# ANNUAL GROUNDWATER MONITORING REPORT

**(INCLUDES FOURTH QUARTER 2014 SEMIANNUAL GROUNDWATER MONITORING REPORT)**

**HAZARDOUS WASTE MANAGEMENT UNITS**
**5 AND 16**
**CALENDAR YEAR 2014**

**RADFORD FACILITY ARMY AMMUNITION PLANT**
**RADFORD, VIRGINIA**

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DAA PROJECT NO. B03204-12

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## EXECUTIVE SUMMARY

This document presents the Annual Groundwater Monitoring Report for calendar year 2014 for Hazardous Waste Management Units (HWMUs) 5 and 16 located at the Radford Facility Army Ammunition Plant (RFAAP) in Radford, Virginia. The Annual Groundwater Monitoring Report was compiled in accordance with the requirements specified in the *Final Hazardous Waste Post-Closure Care Permit for HWMUs 5 and 16* (original effective date October 4, 2002; reissued August 16, 2014). This Annual Groundwater Monitoring Report evaluates the analytical data from Second Quarter 2014 and Fourth Quarter 2014 for each Unit.

In correspondence dated June 26, 2013, the Virginia Department of Environmental Quality (VDEQ) issued approval of clean closure for groundwater at HWMU-7 with immediate cessation of groundwater post-closure related activities at the Unit. In correspondence dated April 2, 2014, the VDEQ granted approval for clean closure for groundwater at HWMU-10 with immediate cessation of groundwater post-closure related activities at the Unit. As a result, groundwater monitoring is no longer required for HWMUs 7 and 10; therefore, RFAAP did not conduct semiannual groundwater monitoring for HWMUs 7 and 10 during calendar year 2014.

### HWMU-5

The calendar year 2014 groundwater monitoring events served as the ninth and tenth semiannual Corrective Action (CA) groundwater monitoring events for HWMU-5 conducted in accordance with Permit Module VI – *Groundwater Corrective Action & Monitoring Program for Unit 5*, which was approved by the Virginia Department of Environmental Quality (VDEQ) in the *Final Class 3 Hazardous Waste Permit Modification* dated November 5, 2009.

During Second Quarter 2014 and Fourth Quarter 2014, TCE was detected in point of compliance well 5WC23 at concentrations greater than the GPS of 5 µg/l, and in point of compliance wells 5WC21 and 5WC22 at concentrations less than the GPS of 5 µg/l. However, no daughter products of TCE were detected in any of the wells comprising the CA monitoring network during the 2014 monitoring events. The TCE concentrations observed in the point of compliance wells during calendar year 2014 are consistent with historical TCE concentrations observed in those wells. TCE was not detected at concentrations greater than the QL in any other wells comprising the CA monitoring network during the calendar year 2014 monitoring events, and no daughter products of TCE were detected in the wells comprising the CA monitoring network. In accordance with the Permit, a long-term concentration plot of the natural-log concentrations of TCE in well 5WC23 versus time was constructed. A linear regression line shows a decreasing trend in TCE concentration in well 5WC23 over time. Based on the data collected to date, the current calculated compliance timeframe for corrective action (monitored natural attenuation [MNA]) is late-2014 which is less than the MNA remedial timeframe goal of 2019 as presented in the Permit, and less than the 2026 MNA ineffective date as specified in the Permit. Therefore, the current remedial measure (MNA) is performing effectively in addressing the TCE concentrations in groundwater at the Unit, and no additional action is required.

Total cobalt was detected at concentrations greater than the revised GPS of 7 µg/l in point of compliance wells 5WC21 and 5WC22 during Second Quarter 2014, and in compliance well

5WC21 during Fourth Quarter 2014. However, total cobalt was not detected at concentrations greater than the GPS in the other wells comprising the CA monitoring network.

Overall, evaluation of calendar year 2014 data for the CA Targeted Constituents and comparison with historical data indicates effective progress of groundwater CA through natural attenuation. No changes to the continuation of the groundwater CA program are anticipated at this time.

**HWMU-16**

Based on an evaluation of the groundwater analytical data and additional information for HWMU-16, total cobalt was detected at a concentration greater than the GPS of 5 µg/l in compliance well 16WC1B during Second Quarter 2014 and Fourth Quarter 2014. In accordance with the Permit and as directed in VDEQ correspondence dated January 21, 2014, Radford AAP conducted an ASD to evaluate whether the total cobalt concentration detected in well 16WC1B was due to 1) a source other than the Unit; 2) errors in sampling, analysis, and evaluation; or 3) natural variation in groundwater. The ASD consisted of four (4) independent samples from point of compliance well 16WC1B collected at a frequency of one sample per calendar quarter (First Quarter 2014 through Fourth Quarter 2014) to evaluate the effect of seasonal variation upon the total cobalt concentrations in groundwater. Additionally, the ASD evaluated additional monitoring wells in the Horseshoe Area of the Facility (the area containing HWMU-16) for natural variability of total cobalt within the aquifer. Radford AAP submitted the ASD to the VDEQ on February 11, 2015; VDEQ review and comment on the ASD is pending.

One additional Permit Attachment 1, Appendix I constituent (1,1-dichloroethene) was detected and confirmed in point of compliance well 16MW9 during Second Quarter 2014. As a result, Radford AAP submitted a Class 1 Permit Modification to the VDEQ on August 13, 2014, to add 1,1-dichloroethene to the Groundwater Compliance Monitoring List for HWMU-16. The VDEQ approved the Class 1 Permit Modification in correspondence dated September 12, 2014, and 1,1-dichloroethene was added to the Groundwater Compliance Monitoring List for HWMU-16 beginning with the Fourth Quarter 2014 monitoring event.

Evaluation of the plume monitoring well data indicated that the concentrations of total barium in upgradient well 16C1 and in plume monitoring wells 16-2 and 16-3 and in spring sampling location 16SPRING were greater than the site-specific background concentration. As stated previously, higher total barium concentrations in downgradient plume monitoring wells relative to background are likely due to natural variations in trace element distribution in groundwater. Upgradient well 16C1 is screened in limestone while downgradient plume monitoring wells 16-1, 16-2, 16-3, and 16-5 are screened in shale and fault breccia. Such differing lithologic formations would be expected to contain very different trace element distributions. Therefore, no further action regarding the 2014 total barium concentrations detected in plume monitoring wells 16-1, 16-2, and 16-3 and in spring sampling location 16SPRING is recommended at this time.

## 1.0 INTRODUCTION

This document presents the Annual Groundwater Monitoring Report for calendar year 2014 for Hazardous Waste Management Units (HWMUs) 5 and 16 located at the Radford Army Ammunition Plant (Radford AAP) in Radford, Virginia. The Annual Groundwater Monitoring Report was compiled in accordance with the requirements specified in the *Final Hazardous Waste Post-Closure Care Permit for HWMUs 5 and 16* (Permit; original effective date October 4, 2002; reissued August 16, 2014).

In correspondence dated June 26, 2013, the Virginia Department of Environmental Quality (VDEQ) issued approval of clean closure for groundwater at HWMU-7 with immediate cessation of groundwater post-closure related activities at the Unit. In correspondence dated April 2, 2014, the VDEQ granted approval for clean closure for groundwater at HWMU-10 with immediate cessation of groundwater post-closure related activities at the Unit. As a result, groundwater monitoring is no longer required for HWMUs 7 and 10; therefore, RFAAP did not conduct semiannual groundwater monitoring for HWMUs 7 and 10 during calendar year 2014.

The Annual Groundwater Monitoring Report presents the following set of information for each Unit: basic information and unit identification, a description of the groundwater monitoring plan, a discussion of groundwater movement, potentiometric surface maps, a table of groundwater elevations, and detailed statistical evaluations of the analytical data.

Please note that the Groundwater Protection Standards (GPS) for HWMUs 5 and 16 were revised in the VDEQ-approved Class 3 Permit Modification dated September 27, 2011; and subsequently revised again in the August 16, 2014 reissuance of the Permit. Therefore, the groundwater samples collected at HWMUs 5 and 16 during the Second Quarter 2014 semiannual monitoring event were evaluated in accordance with the September 27, 2011 VDEQ-approved Class 3 Permit Modification, and the groundwater samples collected during the Fourth Quarter 2014 semiannual monitoring event were evaluated in accordance with the reissued Permit dated August 16, 2014. Copies of correspondence relating to groundwater monitoring activities conducted at HWMUs 5 and 16 during calendar year 2014 are included (on CD-ROM) in **Appendix E**.

### 1.1 HWMU-5

HWMU-5 is a closed lined neutralization pond. The Unit received certification for closure in 1989. As stated in Permit Condition I.K.1 of the Permit, the Compliance Period during which the Groundwater Protection Standard applies to HWMU-5 is 19 years, beginning on the effective date of the original Post-Closure Care Permit for HWMU-5 (October 28, 2001) and continuing until October 28, 2020. The Second Quarter 2010 groundwater monitoring event served as the first semiannual Corrective Action (CA) groundwater monitoring event for HWMU-5 conducted in accordance with Permit Module VI – Groundwater Corrective Action & Monitoring Program for Unit 5, which was approved by the VDEQ in the Final Class 3 Hazardous Waste Permit Modification dated November 5, 2009. This report is the thirteenth complete Annual Groundwater Monitoring Report submitted to the Virginia Department of Environmental Quality (VDEQ) for this Unit during the Compliance Period, and the fifth

complete Annual Groundwater Monitoring Report submitted to the VDEQ under the Groundwater Corrective Action & Monitoring Program.

## 1.2 HWMU-16

HWMU-16 is a closed hazardous waste landfill. The Unit received certification for closure in 1993. As stated in Permit Condition I.K.2, the Compliance Period during which the Groundwater Protection Standard applies to HWMU-16 is 13 years, beginning on the effective date of the *Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Management Units 5, 7, 10, and 16* (October 4, 2002) and continuing until October 4, 2015. This report is the thirteenth Annual Groundwater Monitoring Report submitted to the VDEQ for this Unit during the Compliance Period.

## 2.0 HWMU-5 ANNUAL GROUNDWATER MONITORING REPORT

### 2.1 Waste Management Unit Information

**Unit Name:** Hazardous Waste Management Unit 5 (HWMU-5)
**Owner/Operator:** United States Army/BAE Systems, Ordnance Systems Inc.

**Unit Location:** RFAAP Main Plant Area, Radford, Virginia

**Class:** Hazardous Waste Management Unit
**Type:** Closed Lined Neutralization Pond

### 2.2 Groundwater Monitoring Plan

**Monitoring Network:**

| | |
|---|---|
| Upgradient Well: | 5W8B |
| Point of Compliance Wells: | 5W5B, 5W7B, 5WC21, 5WC22, 5WC23 |
| Plume Monitoring Wells: | 5W12A |
| Observation Wells: | S5W5, S5W7, 5W9A, 5W10A, 5W11A, 5WCA, S5W6, S5W8, 5WC11, 5WC22 |

**Monitoring Status:** Corrective Action Monitoring Program

**CY 2014 Monitoring Events:**

| | |
|---|---|
| Second Quarter 2014: | April 21-22, 2014 |
| Fourth Quarter 2014: | October 14-15, 2014 |

The calendar year 2014 groundwater monitoring events served as the ninth and tenth semiannual Corrective Action (CA) groundwater monitoring events for HWMU-5 conducted in accordance with Permit Module VI – *Groundwater Corrective Action & Monitoring Program for Unit 5*, which was approved by the Virginia Department of Environmental Quality (VDEQ) in the *Final Class 3 Hazardous Waste Permit Modification* dated November 5, 2009.

### 2.3 Groundwater Movement

The monitoring wells at HWMU-5 are screened entirely within either weathered carbonate bedrock residuum or alluvium or across the weathered residuum/carbonate bedrock interface. The static water level measurements gathered during the 2014 semiannual monitoring events are summarized in **Table 1**. Groundwater fluctuations ranged from 0.10 to 1.88 feet during the 2014 groundwater monitoring events. As shown on the HWMU-5 Potentiometric Surface Maps (**Appendix A-1**), groundwater movement beneath the site is generally to the northeast.

Darcian flow conditions were assumed for the alluvium, residuum, and carbonate bedrock beneath HWMU-5. As a result, the groundwater velocities were calculated by multiplying the hydraulic conductivity (determined from previously conducted slug tests) by the

average hydraulic gradient across the site and dividing by an assumed effective porosity for the aquifer. The average hydraulic gradient was determined by superimposing three evenly spaced flow line vectors over the potentiometric surface map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site based on Fourth Quarter 2014 groundwater elevations was calculated to be 0.027 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of $5.25 \times 10^{-5}$ ft/second. This value is consistent with literature values for carbonate rock and for clayey, silty sand and gravel alluvium and residuum (Domenico and Schwartz, 1990).

The estimated groundwater velocity across the site was calculated to be approximately 0.31 ft/day or 113 ft/year based on the following:

- Average hydraulic conductivity of $5.25 \times 10^{-5}$ ft/second.
- Average hydraulic gradient of 0.027 ft/ft.
- Assumed effective porosity of 0.40, based on a representative range of porosities for carbonate rock, weathered residuum, and clayey, silty sand and gravel alluvium (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the velocity presented above depending on water level conditions and the distribution of solution features.

## 2.4 Groundwater Analytical Data Evaluation

The calendar year 2014 groundwater monitoring events served as the ninth and tenth semiannual Corrective Action (CA) groundwater monitoring events for HWMU-5 conducted in accordance with Permit Module VI – *Groundwater Corrective Action & Monitoring Program for Unit 5*, which was approved by the VDEQ in the *Final Class 3 Hazardous Waste Permit Modification* dated November 5, 2009. Specifically, the Second Quarter 2014 and Fourth Quarter 2014 events served as the ninth and tenth semiannual monitoring events in which all of the wells in the CA groundwater monitoring network were sampled for the constituents listed in Appendix J to Permit Attachment 2 (Groundwater Corrective Action Targeted Constituents - GPS and Semiannual Monitoring List for HWMU-5). The Second Quarter 2014 event also served as the annual monitoring event in which the point of compliance wells at HWMU-5 were sampled for the constituents listed in Appendix K to Permit Attachment 2 (Groundwater Corrective Action Annual Monitoring List).

The laboratory analytical results for the 2014 monitoring events are summarized in **Appendix A-2** (Groundwater Corrective Action Targeted Constituents - GPS and Semiannual Monitoring List) and in **Appendix A-3** (Groundwater Corrective Action Annual Monitoring List). The laboratory analytical results for the 2014 monitoring events are included on CD-ROM in **Appendix C**. The analytical data were validated in accordance with SW-846, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*.

Data validation reports are included in **Appendix C**. Copies of field notes recorded during sample collection are included on CD-ROM in **Appendix D**.

### 2.4.1 Semiannual Monitoring for Corrective Action Targeted Constituents

During the Second Quarter 2014 and Fourth Quarter 2014 monitoring events, groundwater samples collected from all of the wells in the CA groundwater monitoring network were analyzed for the CA Targeted Constituents listed in Appendix J to Permit Attachment 2. The CA Targeted Constituents consist of TCE and its daughter products: 1,1-dichloroethene (1,1-DCE), *cis*-1,2-dichloroethene (*c*DCE), *trans*-1,2-dichloroethene (*t*DCE), and vinyl chloride (VC). In addition, the VDEQ added total cobalt to the list of CA Targeted Constituents during a meeting with Radford AAP on May 4, 2011. The laboratory analytical results for the CA Targeted Constituents are summarized in **Appendix A-2**.

During Second Quarter 2014, TCE was detected in point of compliance well 5WC23 at a concentration of 5.5 µg/l, which is greater than the GPS of 5 µg/l (**Appendix A-2**). TCE was detected in point of compliance wells 5WC21 and 5WC22 at concentrations of 4.8 µg/l and 4.0 µg/l, respectively, which are less than the GPS of 5 µg/l (**Appendix A-2**). TCE was not detected in any of the other wells in the CA groundwater monitoring network. Additionally, the TCE daughter products were not detected in any of the wells comprising the CA groundwater monitoring network.

During Fourth Quarter 2014, TCE was detected in point of compliance well 5WC23 at a concentration of 5.2 µg/l, which is greater than the GPS of 5 µg/l (**Appendix A-2**). TCE was detected in point of compliance wells 5WC21 and 5WC22 at concentrations of 3.9 µg/l and 4.2 µg/l, respectively, which are less than the GPS of 5 µg/l (**Appendix A-2**). TCE was not detected in any of the other wells in the CA groundwater monitoring network. Additionally, the TCE daughter products were not detected in any of the wells comprising the CA groundwater monitoring network.

During Second Quarter 2014, total cobalt was detected in point of compliance wells 5WC21 and 5WC22 at concentrations of 62.3 µg/l and 13.9 µg/l, respectively, which are greater than the GPS of 7 µg/l (**Appendix A-2**). Total cobalt was not detected at concentrations greater than the GPS in the other wells comprising the CA monitoring network during Second Quarter 2014.

During Fourth Quarter 2014, total cobalt was detected in point of compliance well 5WC21 at a concentration of 63 µg/l, which is greater than the GPS of 7 µg/l (**Appendix A-2**). Total cobalt was not detected at concentrations greater than the GPS in the other wells comprising the CA monitoring network during Fourth Quarter 2014.

### 2.4.2 Annual Monitoring List - Comparison to Groundwater Protection Standards

During Second Quarter 2014, groundwater samples collected from the point of compliance wells for HWMU-5 were analyzed for the constituents listed in Appendix K to Permit Attachment 2 (Groundwater Corrective Action Annual Monitoring List). Annual

monitoring for the constituents listed in Appendix K is required in order to evaluate whether additional hazardous constituents that are not the targets for the current Corrective Action (e.g., TCE and its daughter products, total cobalt) are present at concentrations greater than the Groundwater Protection Standards (GPS) for the Unit. No additional hazardous constituents that are not targets for the current Corrective Action for the Unit were detected at concentrations greater than their respective GPS during Second Quarter 2014 (**Appendix A-3**).

### 2.4.3 Annual Monitoring List – Verification of Estimated Values

A footnote presented in Appendix K to Permit Attachment 2 indicates that verification is required for constituents detected at concentrations less than the QL if their associated GPSs are 1) based on background values equal to the QL, and 2) are greater than the applicable risk-based concentrations (i.e., ACL or RSL). In these instances, verification must be conducted using an alternate low-level analytical method in order to confirm or refute the observed initial detections if the QL achievable by that method is less than, or equal to, the ACL or RSL for the subject constituent. If a concentration greater than the low-level analytical method QL is observed, then the GPS for that constituent will be updated, if warranted. During Second Quarter 2014, no constituents with GPSs based on background values equal to their respective QLs and greater than the applicable risk-based concentrations were detected at concentrations less than their respective QLs; therefore, no further action was warranted.

## 2.5 Annual Evaluation of Effectiveness of Corrective Action

In accordance with Sections VI.B.6, VI.J.4.f and VI.J.4.g and other applicable sections of the Permit, Radford AAP performed an annual evaluation of the effectiveness of the Corrective Action Program (CAP) (monitored natural attenuation [MNA] program) for calendar year 2014. MNA is the current remedial measure implemented at the Unit to address TCE in groundwater at concentrations greater than the GPS. In accordance with the applicable sections of the Permit, the evaluation includes the following:

- Construction of long-term concentration plots of constituents of concern (COCs) detected at concentrations greater than their respective GPS.
- Calculation of a Point Attenuation Rate for each detected COC and determination of an updated compliance (MNA remedial) timeframe prediction based on revised point attenuation rates determined from concentration versus time graphs using the principles and methods presented in Section 7.4 of Permit Attachment 2, Appendix I (CAP).
- Comparison of updated MNA remedial timeframe to the 2019 MNA remedial timeframe (MNA goal per CAP).
- Determination of the effectiveness of the Current Remedial Measure.

### 2.5.1 Construction of Long-term Concentration Plots of COCs

In accordance with the Permit, graphs of natural-log concentration versus time for monitoring wells exhibiting current detections of TCE and degradation products at concentrations greater than their respective GPS values were constructed (**Appendix A-4**). During Second Quarter 2014 and Fourth Quarter 2014, TCE was detected in point of compliance well 5WC23 at concentrations greater than the GPS of 5 µg/l. TCE was not detected at

concentrations greater than the GPS in any other wells comprising the CA monitoring network during the calendar year 2014 monitoring events. The TCE concentrations observed in point of compliance well 5WC23 are consistent with historical TCE concentrations observed in that well. In accordance with the Permit, a long-term concentration plot of the natural-log concentrations of TCE in well 5WC23 versus time was constructed (**Appendix A-4**). An isoconcentration map illustrating TCE concentrations detected in groundwater during the Fourth Quarter 2014 event is included in **Appendix A-4**.

TCE was detected in point of compliance wells 5WC21 and 5WC22 during both 2014 monitoring events at concentrations equal to or less than the GPS of 5 µg/l. Therefore, concentration plots were not required for TCE in those wells. The TCE concentrations in 5WC21 and 5WC22 continue to show consistent decreases in comparison with historical data (**Appendix A-4**).

To date no daughter products of TCE (i.e., other COCs) have been detected in the groundwater samples collected at from the wells comprising the CA monitoring network at HWMU-5.

Overall, the above evaluation shows that concentrations of TCE are decreasing in the groundwater at the Unit. Therefore, the current remedial measure (MNA) is performing effectively in addressing the TCE concentrations in groundwater at the Unit.

### 2.5.2 Calculation of Point Attenuation Rates and Updated Compliance (MNA Remedial) Timeframe

TCE is the only current COC detected at concentrations greater than its GPS at the Unit (specifically, in well 5WC23). Therefore an updated point attenuation rate was calculated for TCE concentration in well 5WC23. The updated point attenuation rate is 0.0006, which is based on a linear regression, where the slope of the regression represents the attenuation rate, $k_{point}$ (see attached MNA Effectiveness Evaluation Concentration Trend Graph and Point Attenuation Rate Constant Calculation for TCE in Well 5WC23; **Appendix A-4**). The data set used to calculate the point attenuation rate encompasses TCE concentrations detected in well 5WC21 from the last 20 monitoring events beginning with April 18, 2006 to the present (October 14, 2014).

The updated MNA Compliance timeframe was calculated using the following equation:

$$t = -[\ln(C_{goal}/C_{start})]/k_{point}$$

whereas:

$t$ = predicted GPS remedial time frame
$C_{goal}$ = GPS concentration (5 µg/l)
$C_{start}$ = current constituent concentration (5.2 µg/l)
$k_{point}$ = natural attenuation rate per year (0.219)

$$t = -[\ln(5/5.2)]/0.219$$
$$t = 0.18 \text{ year}$$

The calculated current MNA timeframe (date) is late 2014.

The current MNA timeframe is less than the 2019 MNA goal (MNA remedial timeframe presented in the CAP) and less than the 2026 MNA ineffective date (as specified in the CAP). Therefore, the current remedy is considered effective and no additional action is required.

## 2.6 Recommendations

During Second Quarter 2014 and Fourth Quarter 2014, TCE was detected in point of compliance well 5WC23 at concentrations greater than the GPS of 5 µg/l, and in point of compliance wells 5WC21 and 5WC22 at concentrations less than the GPS of 5 µg/l. However, no daughter products of TCE were detected in any of the wells comprising the CA monitoring network during the 2014 monitoring events. The TCE concentrations observed in the point of compliance wells during calendar year 2014 are consistent with historical TCE concentrations observed in those wells. TCE was not detected at concentrations greater than the QL in any other wells comprising the CA monitoring network during the calendar year 2014 monitoring events, and no daughter products of TCE were detected in the wells comprising the CA monitoring network. In accordance with the Permit, a long-term concentration plot of the natural-log concentrations of TCE in well 5WC23 versus time was constructed. A linear regression line shows a decreasing trend in TCE concentration in well 5WC23 over time. Based on the data collected to date, the current calculated compliance timeframe for corrective action (monitored natural attenuation [MNA]) is late 2014, which is less than the MNA remedial timeframe goal of 2019 as presented in the Permit, and less than the 2026 MNA ineffective date as specified in the Permit. Therefore, the current remedial measure (MNA) is performing effectively in addressing the TCE concentrations in groundwater at the Unit, and no additional action is required.

Total cobalt was detected at concentrations greater than the revised GPS of 7 µg/l in point of compliance wells 5WC21 and 5WC22 during Second Quarter 2014, and in compliance well 5WC21 during Fourth Quarter 2014. However, total cobalt was not detected at concentrations greater than the GPS in the other wells comprising the CA monitoring network.

Overall, evaluation of calendar year 2014 data for the CA Targeted Constituents and comparison with historical data indicates effective progress of groundwater CA through natural attenuation. No changes to the continuation of the groundwater CA program are anticipated at this time.

## 3.0 HWMU-16 ANNUAL GROUNDWATER MONITORING REPORT

### 3.1 Waste Management Unit Information

**Unit Name:** Hazardous Waste Management Unit 16 (HWMU-16)
**Owner/Operator:** United States Army/BAE Systems, Ordnance Systems Inc.

**Unit Location:** RFAAP Main Plant Area, Radford, Virginia

**Class:** Hazardous Waste Management Unit
**Type:** Closed Hazardous Waste Landfill

### 3.2 Groundwater Monitoring Plan

**Monitoring Network:**

| | |
|---|---|
| Upgradient Well: | 16C1 |
| Point of Compliance Wells: | 16WC1A, 16WC1B, 16MW8, 16MW9 |
| Plume Monitoring Wells: | 16-1 (Second Quarter 2014), 16-2, 16-3, 16-5, 16WC2B, 16SPRING |
| Observation Wells: | 16-1 (Fourth Quarter 2014), 16WC2A, 16C3, 16CDH3 |

**Monitoring Status:** Compliance Monitoring Program

**CY 2014 Monitoring Events:**

| | |
|---|---|
| Second Quarter 2014: | April 23-24, 2014 |
| Fourth Quarter 2014: | October 20-22, 2014 |

The Compliance Monitoring Constituent List and GPS for HWMU-16 were revised in the VDEQ-approved Class 3 Permit Modification dated September 27, 2011, and subsequently revised again in the August 16, 2014 reissuance of the Permit. Therefore, the groundwater samples collected at HWMU- 16 during the Second Quarter 2014 semiannual monitoring event were evaluated in accordance with the September 27, 2011 VDEQ-approved Class 3 Permit Modification, and the groundwater samples collected during the Fourth Quarter 2014 semiannual monitoring event were evaluated in accordance with the reissued Permit dated August 16, 2014.

### 3.3 Groundwater Movement

The monitoring wells at HWMU-16 are screened entirely within either carbonate bedrock or weathered carbonate bedrock residuum, or across the residuum/bedrock interface. The static water level measurements gathered during the 2014 semiannual monitoring events are summarized in **Table 2**. Groundwater fluctuations ranged from 0.08 to 5.24 feet annually. As shown on the HWMU-16 Potentiometric Surface Maps (**Appendix B-1**), groundwater movement beneath the site is generally to the northeast.

Darcian flow conditions were assumed for the weathered residuum and carbonate bedrock beneath HWMU-16. As a result, the groundwater velocities were calculated by

multiplying the hydraulic conductivity (determined from previously conducted slug tests) by the average hydraulic gradient across the site and dividing by an assumed effective porosity for the aquifer materials. The average hydraulic gradient was determined by superimposing three evenly spaced flow line vectors over the potentiometric surface map, measuring their lengths, calculating the head differential over the distances measured, and dividing the head differential by the length of the flow line vectors. The three calculated gradients were then averaged to a single value. Using this method, the average groundwater hydraulic gradient across the site based on Fourth Quarter 2014 groundwater elevations was calculated to be 0.089 ft/ft. Historical slug test data for the site yielded an average hydraulic conductivity of $7.87 \times 10^{-5}$ ft/second. This value is consistent with literature values for carbonate rock and for clay and silt residuum (Domenico and Schwartz, 1990).

The estimated groundwater velocity across the site was calculated to be approximately 1.51 ft/day or 550 ft/year based on the following:

- Average hydraulic conductivity of $7.87 \times 10^{-5}$ ft/second.
- Average hydraulic gradient of 0.089 ft/ft.
- Assumed effective porosity of 0.40, based on a representative range of porosities for carbonate rock and clay and silt residuum (Domenico and Schwartz, 1990).

The actual groundwater flow velocities in the carbonate bedrock may vary as much as one to two orders of magnitude from the velocity presented above depending on water level conditions and the distribution of solution features.

### 3.4 Groundwater Analytical Data Evaluation

The groundwater samples collected from the compliance monitoring network during the 2014 semiannual monitoring events were analyzed for the constituents listed in Appendix E to Attachment 5 of the Permit, as revised in the VDEQ-approved Class 3 Permit Modification dated September 27, 2011 (for Second Quarter 2014), and listed in Appendix E to Attachment 3 in the August 16, 2014 reissuance of the Permit (for Fourth Quarter 2014). In addition, groundwater samples were collected from the upgradient well and the point of compliance wells for the annual monitoring for the constituents listed in Permit Attachment 1, Appendix I. The laboratory analytical results for the 2014 monitoring events are included in **Appendix B-2** (point of compliance wells) and in **Appendix B-3** (plume monitoring wells). The laboratory analytical results for the 2014 monitoring events also are included in electronic format in **Appendix C**. The analytical data were validated in accordance with SW-846, *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. Data validation reports are included in **Appendix C**. Copies of field notes recorded during sample collection are included on CD-ROM in **Appendix D**.

### 3.4.1 Comparison to Groundwater Protection Standards

As specified in the Permit, the 2014 groundwater analytical data for the upgradient well and the point of compliance wells were compared to GPS for HWMU-16 listed in Appendix G of Permit Attachment 5 as revised in the VDEQ-approved Class 3 Permit Modification dated September 27, 2011 (for Second Quarter 2014), and in Appendix G of Permit Attachment 3 in the August 16, 2014 reissuance of the Permit (for Fourth Quarter 2014). In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the upgradient well and the point of compliance well data to the GPS (**Appendix B-2**).

Upon receipt of the Second Quarter 2014 analytical data, Radford AAP notified the VDEQ of the initial detection of total cobalt at a concentration greater than the GPS of 5 µg/l in point of compliance well 16WC1A. On June 18, 2014, a verification sample was collected from wells 16WC1A to confirm or refute this initial detection. Total cobalt was not detected at a concentration greater than the GPS in the verification sample collected from point of compliance wells 16WC1A; therefore, no further action is required.

During Second Quarter 2014 and Fourth Quarter 2014, total cobalt was detected in point of compliance well 16WC1B at concentrations of 46.8 µg/l and 13.4 µg/l, respectively, which are greater than the GPS of 5 µg/l. In accordance with the Permit and as directed in VDEQ correspondence dated January 21, 2014 (**Appendix E**), Radford AAP conducted an alternate source demonstration (ASD) to evaluate whether the total cobalt concentration detected in well 16WC1B was due to 1) a source other than the Unit; 2) errors in sampling, analysis, and evaluation; or 3) natural variation in groundwater. The ASD consisted of four (4) independent samples from point of compliance well 16WC1B collected at a frequency of one sample per calendar quarter (First Quarter 2014 through Fourth Quarter 2014) to evaluate the effect of seasonal variation upon the total cobalt concentrations in groundwater. Additionally, the ASD evaluated additional monitoring wells in the Horseshoe Area of the Facility (the area containing HWMU-16) for natural variability of total cobalt within the aquifer. Radford AAP submitted the ASD to the VDEQ on February 11, 2015; VDEQ review and comment on the ASD is pending.

A footnote presented in Appendix G of Permit Attachment 3 of the August 16, 2014 reissuance of the Permit indicates that verification is required for constituents detected at concentrations less than the QL if their associated GPSs are equal to the QL, and are greater than the applicable risk-based concentrations (i.e., ACL or RSL). In these instances, verification must be conducted using an alternate low-level analytical method in order to confirm or refute the observed initial detections if the QL achievable by that method is less than, or equal to, the ACL or RSL for the subject constituent. If a concentration greater than the low-level analytical method QL is observed, then the GPS for that constituent will be updated, if warranted. During Fourth Quarter 2014, no constituents with GPSs equal to their respective QLs and greater than the applicable risk-based concentrations were detected at concentrations less than their respective QLs; therefore, no further action was warranted.

### 3.4.2 Comparison to Background Concentrations

As specified in Permit Condition V.O, the 2014 groundwater analytical data for the plume monitoring wells were compared to the background concentrations for HWMU-16 listed

in Appendix F of Permit Attachment 5 (Second Quarter 2014) and Permit Attachment 3 (Fourth Quarter 2014). In accordance with Permit Condition V.I.2, Radford AAP performed a simple empirical comparison of the plume monitoring well data to the background concentrations (**Appendix B-3**).

As shown in **Appendix B-3**, total barium concentrations detected in plume monitoring wells 16-2 and 16-3 and in spring sampling location 16SPRING during both 2014 semiannual monitoring events as well as upradient well 16-1 during Fourth Quarter 2014 were greater than the background concentration of 175.4 µg/l. However, all of the total barium concentrations detected in the plume monitoring wells were well below the USEPA MCL for barium of 2,000 µg/l. Furthermore, higher barium concentrations in downgradient plume monitoring wells relative to background may be the result of natural variations in trace element distribution in groundwater. As illustrated in the boring logs for the compliance network monitoring wells (Appendix H of Permit Attachment 5), upgradient well 16C1 is screened in limestone while downgradient plume monitoring wells 16-2, 16-3, and 16-5 are screened in shale and fault breccia. Such differing lithologic formations would be expected to contain very different trace element distributions.

No other constituent concentrations detected in the plume monitoring wells were greater than their respective background concentrations. In accordance with the requirements of Permit Condition V.K.3, the established background values and the computations used to determine the background values are included in **Appendix B-4**. The background values and associated computations are taken from the Groundwater Quality Assessment Report for HWMU-16 dated August 1999.

### 3.4.3 Annual Monitoring for Constituents Listed in Permit Attachment 1, Appendix I

Upon receipt of the Second Quarter 2014 analytical data, Radford AAP notified the VDEQ of the detection of three additional Appendix IX constituents (1,1-dichloroethene, silver, and tetrahydrofuran) that were not listed in Appendix E of Permit Attachment 5 (Unit 16 – Groundwater Compliance Monitoring Constituent List). 1,1-Dichloroethene and tetrahydrofuran were detected in upgradient well 16C1 at concentrations greater than their respective detection limits (DLs) but less than their respective QLs. Additionally, 1,1-dichloroethene was initially detected in point of compliance well 16MW9 at a concentration greater than the DL but less than the QL. Silver was initially detected in point of compliance well 16MW8 at a concentration greater than the DL but less than the QL. In accordance with the Permit, Radford AAP resampled well 16MW8 for silver and well 16MW9 for 1,1-dichloroethene in order to confirm or refute the additional Appendix IX constituent detections in the point of compliance wells.

Sampling of well 16C1 for Appendix IX constituents is not required per the Post-Closure Care Permit for the Unit; therefore, tetrahydrofuran will not be added to the Groundwater Compliance Monitoring List for the Unit. Silver was not confirmed in the verification sample collected from point of compliance well 16MW8; as a result, silver will not be added to the Groundwater Compliance Monitoring List for the Unit.

The verification sample results confirmed the presence of 1,1-dichloroethene in point of compliance well 16MW9. As a result, Radford AAP submitted a Class 1 Permit Modification to

the VDEQ on August 13, 2014, to add 1,1-dichloroethene to the Groundwater Compliance Monitoring List for HWMU-16. The VDEQ approved the Class 1 Permit Modification in correspondence dated September 12, 2014 (**Appendix E**), and 1,1-dichloroethene was added to the Groundwater Compliance Monitoring List for HWMU-16 beginning with the Fourth Quarter 2014 monitoring event.

## 3.5 Recommendations

Based on an evaluation of the groundwater analytical data and additional information for HWMU-16, total cobalt was detected at a concentration greater than the GPS of 5 µg/l in compliance well 16WC1B during Second Quarter 2014 and Fourth Quarter 2014. In accordance with the Permit and as directed in VDEQ correspondence dated January 21, 2014 (**Appendix E**), Radford AAP conducted an ASD to evaluate whether the total cobalt concentration detected in well 16WC1B was due to 1) a source other than the Unit; 2) errors in sampling, analysis, and evaluation; or 3) natural variation in groundwater. The ASD consisted of four (4) independent samples from point of compliance well 16WC1B collected at a frequency of one sample per calendar quarter (First Quarter 2014 through Fourth Quarter 2014) to evaluate the effect of seasonal variation upon the total cobalt concentrations in groundwater. Additionally, the ASD evaluated additional monitoring wells in the Horseshoe Area of the Facility (the area containing HWMU-16) for natural variability of total cobalt within the aquifer. Radford AAP submitted the ASD to the VDEQ on February 11, 2015; VDEQ review and comment on the ASD is pending.

One additional Permit Attachment 1, Appendix I constituent (1,1-dichloroethene) was detected and confirmed in point of compliance well 16MW9 during Second Quarter 2014. As a result, Radford AAP submitted a Class 1 Permit Modification to the VDEQ on August 13, 2014, to add 1,1-dichloroethene to the Groundwater Compliance Monitoring List for HWMU-16. The VDEQ approved the Class 1 Permit Modification in correspondence dated September 12, 2014 (**Appendix E**), and 1,1-dichloroethene was added to the Groundwater Compliance Monitoring List for HWMU-16 beginning with the Fourth Quarter 2014 monitoring event.

Evaluation of the plume monitoring well data indicated that the concentrations of total barium in upgradient well 16C1 and in plume monitoring wells 16-2 and 16-3 and in spring sampling location 16SPRING were greater than the site-specific background concentration. As stated previously, higher total barium concentrations in downgradient plume monitoring wells relative to background are likely due to natural variations in trace element distribution in groundwater. Upgradient well 16C1 is screened in limestone while downgradient plume monitoring wells 16-1, 16-2, 16-3, and 16-5 are screened in shale and fault breccia. Such differing lithologic formations would be expected to contain very different trace element distributions. Therefore, no further action regarding the 2014 total barium concentrations detected in plume monitoring wells 16-1, 16-2, and 16-3 and in spring sampling location 16SPRING is recommended at this time.

**SIGNATURE/CERTIFICATION**

*Prepared by:*

Name: Ross G. Miller, Senior Project Geologist

Signature:

Company: Draper Aden Associates
Address: 2206 South Main Street
City/State/Zip: Blacksburg, Virginia 24060-6600

*Virginia Professional Certification:*

I certify that I have prepared or supervised preparation of the attached report, that it has been prepared in accordance with industry standards and practices, and that the information contained herein is truthful and accurate to the best of my knowledge.

Name: Michael D. Lawless, Environmental Program Manager

Signature:

Virginia Professional Certification Type and Number: PG 832
Company: Draper Aden Associates
Address: 2206 South Main Street
City/State/Zip: Blacksburg, Virginia 24060-6600

# TABLES

**TABLE 1**
**HWMU-5**
**GROUNDWATER ELEVATIONS - 2014**
**RADFORD ARMY AMMUNITION PLANT**
**RADFORD, VIRGINIA**

| MONITORING WELL ID | ELEVATION TOP OF WELL | APRIL 21, 2014 | | OCTOBER 14, 2014 | |
|---|---|---|---|---|---|
| | | DTW | GW ELEV | DTW | GW ELEV |
| 5W8B | 1789.58 | 14.68 | 1774.90 | 13.78 | 1775.80 |
| 5W5B | 1775.13 | 8.73 | 1766.40 | 7.38 | 1767.75 |
| 5W7B | 1774.78 | 8.93 | 1765.85 | 7.72 | 1767.06 |
| 5WC21 | 1774.43 | 8.99 | 1765.44 | 7.71 | 1766.72 |
| 5WC22 | 1774.45 | 8.93 | 1765.52 | 7.61 | 1766.84 |
| 5WC23 | 1773.84 | 8.30 | 1765.54 | 6.99 | 1766.85 |
| 5W12A | 1772.46 | 10.73 | 1761.73 | 10.01 | 1762.45 |
| S5W5 | 1772.31 | 8.26 | 1764.05 | 6.38 | 1765.93 |
| S5W7 | 1776.08 | 11.32 | 1764.76 | 9.73 | 1766.35 |
| 5W9A | 1762.20 | 1.25 | 1760.95 | 1.15 | 1761.05 |
| 5W10A | 1771.40 | 13.08 | 1758.32 | 13.82 | 1757.58 |
| 5W11A | 1766.20 | 10.46 | 1755.74 | 9.40 | 1756.80 |
| 5WC11 | 1788.92 | 16.16 | 1772.76 | 14.90 | 1774.02 |
| 5WC12 | 1788.96 | 15.89 | 1773.07 | 15.20 | 1773.76 |
| 5WCA | 1779.05 | 12.60 | 1766.45 | 11.20 | 1767.85 |
| S5W6 | 1771.43 | 6.60 | 1764.83 | 5.35 | 1766.08 |
| S5W8 | 1783.68 | 11.84 | 1771.84 | 10.91 | 1772.77 |

**NOTES:**
DTW: Depth to water from top of casing.
GW ELEV: Groundwater elevation.
All elevations in feet above mean sea level.

**TABLE 2**
**HWMU-16**
**GROUNDWATER ELEVATIONS - 2014**
**RADFORD ARMY AMMUNITION PLANT**
**RADFORD, VIRGINIA**

| MONITORING WELL ID | ELEVATION TOP OF WELL | APRIL 23, 2014 | | OCTOBER 21, 2014 | |
|---|---|---|---|---|---|
| | | DTW | GW ELEV | DTW | GW ELEV |
| 16C1 | 1840.14 | 47.57 | 1792.57 | 49.54 | 1790.60 |
| 16MW8 | 1815.82 | 71.57 | 1744.25 | 72.94 | 1742.88 |
| 16MW9 | 1808.88 | 62.77 | 1746.11 | 66.55 | 1742.33 |
| 16WC1A | 1812.61 | 64.62 | 1747.99 | 67.39 | 1745.22 |
| 16WC1B | 1812.95 | 64.62 | 1748.33 | 67.64 | 1745.31 |
| 16-1 | 1815.82 | 41.75 | 1774.07 | 46.82 | 1769.00 |
| 16-2 | 1810.99 | 55.90 | 1755.09 | 55.82 | 1755.17 |
| 16-3 | 1824.77 | 56.02 | 1768.75 | 56.63 | 1768.14 |
| 16-5 | 1742.60 | 4.02 | 1738.58 | 4.25 | 1738.35 |
| 16WC2B | 1818.71 | 51.85 | 1766.86 | 54.04 | 1764.67 |
| 16WC2A | 1820.05 | DRY | DRY | DRY | DRY |
| 16C3 | 1822.22 | 63.28 | 1758.94 | 68.52 | 1753.70 |
| 16CDH3 | 1825.60 | DRY | DRY | DRY | DRY |
| SPRING | na | na | na | na | na |

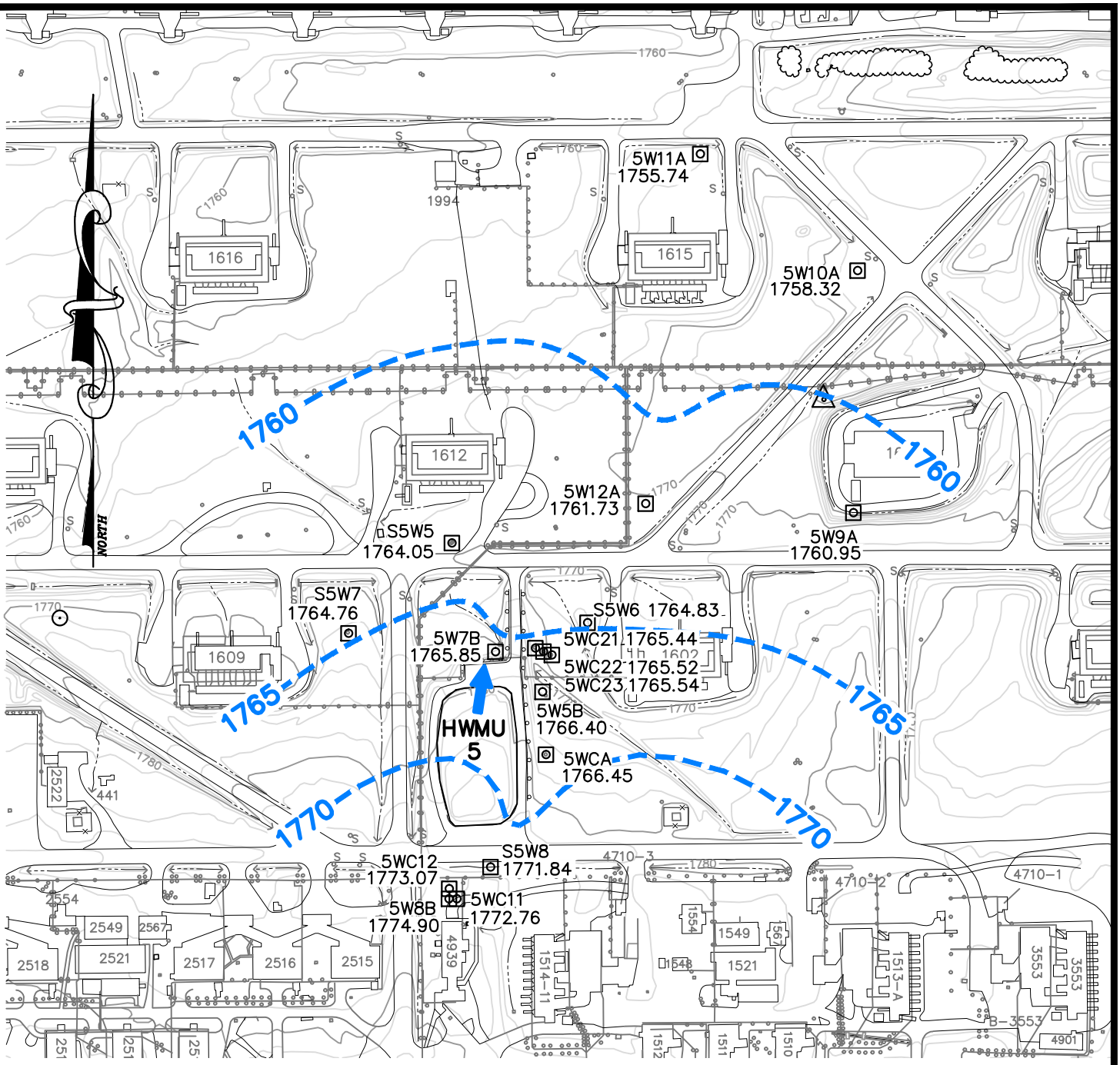
**NOTES:**
DTW: Depth to water from top of casing.
GW ELEV: Groundwater elevation.
All elevations in feet above mean sea level.
na: Not applicable.

# APPENDIX A

# HWMU-5

# APPENDIX A-1

# HWMU-5 POTENTIOMETRIC SURFACE MAPS
# SECOND QUARTER 2014
# FOURTH QUARTER 2014




GRAPHIC SCALE

200 0 100 200 400

( IN FEET )

1 inch = 200 ft.

**LEGEND**

5W7B
1765.85 — MONITORING WELL GROUNDWATER ELEVATION (feet above mean sea level)

--1770-- GROUNDWATER CONTOUR

GROUNDWATER FLOW DIRECTION

NOTE: TOPOGRAPHIC CONTOUR INTERVAL 2'

HWMU-5 POTENTIOMETRIC SURFACE MAP (APRIL 21, 2014)

# RADFORD ARMY AMMUNITION PLANT

RADFORD, VIRGINIA

SCALE: 1"=200'

PLAN NO. B03204-12


Draper Aden Associates

Engineering ✦ Surveying ✦ Environmental Services

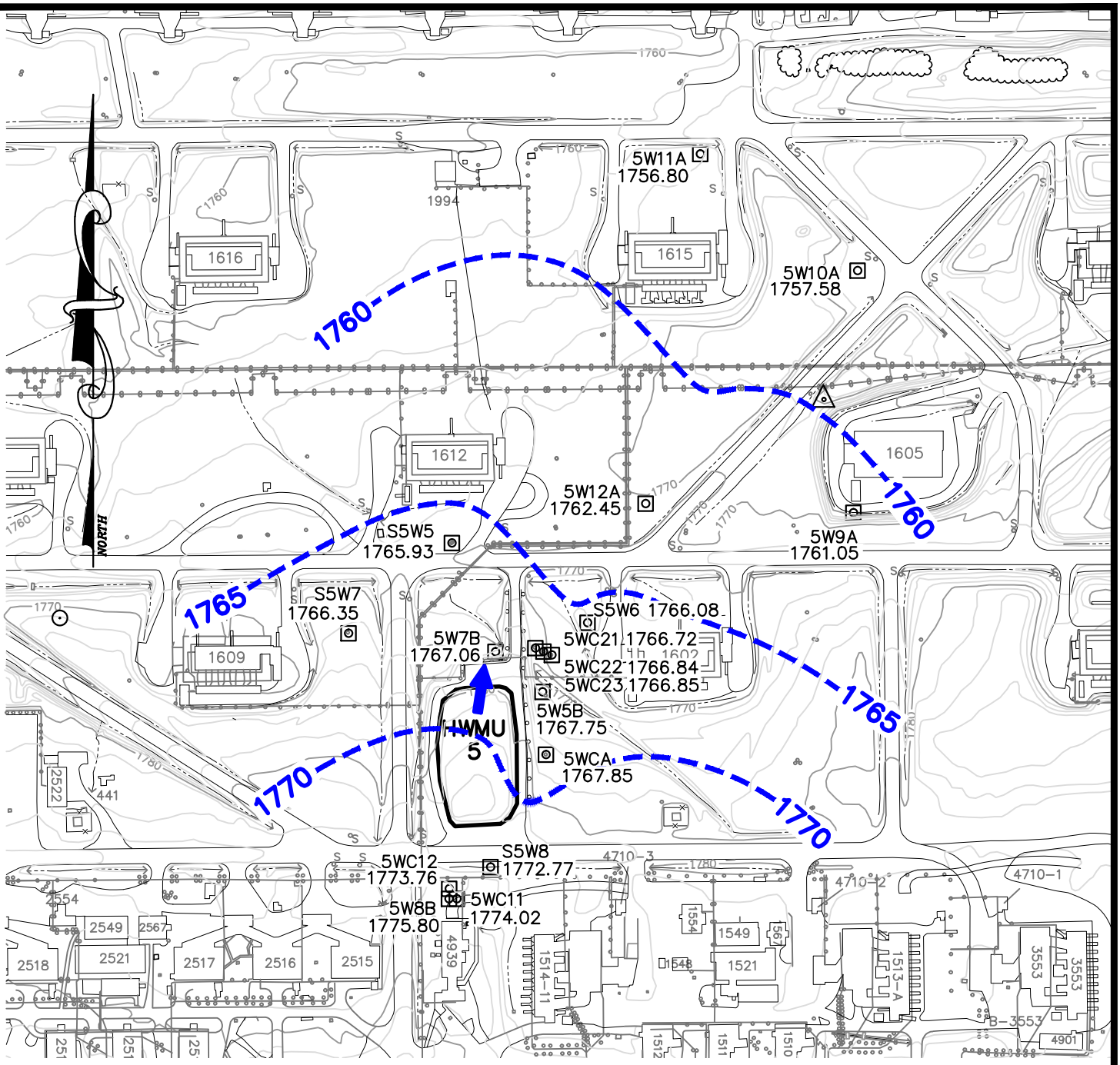
2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291

Richmond, VA
Charlottesville, VA
Hampton Roads, VA


| | |
|---|---|
| DESIGNED | SN |
| DRAWN | DLD |
| CHECKED | MDL |
| DATE | 06/06/2014 |

FIGURE 1

P:\B03200\B03204\B03204-12\CAD\B03204-12_HWMU-5.dwg Jun 06, 2014 10:29am




GRAPHIC SCALE

200 0 100 200 400

( IN FEET )

1 inch = 200 ft.

**LEGEND**

5W7B ⊡ 1767.06 — MONITORING WELL GROUNDWATER ELEVATION (feet above mean sea level)

--1770-- GROUNDWATER CONTOUR

GROUNDWATER FLOW DIRECTION

**NOTE: TOPOGRAPHIC CONTOUR INTERVAL 2'**

HWMU-5 POTENTIOMETRIC SURFACE MAP (OCTOBER 14, 2014)

# RADFORD ARMY AMMUNITION PLANT

RADFORD, VIRGINIA

SCALE: 1"=200'

PLAN NO. B03204-12


Draper Aden Associates

*Engineering • Surveying • Environmental Services*

2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291

Richmond, VA
Charlottesville, VA
Hampton Roads, VA
Coats, NC


| | |
|---|---|
| DESIGNED | SN |
| DRAWN | DLD |
| CHECKED | MDL |
| DATE | 02/11/15 |

FIGURE 1

P:\B03200\B03204\B03204-12\CAD\B03204-12_HWMU-5 OCT 2014.dwg Feb 12, 2015 8:29am

# APPENDIX A-2

# HWMU-5 2014 LABORATORY ANALYTICAL RESULTS
# GROUNDWATER CORRECTIVE ACTION TARGETED CONSTITUENTS
# GPS AND SEMIANNUAL MONITORING LIST

## *Summary of Semiannual Target Analyte Monitoring Results Appendix J*
## *Corrective Action Monitoring Plan - Targeted Constituents*
## *Hazardous Waste Management Unit 5*
## *Radford Army Ammunition Plant, Radford, Virginia*

***Upgradient well = 5W8B***

| *Analyte/Quarter* | *5W8B Q* | *5W5B Q* | *5W7B Q* | *5WC21 Q* | *5WC22 Q* | *5WC23 Q* | *5W12A Q* | *QL* | *Permit QL* | *GPS* | *DL* | *Permit DL* | *UNIT* | *Method* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Cobalt** | | | | | | *CAS #* 7440-48-4 | | | | | | | | |
| Fourth Quarter 2014 | U | U | 3.18 J | 63 | 4.26 J | 2 J | U | 5 | 5 | 7 | 1 | 1 | ug/l | 6020A |
| **1,1-Dichloroethene** | | | | | | *CAS #* 75-35-4 | | | | | | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | U | 0.5 | 1 | 7 | 0.1 | 0.44 | ug/l | 8260C |
| **cis-1,2-Dichloroethene** | | | | | | *CAS #* 156-59-2 | | | | | | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | U | 0.5 | 1 | 70 | 0.1 | 0.1 | ug/l | 8260C |
| **trans-1,2-Dichloroethene** | | | | | | *CAS #* 156-60-5 | | | | | | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | U | 0.5 | 1 | 100 | 0.1 | 0.8 | ug/l | 8260C |
| **Trichloroethene** | | | | | | *CAS #* 79-01-6 | | | | | | | | |
| Fourth Quarter 2014 | U | U | U | 3.9 | 4.2 | 5.2 | U | 0.5 | 1 | 5 | 0.1 | 0.177 | ug/l | 8260C |
| **Vinyl chloride** | | | | | | *CAS #* 75-01-4 | | | | | | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | U | 0.5 | 1 | 2 | 0.1 | 0.1 | ug/l | 8260C |

## *Summary of Semiannual Target Analyte Monitoring Results Appendix J*
## *Corrective Action Monitoring Plan - Targeted Constituents*
## *Hazardous Waste Management Unit 5*
## *Radford Army Ammunition Plant, Radford, Virginia*

*Upgradient well = 5W8B*

| *Analyte/Quarter* | *5W8B Q* | *5W5B Q* | *5W7B Q* | *5WC21 Q* | *5WC22 Q* | *5WC23 Q* | *5W12A Q* | *QL* | *Permit QL* | *GPS* | *DL* | *Permit DL* | *UNIT* | *Method* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Definitions:**

***Results are reported to the permit detection limit.***

**QL** Denotes laboratory quantitation limit.
**Permit QL** Denotes permit quantitation limit.
**DL** Denotes laboratory detection limit.
**Permit DL** Denotes permit detection limit.
**U** denotes not detected at or above the permit detection limit or QL.
**UA** denotes not detected at or above the adjusted detection limit or adjusted QL.
**J** Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above the detection limit or QL and detection limit and QL are estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted detection limit and adjusted detection limit and QL are estimated.
**UN** Denotes analyte concentration is less than the QL and/or five times the blank concentration. Not reliably detected due to blank contamination.
**R** Denotes result rejected.
**Q** Denotes data validation qualifier. **X** Denotes mass spectral confirmation not obtained-result suspect.

**CAS#** Denotes Chemical Abstract Services registration number.
**GPS** Denotes Groundwater Protection Standards (2014) listed in Appendix J of Module VI-Groundwater Corrective Action & Monitoring Program for Unit 5 (approved by the VDEQ in the Final Class 3 Hazardous Waste Permit Modification dated November 5, 2009 and modified Sept 27, 2011) which was incorporated into the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002). The first Corrective Action Monitoring Event occurred Second Quarter 2010.
**"–"** denotes not sampled.

# APPENDIX A-3

## HWMU-5 2014 LABORATORY ANALYTICAL RESULTS
## GROUNDWATER CORRECTIVE ACTION ANNUAL MONITORING LIST

## *Summary of Annual Target Analyte Monitoring Results - Appendix K*
## *Corrective Action Monitoring Plan - Targeted Constituents*
## *Hazardous Waste Management Unit 5*
## *Radford Army Ammunition Plant, Radford, Virginia*

*Upgradient well = 5W8B*

| Analyte/Quarter | 5W8B Q | 5W5B Q | 5W7B Q | 5WC21 Q | 5WC22 Q | 5WC23 Q | QL | Permit QL | GPS | DL | Permit DL | UNIT | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Antimony** | | | | | | CAS # 7440-36-0 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 2 | 1 | 6 | 0.4 | 0.4 | ug/l | 6020A |
| **Arsenic** | | | | | | CAS # 7440-38-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 10 | 10 | 10 | 2 | 2 | ug/l | 6020A |
| **Barium** | | | | | | CAS # 7440-39-3 | | | | | | | |
| Second Quarter 2014 | - | 27 | 32.7 | 12.7 | 31.6 | 24 | 10 | 10 | 2,000 | 1 | 1 | ug/l | 6020A |
| **Beryllium** | | | | | | CAS # 7440-41-7 | | | | | | | |
| Second Quarter 2014 | - | U | U | 0.997 J | U | U | 1 | 1 | 4 | 0.2 | 0.2 | ug/l | 6020A |
| **Cadmium** | | | | | | CAS # 7440-43-9 | | | | | | | |
| Second Quarter 2014 | - | U | U | 0.514 J | 0.289 J | U | 1 | 1 | 5 | 0.2 | 0.2 | ug/l | 6020A |
| **Chromium** | | | | | | CAS # 7440-47-3 | | | | | | | |
| Second Quarter 2014 | - | U | U | 4.74 J | U | U | 5 | 5 | 100 | 1 | 1 | ug/l | 6020A |
| **Cobalt** | | | | | | CAS # 7440-48-4 | | | | | | | |
| Second Quarter 2014 | U | U | 2.23 J | 62.3 | 13.9 | 2.97 J | 5 | 5 | 7 | 1 | 1 | ug/l | 6020A |
| **Copper** | | | | | | CAS # 7440-50-8 | | | | | | | |
| Second Quarter 2014 | - | U | 1.33 J | 3.77 J | U | U | 5 | 5 | 1,300 | 1 | 1 | ug/l | 6020A |
| **Lead** | | | | | | CAS # 7439-92-1 | | | | | | | |
| Second Quarter 2014 | - | U | 0.63 J | 0.279 J | U | U | 1 | 1 | 15 | 0.2 | 0.2 | ug/l | 6020A |
| **Mercury** | | | | | | CAS # 7439-97-6 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 2 | 2 | 2 | 0.2 | 0.2 | ug/l | 7470A |
| **Nickel** | | | | | | CAS # 7440-02-0 | | | | | | | |
| Second Quarter 2014 | - | U | U | 30.9 | 7.71 J | 5.65 J | 10 | 10 | 313 | 2 | 2 | ug/l | 6020A |
| **Selenium** | | | | | | CAS # 7782-49-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 10 | 10 | 50 | 3 | 3 | ug/l | 6020A |
| **Silver** | | | | | | CAS # 7440-22-4 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 2 | 2 | 78.25 | 0.2 | 0.2 | ug/l | 6020A |
| **Thallium** | | | | | | CAS # 7440-28-0 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 1 | 1 | 2 | 0.2 | 0.2 | ug/l | 6020A |
| **Vanadium** | | | | | | CAS # 7440-62-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | 1.89 J | U | U | 10 | 10 | 109.55 | 1 | 1 | ug/l | 6020A |

*See last page of this report for definitions.*

## *Summary of Annual Target Analyte Monitoring Results - Appendix K*
## *Corrective Action Monitoring Plan - Targeted Constituents*
## *Hazardous Waste Management Unit 5*
## *Radford Army Ammunition Plant, Radford, Virginia*

*Upgradient well = 5W8B*

| Analyte/Quarter | 5W8B Q | 5W5B Q | 5W7B Q | 5WC21 Q | 5WC22 Q | 5WC23 Q | QL | Permit QL | GPS | DL | Permit DL | UNIT | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Zinc** | | | | | | CAS # 7440-66-6 | | | | | | | |
| Second Quarter 2014 | - | U | 5.37 J | 36.6 J | U | U | 10 | 10 | 4,695 | 3 | 3 | ug/l | 6020A |
| **Acetone** | | | | | | CAS # 67-64-1 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 10 | 10 | 8,750.2 | 3 | 3 | ug/l | 8260C |
| **bis(2-Ethylhexyl)phthalate** | | | | | | CAS # 117-81-7 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 5 | 6 | 10 | 0.57 | 1.5 | ug/l | 8270D |
| **2-Butanone** | | | | | | CAS # 78-93-3 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 10 | 10 | 2,667.6 | 1 | 1 | ug/l | 8260C |
| **Chloroform** | | | | | | CAS # 67-66-3 | | | | | | | |
| Second Quarter 2014 | - | 1.1 J | 19 J | 0.6 J | 0.7 J | 0.9 J | 1 | 1 | 80 | 0.1 | 0.1 | ug/l | 8260C |
| **Dichlorodifluoromethane** | | | | | | CAS # 75-71-8 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 1 | 1 | 142.27 | 0.3 | 0.28 | ug/l | 8260C |
| **1,2-Dichloroethane** | | | | | | CAS # 107-06-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 1 | 1 | 5 | 0.1 | 0.147 | ug/l | 8260C |
| **Diethyl ether** | | | | | | CAS # 60-29-7 | | | | | | | |
| Second Quarter 2014 | - | U | U | 2.5 J | 4.5 J | 16 | 12 | 12 | 7,300 | 0.4 | 0.39 | ug/l | 8260C |
| **Diethyl phthalate** | | | | | | CAS # 84-66-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 5 | 10 | 12,520 | 0.52 | 0.5 | ug/l | 8270D |
| **2,4-Dinitrotoluene** | | | | | | CAS # 121-14-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 5 | 10 | 31.3 | 0.84 | 0.6 | ug/l | 8270D |
| **2,6-Dinitrotoluene** | | | | | | CAS # 606-20-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 5 | 10 | 15.65 | 0.75 | 0.7 | ug/l | 8270D |
| **Methylene chloride** | | | | | | CAS # 75-09-2 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 1 | 1 | 5 | 0.2 | 0.182 | ug/l | 8260C |
| **o-Nitroaniline** | | | | | | CAS # 88-74-4 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | 1.8 J | 10 | 10 | 110 | 1.5 | 0.7 | ug/l | 8270D |
| **p-Nitroaniline** | | | | | | CAS # 100-01-6 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 10 | 20 | 20 | 2.7 | 1.3 | ug/l | 8270D |
| **Nitrobenzene** | | | | | | CAS # 98-95-3 | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 5 | 10 | 10 | 1.3 | 0.8 | ug/l | 8270D |

*See last page of this report for definitions.*

## *Summary of Annual Target Analyte Monitoring Results - Appendix K*
## *Corrective Action Monitoring Plan - Targeted Constituents*
## *Hazardous Waste Management Unit 5*
## *Radford Army Ammunition Plant, Radford, Virginia*

***Upgradient well = 5W8B***

| *Analyte/Quarter* | *5W8B Q* | *5W5B Q* | *5W7B Q* | *5WC21 Q* | *5WC22 Q* | *5WC23 Q* | *QL* | *Permit QL* | *GPS* | *DL* | *Permit DL* | *UNIT* | *Method* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Toluene** | | | | | | *CAS # 108-88-3* | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 1 | 1 | 1,000 | 0.1 | 0.1 | ug/l | 8260C |
| **Xylenes (Total)** | | | | | | *CAS # 1330-20-7* | | | | | | | |
| Second Quarter 2014 | - | U | U | U | U | U | 3 | 3 | 10,000 | 0.2 | 0.208 | ug/l | 8260C |

**Definitions:**

***Results are reported to the Permit Detection Limit.***
***First Corrective Action Monitoring Event Second Quarter 2010:***

**QL:** Denotes laboratory quantitation limit.
**Permit QL:** Denotes permit quantitation limit.
**DL:** Denotes laboratory detection limit.
**Permit DL:** Denotes permit detection limit.
**U:** Denotes not detected at or above the permit detection limit or QL.
**UA:** Denotes not detected at or above the adjusted detection limit or adjusted QL.
**J:** Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above the detection limit or QL and detection limit and QL are estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted detection limit and adjusted detection limit and QL are estimated.
**UN:** Denotes analyte concentration is less than the QL and/or five times the blank concentration. Not reliably detected due to blank contamination.
**R:** Denotes result rejected.
**Q:** Denotes data validation qualifier.
**X:** Denotes mass spectral confirmation not obtained - result suspect.

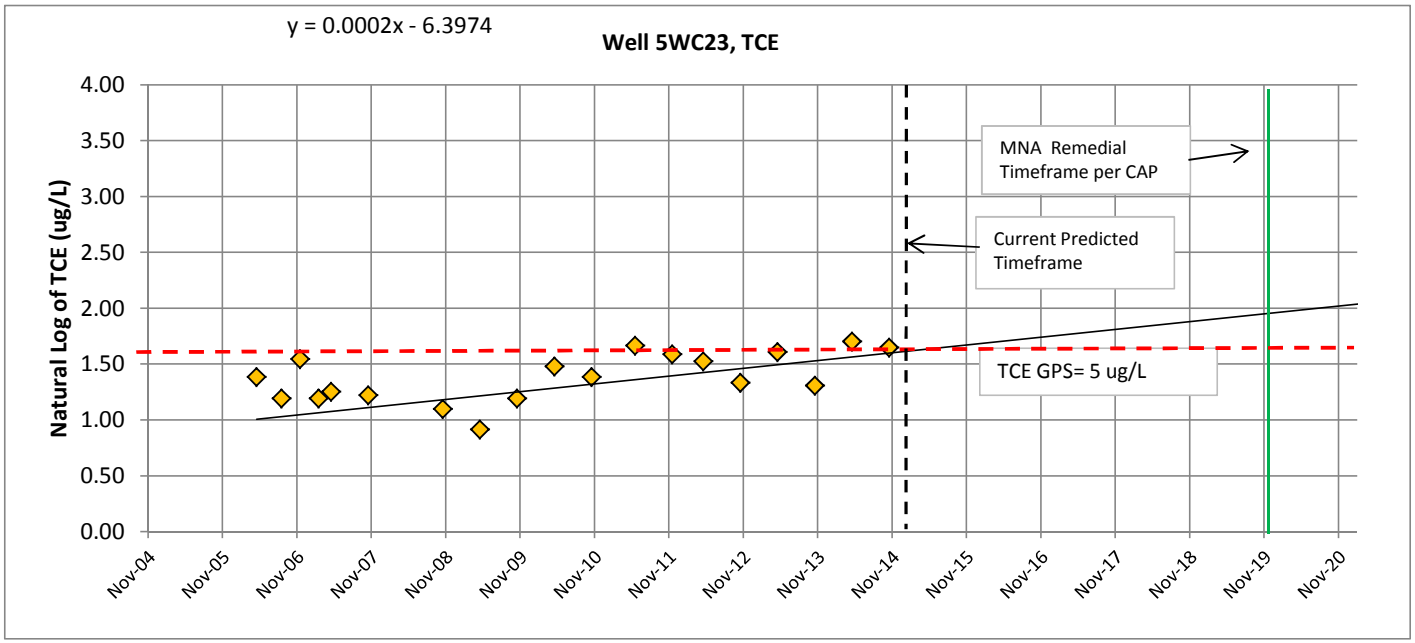
**CAS#:** Denotes Chemical Abstract Services registration number.
**GPS:** Denotes Groundwater Protection Standards listed in Appendix K of Module VI-Groundwater Corrective Action & Monitoring Program for Unit 5 (approved by the VDEQ in the Final Class 3 Hazardous Waste Permit Modification dated November 5, 2009) which was incorporated into the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).
**"–":** Denotes not sampled.

# APPENDIX A-4

## MNA EFFECTIVENESS EVALUATION
## (CONCENTRATION TREND GRAPH, POINT ATTENUATION RATE CALCULATION, DATA TREND GRAPHS, TCE ISOCONCENTRATION MAP)

# MNA Effectiveness Evaluation - Concentration Trend Graph and Point Attenuation Rate Calculation

| Sample Date | TCE (ug/L) | ln TCE (ug/L) |
|---|---|---|
| 4/18/2006 | 4.00 | 1.39 |
| 8/18/2006 | 3.30 | 1.19 |
| 11/18/2006 | 4.70 | 1.55 |
| 2/14/2007 | 3.30 | 1.19 |
| 4/18/2007 | 3.50 | 1.25 |
| 10/30/2007 | 3.40 | 1.22 |
| 4/28/2008 | 0.50 | -0.69 |
| 10/27/2008 | 3.00 | 1.10 |
| 4/20/2009 | 2.50 | 0.92 |
| 10/26/2009 | 3.30 | 1.19 |
| 4/21/2010 | 4.40 | 1.48 |
| 10/26/2010 | 4.00 | 1.39 |
| 5/4/2011 | 5.30 | 1.67 |
| 11/1/2011 | 4.90 | 1.59 |
| 4/24/2012 | 4.60 | 1.53 |
| 10/29/2012 | 3.80 | 1.34 |
| 4/29/2013 | 5.00 | 1.61 |
| 10/28/2013 | 3.70 | 1.31 |
| 4/21/2014 | 5.50 | 1.70 |
| 10/14/2014 | 5.20 | 1.65 |
| | | #NUM! |




| Last 20 rounds | | TCE GPS | Estimated Rate and Time Required | | | Current MNA Timeframe Prediction | MNA Goal (per CAP) | MNA Ineffective Date (per CAP) |
|---|---|---|---|---|---|---|---|---|
| First Event | Last Event | ug/L | Rate (per day) | Rate (per year) | Time (years) | | | |
| 4/18/2006 | 10/14/2014 | 5.000 | 0.0006 | 0.219 | 0.18 | December-2014 | October-2019 | December-2026 |

| Effectiveness Evaluation for MNA Remedy | Status | Condition |
|---|---|---|
| 1) Is the current MNA remedial timeframe prediction less than the 2019 MNA Goal? | yes | If 'yes', then the remedy is considered effective and no additional action is required. If 'no' for three consecutive years, then contingency measures will be implemented as defined in the CAP. |
| 2) Is the current MNA remedial timeframe prediction less than the 2026 MNA ineffective date? | yes | If 'yes', the remedy will be considered effective. If 'no' for three consecutive monitoring years, then an alternate remedial approach will be implemented as defined in the CAP. |

**TCE Detections in Groundwater, Radford Army Ammunition Plant HWMU 5 (RAAP-042)**

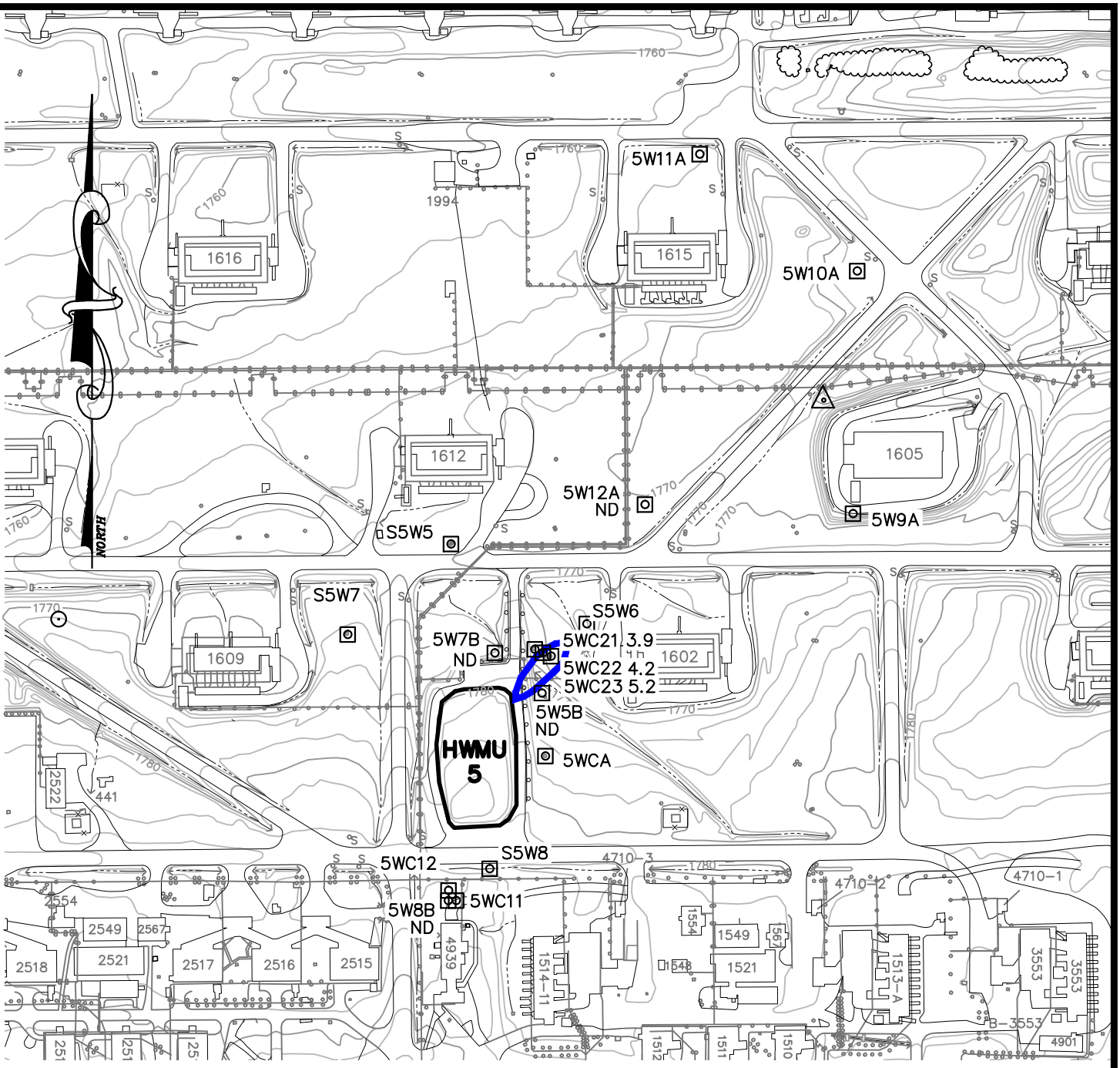
| Date | 5W8B | 5W5B | 5WC21 | 5WC22 | 5WC23 | 5W7B | S5WS | S5W7 | 5W9A | 5W10A | 5W11A |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st Qtr 1996 | ~ | 2.3 | ~ | 2.2 | 2.9 | ~ | ~ | ~ | 0.6 J | ~ | ~ |
| 2nd Qtr 1996 | ~ | 5.7 | 0.4 J | 3.8 | 4.5 | ~ | ~ | ~ | 0.7 J | ~ | ~ |
| 3rd Qtr 1996 | TC | 4.3 | 0.4 J | 5 | 5.8 | ~ | ~ | ~ | 0.8 J | ~ | ~ |
| 4th Qtr 1996 | ~ | 2.4 | 0.9J | 6.2 | 5.3 | ~ | ~ | ~ | 0.6 J | ~ | ~ |
| 1st Qtr 1997 | ~ | 2.5 | 1.8 | 7.4 | 6.6 | 0.2 J | ~ | 0.1 J | 0.3 J | ~ | ~ |
| 2nd Qtr 1997 | 0.3 J | 7.8 | 2.7 | 7.4 | 6.8 | 0.1 J | 0.4 J | ~ | 0.8 J | 0.1 J | ~ |
| 3rd Qtr 1997 | ~ | 6 | 2.4 | 8.4 | 8.7 | ~ | 0.2 J | ~ | 0.5 J | ~ | ~ |
| 4th Qtr 1997 | 0.8 J | 9.4 | 1.2 | 8.9 | 2.8 | 0.3 J | 0.3 J | ~ | 0.3 J | ~ | ~ |
| 1st Qtr 1998 | ~ | 3.2 | 0.5 | 4.5 | 5.6 | ~ | ~ | ~ | 0.2 J | ~ | ~ |
| 2nd Qtr 1998 | ~ | 12.8 | 1.3 | 4.7 | 4.7 | ~ | 0.2 J | ~ | 0.2 J | ~ | ~ |
| 3rd Qtr 1998 | ~ | 12.8 | 2 | 4.7 | 5.1 | ~ | ~ | ~ | 0.5 J | ~ | ~ |
| 4di Qtr 1998 | ~ | 7.5 | 4.6 | 5.4 | 5.6 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 1999 | ~ | 9.5 | 6.7 | 7.5 | 7.5 | ~ | ~ | ~ | ~ | 7.4 | ~ |
| 2nd Qtr 1999 | ~ | 15.9 | 5.6 | 6.7 | 6 | ~ | ~ | ~ | 0.2 J | ~ | ~ |
| 3rd Qtr 1999 | ~ | 20.5 | 7.8 | 9.9 | 7.8 | ~ | ~ | ~ | 0.5 J | ~ | ~ |
| 4th Qtr 1999 | ~ | 19.5 | 4.06 | 6.68 | 6.98 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 2000 | ~ | 15.8 | 3.1 | 6.3 | 6.3 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2000 | ~ | 13.2 | 3.9 | 5.7 | 5.5 | ~ | ~ | ~ | ~ | ~ | ~ |
| 3rd Qtr 2000 | ~ | 16.3 | 5.42 | DRY | DRY | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2000 | ~ | 14.9 | 6.55 | 5.33 | 5.41 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 2001 | ~ | 18.8 | 7.32 | 5.81 | 4.98 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2001 | ~ | 1.67 | 12.1 | 9.33 | 9.11 | ~ | ~ | ~ | ~ | ~ | ~ |
| 3rd Qtr 2001 | ~ | 6.06 | 20.4 | 13.2 | 11.8 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2001 | ~ | 9.91 | 19.2 | 7.78 | 7.83 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 2002 | 9.13 | ~ | 19.1 | 6.63 | 6.33 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2002 | ~ | 9.84 | 16.6 | 7.03 | 6.25 | ~ | ~ | ~ | ~ | ~ | ~ |
| 3rd Qtr 2002 | ~ | 6.36 | 8.46 | 1.94 | 2.13 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2002 | ~ | 5.84 | 11.3 | 2.54 | 2.69 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2003 | ~ | 4.2 | 26 | 7.4 | 7.6 | ~ | ~ | ~ | ~ | ~ | ~ |
| 3rd Qtr 2003 | ~ | 1.9 | 22 | 8 | 7.9 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2003 | ~ | 6 | 23 | 7.1 | 7.1 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 2004 | ~ | 7.4 | 23 | 7.4 | 6.8 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2004 | ~ | 8 | 22 | 6.2 | 6.8 | ~ | ~ | ~ | ~ | ~ | ~ |
| 3rd Qtr 2004 | ~ | 7 | 17 | 4.8 | 4.9 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4st Qtr 2004 | ~ | 9.4 | 20 | 6.2 | 6.6 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 2005 | ~ | 7.9 | 24 | 5.9 | 5.9 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2005 | ~ | 13 | 16 | 5.5 | 5.8 | ~ | ~ | ~ | ~ | ~ | ~ |
| 3rd Qtr 2005 | ~ | 12 | 10 | 4.2 | 5.1 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2005 | ~ | 12 | 6.8 | 4.4 | 4.3 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 2006 | ~ | 8.5 | 3.9 | 3.7 | 4.5 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2006 | ~ | 17 | 4 | 4 | 4 | ~ | ~ | ~ | ~ | ~ | ~ |
| 3rd Qtr 2006 | ~ | 11 | 3.7 | 3.3 | 3.7 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2006 | ~ | 9.4 | 3.5 | 4.7 | 3.5 | ~ | ~ | ~ | ~ | ~ | ~ |
| 1st Qtr 2007 | ~ | 9 | 5.6 | 3.3 | 3.6 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2007 | ~ | 10 | 5.5 | 3.5 | 3.5 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2007 | ~ | 8.9 | 2.5 | 3.4 | 3.5 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2008 | ~ | 7.8 | ~ | ~ | 2.9 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2008 | ~ | 14 | 1.3 | 3 | 3 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2009 | ~ | 1.3 | ~ | 2.5 | 2.5 | ~ | ~ | ~ | ~ | ~ | ~ |
| 4th Qtr 2009 | ~ | 7 | 1.9 | 3.3 | 3.3 | ~ | ~ | ~ | ~ | ~ | ~ |
| 2nd Qtr 2010 | ~ | 2.6 | 4.2 | 4.4 | 4.3 | ~ | | | | | |
| 4th Qtr 2010 | ~ | 7.3 | 4 | 4 | 3.9 | ~ | | | | | |
| 2nd Qtr 2011 | ~ | 0.9 J | 4.9 | 5.2 | 5.3 | ~ | | | | | |
| 4th Qtr 2011 | ~ | 0.9 J | 7.3 | 4.9 | 4.9 | ~ | | | | | |
| 2nd Qtr 2012 | ~ | 0.3 J | 5.8 | 4.3 | 4.6 | ~ | | | | | |
| 4th Qtr 2012 | ~ | 2.4 | 6.2 | 3.7 | 3.8 | ~ | | | | | |
| 2nd Qtr 2013 | ~ | 0.5 J | 6.8 | 3.2 | 5 | ~ | | | | | |
| 4th Qtr 2013 | ~ | 0.5 J | 5.9 | 3.7 | 3.7 | ~ | | | | | |
| 2nd Qtr 2014 | ~ | ~ | 4.8 | 4 | 5.5 | ~ | | | | | |
| 4th Qtr 2014 | ~ | ~ | 3.9 | 4.2 | 5.2 | ~ | | | | | |

Notes:

~ - TCE not detected above laboratory detection limit

J - Trichloroethene was detected at a concentration greater than the detection limit but less than the quantitation limit. These results are estimates only.

DRY - Monitoring wells 5WC22 and 5WC23 were dry during 3rd Quarter 2000. No samples were collected.




## LEGEND

| | |
|---|---|
| 5W5B ⊡ | MONITORING WELL |
| 5.2 | TCE CONCENTRATION (ug/l) |
| ND | NOT DETECTED |
| – –5.0– – | TCE GPS ISOCONCENTRATION CONTOUR |

NOTE: TOPOGRAPHIC CONTOUR INTERVAL 2'

GRAPHIC SCALE

200 0 100 200 400

( IN FEET )

1 inch = 200ft.

# HWMU-5 TCE ISOCONCENTRATION MAP (4th QUARTER 2014)
# RADFORD ARMY AMMUNITION PLANT
## RADFORD, VIRGINIA

SCALE: 1"=200'

PLAN NO. B03204-12


Draper Aden Associates
*Engineering • Surveying • Environmental Services*
2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291
Richmond, VA
Charlottesville, VA
Hampton Roads, VA
Coats, NC


| | |
|---|---|
| DESIGNED | RGM |
| DRAWN | DLD |
| CHECKED | MDL |
| DATE | 02/23/15 |

FIGURE 1

P:\B03200\B03204\B03204-12\CAD\B03204-12_4TH QUARTER 2014 FIG1.dwg Feb 24, 2015 8:37am

# APPENDIX B

# HWMU-16

# APPENDIX B-1

# HWMU-16 POTENTIOMETRIC SURFACE MAPS
# SECOND QUARTER 2014
# FOURTH QUARTER 2014

SPRING

16-5
1738.58

16-1
1774.07

16-2
1755.09

16-3
1768.75

16-4

16C1
1792.57

16C3
1758.94

16CDH2

16CDH3
Dry

16MW8
1744.25

16MW9
1746.11

16WC1A
1747.99

16WC1B
1748.33

16WC2A
Dry

16WC2B
1766.86

1929

1928

4601-14

4601-13

SWMU
28

SWMU
30

SWMU
51

SWMU
52

HWMU-16

1780
1770
1760
1750
1740
1830
1820
1810
1800
1790

GRAPHIC SCALE

100 0 50 100 200

( IN FEET )
1 inch = 100 ft.

## LEGEND

16C1 ◻ 1792.57 — MONITORING WELL GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)

1780 — GROUNDWATER ELEV. CONTOUR

GROUNDWATER FLOW DIRECTION

NOTE: TOPOGRAPHIC CONTOUR INTERVAL 2'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2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291
Richmond, VA
Charlottesville, VA
Hampton Roads, VA


| | |
|---|---|
| DESIGNED | RGM |
| DRAWN | DLD |
| CHECKED | SN |
| DATE | 06/06/2014 |

HWMU-16 POTENTIOMETRIC SURFACE MAP - APRIL 23, 2014

# RADFORD ARMY AMMUNITION PLANT

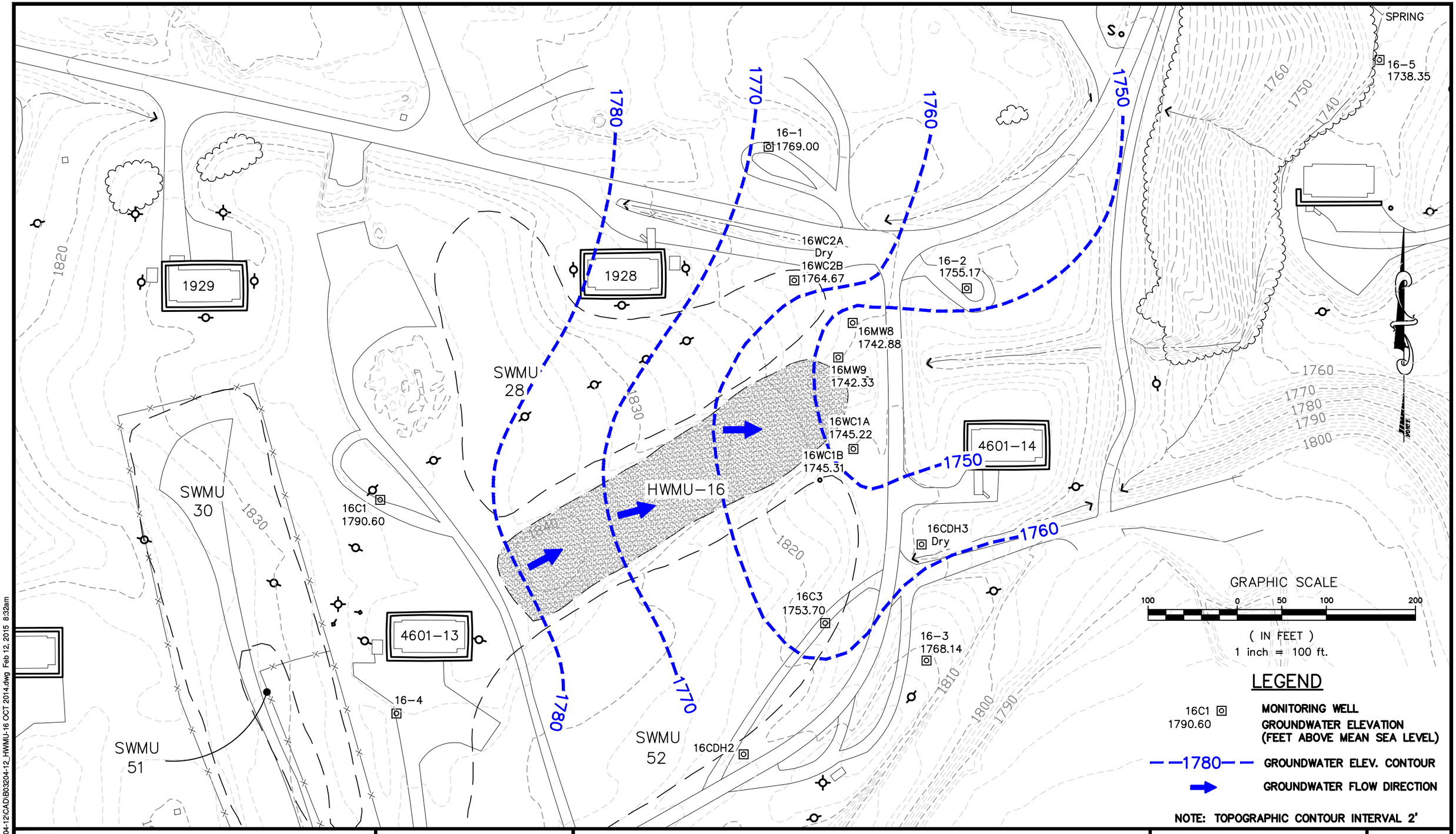
RADFORD, VIRGINIA

SCALE: 1"=100'

PLAN NO. B03204-12

FIGURE 2

P:\B03\200\B03204\B03204-12\CAD\B03204-12_HWMU-16.dwg Jun 17, 2014 12:22pm




Draper Aden Associates
Engineering • Surveying • Environmental Services
2206 South Main Street
Blacksburg, VA 24060
540-552-0444 Fax: 540-552-0291
Richmond, VA
Charlottesville, VA
Hampton Roads, VA
Coats, NC

| | |
|---|---|
| DESIGNED | RGM |
| DRAWN | DLD |
| CHECKED | SN |
| DATE | 02/11/15 |

HWMU-16 POTENTIOMETRIC SURFACE MAP - OCTOBER 21, 2014

RADFORD ARMY AMMUNITION PLANT

RADFORD, VIRGINIA

SCALE: 1"=100'

PLAN NO. B03204-12

FIGURE 2

P:\B03\200\B03204\B03204-12\CAD\B03204-12_HWMU-16 OCT 2014.dwg Feb 12, 2015 8:32am

# APPENDIX B-2

# HWMU-16 2014 LABORATORY ANALYTICAL RESULTS
# POINT OF COMPLIANCE WELLS

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells 2Q2014*
# *Radford Army Ammunition Plant, Radford, Virginia*
## *Upgradient well = 16C1*

*All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Antimony** | | | | | *CAS #* | *7440-36-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 6 | 6020A |
| **Arsenic** | | | | | *CAS #* | *7440-38-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | 10 | 6020A |
| **Barium** | | | | | *CAS #* | *7440-39-3* | | |
| Second Quarter 2014 | 159 | 123 | 579 | 274 | 111 | 10 | 2000 | 6020A |
| **Beryllium** | | | | | *CAS #* | *7440-41-7* | | |
| Second Quarter 2014 | U | 0.253 J | U | U | U | 1 | 4 | 6020A |
| **Cadmium** | | | | | *CAS #* | *7440-43-9* | | |
| Second Quarter 2014 | U | 0.22 J | U | U | U | 1 | 5 | 6020A |
| **Chromium** | | | | | *CAS #* | *7440-47-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | 100 | 6020A |
| **Cobalt** | | | | | *CAS #* | *7440-48-4* | | |
| Second Quarter 2014 | U | 2.47 J | 4.49 J | 4.7 J | 46.8 | 5 | 5 | 6020A |
| **Copper** | | | | | *CAS #* | *7440-50-8* | | |
| Second Quarter 2014 | U | 9.44 | U | U | 2.17 J | 5 | 1300 | 6020A |
| **Lead** | | | | | *CAS #* | *7439-92-1* | | |
| Second Quarter 2014 | U | 0.604 J | U | U | U | 1 | 15 | 6020A |
| **Mercury** | | | | | *CAS #* | *7439-97-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 2 | 2 | 7470A |
| **Nickel** | | | | | *CAS #* | *7440-02-0* | | |
| Second Quarter 2014 | 4.65 J | 5.17 J | 16.8 | 8.1 J | 9.35 J | 10 | 313 | 6020A |
| **Selenium** | | | | | *CAS #* | *7782-49-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | 50 | 6020A |
| **Silver** | | | | | *CAS #* | *7440-22-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 78.25 | 6020A |
| **Thallium** | | | | | *CAS #* | *7440-28-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 6020A |
| **Tin** | | | | | *CAS #* | *7440-31-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 50 | - | 6010C |
| **Vanadium** | | | | | *CAS #* | *7440-62-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | 151 | 6020A |
| **Zinc** | | | | | *CAS #* | *7440-66-6* | | |
| Second Quarter 2014 | U | 35.1 | U | 6.7 J | 10.2 | 10 | 4695 | 6020A |
| **Sulfide** | | | | | *CAS #* | *18496-25-8* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 3000 | - | 9034 |
| **Cyanide** | | | | | *CAS #* | *57-12-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 20 | - | 9012B |
| **Acenaphthene** | | | | | *CAS #* | *83-32-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Acenaphthylene** | | | | | *CAS #* | *208-96-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Acetone** | | | | | *CAS #* | *67-64-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | 223.57 | 8260C |
| **Acetonitrile** | | | | | *CAS #* | *75-05-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 100 | - | 8260C |
| **Acetophenone** | | | | | *CAS #* | *98-86-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **2-Acetylaminofluorene** | | | | | *CAS #* | *53-96-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Acrolein** | | | | | *CAS #* | *107-02-8* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 25 | - | 8260C |
| **Acrylonitrile** | | | | | *CAS #* | *107-13-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Aldrin** | | | | | *CAS #* | *309-00-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |

*See last page of this report for definitions.*

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells* 2Q 2104
## *Radford Army Ammunition Plant, Radford, Virginia*
### *Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Allyl chloride** | | | | | *CAS #* | *107-05-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **4-Aminobiphenyl** | | | | | *CAS #* | *92-67-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Aniline** | | | | | *CAS #* | *62-53-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Anthracene** | | | | | *CAS #* | *120-12-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Aramite** | | | | | *CAS #* | *140-57-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Benzene** | | | | | *CAS #* | *71-43-2* | | |
| Second Quarter 2014 | 0.3 J | U | 0.3 J | 0.1 J | U | 1 | 5 | 8260C |
| **Benzo[a]anthracene** | | | | | *CAS #* | *56-55-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Benzo[b]fluoranthene** | | | | | *CAS #* | *205-99-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Benzo[k]fluoranthene** | | | | | *CAS #* | *207-08-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Benzo[ghi]perylene** | | | | | *CAS #* | *191-24-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Benzo(a)pyrene** | | | | | *CAS #* | *50-32-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **1,4-Benzenediamine** | | | | | *CAS #* | *106-50-3* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 10 | - | 8270D |
| **Benzyl alcohol** | | | | | *CAS #* | *100-51-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **alpha-BHC** | | | | | *CAS #* | *319-84-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |
| **beta-BHC** | | | | | *CAS #* | *319-85-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |
| **delta-BHC** | | | | | *CAS #* | *319-86-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |
| **gamma-BHC** | | | | | *CAS #* | *58-89-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |
| **bis(2-Chloroethoxy)methane** | | | | | *CAS #* | *111-91-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **bis(2-Chloroethyl)ether** | | | | | *CAS #* | *111-44-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **bis(2-Chloro-1-methylethyl)ether** | | | | | *CAS #* | *108-60-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **bis(2-Ethylhexyl)phthalate** | | | | | *CAS #* | *117-81-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | 10 | 8270D |
| **Bromobenzene** | | | | | *CAS #* | *108-86-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Bromochloromethane** | | | | | *CAS #* | *74-97-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Bromodichloromethane** | | | | | *CAS #* | *75-27-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Bromoform** | | | | | *CAS #* | *75-25-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **4-Bromophenyl phenyl ether** | | | | | *CAS #* | *101-55-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **2-Butanone** | | | | | *CAS #* | *78-93-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | 2667.6 | 8260C |
| **n-Butyl alcohol** | | | | | *CAS #* | *71-36-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 50 | - | 8260C |

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells* 2Q 2014
## *Radford Army Ammunition Plant, Radford, Virginia*
### *Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **tert-Butyl alcohol** | | | | | *CAS #* | *75-65-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 200 | - | 8260C |
| **n-Butylbenzene** | | | | | *CAS #* | *104-51-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **sec-Butylbenzene** | | | | | *CAS #* | *135-98-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **tert-Butylbenzene** | | | | | *CAS #* | *98-06-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Butyl benzyl phthalate** | | | | | *CAS #* | *85-68-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Carbon disulfide** | | | | | *CAS #* | *75-15-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Carbon tetrachloride** | | | | | *CAS #* | *56-23-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 5 | 8260C |
| **Chlordane** | | | | | *CAS #* | *57-74-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.8 | - | 8081B |
| **p-Chloroaniline** | | | | | *CAS #* | *106-47-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Chlorobenzene** | | | | | *CAS #* | *108-90-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Chlorobenzilate** | | | | | *CAS #* | *510-15-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **p-Chloro-m-cresol** | | | | | *CAS #* | *59-50-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Chloroethane** | | | | | *CAS #* | *75-00-3* | | |
| Second Quarter 2014 | 4.8 | U | 2.9 | 1 J | U | 1 | 1293.39 | 8260C |
| **Chloroform** | | | | | *CAS #* | *67-66-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 80 | 8260C |
| **2-Chloroethyl vinyl ether** | | | | | *CAS #* | *110-75-8* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 20 | - | 8260C |
| **2-Chloronaphthalene** | | | | | *CAS #* | *91-58-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **2-Chlorophenol** | | | | | *CAS #* | *95-57-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **4-Chlorophenyl phenyl ether** | | | | | *CAS #* | *7005-72-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Chloroprene** | | | | | *CAS #* | *126-99-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **2-Chlorotoluene** | | | | | *CAS #* | *95-49-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **4-Chlorotoluene** | | | | | *CAS #* | *106-43-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Chrysene** | | | | | *CAS #* | *218-01-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Cyclohexane** | | | | | *CAS #* | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **2,4-Dichlorophenoxyacetic acid** | | | | | *CAS #* | *94-75-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8151A |
| **4,4'-DDD** | | | | | *CAS #* | *72-54-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.05 | - | 8081B |
| **4,4'-DDE** | | | | | *CAS #* | *72-55-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.05 | - | 8081B |
| **4,4'-DDT** | | | | | *CAS #* | *50-29-3* | | |
| Second Quarter 2014 | U N | U N | U N | U N | U | 0.05 | - | 8081B |
| **Diallate** | | | | | *CAS #* | *2303-16-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells 2Q 2014*
# *Radford Army Ammunition Plant, Radford, Virginia*
## *Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Dibenz(a,h)anthracene** | | | | | *CAS #* | *53-70-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Dibenzofuran** | | | | | *CAS #* | *132-64-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Dibromochloromethane** | | | | | *CAS #* | *124-48-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,2-Dibromo-3-chloropropane** | | | | | *CAS #* | *96-12-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,2-Dibromoethane** | | | | | *CAS #* | *106-93-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Di-n-butyl phthalate** | | | | | *CAS #* | *84-74-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **1,2-Dichlorobenzene** | | | | | *CAS #* | *95-50-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,3-Dichlorobenzene** | | | | | *CAS #* | *541-73-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,4-Dichlorobenzene** | | | | | *CAS #* | *106-46-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **3,3'-Dichlorobenzidine** | | | | | *CAS #* | *91-94-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **trans-1,4-Dichloro-2-butene** | | | | | *CAS #* | *110-57-6* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 10 | - | 8260C |
| **Dichlorodifluoromethane** | | | | | *CAS #* | *75-71-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 142.3 | 8260C |
| **1,1-Dichloroethane** | | | | | *CAS #* | *75-34-3* | | |
| Second Quarter 2014 | 8 | 0.3 J | 9.5 | 2.9 | U | 1 | 9.5 | 8260C |
| **1,2-Dichloroethane** | | | | | *CAS #* | *107-06-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 5 | 8260C |
| **1,1-Dichloroethene** | | | | | *CAS #* | *75-35-4* | | |
| Second Quarter 2014 | 0.3 J | U | 0.3 J | U | U | 1 | - | 8260C |
| **trans-1,2-Dichloroethene** | | | | | *CAS #* | *156-60-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **2,4-Dichlorophenol** | | | | | *CAS #* | *120-83-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **2,6-Dichlorophenol** | | | | | *CAS #* | *87-65-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **1,2-Dichloropropane** | | | | | *CAS #* | *78-87-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,3-Dichloropropane** | | | | | *CAS #* | *142-28-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **2,2-Dichloropropane** | | | | | *CAS #* | *594-20-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,1-Dichloropropene** | | | | | *CAS #* | *563-58-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **cis-1,3-Dichloropropene** | | | | | *CAS #* | *10061-01-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **trans-1,3-Dichloropropene** | | | | | *CAS #* | *10061-02-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Dieldrin** | | | | | *CAS #* | *60-57-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.05 | - | 8081B |
| **Diethyl ether** | | | | | *CAS #* | *60-29-7* | | |
| Second Quarter 2014 | 38 J | 7.4 J | 52 J | 13 | U | 13 | 7300 | 8260C |
| **Diethyl phthalate** | | | | | *CAS #* | *84-66-2* | | |
| Second Quarter 2014 | U | U | 1 J | U | U | 5 | 11000 | 8270D |
| **O,O-Diethyl O-2-pyrazinyl** | | | | | *CAS #* | *297-97-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells* 2Q 2014
## *Radford Army Ammunition Plant, Radford, Virginia*
*Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Dimethoate** | | | | | *CAS #* | *60-51-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Dimethyl ether** | | | | | *CAS #* | *115-10-6* | | |
| Second Quarter 2014 | 9.4 J | 0.3 J | 0.9 J | 0.9 J | 0.2 J | 13 | 17 | 8260C |
| **p-(Dimethylamino)azobenzene** | | | | | *CAS #* | *60-11-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **7,12-Dimethylbenz[a]anthracene** | | | | | *CAS #* | *57-97-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **3,3'-Dimethylbenzidine** | | | | | *CAS #* | *119-93-7* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 5 | - | 8270D |
| **a,a-Dimethylphenethylamine** | | | | | *CAS #* | *122-09-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 15 | - | 8270D |
| **2,4-Dimethylphenol** | | | | | *CAS #* | *105-67-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Dimethyl phthalate** | | | | | *CAS #* | *131-11-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **m-Dinitrobenzene** | | | | | *CAS #* | *99-65-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **4,6-Dinitro-o-cresol** | | | | | *CAS #* | *534-52-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **2,4-Dinitrophenol** | | | | | *CAS #* | *51-28-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **2,4-Dinitrotoluene** | | | | | *CAS #* | *121-14-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | 31.3 | 8270D |
| **2,6-Dinitrotoluene** | | | | | *CAS #* | *606-20-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | 15.65 | 8270D |
| **Dinoseb** | | | | | *CAS #* | *88-85-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 2.5 | - | 8151A |
| **Di-n-octyl phthalate** | | | | | *CAS #* | *117-84-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **1,4-Dioxane** | | | | | *CAS #* | *123-91-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 200 | - | 8260C |
| **Diphenylamine** | | | | | *CAS #* | *122-39-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Disulfoton** | | | | | *CAS #* | *298-04-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Endosulfan I** | | | | | *CAS #* | *959-98-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |
| **Endosulfan II** | | | | | *CAS #* | *33213-65-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.05 | - | 8081B |
| **Endosulfan sulfate** | | | | | *CAS #* | *1031-07-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.05 | - | 8081B |
| **Endrin** | | | | | *CAS #* | *72-20-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.05 | - | 8081B |
| **Ethyl acetate** | | | | | *CAS #* | *141-78-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Endrin aldehyde** | | | | | *CAS #* | *7421-93-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.05 | - | 8081B |
| **Ethanol** | | | | | *CAS #* | *64-17-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 250 | - | 8260C |
| **Ethylbenzene** | | | | | *CAS #* | *100-41-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 700 | 8260C |
| **Ethyl methacrylate** | | | | | *CAS #* | *97-63-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Ethyl methanesulfonate** | | | | | *CAS #* | *62-50-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells* 2Q 2014
## *Radford Army Ammunition Plant, Radford, Virginia*
### *Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Ethylene oxide** | | | | | *CAS #* | *75-21-8* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 100 | - | 8260C |
| **Famphur** | | | | | *CAS #* | *52-85-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Fluoranthene** | | | | | *CAS #* | *206-44-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Fluorene** | | | | | *CAS #* | *86-73-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Heptachlor** | | | | | *CAS #* | *76-44-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |
| **Heptachlor epoxide** | | | | | *CAS #* | *1024-57-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.025 | - | 8081B |
| **Hexachlorobenzene** | | | | | *CAS #* | *118-74-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Hexachlorobutadiene** | | | | | *CAS #* | *87-68-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Hexachlorocyclopentadiene** | | | | | *CAS #* | *77-47-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Hexachloroethane** | | | | | *CAS #* | *67-72-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Hexachlorophene** | | | | | *CAS #* | *70-30-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 100 | - | 8270D |
| **Hexachloropropene** | | | | | *CAS #* | *1888-71-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **2-Hexanone** | | | | | *CAS #* | *591-78-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Indeno[1,2,3-cd]pyrene** | | | | | *CAS #* | *193-39-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Isobutyl alcohol** | | | | | *CAS #* | *78-83-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 200 | - | 8260C |
| **Isodrin** | | | | | *CAS #* | *465-73-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Isophorone** | | | | | *CAS #* | *78-59-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Isopropylbenzene** | | | | | *CAS #* | *98-82-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Isopropylether** | | | | | *CAS #* | *108-20-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **4-Isopropyltoluene** | | | | | *CAS #* | *99-87-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Isosafrole** | | | | | *CAS #* | *120-58-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Kepone** | | | | | *CAS #* | *143-50-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Methacrylonitrile** | | | | | *CAS #* | *126-98-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 100 | - | 8260C |
| **Methapyrilene** | | | | | *CAS #* | *91-80-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Methoxychlor** | | | | | *CAS #* | *72-43-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 0.25 | - | 8081B |
| **Bromomethane** | | | | | *CAS #* | *74-83-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Chloromethane** | | | | | *CAS #* | *74-87-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 1.4 | 8260C |
| **3-Methylcholanthrene** | | | | | *CAS #* | *56-49-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells* 2Q 2014
## *Radford Army Ammunition Plant, Radford, Virginia*
### *Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Iodomethane** | | | | | *CAS #* | *74-88-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Methyl methacrylate** | | | | | *CAS #* | *80-62-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Methyl methane sulfonate** | | | | | *CAS #* | *66-27-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **2-Methylnaphthalene** | | | | | *CAS #* | *91-57-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Methyl parathion** | | | | | *CAS #* | *298-00-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **4-Methyl-2-pentanone** | | | | | *CAS #* | *108-10-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **2-Methylphenol** | | | | | *CAS #* | *95-48-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **3 & 4-Methylphenol** | | | | | *CAS #* | *m 108-39-4* | *p 106-44-5* | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Methyl tert-butyl ether** | | | | | *CAS #* | *1634-04-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Dibromomethane** | | | | | *CAS #* | *74-95-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Methylene chloride** | | | | | *CAS #* | *75-09-2* | | |
| Second Quarter 2014 | 3.9 | U | U | U | U | 1 | 13.95 | 8260C |
| **Naphthalene** | | | | | *CAS #* | *91-20-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,4-Naphthoquinone** | | | | | *CAS #* | *130-15-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **1-Naphthylamine** | | | | | *CAS #* | *134-32-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **2-Naphthylamine** | | | | | *CAS #* | *91-59-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **o-Nitroaniline** | | | | | *CAS #* | *88-74-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **m-Nitroaniline** | | | | | *CAS #* | *99-09-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **p-Nitroaniline** | | | | | *CAS #* | *100-01-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Nitrobenzene** | | | | | *CAS #* | *98-95-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **o-Nitrophenol** | | | | | *CAS #* | *88-75-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **p-Nitrophenol** | | | | | *CAS #* | *100-02-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **4-Nitroquinoline-1-oxide** | | | | | *CAS #* | *56-57-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosodi-n-butylamine** | | | | | *CAS #* | *924-16-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosodiethylamine** | | | | | *CAS #* | *55-18-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosodimethylamine** | | | | | *CAS #* | *62-75-9* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosodiphenylamine** | | | | | *CAS #* | *86-30-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosodipropylamine** | | | | | *CAS #* | *621-64-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosomethylethylamine** | | | | | *CAS #* | *10595-95-6* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |

*See last page of this report for definitions.*

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells* 2Q 2014
## *Radford Army Ammunition Plant, Radford, Virginia*
### *Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **N-Nitrosomorpholine** | | | | | *CAS #* | *59-89-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosopiperidine** | | | | | *CAS #* | *100-75-4* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **N-Nitrosopyrrolidine** | | | | | *CAS #* | *930-55-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **5-Nitroso-o-toluidine** | | | | | *CAS #* | *99-55-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Parathion** | | | | | *CAS #* | *56-38-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Pentachlorobenzene** | | | | | *CAS #* | *608-93-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Pentachloroethane** | | | | | *CAS #* | *76-01-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Pentachloronitrobenzene** | | | | | *CAS #* | *82-68-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Pentachlorophenol** | | | | | *CAS #* | *87-86-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Phenacetin** | | | | | *CAS #* | *62-44-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Phenanthrene** | | | | | *CAS #* | *85-01-8* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Phenol** | | | | | *CAS #* | *108-95-2* | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Total Recoverable Phenolics** | | | | | *CAS #* | | | |
| Second Quarter 2014 | U | U | U | U | U | 40 | - | 9066 |
| **Phorate** | | | | | *CAS #* | *298-02-2* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 5 | - | 8270D |
| **2-Picoline** | | | | | *CAS #* | *931-19-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Pronamide** | | | | | *CAS #* | *23950-58-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **1-Propanol** | | | | | *CAS #* | *71-23-8* | | |
| Second Quarter 2014 | U J | U J | U J | U J | U J | 100 | - | 8260C |
| **2-Propanol** | | | | | *CAS #* | *67-63-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 100 | - | 8260C |
| **Propionitrile** | | | | | *CAS #* | *107-12-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 100 | - | 8260C |
| **n-Propylbenzene** | | | | | *CAS #* | *103-65-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Pyrene** | | | | | *CAS #* | *129-00-0* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Pyridine** | | | | | *CAS #* | *110-86-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Safrole** | | | | | *CAS #* | *94-59-7* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Silvex** | | | | | *CAS #* | *93-72-1* | | |
| Second Quarter 2014 | U | U | U | U | U | 2.5 | - | 8151A |
| **Styrene** | | | | | *CAS #* | *100-42-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Sulfotep** | | | | | *CAS #* | *3689-24-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **2,4,5-Trichlorophenoxyacetic acid** | | | | | *CAS #* | *93-76-5* | | |
| Second Quarter 2014 | U | U | U | U | U | 2.5 | - | 8151A |
| **1,2,4,5-Tetrachlorobenzene** | | | | | *CAS #* | *95-94-3* | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |

*See last page of this report for definitions.*

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells 2Q 2014*
## *Radford Army Ammunition Plant, Radford, Virginia*
*Upgradient well = 16C1* *All Results in ug/L.*

| Analtye/Quarter | 16C1 | 16MW8 | 16MW9 | 16WC1A | 16WC1B | QL | GPS | Method |
|---|---|---|---|---|---|---|---|---|
| **1,1,1,2-Tetrachloroethane** | | | | | CAS # 630-20-6 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,1,2,2-Tetrachloroethane** | | | | | CAS # 79-34-5 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Tetrachloroethene** | | | | | CAS # 127-18-4 | | | |
| Second Quarter 2014 | 0.4 J | U | U | 0.1 J | U | 1 | 5 | 8260C |
| **Tetrahydrofuran** | | | | | CAS # 109-99-9 | | | |
| Second Quarter 2014 | 15 J | U | U | U | U | 25 | - | 8260C |
| **2,3,4,6-Tetrachlorophenol** | | | | | CAS # 58-90-2 | | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **Toluene** | | | | | CAS # 108-88-3 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 1000 | 8260C |
| **o-Toluidine** | | | | | CAS # 95-53-4 | | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Toxaphene** | | | | | CAS # 8001-35-2 | | | |
| Second Quarter 2014 | U | U | U | U | U | 2.5 | - | 8081B |
| **1,2,3-Trichlorobenzene** | | | | | CAS # 87-61-6 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,2,4-Trichlorobenzene** | | | | | CAS # 120-82-1 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,1,1-Trichloroethane** | | | | | CAS # 71-55-6 | | | |
| Second Quarter 2014 | 0.4 J | U | U | U | U | 1 | 200 | 8260C |
| **1,1,2-Trichloroethane** | | | | | CAS # 79-00-5 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Trichloroethene** | | | | | CAS # 79-01-6 | | | |
| Second Quarter 2014 | 0.3 J | U | U | U | U | 1 | 5 | 8260C |
| **Trichlorofluoromethane** | | | | | CAS # 75-69-4 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 469.5 | 8260C |
| **2,4,5-Trichlorophenol** | | | | | CAS # 95-95-4 | | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **2,4,6-Trichlorophenol** | | | | | CAS # 88-06-2 | | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8270D |
| **1,2,3-Trichloropropane** | | | | | CAS # 96-18-4 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | | | | | CAS # 76-13-1 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | 59000 | 8260C |
| **O,O,O-Triethyl phosphorothioate** | | | | | CAS # 126-68-1 | | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **1,2,4-Trimethylbenzene** | | | | | CAS # 95-63-6 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **1,3,5-Trimethylbenzene** | | | | | CAS # 108-67-8 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **sym-Trinitrobenzene** | | | | | CAS # 99-35-4 | | | |
| Second Quarter 2014 | U | U | U | U | U | 5 | - | 8270D |
| **Vinyl acetate** | | | | | CAS # 108-05-4 | | | |
| Second Quarter 2014 | U | U | U | U | U | 10 | - | 8260C |
| **Vinyl chloride** | | | | | CAS # 75-01-4 | | | |
| Second Quarter 2014 | U | U | U | U | U | 1 | - | 8260C |
| **Xylenes (Total)** | | | | | CAS # 1330-20-7 | | | |
| Second Quarter 2014 | U | U | U | U | U | 3 | 10000 | 8260C |

## *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells* 2Q 2104
## *Radford Army Ammunition Plant, Radford, Virginia*

***Upgradient well = 16C1*** ***All Results in ug/L.***

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|

**Definitions:**

***The following definitions apply to results reported for Appendix IX monitoring events.***
***All Appendix IX monitoring results for compliance wells are reported to the detection limit.***

***Appendix IX Monitoring Events: 3Q2003, 2Q-2004, 2Q-2005, 3Q2006, 2Q2007, 2Q2008, 2Q2009, 2Q 2010, 2Q 2011, 2Q 2012, 2Q2013, 2Q2014***

**QL** Denotes permit required quantitation limit.
**U** denotes not detected at or above the detection limit.
**UA** denotes not detected at or above the adjusted detection limit.
**J** Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above the detection limit and detection limit and QL are estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted detection limit and adjusted detection limit and QL are estimated.
**UN** Denotes analyte concentration is less than the quantitation limit and/or five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.
**R** Denotes result rejected.
**Q** Denotes data validation qualifier. **X** Denotes mass spectral confirmation not obtained-result suspect.
Background Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable.
**CAS#** Denotes Chemical Abstract Services registration number.
**GPS** Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002) (revised September 27, 2011).
**NS** denotes not sampled. **NA** denotes not analyzed.
**"–"** denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

***The following definitions apply to results reported for non-Appendix IX monitoring events.***
***All non-Appendix IX monitoring results for compliance wells are reported at or above the quantitation limit.***

**QL** Denotes permit required quantitation limit.
**U** Denotes analyte not detected at or above QL.
**UA** Denotes analyte not detected at or above adjusted sample QL.
**J** Denotes result is estimated. When used with "U" (i.e., "**UJ**"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.
**R** Denotes result rejected.
**Q** Denotes data validation qualifier.
**Background** Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), (revised September 27, 2011), where applicable.
**CAS#** Denotes Chemical Abstract Services registration number.
**GPS** Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002) (revised September 27, 2011).

**NOTE:**

Fourth Quarter 2008:
Due to laboratory error all HWMU 16 samples were analyzed using Method 8260B 5 ml purge instead of a 25 ml purge which resulted in a higher QL. For these samples, all results were evaluated to the detection limit, which is comparable to the permit QL. Results below the laboratory QL but at or above the permit QL are reported and qualified as estimated.
Second Quarter 2009:
Verification event 6/11/2009 - 16MW8 for acetone. Verification result reported as not detected.
4/ 2010 event -Per DEQ, tin analyzed by Method 6010B instead of Method 6020. Verification event: 16MW9 1,1-dichloroethene and benzene. 16WC1B 4,4-DDD. Verification result reported as not detected.
Verification event 6/27/2012 – 16WC1A for cobalt. Verification result reported.

*See last page of this report for definitions.*

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells*
# *Radford Army Ammunition Plant, Radford, Virginia*
## *Upgradient well = 16C1*

*All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Arsenic** | | | | | *CAS #* | *7440-38-2* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 10 | 10 | 6020A |
| **Barium** | | | | | *CAS #* | *7440-39-3* | | |
| Fourth Quarter 2014 | 200 | 125 | 519 | 231 | 138 | 10 | 2000 | 6020A |
| **Beryllium** | | | | | *CAS #* | *7440-41-7* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 4 | 6020A |
| **Cadmium** | | | | | *CAS #* | *7440-43-9* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 5 | 6020A |
| **Chromium** | | | | | *CAS #* | *7440-47-3* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 5 | 100 | 6020A |
| **Cobalt** | | | | | *CAS #* | *7440-48-4* | | |
| Fourth Quarter 2014 | U | U | U | U | 13.4 | 5 | 5 | 6020A |
| **Copper** | | | | | *CAS #* | *7440-50-8* | | |
| Fourth Quarter 2014 | U | 25.6 | U | U | U | 5 | 1300 | 6020A |
| **Lead** | | | | | *CAS #* | *7439-92-1* | | |
| Fourth Quarter 2014 | U | 1.1 | U | U | U | 1 | 15 | 6020A |
| **Mercury** | | | | | *CAS #* | *7439-97-6* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 2 | 2 | 7470A |
| **Nickel** | | | | | *CAS #* | *7440-02-0* | | |
| Fourth Quarter 2014 | U | U | 13.9 | U | U | 10 | 300 | 6020A |
| **Vanadium** | | | | | *CAS #* | *7440-62-2* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 10 | 151 | 6020A |
| **Zinc** | | | | | *CAS #* | *7440-66-6* | | |
| Fourth Quarter 2014 | U | 56.1 | U | U | U | 10 | 4700 | 6020A |
| **Benzene** | | | | | *CAS #* | *71-43-2* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 5 | 8260C |
| **2-Butanone** | | | | | *CAS #* | *78-93-3* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 10 | 4900 | 8260C |
| **Carbon tetrachloride** | | | | | *CAS #* | *56-23-5* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 5 | 8260C |
| **Chloroethane** | | | | | *CAS #* | *75-00-3* | | |
| Fourth Quarter 2014 | 4.6 | U | 2.4 | U | U | 1 | 21000 | 8260C |
| **Dichlorodifluoromethane** | | | | | *CAS #* | *75-71-8* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 190 | 8260C |
| **1,1-Dichloroethane** | | | | | *CAS #* | *75-34-3* | | |
| Fourth Quarter 2014 | 8.2 | U | 7.3 | 1.7 | U | 1 | 9.5 | 8260C |
| **1,1-Dichloroethene** | | | | | *CAS #* | *75-35-4* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 7 | 8260C |
| **Diethyl ether** | | | | | *CAS #* | *60-29-7* | | |
| Fourth Quarter 2014 | 44.3 | U | 42.4 | U | U | 12.5 | 7300 | 8260C |
| **Diethyl phthalate** | | | | | *CAS #* | *84-66-2* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 5 | 11000 | 8270D |
| **Dimethyl ether** | | | | | *CAS #* | *115-10-6* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 12.5 | 17 | 8260C |
| **2,4-Dinitrotoluene** | | | | | *CAS #* | *121-14-2* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 5 | 10 | 8270D |
| **2,6-Dinitrotoluene** | | | | | *CAS #* | *606-20-2* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 5 | 10 | 8270D |
| **Ethylbenzene** | | | | | *CAS #* | *100-41-4* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 700 | 8260C |
| **Chloromethane** | | | | | *CAS #* | *74-87-3* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 190 | 8260C |
| **Methylene chloride** | | | | | *CAS #* | *75-09-2* | | |
| Fourth Quarter 2014 | 3.4 | U | U | U | U | 1 | 13.95 | 8260C |
| **Tetrachloroethene** | | | | | *CAS #* | *127-18-4* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 5 | 8260C |

*See last page of this report for definitions.*

## *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*
***Upgradient well = 16C1*** ***All Results in ug/L.***

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Toluene** | | | | | *CAS #* | *108-88-3* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 1000 | 8260C |
| **1,1,1-Trichloroethane** | | | | | *CAS #* | *71-55-6* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 200 | 8260C |
| **Trichloroethene** | | | | | *CAS #* | *79-01-6* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 5 | 8260C |
| **Trichlorofluoromethane** | | | | | *CAS #* | *75-69-4* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 1000 | 8260C |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | | | | | *CAS #* | *76-13-1* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 1 | 59000 | 8260C |
| **Xylenes (Total)** | | | | | *CAS #* | *1330-20-7* | | |
| Fourth Quarter 2014 | U | U | U | U | U | 3 | 10000 | 8260C |

*See last page of this report for definitions.*

## *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*

***Upgradient well = 16C1*** ***All Results in ug/L.***

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|

**Definitions:**

***The following definitions apply to results reported for Appendix IX monitoring events.***
***All Appendix IX monitoring results for compliance wells are reported to the detection limit.***

***Appendix IX Monitoring Events: 3Q2003, 2Q-2004, 2Q-2005, 3Q2006, 2Q2007, 2Q2008, 2Q2009, 2Q 2010, 2Q 2011, 2Q 2012, 2Q2013, 2Q2014***

**QL** Denotes permit required quantitation limit.
**U** denotes not detected at or above the detection limit.
**UA** denotes not detected at or above the adjusted detection limit.
**J** Denotes result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above the detection limit and detection limit and QL are estimated. When used with "UA" (i.e., "UAJ"), denotes analyte not detected at or above adjusted detection limit and adjusted detection limit and QL are estimated.
**UN** Denotes analyte concentration is less than the quantitation limit and/or five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.
**R** Denotes result rejected.
**Q** Denotes data validation qualifier. **X** Denotes mass spectral confirmation not obtained-result suspect.
Background Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), where applicable.
**CAS#** Denotes Chemical Abstract Services registration number.
**GPS** Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002) (rev 9/11)(rev 8/2014)
**NS** denotes not sampled. **NA** denotes not analyzed.
**"–"** denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

***The following definitions apply to results reported for non-Appendix IX monitoring events.***
***All non-Appendix IX monitoring results for compliance wells are reported at or above the quantitation limit.***

**QL** Denotes permit required quantitation limit.
**U** Denotes analyte not detected at or above QL.
**UA** Denotes analyte not detected at or above adjusted sample QL.
**J** Denotes result is estimated. When used with "U" (i.e., "**UJ**"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.
**R** Denotes result rejected.
**Q** Denotes data validation qualifier.
**Background** Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), (revised September 27, 2011), where applicable.
**CAS#** Denotes Chemical Abstract Services registration number.
**GPS** Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002) (rev 9/11, rev 8/14)

**NOTE:**

Fourth Quarter 2008:
Due to laboratory error all HWMU 16 samples were analyzed using Method 8260B 5 ml purge instead of a 25 ml purge which resulted in a higher QL. For these samples, all results were evaluated to the detection limit, which is comparable to the permit QL. Results below the laboratory QL but at or above the permit QL are reported and qualified as estimated.
Second Quarter 2009:
Verification event 6/11/2009 - 16MW8 for acetone. Verification result reported as not detected.
4/ 2010 event -Per DEQ, tin analyzed by Method 6010B instead of Method 6020. Verification event: 16MW9 1,1-dichloroethene and benzene. 16WC1B 4,4-DDD. Verification result reported as not detected.
Verification event 6/27/2012 – 16WC1A for cobalt. Verification result reported.

*See last page of this report for definitions.*

# APPENDIX B-3

# HWMU-16 2014 LABORATORY ANALYTICAL RESULTS
# PLUME MONITORING WELLS

## *Target Analyte Monitoring Results At Or Above Permit Quantitation Limit* 2Q2014
## *HWMU-16 Plume Monitoring Wells*

### *Radford Army Ammunition Plant, Radford, Virginia*

*All Results in ug/L.*

*Upgradient well = 16C1*

| *Analtye/Quarter* | *16C1 Q* | *16-1 Q* | *16-2 Q* | *16-3 Q* | *16-5 Q* | *16WC2B Q* | *16SPRING Q* | *QL* | *Background* | *Method* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | | | | | | *CAS # 7440-38-2* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 10 | 1 | 6020A |
| **Barium** | | | | | | *CAS # 7440-39-3* | | | | |
| Second Quarter 2014 | 159 | 147 | 206 | 707 | 164 | 114 | 198 | 10 | 175.4 | 6020A |
| **Beryllium** | | | | | | *CAS # 7440-41-7* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 0.7 | 6020A |
| **Cadmium** | | | | | | *CAS # 7440-43-9* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 0.2 | 6020A |
| **Chromium** | | | | | | *CAS # 7440-47-3* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 5 | 6.2 | 6020A |
| **Cobalt** | | | | | | *CAS # 7440-48-4* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 5 | 5 | 6020A |
| **Copper** | | | | | | *CAS # 7440-50-8* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 5 | 13 | 6020A |
| **Lead** | | | | | | *CAS # 7439-92-1* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 10 | 6020A |
| **Mercury** | | | | | | *CAS # 7439-97-6* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 2 | 0.2 | 7470A |
| **Nickel** | | | | | | *CAS # 7440-02-0* | | | | |
| Second Quarter 2014 | 4.65 J | U | U | U | U | U | U | 10 | 16 | 6020A |
| **Vanadium** | | | | | | *CAS # 7440-62-2* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 10 | 151 | 6020A |
| **Zinc** | | | | | | *CAS # 7440-66-6* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 10 | 51 | 6020A |
| **Benzene** | | | | | | *CAS # 71-43-2* | | | | |
| Second Quarter 2014 | 0.3 J | U | U | U | U | U | U | 1 | 1 | 8260C |
| **2-Butanone** | | | | | | *CAS # 78-93-3* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 10 | 1.1 | 8260C |
| **Carbon tetrachloride** | | | | | | *CAS # 56-23-5* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 0.2 | 8260C |
| **Chloroethane** | | | | | | *CAS # 75-00-3* | | | | |
| Second Quarter 2014 | 4.8 | U | U | U | U | U | U | 1 | 20.7 | 8260C |
| **Dichlorodifluoromethane** | | | | | | *CAS # 75-71-8* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 46.5 | 8260C |
| **1,1-Dichloroethane** | | | | | | *CAS # 75-34-3* | | | | |
| Second Quarter 2014 | 8 | U | U | U | U | U | U | 1 | 9.5 | 8260C |
| **Diethyl ether** | | | | | | *CAS # 60-29-7* | | | | |
| Second Quarter 2014 | 38 J | U | U | U | U | U | U | 13 | 75.5 | 8260C |
| **Diethyl phthalate** | | | | | | *CAS # 84-66-2* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 5 | 5 | 8270D |
| **Dimethyl ether** | | | | | | *CAS # 115-10-6* | | | | |
| Second Quarter 2014 | 9.4 J | U | U | U | U | U | U | 13 | 17.0 | 8260C |
| **2,4-Dinitrotoluene** | | | | | | *CAS # 121-14-2* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 5 | 10 | 8270D |
| **2,6-Dinitrotoluene** | | | | | | *CAS # 606-20-2* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 5 | 10 | 8270D |

*See last page of this report for definitions.*

## *Target Analyte Monitoring Results At Or Above Permit Quantitation Limit* 2Q 2014
## *HWMU-16 Plume Monitoring Wells*

## *Radford Army Ammunition Plant, Radford, Virginia*

***All Results in ug/L.*** ***Upgradient well = 16C1***

| *Analtye/Quarter* | *16C1 Q* | *16-1 Q* | *16-2 Q* | *16-3 Q* | *16-5 Q* | *16WC2B Q* | *16SPRING Q* | *QL* | *Background* | *Method* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Ethylbenzene** | | | | | | *CAS # 100-41-4* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 0.1 | 8260C |
| **Chloromethane** | | | | | | *CAS # 74-87-3* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 0.3 | 8260C |
| **Methylene chloride** | | | | | | *CAS # 75-09-2* | | | | |
| Second Quarter 2014 | 3.9 | U | U | U | U | U | U | 1 | 13.95 | 8260C |
| **Tetrachloroethene** | | | | | | *CAS # 127-18-4* | | | | |
| Second Quarter 2014 | 0.4 J | U | U | U | U | U | U | 1 | 0.7 | 8260C |
| **Toluene** | | | | | | *CAS # 108-88-3* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 0.1 | 8260C |
| **1,1,1-Trichloroethane** | | | | | | *CAS # 71-55-6* | | | | |
| Second Quarter 2014 | 0.4 J | U | U | U | U | U | U | 1 | 9.2 | 8260C |
| **Trichloroethene** | | | | | | *CAS # 79-01-6* | | | | |
| Second Quarter 2014 | 0.3 J | U | U | U | U | U | U | 1 | 0.1 | 8260C |
| **Trichlorofluoromethane** | | | | | | *CAS # 75-69-4* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 11.3 | 8260C |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | | | | | | *CAS # 76-13-1* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 1 | 1.2 | 8260C |
| **Xylenes (Total)** | | | | | | *CAS # 1330-20-7* | | | | |
| Second Quarter 2014 | U | U | U | U | U | U | U | 3 | 0.2 | 8260C |

## *Target Analyte Monitoring Results At Or Above Permit Quantitation Limit 2Q2014*
## *HWMU-16 Plume Monitoring Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*

***All Results in ug/L.*** ***Upgradient well = 16C1***

| *Analtye/Quarter* | *16C1 Q* | *16-1 Q* | *16-2 Q* | *16-3 Q* | *16-5 Q* | *16WC2B Q* | *16SPRING Q* | *QL* | *Background* | *Method* |
|---|---|---|---|---|---|---|---|---|---|---|

**Definitions:**

***All plume monitoring well results reported to at or above the permit quantitation limit except for the upgradient well during the Appendix IX monitoring Event. During this event, results for the upgradient well are reported to the detection limit.***

**Q** Denotes data validation qualifier.
**QL** Denotes permit required quantitation limit.
**U** Denotes analyte not detected at or above QL.
**UA** Denotes analyte not detected at or above adjusted sample QL.
**J** Denotes result is estimated. When used with "U" (i.e., "**UJ**"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.
**UN** Denotes analyte concentration is less than the quantiation limit and five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.
**R** Denotes result rejected.
**Background** Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), revised September 27, 2011.
**CAS#** Denotes Chemical Abstract Services registration number.
**GPS** Denotes groundwater protection standard.

**NS** denotes not sampled. **NA** denotes not analyzed. "–"denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

Notes:
4Q2004. No data for 16-1 8270C-semivolatiles. Well dry-insufficient sample volume.
4Q2006 - No data for 16-1; well dry.
4Q2008- No data for 16-1; well dry.
2Q2009- No data for 16-1; well dry.

**NOTE:**
Fourth Quarter 2008
Due to laboratory error all HWMU 16 samples were analyzed using Method 8260B 5 ml purge instead of a 25 ml purge which resulted in a higher QL. For these samples, all results were evaluated to the detection limit, which is comparable to the permit QL. Results below the laboratory QL but at or above the permit QL are reported and qualified as estimated.

## *Target Analyte Monitoring Results At Or Above Permit Quantitation Limit*
## *HWMU-16 Plume Monitoring Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*

***All Results in ug/L.*** ***Upgradient well = 16C1***

| *Analtye/Quarter* | *16C1 Q* | *16-2 Q* | *16-3 Q* | *16-5 Q* | *16WC2B Q* | *16SPRING Q* | *QL* | *Background* | *Method* |
|---|---|---|---|---|---|---|---|---|---|
| **Arsenic** | | | | | | *CAS #7440-38-2* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 10 | 1 | 6020A |
| **Barium** | | | | | | *CAS #7440-39-3* | | | |
| Fourth Quarter 2014 | 200 | 242 | 745 | 171 | 116 | 219 | 10 | 175.4 | 6020A |
| **Beryllium** | | | | | | *CAS #7440-41-7* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.7 | 6020A |
| **Cadmium** | | | | | | *CAS #7440-43-9* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.2 | 6020A |
| **Chromium** | | | | | | *CAS #7440-47-3* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 5 | 6.2 | 6020A |
| **Cobalt** | | | | | | *CAS #7440-48-4* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 5 | 5 | 6020A |
| **Copper** | | | | | | *CAS #7440-50-8* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 5 | 13 | 6020A |
| **Lead** | | | | | | *CAS #7439-92-1* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 10 | 6020A |
| **Mercury** | | | | | | *CAS #7439-97-6* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 2 | 0.2 | 7470A |
| **Nickel** | | | | | | *CAS #7440-02-0* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 10 | 16 | 6020A |
| **Vanadium** | | | | | | *CAS #7440-62-2* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 10 | 151 | 6020A |
| **Zinc** | | | | | | *CAS #7440-66-6* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 10 | 51 | 6020A |
| **Benzene** | | | | | | *CAS #71-43-2* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 1 | 8260C |
| **2-Butanone** | | | | | | *CAS #78-93-3* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 10 | 1.1 | 8260C |
| **Carbon tetrachloride** | | | | | | *CAS #56-23-5* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.2 | 8260C |
| **Chloroethane** | | | | | | *CAS #75-00-3* | | | |
| Fourth Quarter 2014 | 4.6 | U | U | U | U | U | 1 | 20.7 | 8260C |
| **Dichlorodifluoromethane** | | | | | | *CAS #75-71-8* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 46.5 | 8260C |
| **1,1-Dichloroethane** | | | | | | *CAS #75-34-3* | | | |
| Fourth Quarter 2014 | 8.2 | U | U | U | U | U | 1 | 9.5 | 8260C |
| **1,1-Dichloroethene** | | | | | | *CAS #75-35-4* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 1 | 8260C |
| **Diethyl ether** | | | | | | *CAS #60-29-7* | | | |
| Fourth Quarter 2014 | 44.3 | U | U | U | U | U | 12.5 | 75.5 | 8260C |
| **Diethyl phthalate** | | | | | | *CAS #84-66-2* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 5 | 5 | 8270D |
| **Dimethyl ether** | | | | | | *CAS #115-10-6* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 12.5 | 17.0 | 8260C |
| **2,4-Dinitrotoluene** | | | | | | *CAS #121-14-2* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 5 | 10 | 8270D |

*See last page of this report for definitions.*

## *Target Analyte Monitoring Results At Or Above Permit Quantitation Limit*
## *HWMU-16 Plume Monitoring Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*

***All Results in ug/L.*** ***Upgradient well = 16C1***

| *Analtye/Quarter* | *16C1 Q* | *16-2 Q* | *16-3 Q* | *16-5 Q* | *16WC2B Q* | *16SPRING Q* | *QL* | *Background* | *Method* |
|---|---|---|---|---|---|---|---|---|---|
| **2,6-Dinitrotoluene** | | | | | | *CAS #606-20-2* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 5 | 10 | 8270D |
| **Ethylbenzene** | | | | | | *CAS #100-41-4* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.1 | 8260C |
| **Chloromethane** | | | | | | *CAS #74-87-3* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.3 | 8260C |
| **Methylene chloride** | | | | | | *CAS #75-09-2* | | | |
| Fourth Quarter 2014 | 3.4 | U | U | U | U | U | 1 | 13.95 | 8260C |
| **Tetrachloroethene** | | | | | | *CAS #127-18-4* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.7 | 8260C |
| **Toluene** | | | | | | *CAS #108-88-3* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.1 | 8260C |
| **1,1,1-Trichloroethane** | | | | | | *CAS #71-55-6* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 9.2 | 8260C |
| **Trichloroethene** | | | | | | *CAS #79-01-6* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 0.1 | 8260C |
| **Trichlorofluoromethane** | | | | | | *CAS #75-69-4* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 11.3 | 8260C |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | | | | | | *CAS #76-13-1* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 1 | 1.2 | 8260C |
| **Xylenes (Total)** | | | | | | *CAS #1330-20-7* | | | |
| Fourth Quarter 2014 | U | U | U | U | U | U | 3 | 0.2 | 8260C |

## *Target Analyte Monitoring Results At Or Above Permit Quantitation Limit*
## *HWMU-16 Plume Monitoring Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*

***All Results in ug/L.***

***Upgradient well = 16C1***

| *Analtye/Quarter* | *16C1 Q* | *16-2 Q* | *16-3 Q* | *16-5 Q* | *16WC2B Q* | *16SPRING Q* | *QL* | *Background* | *Method* |
|---|---|---|---|---|---|---|---|---|---|

**Definitions:**

***All plume monitoring well results reported to at or above the permit quantitation limit except for the upgradient well during the Appendix IX monitoring Event. During this event, results for the upgradient well are reported to the detection limit.***

**Q** Denotes data validation qualifier.
**QL** Denotes permit required quantitation limit.
**U** Denotes analyte not detected at or above QL.
**UA** Denotes analyte not detected at or above adjusted sample QL.
**J** Denotes result is estimated. When used with "U" (i.e., "**UJ**"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.
**UN** Denotes analyte concentration is less than the quantiation limit and five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when compliance well results are reported to at or above the project detection limit.
**R** Denotes result rejected.
**Background** Denotes background concentrations listed in Appendix F to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), revised September 27, 2011.
**CAS#** Denotes Chemical Abstract Services registration number.
**GPS** Denotes groundwater protection standard. (2014)

**NS** denotes not sampled. **NA** denotes not analyzed. "–"denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

Notes:
4Q2004. No data for 16-1 8270C-semivolatiles. Well dry-insufficient sample volume.
4Q2006 - No data for 16-1; well dry.
4Q2008- No data for 16-1; well dry.
2Q2009- No data for 16-1; well dry.

**NOTE:**
Fourth Quarter 2008
Due to laboratory error all HWMU 16 samples were analyzed using Method 8260B 5 ml purge instead of a 25 ml purge which resulted in a higher QL. For these samples, all results were evaluated to the detection limit, which is comparable to the permit QL. Results below the laboratory QL but at or above the permit QL are reported and qualified as estimated.

# APPENDIX B-4

# ESTABLISHED BACKGROUND VALUES AND COMPUTATIONS FOR HWMU-16

- It was not understood why the majority of fluorescein detections were considered false positive detections. The basis of this observation is unclear considering a lack of background and laboratory confirmation results.

- It was not apparent why certain samples were selected for laboratory confirmation and others were not. There was no apparent consistency in the selection of samples for laboratory confirmation.

- Samples were submitted for confirmation laboratory analyses three months or more following the collection of the samples in the field. No information was provided regarding the custody and/or storage of the samples. The samples were submitted to the analytical laboratory with incomplete chain-of-custody (COC), and the COC documentation was not completed by the laboratory.

In summary, the data from the study do not provide the basis for meaningful interpretation. Any attempt to formulate conclusions from the data as presented regarding the presence of preferred or predominant groundwater flow patterns is not warranted or recommended.

## 3.3 HWMU-16 GROUNDWATER MONITORING ANALYTE LIST

The groundwater monitoring analyte list for HWMU-16 is presented in **Table 1 (Appendix B)**. The list represents the subset of the constituents listed in Appendix III of 40 CFR Part 261 that previously have been detected in the groundwater and/or that are reasonably expected to be in or derived from waste contained in HWMU-16. As discussed in Section 3.5.2 below, 12 inorganic constituents and two explosive/propellant constituents have been detected in the groundwater monitoring network for HWMU-16 at statistically significant concentrations above the Unit's calculated background concentrations. The inorganic constituents may be derived from the aquifer formation materials; however, the two explosive/propellant constituents (2,4-Dinitrotoluene and 2,6-Dinitrotoluene) are byproducts of wastes derived from explosives. Therefore, the two explosive/propellant constituents detected could only be from HWMU-16.

The concentration limits established for the hazardous constituents also are listed in **Table 1**. The concentration limits represent either background concentrations calculated for the constituents in this GWQAR, Maximum Concentrations of Constituents for Ground-water Protection listed in Table 1 of 40 CFR 264.94, USEPA Drinking Water Standard Maximum Contaminant Levels (MCLs), or alternate concentration limits (ACLs) established by the VDEQ (July 1998). Certain organic constituents on the list do not have USEPA MCLs or VDEQ ACLs; they also do not have calculated background concentrations because they have not been detected in the Unit's upgradient well. Therefore, the concentration limits for these constituents are equal to their respective method detection limits.

As Alliant discussed with the VDEQ in the past, the reliability of previous laboratory analytical data - particularly dissolved metals data - appeared to be questionable in some cases. In an April 9, 1996 letter to C. Jake (Alliant), the VDEQ agreed that only total metals concentrations in groundwater would be measured, as described in a USEPA Region III guidance on groundwater sampling in karst terrain. Therefore, all references to metals concentrations in this GWQAR refer to <u>total</u> metals concentrations.

## 3.4 HWMU-16 GROUNDWATER BACKGROUND CONCENTRATIONS

Background concentrations were calculated for each constituent in the groundwater monitoring program using the analytical data from 1996 through 1998 for upgradient well 16C1.

The background concentration calculations were based on site wide 95% confidence, 95% coverage upper prediction intervals. The calculated background concentrations are listed in **Table 2 (Appendix B)**. The background concentrations were used to construct the outermost closing contours on the Isoconcentration Maps **(Appendix A)**.

## 3.5 HWMU-16 STATISTICAL ANALYSIS

Statistical evaluations for HWMU-16 are performed annually and submitted to the VDEQ in accordance with the annual reporting requirements specified in 40 CFR 265.94. As part of this GWQAR, statistical evaluations were performed on Fourth Quarter 1998 analytical data in accordance with the procedures and guidance provided in the following documents:

- Title 40 of the Code of Federal Regulations, 40 CFR 264.97 and 264.98;
- VDEQ Guidance for statistical analysis titled "Data Analysis Plan," undated;
- Interim Final Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, USEPA, April 1989;
- Addendum to Interim Final Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, USEPA, July 1992; and
- Statistical Methods for Groundwater Monitoring, Gibbons, R.D., 1994.

Statistical threshold values were computed for the 54 constituents for which HWMU-16 is currently monitored based on the concentrations of those constituents in upgradient (background) well 16C1. All data starting with First Quarter 1996 to Fourth Quarter 1998 were used for this purpose. The 1996 through 1998 monitoring data have been submitted previously to the VDEQ by Alliant in quarterly monitoring reports; therefore, the data are not listed in this GWQAR. Statistical comparisons were performed for the Fourth Quarter 1998 data set. Comparison statistical analyses were performed for all constituents which were detected in any downgradient well during that event.

### 3.5.1 Background Data and Statistical Comparisons

Statistical analyses were performed using the analytical results from upgradient well 16C1 data as background data. Based on the percentage of non-detects and the distribution of the background data, methods of statistical comparisons varied. Background average, standard deviation and other descriptive statistical data were computed for all constituents and are presented in **Appendix C**.

The constituents listed below were 100% non-detected in the background data. The background threshold levels (BTLs) for these constituents were established as equal to their detection limits (DL). Detections of these constituents in the downgradient wells during Fourth Quarter 1998 were compared to these BTLs.

| Background Threshold Level (BTL) = Detection Limit (DL) | | | | |
|---|---|---|---|---|
| Parameter | Sample Size | % Non-Detects | DL (µg/l) | BTL (µg/l) |
| Antimony | 12 | 100 | 3 | 3 |
| Arsenic | 12 | 100 | 1 | 1 |
| Bromoform | 12 | 100 | 0.3 | 0.3 |
| Carbon tetrachloride | 12 | 100 | 0.2 | 0.2 |
| Chlorobenzene | 12 | 100 | 0.1 | 0.1 |
| Chloromethane | 12 | 100 | 0.3 | 0.3 |
| Cyanide | 12 | 100 | 10 | 10 |

| Background Threshold Level (BTL) = Detection Limit (DL) | | | | |
|---|---|---|---|---|
| Parameter | Sample Size | % Non-Detects | DL (µg/l) | BTL (µg/l) |
| Di-n-butyl phthalate | 12 | 100 | 5 | 5 |
| 1,2-Dichloroethane | 12 | 100 | 0.1 | 0.1 |
| trans-1,2-Dichloroethene | 12 | 100 | 0.1 | 0.1 |
| 1,4-Dichlorobenzene | 12 | 100 | 0.1 | 0.1 |
| Ethylbenzene | 12 | 100 | 0.1 | 0.1 |
| Mercury | 12 | 100 | 0.2 | 0.2 |
| Methyl ethyl ketone | 12 | 100 | 1.1 | 1.1 |
| Selenium | 12 | 100 | 1 | 1 |
| 1,1,2,2-Tetrachloroethane | 12 | 100 | 0.3 | 0.3 |
| 1,1,2-Trichloroethane | 12 | 100 | 0.5 | 0.5 |
| Trichloroethene | 12 | 100 | 0.1 | 0.1 |
| Toluene | 12 | 100 | 0.1 | 0.1 |
| 2378-TCDF | 12 | 100 | 0.0485 ppt | 0.0485 ppt |
| 12378-PECDF | 12 | 100 | 0.0439 ppt | 0.0439 ppt |
| 23478-PECDF | 12 | 100 | 0.0417 ppt | 0.0417 ppt |
| 123478-HXCDF | 12 | 100 | 0.0390 ppt | 0.0390 ppt |
| 123678-HXCDF | 12 | 100 | 0.0377 ppt | 0.0377 ppt |
| 234678-HXCDF | 12 | 100 | 0.0428 ppt | 0.0428 ppt |
| 123789-HXCDF | 12 | 100 | 0.0415 ppt | 0.0415 ppt |
| 1234678-HPCDF | 12 | 100 | 0.0615 ppt | 0.0615 ppt |
| 1234789-HPCDF | 12 | 100 | 0.0709 ppt | 0.0709 ppt |
| OCDF | 12 | 100 | 0.1307 ppt | 0.1307 ppt |

Non-parametric prediction intervals were computed for all of the constituents for which the data from background well 16C1 satisfied one of the following two criteria, per VDEQ regulations and guidance as well as USEPA guidance:

- Percentage of non-detects was greater than or equal to 50 and less than 100; or
- Percentage of non-detects was less than 50, but data was not normally distributed in original or log-transformed mode.

The background threshold levels for these constituents were set as equal to their upper prediction limits (UPLs). The background and relevant statistical data for these constituents are summarized below. The confidence level and false positive rate were calculated based on the number of background data points available and number of future comparisons. For all constituents, the confidence level was determined to be equal to 0.933, and the false positive rate was equal to 0.067. Since the upper control limit of a non-parametric interval cannot be adjusted for multiple comparisons and inadequate number of background data, the number of resampling events required was adjusted to account for the high error rates inherent in those situations. The number of confirmation resamples required for all constituents is 2. The background and relevant statistical data for these constituents are summarized below. Associated statistical computations are presented in **Appendix C**.

| BTL = Upper Prediction Limit of Non-parametric Prediction Interval w/false positive rate=0.067 | | | | |
|---|---|---|---|---|
| Parameter | Sample Size | % Non-Detects | DL (µg/l) | BTL (µg/l) |
| Beryllium | 12 | 75 | 0.2 | 0.7 |
| Cadmium | 12 | 75 | 0.1 | 0.2 |
| Cobalt | 12 | 75 | 1 | 5 |
| Copper | 12 | 50 | 1 | 13 |
| 1,1-Dichloroethane | 12 | 0 | 0.2 | 9.5 |
| 2,4-Dinitrotoluene | 12 | 92 | 0.08 | 0.10 |

| BTL = Upper Prediction Limit of Non-parametric Prediction Interval w/false positive rate=0.067 | | | | |
|---|---|---|---|---|
| Parameter | Sample Size | % Non-Detects | DL (µg/l) | BTL (µg/l) |
| 2,6-Dinitrotoluene | 12 | 75 | 0.08 | 0.11 |
| Lead | 12 | 42 | 1 | 10 |
| Nickel | 12 | 92 | 15 | 16 |
| Silver | 12 | 75 | 0.2 | 0.5 |
| Thallium | 12 | 67 | 1 | 6 |
| TOC | 12 | 75 | 1000 | 7000 |
| 1,1,1-Trichloroethane | 12 | 17 | 0.3 | 9.2 |
| Vanadium | 12 | 83 | 4 | 151 |
| Vinyl Chloride | 12 | 92 | 0.1 | 0.1 |
| Xylene (total) | 12 | 92 | 0.1 | 0.2 |
| Zinc | 12 | 50 | 5 | 51 |

Chromium exhibited normally distributed data (excluding non-detects) with between 25% and 50% non-detects in the background well. The mean and standard deviation of the background data for chromium were adjusted using Cohen's Maximum Likelihood Estimator Method (1959, 1961). A one-sided parametric prediction interval was then computed for chromium based on the adjusted mean and standard deviation. The Upper Prediction Limit was set as the BTL for chromium. The background and relevant statistical data for chromium are summarized below. Cohen's adjustment computations and prediction interval computations are presented in **Appendix C**.

| BTL = Upper Prediction Limit of Prediction Interval w/false positive rate=0.05<br>Original Mean = 3.54, Original SD = 1.933<br>Adjusted Mean = 3.642. Adjusted SD = 1.95 | | | | |
|---|---|---|---|---|
| Parameter | Sample Size | % Non-Detects | DL (µg/l) | BTL (µg/l) |
| Chromium | 12 | 25 | 1 | 6.2 |

The following constituents exhibited normally distributed background data with less than 25% non-detects. One sided parametric prediction intervals were computed on the background data for all of these constituents. The UPLs for these constituents were set as their respective BTLs, with one exception. For pH, a two-sided parametric prediction interval was computed; therefore, the BTL for pH consisted of a range between the lower prediction limit (LPL) and the upper prediction limit. The background concentration calculations were based on a site wide 95% confidence, 95% coverage upper prediction intervals. When adjusted for multiple comparisons of the background data, the minimum required false positive rate was below 1% (0.01). A 99% confidence level (0.01 false positive rate) was used for all individual comparisons, which with the most conservative assumptions provided a site-wide false positive rate of >0.05 for all constituents. The background and relevant statistical data for these constituents are summarized below. The prediction interval computations for these constituents are presented in **Appendix C**.

| BTL = UPL of one-sided Prediction Interval (exception pH) w/site-wide false positive rate>0.05<br>(individual comparisons false positive rate=0.01)<br>BTL for pH = LPL – UPL of two-sided Prediction Interval | | | | |
|---|---|---|---|---|
| Parameter | Sample Size | % Non-Detects | DL (µg/l) | BTL (µg/l) |
| Barium | 12 | 0 | 2 | 175.4 |
| Dichlorodifluoromethane | 12 | 8 | 0.3 | 46.5 |
| Tetrachloroethene | 12 | 17 | 0.1 | 0.7 |
| TOX | 12 | 17 | 5 | 42.2 |

| BTL = UPL of one-sided Prediction Interval (exception pH) w/site-wide false positive rate>0.05 (individual comparisons false positive rate=0.01) BTL for pH = LPL – UPL of two-sided Prediction Interval | | | | |
|---|---|---|---|---|
| Parameter | Sample Size | % Non-Detects | DL (µg/l) | BTL (µg/l) |
| Trichlorofluoromethane | 12 | 0 | 0.5 | 11.3 |
| Specific Conductivity | 8 | 0 | 1 µS/cm | 672 µS/cm |
| pH | 8 | 0 | 0.1 pH units | 5.7 to 7.9 pH units |

### 3.5.2 Results of Statistical Comparisons

The following table lists the constituents which were detected during the Fourth Quarter 1998 event at concentrations exceeding their respective background threshold levels (BTLs), and the downgradient wells in which they were detected.

| Parameter | Monitoring Well(s) |
|---|---|
| Arsenic | 16-5, 16WC2B |
| Barium | 16-2, 16-3, 16-5, 16WC1A, 16WC1B, 16WC2B, 16SPRING |
| Beryllium | 16WC1B, 16WC2B |
| Cadmium | 16WC1B |
| Chromium | 16-3, 16-5, 16WC1B, 16WC2B |
| Cobalt | 16-5, 16WC1B, 16WC2B |
| Copper | 16-5, 16WC1B, 16WC2B |
| Lead | 16WC1B |
| Mercury | 16WC1B |
| Nickel | 16-5, 16WC1A, 16WC2B |
| Selenium | 16-5, 16WC1B, 16WC2B |
| Zinc | 16WC1B |
| 2,4-Dinitrotoluene | 16-3, 16-5, 16WC1B, 16WC2B, 16SPRING |
| 2,6-Dinitrotoluene | 16WC1A, 16WC1B |

Any HWMU-16 target constituents not listed above were not detected in the downgradient monitoring wells at concentrations exceeding their respective BTLs.

## 3.6 HWMU-16 PLUME DELINEATIONS

In accordance with VDEQ instructions presented during the May 19, 1999 meeting between Alliant and the VDEQ, Isoconcentration Maps were produced to depict constituent plumes in the groundwater beneath the site (**Appendix A**). In order to evaluate the shape and position of constituent plumes over time, historical Isoconcentration Maps were developed using the historical maximum concentrations for the constituents monitored at the site for the time periods of 1992 through 1995 and 1996 through 1998. The historical maximum concentrations for these time periods are listed in **Tables 3** and **4**, respectively (**Appendix B**).

Groundwater analytical data collected prior to 1992 were not included in the evaluation of historical maximum concentrations. The data collected prior to 1992 are considered unreliable due to "order-of-magnitude" variations in parameter concentrations from quarter to quarter, as well as a general lack of laboratory QA/QC. Additionally, the groundwater monitoring analyte lists prior to 1992 did not include many of the parameters on the current groundwater monitoring analyte list for HWMU-16.

**TABLE 2**
**HWMU-16**
**Calculated Background Values**

| Constituent | Background Concentration (µg/l unless otherwise noted) |
|---|---|
| Antimony | 3 |
| Arsenic | 1 |
| Barium | 175.4 |
| Beryllium | 0.7 |
| Cadmium | 0.2 |
| Chromium | 6.2 |
| Cobalt | 5 |
| Copper | 13 |
| Lead | 10 |
| Mercury | 0.2 |
| Nickel | 16 |
| Selenium | 1 |
| Silver | 0.5 |
| Thallium | 6 |
| Vanadium | 151 |
| Zinc | 51 |
| Bromoform | 0.3 |
| Carbon Tetrachloride | 0.2 |
| Chlorobenzene | 0.1 |
| Chloromethane | 0.3 |
| 1,4-Dichlorobenzene | 0.1 |
| Dichlorodifluoromethane | 46.5 |
| 1,1-Dichloroethane | 9.5 |
| 1,2-Dichloroethane | 0.1 |
| trans-1,2-Dichloroethene | 0.1 |
| Ethylbenzene | 0.1 |
| Methyl Ethyl Ketone | 1.1 |
| 1,1,2,2-Tetrachloroethane | 0.3 |
| Tetrachloroethene | 0.7 |
| Toluene | 0.1 |
| 1,1,1-Trichloroethane | 9.2 |
| 1,1,2-Trichloroethane | 0.5 |
| Trichloroethene | 0.1 |
| Trichlorofluoromethane | 11.3 |
| Vinyl Chloride | 0.1 |
| Xylenes (total) | 0.2 |

**TABLE 2**
**HWMU-16**
**Calculated Background Values**

| Constituent | Background Concentration (µg/l unless otherwise noted) |
|---|---|
| Di-n-butylphthalate | 5 |
| 2,4-Dinitrotoluene | 0.10 |
| 2,6-Dinitrotoluene | 0.11 |
| 2378-TCDF | 0.0485 ppt |
| 12378-PECDF | 0.0439 ppt |
| 23478-PECDF | 0.0417 ppt |
| 123478-HXCDF | 0.0390 ppt |
| 123678-HXCDF | 0.0377 ppt |
| 234678-HXCDF | 0.0428 ppt |
| 123789-HXCDF | 0.0415 ppt |
| 1234678-HPCDF | 0.0615 ppt |
| 1234789-HPCDF | 0.0709 ppt |
| OCDF | 0.1307 ppt |
| Cyanide | 10 |
| Total Organic Carbon (x4) | 7000 |
| Total Organic Halides (x4) | 42.2 |
| Specific Conductivity | 672 µS/cm |
| pH | 5.7 to 7.9 pH units |

**Appendix IX Constituents Detected Since Permit Issuance**
**HWMUs 5, 7, 10, and 16**
**Radford Army Ammunition Plant**

| Unit | Quarter Initially Detected | Constituent | Background--Calculated or QL? | Background (ug/L) | GPS Required? (261 Appendix VIII) | Proposed GPS (ug/L) | Source |
|---|---|---|---|---|---|---|---|
| HMWU-5 | Fourth Quarter 2003 | Chromium | QL | 5 | yes | 100 | USEPA MCL |
| | | Diethyl Ether | QL | 12 | no | NA | NA |
| | | 2-Nitroaniline | QL | 20 | no | NA | NA |
| | | 4-Nitroaniline | QL | 20 | yes | 20 | Background/QL |
| | | Nitrobenzene | QL | 10 | yes | 10 | Background/QL |
| | Third Quarter 2006 | Dichlorodifluoromethane | QL | 1 | yes | 125.2 | VDEQ ACL |
| HWMU-7 | Third Quarter 2003 | Copper | Calculated | 49 | no | NA | NA |
| | Second Quarter 2004 | Zinc | Calculated | 217 | no | NA | NA |
| HWMU-10 | First Quarter 2003 | Cobalt | QL | 5 | no | NA | NA |
| | Second Quarter 2003 | Vanadium | QL | 10 | no | NA | NA |
| | Second Quarter 2005 | Acetone | QL | 10 | no | NA | NA |
| | | 2-Propanol | QL | 50 | no | NA | NA |
| HWMU-16 | Second Quarter 2003 | Chloroethane | Calculated | 20.7 | yes | 20.7 | Background/QL |
| | | Diethyl Ether | Calculated | 75.5 | no | NA | NA |
| | | Dimethyl Ether | Calculated | 17.0 | no | NA | NA |
| | Third Quarter 2003 | Methylene Chloride | Calculated | 13.95 | no* | NA | NA |
| | Second Quarter 2004 | 1,1,2-Trichloro-1,2,2-trifluoroethane | Calculated | 1.2 | no* | NA | NA |

**HWMU-5:** The additional Appendix IX constituents detected in the downgradient point of compliance wells were not detected above their respective Quantitation Limits (QLs) in the upgradient well. As a result, background concentrations for those constituents were set as equal to their respective QLs. In accordance with the Permit (Condition V.J.1.g.), GPS are proposed for those additional Appendix IX constituents that are listed in Appendix VIII of 40 CFR Part 261 (chromium, 4-nitroaniline, nitrobenzene, and dichlorodifluoromethane). No GPS are proposed for the additional Appendix IX constituents that are not listed in Appendix VIII of 40 CFR Part 261 (diethyl ether and 2-nitroaniline).

**HWMU-7:** Background concentrations for the additional Appendix IX constituents detected in the downgradient point of compliance wells (copper and zinc) were previously calculated and submitted to the VDEQ in the August 1998 ***Groundwater Quality Assessment Report for HWMU-7*** prepared by ERM, Inc. In accordance with the Permit (Condition V.J.2.g.), no GPS are proposed for the additional Appendix IX constituents (copper and zinc), as they are not listed in Appendix VIII of 40 CFR Part 261.

**HWMU-10:** The additional Appendix IX constituents detected in the downgradient point of compliance wells were not detected above their respective Quantitation Limits (QLs) in the upgradient well. As a result, background concentrations for those constituents were set as equal to their respective QLs. In accordance with the Permit (Condition V.J.3.g.), no GPS are proposed for the additional Appendix IX constituents (cobalt, vanadium, acetone, and 2-propanol), as they are not listed in Appendix VIII of 40 CFR Part 261.

**HWMU-16:** Background concentrations for additional Appendix IX constituents chloroethane, diethyl ether, dimethyl ether, and methylene chloride were calculated using data collected from upgradient well 16C1 during the period from Third Quarter 2003 through Third Quarter 2004. The background concentration for additional Appendix IX constituent 1,1,2-trichloro-1,2,2-trifluoroethane was calculated using data collected from upgradient well 16C1 during the period from Second Quarter 2004 through Third Quarter 2006.
In accordance with the Permit (Condition V.J.4.g.), GPS are proposed for additional Appendix IX constituents that are listed in Appendix VIII of 40 CFR Part 261 (chloroethane). No GPS are proposed for the additional Appendix IX constituents that are not listed in Appendix VIII of 40 CFR Part 261 (diethyl ether and dimethyl ether).
*Methylene chloride and 1,1,2-trichloro-1,2,2-trifluoroethane should not be added to the Groundwater Monitoring List for HWMU-16, as these constituents were only detected in the upgradient well for the Unit, and not in the downgradient point of compliance wells.

**Statistical Computations – RAAP HWMU-16 – 1,1,2-Trichloro-1,2,2-Trifluoroethane**

In accordance with the facility permit and VHWMR, statistical background concentration is being established for 1,1,1-Trichloro-1,2,2-Trifluoroethane. Inter-well upper prediction limits (UPL) were calculated on the background data for this target parameter in accordance with the facility permit and VHWMR (40 CFR 264.97(h)). Background data for this target parameter consisted of all data for the background well 16C1 collected from 2nd quarter 2004 through 3rd quarter 2006.

*Discussion of Tests for Normality*

The power of a statistical tool to account for false positive and false negative results, while accurately detecting true statistical variations for a facility under scrutiny depends on numerous factors, one of which is the distribution of the data. A great number of statistical tools are based on the assumption that data are normally distributed. Hence the distribution of the sample population for parameters evaluated under this statistical analysis is first determined. Sample populations are tested for normal distribution using several normality tests. "Groundwater Information Tracking System with Statistical Analysis Capability" (GRITS/STAT) v5.0 was the software used to run these statistical tests. GRITS/STAT is an analytical software package provided by the USEPA. The distributions of the data sets were verified in the original mode as well as in log-transformed mode. The normality of the data set was evaluated using the Shapiro-Wilk test for normality.

*Discussion of Prediction Interval Tests*

Normality tests are performed prior to running parametric tests (tests that require that the data be normal). Results of the normality tests show that the background data for 1,1,2-Trichloro-1,2,2-Trifluoroethane is non-normally distributed. Non-parametric UPL (NUPL) was constructed on the background data for this parameter. The confidence levels of NUPLs are typically approximate and estimated to be around 91%.

*Summary of UPL*

| Parameter | Background Data Distribution | Type of UPL | Multiple Comparisons/year | UPL (µg/l) |
|---|---|---|---|---|
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | Non-Normal | NUPL | N/A | 1.2 |

**Statistical Computations – RAAP HWMU-16**

In accordance with the facility permit and VHWMR, statistical background concentrations are being established for the four new target parameters chloroethane, diethyl ether, dimethyl ether and methylene chloride. These four target parameters were added to the facility monitoring program during the 3rd quarter 2003 monitoring event. Inter-well upper prediction limits (UPL) were calculated on the background data for the target parameters in accordance with the facility permit and VHWMR (40 CFR 264.97(h)). Background data for these target parameters consisted of all data for the background well 16C1 collected from 3rd quarter 2003 through 3rd quarter 2004.

*Discussion of Tests for Normality*

The power of a statistical tool to account for false positive and false negative results, while accurately detecting true statistical variations for a facility under scrutiny depends on numerous factors, one of which is the distribution of the data. A great number of statistical tools are based on the assumption that data are normally distributed. Hence the distribution of the sample population for parameters evaluated under this statistical analysis is first determined. Sample populations were tested for normal distribution using several normality tests. "Groundwater Information Tracking System with Statistical Analysis Capability" (GRITS/STAT) v5.0 was the software used to run these statistical tests. GRITS/STAT is an analytical software package provided by the USEPA. The distributions of the data sets were verified in the original mode as well as in log-transformed mode. The normality of the data sets was evaluated using the Shapiro-Wilk test for normality.

*Discussion of Prediction Interval Tests*

Normality tests are performed prior to running parametric tests (tests that require that the data be normal). A 99% confidence parametric inter-well UPL was computed for each of the four target parameters that showed normally distributed background data. Results of the normality tests show that the background data for chloroethane, diethyl ether and methylene chloride are normally distributed, and the background data for dimethyl ether is non-normally distributed. Non-parametric UPL (NUPL) was constructed on the background data for dimethyl ether, and parametric UPLs (PUPL) were constructed on the background data for chloroethane, diethyl ether and methylene chloride. No adjustments to the error rates were made to the NUPLs for multiple comparisons. Adjustment for 10 comparisons per year (considering 10 compliance monitoring wells at the facility and 4 quarters of data for each year, and considering historic detects, 10 is considered a representative number for multiple comparisons per year) was made to the PUPLs. The confidence levels of NUPLs are well less than 95%. Any statistically significant increase (SSI) must be confirmed by verification sampling.

*Summary of UPLs*

| Parameter | Background Data Distribution | Type of UPL | Multiple Comparisons/year | UPL (µg/l) |
|---|---|---|---|---|
| Chloroethane | Normal | PUPL | 10 | 20.7 |
| Diethyl ether | Normal | NUPL | 10 | 75.5 |
| Dimethyl ether | Non-normal | PUPL | N/A | 17.0 |
| Methylene Chloride | Normal | PUPL | 10 | 13.95 |

**RAAP-HWMU-16 - Statistical Analysis - Notes**

1) Y2K Correction dates are as shown in table below.

| Actual Event | Date Used in Stat Software |
|---|---|
| 2000-Qtr1 | 12/13/1999 |
| 2000-Qtr2 | 12/14/1999 |
| 2000-Qtr3 | 12/15/1999 |
| 2000-Qtr4 | 12/16/1999 |
| 2001-Qtr1 | 12/17/1999 |
| 2003-Qtr3 | 12/18/1999 |
| 2003-Qtr4 | 12/19/1999 |
| 2004-Qtr1 | 12/20/1999 |
| 2004-Qtr2 | 12/21/1999 |
| 2004-Qtr3 | 12/22/1999 |

Interwell Tests:
2) Background data for target parameters chloroethane, diethyl ether, dimethyl ether and methylene chloride were evaluated using Shapiro-Wilk test. Background data showed normal distribution for chloroethane, diethyl ether and methylene chloride. Parametric interwell 99% confidence upper prediction limits were computed for parameters with normally distributed background data. Dimethyl ether background data was non-normally distributed. Therefore non-parametric Upper Prediction Limit (UPL) was computed for dimethyl ether.

3) No adjustments for multiple comparisons could be made for non-parametric UPLs. Adjustments were made to the parametric UPLs for 10 future comparisons per year to account for multiple compliance monitoring wells and quarterly event data.
Any Statistically significant increase (SSI) must be confirmed by verification sampling.

E:\Ross Work\Radford AAP Archives\HWMU-16\[HWMU16StatDate correction.xls]Sheet1

Normality Tests

Report Printed: 02-02-2005 13:49

Facility:RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford ST:VA Zip:24141
County:PULASKI

Contact:
Phone:( ) -

Permit Type:Detection

Constituent:ClEthane Chloroethane

CAS Number: 75-00-3
MCL: 0.000 ppb
ACL: 0.000 ppb
Detect Limit: 2.000 ppb

Start Date:Mar 31 1996
End Date:Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1 Position:Upgradient Observations:5

| Scale | Minimum | Maximum | Mean | Std Dev |
|---|---|---|---|---|
| Original: | 1.000 | 6.400 | 4.340 | 2.078 |
| Log: | 0.000 | 1.856 | 1.303 | 0.749 |

Pooled Statistics
Observations: 5

| Statistic | Original Scale | Log Scale |
|---|---|---|
| Mean: | 4.340 | 1.303 |
| Std Dev: | 2.078 | 0.749 |
| Skewness: | -0.810 | -1.296* |
| Kurtosis: | -0.555 | -0.011 |
| Minimum: | 1.000 | 0.000 |
| Maximum: | 6.400 | 1.856 |
| CV: | 0.479 | 0.575 |

Shapiro-Wilk Statistics

| Scale | Test Statistic | 5% Critical Value | 1% Critical Value |
|---|---|---|---|
| Original: | 0.9037 | 0.7620 | 0.6860 |

| | | | |
|---|---|---|---|
| Log: | 0.7615* | 0.7620 | 0.6860 |

* Indicates statistically significant evidence of non-normality.
GRIT/STAT Version 5.0

**Parametric Prediction Interval**
Report Printed February 2,2005



Facility:Haz. Waste Unit 16 - RAAP
Parameter:Chloroethane(CAS Number:75-00-3)

**ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL**

| | |
|---|---|
| Observations (n): | 5 |
| Shapiro-Wilk (W): | 0.9037 |
| Critical W, $\alpha$=0.01: | 0.6860 |
| Mean: | 4.340 ppb |
| Std Dev: | 2.078 ppb |
| DF: | 4 |
| Conf. Level (1-$\alpha$): | ~~0.9500~~ 0.99 |
| Future Samples (k): | 10 |
| $t_{\left[1-\frac{\alpha}{k}\right]}$: | 7.1732 |
| Kappa: | 7.8579 |
| UL: | 20.669 ppb |
| LL: | -$\infty$ |

*Report Produced by GRITS/STAT 5.01*

Normality Tests

Report Printed: 02-02-2005 13:49

Facility:RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford ST:VA Zip:24141
County:PULASKI

Contact:
Phone:( ) -

Permit Type:Detection

Constituent:DEthEth Diethyl ether

CAS Number: - -
MCL: 0.000 ppb
ACL: 0.000 ppb
Detect Limit: 24.000 ppb

Start Date:Mar 31 1996
End Date:Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1 Position:Upgradient Observations:5

| Scale | Minimum | Maximum | Mean | Std Dev |
|---|---|---|---|---|
| Original: | 12.000 | 30.000 | 21.200 | 6.907 |
| Log: | 2.485 | 3.401 | 3.007 | 0.355 |

Pooled Statistics
Observations: 5

| Statistic | Original Scale | Log Scale |
|---|---|---|
| Mean: | 21.200 | 3.007 |
| Std Dev: | 6.907 | 0.355 |
| Skewness: | -0.122 | -0.491 |
| Kurtosis: | -1.140 | -1.024 |
| Minimum: | 12.000 | 2.485 |
| Maximum: | 30.000 | 3.401 |
| CV: | 0.326 | 0.118 |

Shapiro-Wilk Statistics

| Scale | Test Statistic | 5% Critical Value | 1% Critical Value |
|---|---|---|---|
| Original: | 0.9768 | 0.7620 | 0.6860 |

| | | | |
|---|---|---|---|
| Log: | 0.9507 | 0.7620 | 0.6860 |

* Indicates statistically significant evidence of non-normality.
GRIT/STAT Version 5.0

**Parametric Prediction Interval**
Report Printed February 2,2005



Facility:Haz. Waste Unit 16 - RAAP
Parameter:Diethyl ether(CAS Number:- -)

**ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL**

| | |
|---|---|
| Observations (n): | 5 |
| Shapiro-Wilk (W): | 0.9768 |
| Critical W, $\alpha$=0.01: | 0.6860 |
| Mean: | 21.200 ppb |
| Std Dev: | 6.907 ppb |
| DF: | 4 |
| Conf. Level (1-$\alpha$): | ~~0.9500~~ 0.99 |
| Future Samples (k): | 10 |
| $t_{\left[1-\frac{\alpha}{k}\right]}$: | 7.1732 |
| Kappa: | 7.8579 |
| UL: | 75.470 ppb |
| LL: | -$\infty$ |

*Report Produced by GRITS/STAT 5.01*

Normality Tests

Report Printed: 02-02-2005 13:53

Facility:RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford ST:VA Zip:24141
County:PULASKI

Contact:
Phone:( ) -

Permit Type:Detection

Constituent:DMethEth Dimethyl ether

CAS Number: - -
MCL: 0.000 ppb
ACL: 0.000 ppb
Detect Limit: 24.000 ppb

Start Date:Mar 31 1996
End Date:Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1 Position:Upgradient Observations:5

| Scale | Minimum | Maximum | Mean | Std Dev |
|---|---|---|---|---|
| Original: | 12.000 | 17.000 | 13.000 | 2.236 |
| Log: | 2.485 | 2.833 | 2.555 | 0.156 |

Pooled Statistics
Observations: 5

| Statistic | Original Scale | Log Scale |
|---|---|---|
| Mean: | 13.000 | 2.555 |
| Std Dev: | 2.236 | 0.156 |
| Skewness: | 1.500* | 1.500* |
| Kurtosis: | 0.250 | 0.250 |
| Minimum: | 12.000 | 2.485 |
| Maximum: | 17.000 | 2.833 |
| CV: | 0.172 | 0.061 |

Shapiro-Wilk Statistics

| Scale | Test Statistic | 5% Critical Value | 1% Critical Value |
|---|---|---|---|
| Original: | 0.5521* | 0.7620 | 0.6860 |

| | | | |
|---|---|---|---|
| Log: | 0.5521* | 0.7620 | 0.6860 |

* Indicates statistically significant evidence of non-normality.
GRIT/STAT Version 5.0

**Nonparametric Prediction Interval**
Report Printed February 2,2005



Facility:Haz. Waste Unit 16 - RAAP
Parameter:Dimethyl ether(CAS Number:- -)

**ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL**

| | |
|---|---|
| Observations (n): | 5 |
| Conf. Level (1-$\alpha$): | 33.330% |

UL: 17.000 ppb
LL: 0.000

Normality Tests

Report Printed: 02-02-2005 13:54

Facility:RAAPHWMU16 Haz. Waste Unit 16 - RAAP

Address:

City:Radford ST:VA Zip:24141
County:PULASKI

Contact:
Phone:( ) -

Permit Type:Detection

Constituent:MeCl Dichloromethane (Methylene chloride)

CAS Number: 75-09-2
MCL: 0.000 ppb
ACL: 0.000 ppb
Detect Limit: 2.000 ppb

Start Date:Mar 31 1996
End Date:Dec 22 1999

Normality Test on Observations for wells listed below:

Well:16C1 Position:Upgradient Observations:5

| Scale | Minimum | Maximum | Mean | Std Dev |
|---|---|---|---|---|
| Original: | 4.100 | 6.800 | 5.800 | 1.037 |
| Log: | 1.411 | 1.917 | 1.743 | 0.197 |

Pooled Statistics
Observations: 5

| Statistic | Original Scale | Log Scale |
|---|---|---|
| Mean: | 5.800 | 1.743 |
| Std Dev: | 1.037 | 0.197 |
| Skewness: | -0.925 | -1.088* |
| Kurtosis: | -0.436 | -0.263 |
| Minimum: | 4.100 | 1.411 |
| Maximum: | 6.800 | 1.917 |
| CV: | 0.179 | 0.113 |

Shapiro-Wilk Statistics

| Scale | Test Statistic | 5% Critical Value | 1% Critical Value |
|---|---|---|---|
| Original: | 0.8964 | 0.7620 | 0.6860 |

| | | | |
|---|---|---|---|
| Log: | 0.8519 | 0.7620 | 0.6860 |

* Indicates statistically significant evidence of non-normality.
GRIT/STAT Version 5.0

**Parametric Prediction Interval**
Report Printed February 2,2005



Facility:Haz. Waste Unit 16 - RAAP
Parameter:Dichloromethane (Methylene chloride(CAS Number:75-09-2)

**ONE-TAILED UPPER PARAMETRIC PREDICTION INTERVAL**

| | |
|---|---|
| Observations (n): | 5 |
| Shapiro-Wilk (W): | 0.8964 |
| Critical W,$\alpha$=0.01: | 0.6860 |
| Mean: | 5.800 ppb |
| Std Dev: | 1.037 ppb |
| DF: | 4 |
| Conf. Level (1-$\alpha$): | ~~0.9500~~ 0.99 |
| Future Samples (k): | 10 |
| $t_{\left[1-\frac{\alpha}{k}\right]}$: | 7.1732 |
| Kappa: | 7.8579 |
| UL: | 13.947 ppb |
| LL: | -$\infty$ |

***Report Produced by GRITS/STAT 5.01***

# *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells*
# *Radford Army Ammunition Plant, Radford, Virginia*
## *Upgradient well = 16C1*

*All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Chloroethane** | | | | | *CAS #* | *75-00-3* | | |
| Third Quarter 2003 | 6.4 | U | 4.8 | U | U | 1 | 20.7 | 8260B |
| Fourth Quarter 2003 | 5.7 | U | 2.6 | 1.1 | U | 1 | 20.7 | 8260B |
| First Quarter 2004 | U J | U J | U J | U J | U J | 1 | 20.7 | 8260B |
| Second Quarter 2004 | 4.4 | U | 2.4 | 0.63 J | U | 1 | 20.7 | 8260B |
| Third Quarter 2004 | 4.2 | U | 2 | U | U | 1 | 20.7 | 8260B |
| Fourth Quarter 2004 | 4.9 | U | 2.5 | U | U | 1 | 20.7 | 8260B |
| First Quarter 2005 | 7.6 J | U J | 3.7 J | U J | U J | 1 | 20.7 | 8260B |
| Second Quarter 2005 | U J | U | U J | U | U | 1 | 20.7 | 8260B |
| Third Quarter 2005 | 4.7 J | U J | U | U J | U J | 1 | 20.7 | 8260B |
| Fourth Quarter 2005 | 4.6 J | U | 2.6 J | U | U | 1 | 20.7 | 8260B |
| First Quarter 2006 | 5.3 | U | U | U | U | 1 | 20.7 | 8260B |
| Second Quarter 2006 | 5 J | U | 2 J | U | U | 1 | 20.7 | 8260B |
| Third Quarter 2006 | 5 | U | 0.7 J | 0.7 J | U | 1 | 20.7 | 8260B |
| Fourth Quarter 2006 | 5.8 | U | 1 | U | U | 1 | 20.7 | 8260B |
| First Quarter 2007 | 6.1 | U | 1 | U | U | 1 | 20.7 | 8260B |
| Second Quarter 2007 | 5.2 | U | 1.4 | U | U | 1 | 20.7 | 8260B |
| **Diethyl ether** | | | | | *CAS #* | *60-29-7* | | |
| Third Quarter 2003 | 12 J | U | 12 J | U | U | 12 | - | 8260B |
| Fourth Quarter 2003 | 30 | U | 14 | U | U | 12 | - | 8260B |
| First Quarter 2004 | 24 | U | U | U | U | 12 | - | 8260B |
| Second Quarter 2004 | 23 J | U J | 13 J | U J | U J | 12 | - | 8260B |
| Third Quarter 2004 | 17 | U | U | U | U | 12 | - | 8260B |
| Fourth Quarter 2004 | 24 | U J | U | U | U J | 12 | - | 8260B |
| First Quarter 2005 | 29 | U | 14 | U | U | 12 | - | 8260B |
| Second Quarter 2005 | 20 | U J | 9.2 | U J | U J | 12 | - | 8260B |
| Third Quarter 2005 | 30 | U | 15 | U | U | 12 | - | 8260B |
| Fourth Quarter 2005 | 25 | U | 18 | U | U | 12 | - | 8260B |
| First Quarter 2006 | 19 | U | U | U | U | 12 | - | 8260B |
| Second Quarter 2006 | 17 | U | U | U | U | 12.5 | - | 8260B |
| Third Quarter 2006 | 33 | 1.5 J | 4.3 J | 4.6 J | U | 12.5 | - | 8260B |
| Fourth Quarter 2006 | 20 | U | U | U | U | 12.5 | - | 8260B |
| First Quarter 2007 | 21 | U | U | U | U | 12.5 | - | 8260B |
| Second Quarter 2007 | 17 J | 1.5 J | 5.7 J | 2.1 J | U J | 12.5 | - | 8260B |
| **Dimethyl ether** | | | | | *CAS #* | *115-10-6* | | |
| Third Quarter 2003 | 6.6 J | U | 9.9 J | U | U | 12 | - | 8260B |
| Fourth Quarter 2003 | U | U | U | U | U | 12 | - | 8260B |
| First Quarter 2004 | 17 J | U J | 13 J | U J | U J | 12 | - | 8260B |
| Second Quarter 2004 | U J | U J | 6.6 J | U J | U J | 12 | - | 8260B |
| Third Quarter 2004 | U J | U J | U J | U J | U J | 12 | - | 8260B |
| Fourth Quarter 2004 | 16 J | U J | 12 J | U | U J | 12 | - | 8260B |
| First Quarter 2005 | 26 | U | 25 | U | U | 12 | - | 8260B |
| Second Quarter 2005 | 15 | U | 14 | U | U | 12 | - | 8260B |
| Third Quarter 2005 | 13 | U | U | U | U | 12 | - | 8260B |
| Fourth Quarter 2005 | U | U | U | U | U | 12 | - | 8260B |
| First Quarter 2006 | U | U | U | U | U | 12 | - | 8260B |
| Second Quarter 2006 | U | U | U | U | U | 12.5 | - | 8260B |
| Third Quarter 2006 | 11 J | U J | 3.2 J | 2.8 J | U J | 12.5 | - | 8260B |
| Fourth Quarter 2006 | U | U | U | U | U | 12.5 | - | 8260B |
| First Quarter 2007 | U | U | U | U | U | 12.5 | - | 8260B |
| Second Quarter 2007 | 11 J | U | 7 J | 2.6 J | 1.2 J | 12.5 | - | 8260B |

*See last page of this report for definitions.*

## *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*

*Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|
| **Methylene chloride** | | | | | *CAS #* 75-09-2 | | | |
| Third Quarter 2003 | 4.1 | U | U | U | U | 1 | 13.95 | 8260B |
| Fourth Quarter 2003 | 6.8 | U | U | U | U | 1 | 13.95 | 8260B |
| First Quarter 2004 | 6.4 | U | U | U | U | 1 | 13.95 | 8260B |
| Second Quarter 2004 | 5.7 | U | U | U | U | 1 | 13.95 | 8260B |
| Third Quarter 2004 | 6 | U A | U A | U A | U A | 1 | 13.95 | 8260B |
| Fourth Quarter 2004 | 6.4 | U | U | U | U | 1 | 13.95 | 8260B |
| First Quarter 2005 | 6.8 J | U | U | U | U | 1 | 13.95 | 8260B |
| Second Quarter 2005 | 6.3 | U | U | U | U | 1 | 13.95 | 8260B |
| Third Quarter 2005 | 6.2 | U | U | U | U | 1 | 13.95 | 8260B |
| Fourth Quarter 2005 | 4.7 | U | U | U | U | 1 | 13.95 | 8260B |
| First Quarter 2006 | 4.9 | U | U | U | U | 1 | 13.95 | 8260B |
| Second Quarter 2006 | 7 | U | U | U | U | 1 | 13.95 | 8260B |
| Third Quarter 2006 | U N | U N | U N | U N | U N | 1 | 13.95 | 8260B |
| Fourth Quarter 2006 | U A | U | U | U A | U | 1 | 13.95 | 8260B |
| First Quarter 2007 | 6.3 | U | U | U | U | 1 | 13.95 | 8260B |
| Second Quarter 2007 | 3.4 | U | U | U | U | 1 | 13.95 | 8260B |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | | | | | *CAS #* 76-13-1 | | | |
| Third Quarter 2003 | U | U | U | U | U | 1 | - | 8260B |
| Second Quarter 2004 | 1.2 | U J | U J | U J | U J | 1 | - | 8260B |
| Third Quarter 2004 | U | U | U | U | U | 1 | - | 8260B |
| Fourth Quarter 2004 | U | U | U | U | U | 1 | - | 8260B |
| First Quarter 2005 | 1 | U | U | U | U | 1 | - | 8260B |
| Second Quarter 2005 | U | U | U | U | U | 1 | - | 8260B |
| Third Quarter 2005 | U | U | U | U | U | 1 | - | 8260B |
| Fourth Quarter 2005 | U | U | U | U | U | 1 | - | 8260B |
| First Quarter 2006 | U | U | U | U | U | 1 | - | 8260B |
| Second Quarter 2006 | U | U | U | U | U | 1 | - | 8260B |
| Third Quarter 2006 | U | U | U | U | U | 1 | - | 8260B |
| Fourth Quarter 2006 | U | U | U | U | U | 1 | - | 8260B |
| First Quarter 2007 | U | U | U | U | U | 1 | - | 8260B |
| Second Quarter 2007 | U | U | U | U | U | 1 | - | 8260B |

*See last page of this report for definitions.*

## *Target Analyte Monitoring Results - HWMU-16 Point of Compliance Wells*
## *Radford Army Ammunition Plant, Radford, Virginia*

*Upgradient well = 16C1* *All Results in ug/L.*

| *Analtye/Quarter* | *16C1* | *16MW8* | *16MW9* | *16WC1A* | *16WC1B* | *QL* | *GPS* | *Method* |
|---|---|---|---|---|---|---|---|---|

**Definitions:** **QL** Denotes permit required quantitation limit. **U** Denotes analyte not detected at or above QL. **UA** Denotes analyte not detected at or above adjusted sample QL. **J** Denotes associated result is estimated. When used with "U" (i.e., "**UJ**"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated. **UN** Denotes analyte concentration is less than the quantiation limit and five times the blank concentration. Not reliably detected due to blank contamination. This qualifier used only for Appendix IX monitoring event when results are reported to at or above the project detection limit. **R** Denotes result rejected. **Q** Denotes data validation qualifier. **CAS#** Denotes Chemical Abstract Services registration number. **X** Denotes mass spectral confirmation not obtained-result suspect.

**GPS** Denotes Groundwater Protection Standards listed in Appendix G to Attachment 5 in the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002).
**NS** denotes not sampled. **NA** denotes not analyzed. "–" denotes not detected (pre-2nd Quarter 2003) or not available / not sampled (beginning 2nd Quarter 2003).

**Notes:**
**-Appendix IX Groundwater Monitoring Events:**
Third Quarter 2003, Second Quarter 2004, Second Quarter 2005, Third Quarter 2006, Second Quarter 2007
For Appendix IX monitoring events, all results evaluated to detection limit. See laboratory data deliverable for detection limit.

-9/30/2003: Verification sampling event for 16C1 (heptachlor) and 16C1B (Endrin). Verification results: all results reported not detected to detection limit. Original results 0.067 µg/l and 0.39 µg/l, respectively. Confirmation results reported in this table.
-9/30/2003: Verification sampling event for 16C1 (chloroethane, ethyl ether, methyl ether, methylene chloride) and 16MW9 (chloroethane, ethyl ether, methyl ether). Verification results: all results confirmed original analysis. Original results reported in this table.
-June 21, 2004: Verification event for 8260B 16C1 (1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane). Verification results: all not detected except 1,1,2-trichloro-1,2,2-trifluoroethane added to quarterly analyte list beginning 3Q 2004. Due to laboratory error, Appendix IX results for semivolatiles (Method 8270C) will be presented in 3Q 2004. Verification event results for 16WC1B and 16C1 (8081A) – all verification results were not confirmed.
-07/27-28/2005. Verification event for 16WC1B (Mercury Method 7470A.) Not detected in verification sample. Also, verification event for 16C1, 16WC1B-8081A. and 16C1, 16MW9, 16WC1A-ethanol. All verification results not detected. Verification results used.
-06/19/2007. Verification event for 16WC1B and 16MW9 thallium Not detected in verification sample. Verification results used.

## Ross Miller

**From:** Flint, Jeremy <Jeremy.Flint@ATK.COM>
**Sent:** Friday, January 20, 2012 2:23 PM
**To:** Powers, Loretta
**Cc:** Janet Frazier; Kathy Olsen; Mike Lawless; Ross Miller
**Subject:** FW: VA1210020730, RAAP, Additional App. IX GW Mont Results PCC HWMU 5,7,10,16, Final Notification

Loretta,
Please file the attached e-mail as an answer to ATK letter number 11-815-106

Thank You
Jeremy Flint
Lead Compliance Engineer
Environmental Affairs Department
Alliant Techsystems Inc.
P.O. Box 1
Radford, VA 24143
Phone: 540 - 639 - 7668
Fax: 540 - 639 - 8109
***"Together Everyone Accomplishes More." (TEAM)***

**From:** Maiden, Vince (DEQ) [mailto:Vincent.Maiden@deq.virginia.gov]
**Sent:** Friday, January 20, 2012 10:26 AM
**To:** Flint, Jeremy
**Cc:** McKenna, Jim; Schneider, Jutta (DEQ)
**Subject:** VA1210020730, RAAP, Additional App. IX GW Mont Results PCC HWMU 5,7,10,16, Final Notification

Jeremy:

The Department has received the referenced August 1, 2011 document. The notification indicates the benzene was confirmed in 16MW and recommended that this contituent be added to the compliance monitoring list for HWMU-16. In addition, the facility recommeded that the background for benzene be estalished at the LOQ of 1µg/l and the groundwater protection standard be set at 5µg/l based on the MCL. The Department agrees with the recommedations. It appears that these changes were included in the permit renewal application dated September 15, 2011. The Department will formally address those changes along with others in the permit renewal process. If you have any questions please feel free to contact me.

Vincent Maiden
Corrective Action Project Manager
Virginia Department of Environmental Quality
Office of Remediation Programs
629 East Main Street or P.O. Box 1105
Richmond, VA 23218 Richmond, VA 23219
(276) 676-4867
Vincent.Maiden@deq.virginia.gov

# COMMONWEALTH of VIRGINIA

*DEPARTMENT OF ENVIRONMENTAL QUALITY*
*Street address:* 629 East Main Street, Richmond, Virginia 23219
*Mailing address:* P.O. Box 1105, Richmond, Virginia 23218
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482


Office of Waste Permitting and Compliance

Land Protection and Remediation Division

September 12, 2014

**VIA ELECTRONIC MAIL**
Mr. Jay Stewart
Environmental Manager
BAE Systems, Ordnance Systems, Inc.
Radford Army Ammunition Plant
4050 Pepper's Ferry Road
Radford, Virginia 24141

**Re: Radford Army Ammunition Plant, Radford, VA**
**EPA ID No.VA1210020730, Approval of Class 1 Permit Modifications**
**Hazardous Waste Management Units 5 and 16, Post Closure-Care Permit**

Dear Mr. Stewart:

Enclosed are the final Class 1 Modifications to the Hazardous Waste Permit for Post Closure-Care of two hazardous waste management units (HWMUs) 5 and 16 at the Radford Army Ammunition Plant (RAAP), Radford, Virginia facility. The final Class 1 Modifications to the Permit have been approved.

The Virginia Department of Environmental Quality (DEQ) received the Class 1 Permit groundwater related modification request addressing the HWMU 16 that was communicated to the DEQ in an e-mail dated August 13, 2014, from the RAAP, Radford, Virginia facility. RAAP requested that 1,1-dichloroethene (1,1-DCE) be added to the Groundwater Compliance Monitoring Constituent List for HWMU-16.

1,1-DCE was detected in the most recent annual groundwater sampling event required under the Post-Closure Permit, and in a letter dated July 21, 2014, the VDEQ supported the RAAP's July 1, 2014, proposal that 1,1-DCE be added to the Groundwater Compliance Monitoring Constituent List and also the setting of the background value for 1,1-DCE at the Limit of Quantitation (LOQ) value of 1

ug/1 and the Groundwater Protection Standard (GPS) at the USEPA Maximum Contaminant Level (MCL) of 7 ug/l.

In the e-mail letter dated August 13, 2014, RAAP submitted the following requested changes to the facility's hazardous waste Post Closure-Care Permit as marked–up files comprising the Class 1 Permit modification:

- Permit Attachment 3, Appendix E (HWMU-16 Groundwater Compliance Monitoring Constituent List) from the Post-Closure Care Permit to add 1,1-DCE to the groundwater Compliance Monitoring Program for HWMU-16, and

- Permit Attachment 3, Appendix G (HWMU-16 Groundwater Protection Standards) from the Post-Closure Care Permit to add 1,1-DCE to the groundwater Compliance Monitoring Program for HWMU-16.

The requested changes represent a Class 1 permit modification under 40 CFR § 270.42, Appendix I.C.2 – *Changes in groundwater sampling or analysis procedures or monitoring schedule, with prior approval of the Director.*

Based on the above justification, this August 13, 2014, e-mailed letter requesting changes in the groundwater compliance monitoring program including the addition of 1,1-DCE and its associated background concentration and GPS; the RAAP has established sufficient documentation for approval of all requested changes. In accordance with the VHWMR, under 40 CFR § 270.42, Appendix I, Section C.2 and based upon the accuracy of the information contained in the Permittee's correspondence dated August 13, 2014, the requested Class 1 modifications to the permit are approved.

Enclosed are the final modified pages in electronic format to be inserted into the RAAP's copy of the hazardous waste permit.

All conditions and requirements of the facility Permit shall remain in effect for the duration of the Permit unless the existing Permit is modified, revoked and reissued, or terminated in accordance with 40 CFR § 124.5, and 40 CFR § 270.41 through 270.42, or continued in accordance with 9 VAC 20-60-270.B.5.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision to initiate a legal appeal by filing a notice of appeal with:

David K. Paylor, Director
Department of Environmental Quality
629 East Main Street
P.O. Box 1105
Richmond, VA 23218

In the event that this decision is served to you by mail, the date of service will be calculated as three days after the postmark date. Please refer to Part 2A of the Rules of the Supreme Court of Virginia, which describes the required content of the Notice of Appeal, including specifications

of the Circuit Court to which the appeal is taken, and additional requirements concerning appeals from decisions of administrative agencies.

This above Class 1 permit modification under 40 CFR § 270.42(a)(1) requires the Permittee to send a notice of the modification to all persons on the facility mailing list (attached) within 90 days after the change is put into effect. In addition, RAAP must provide documentation to this Office regarding compliance with the public notice requirement. Please submit evidence of this mailing (return receipts, copy of the notification letter) when it is available.

If you should have any questions regarding these matters, please contact Russell McAvoy, Jr., PE, Environmental Engineer Senior, at (804) 698-4194 or by e-mail at russell.mcavoy@deq.virginia.gov.

Sincerely,

Leslie A. Romanchik

Leslie A. Romanchik
Hazardous Waste Program Manager
Office of Waste Permitting and Compliance

Enclosures: Facility Mailing List, Modified Permit Pages

cc: Andrea Barbieri – EPA, Region III (3LC50) e/enclosures
Jutta Schneider – DEQ, CO
Kurt Kochan – DEQ, CO
Aziz Farahmand – DEQ, BRRO
Elizabeth Lohman – DEQ, BRRO
Julia King–Collins – DEQ, CO
Central Hazardous Waste Files

**APPENDIX C**
**LABORATORY ANALYTICAL RESULTS – YEAR 2014**
**(CD-ROM)**

CompuChem
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4/30/2014

Abridged Data Package.

Full Deliverable Available

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP APPIX 2014 UNIT 5

WorkOrder: 1404151

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404151

**Project:** RAAP APPIX 2014 UNIT 5 **Sdg:** 1404151

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404151-01 | 5W7B | Water | 04/21/2014 12:30 | 04/23/2014 09:47 |
| 1404151-02 | 5W5B | Water | 04/21/2014 11:35 | 04/23/2014 09:47 |
| 1404151-03 | 5WC21 | Water | 04/21/2014 13:40 | 04/23/2014 09:47 |
| 1404151-04 | 5WDUP | Water | 04/21/2014 13:55 | 04/23/2014 09:47 |
| 1404151-05 | 5WC22 | Water | 04/21/2014 14:50 | 04/23/2014 09:47 |
| 1404151-06 | 5WC23 | Water | 04/22/2014 09:30 | 04/23/2014 09:47 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2014 UNIT 5

**Laboratory:** COMPUCHEM

**SDG:** 1404151

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 5W7B | EPA 7470A | 1404151-01 |
| 5W7B | EPA 6020A | 1404151-01 |
| 5W5B | EPA 7470A | 1404151-02 |
| 5W5B | EPA 6020A | 1404151-02 |
| 5WC21 | EPA 7470A | 1404151-03 |
| 5WC21 | EPA 6020A | 1404151-03 |
| 5WDUP | EPA 7470A | 1404151-04 |
| 5WDUP | EPA 6020A | 1404151-04 |
| 5WC22 | EPA 7470A | 1404151-05 |
| 5WC22 | EPA 6020A | 1404151-05 |
| 5WC23 | EPA 7470A | 1404151-06 |
| 5WC23 | EPA 6020A | 1404151-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 04/29/2014

Title: Senior Chemist

Environmental Testing Laboratories

CompuChem

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Liberty Analytical Corp.

**CompuChem**
**a Division of Liberty Analytical Corp.**
501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1404151
# Client: DRAPER
# Project: RAAP APPIX 2014 UNIT 5

The indicated Sample Delivery Group (SDG) consisting of six (6) water samples was received into the laboratory information management system (LIMS) on April 23, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 0.8 to 0.9 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6020A/7470A methodology for the requested metals and mercury.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Barium for sample 5W7B

$$\frac{32.67848\ \mu g/L\ (C) \times 0.05\ L\ (F)}{0.05\ L\ (I)} = 32.678\ \mu g/L \text{ reported as } 32.7\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

The ICP/MS sample matrix spike, CCN = 4042405-MS1 (5W7BS) was found to be inside control limits.

The mercury sample matrix spike, CCN = 4042404-MS1 (5W7BS) was found to be inside control limits.

The ICP/MS sample matrix duplicate spike, CCN = 4042405-MSD1 (5W7BSD) was found to be inside control limits.

The mercury sample matrix duplicate spike, CCN = 4042404-MSD1 (5W7BSD) was found to be inside control limits.

The ICP/MS sample duplicate, CCN = 4042405-DUP1 (5W7BD) was found to be inside control limits.

The mercury sample duplicate, CCN = 4042404-DUP1 (5W7BD) was found to be inside control limits.

A five-fold serial dilution of sample, CCN = SDI1404151-01 (5W7BL) was performed in accordance with SW-846 requirements for ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP/MS sample post digestion spike, CCN =4042405-PS1 (5W7BA) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
April 29, 2014

# CHAIN OF CUSTODY RECORD

Laboratory: CompuChem Environmental, 501 Madison Avenue, Cary NC 27513/Cathy Dover, Manager/1-800-833-5097

OK JVE 4/14/2014

| | | | |
|---|---|---|---|
| **Client:** Draper Aden Associates<br>**Attn:** 0<br>**Address:** 0<br>0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU5<br>2nd Quarter 2014 Groundwater Corrective Action Monitoring Event<br>**Event:**<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>WPS: 12-237-301-01-9313-7248<br>**Carrier:**<br>**Tracking Number:** 12-237-301-01-9311-2431 |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER
Preserved and shipped on Ice: YES

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 4 - Sample Type | | | | | G | G | G | | | | | | | |
| Box 3 - Filtered/Unfiltered | | | | | U | U | U | | | | | | | |
| Required pH of Sample | | | | | <2 | <2 | | | | | | | | |
| Box 2 - Preservative | | | | | B | B | H | | | | | | | |
| Box 5 - Sample Container Type | | | | | 1-500ml P | 1-500ml P | 2-1L A | | | | | | | |
| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | (Metals-Total) 6020A(3005A)/ 7470A | Cobalt only-Total 6020A/3005A | 8270D/3510C (Semivolatiles) | metals pH | | | ORG + 6020A/7470A | | | |
| 5W8B | 4/21 | 1040 | GW | 1 | | X | | <2 | | | ~~1404151-04~~ | | Co only | 1404152-01 upgradient monitoring well |
| 5W5B | 4/21 | 1135 | GW | 3 | X | | X | <2 | | | 1404151-02 | | | |
| 5W6 | | | GW | | | | | | | | | | | USE FOR QC |
| 5WC21 | 4/21 | 1340 | GW | 3 | X | | X | <2 | | | | -03 | | |
| 5WDUP | 4/21 | 1355 | GW | 3 | X | | X | <2 | | | | -04 | | |
| 5WC22 | 4/21 | 1450 | GW | 3 | X | | X | <2 | | | | -05 | | |
| 5WC23 | 4/22 | 0930 | GW | 3 | X | | X | <2 | | | ✓ | -06 | | |
| 5W12A | 4/22 | 1025 | GW | 1 | | X | | <2 | | | | | | 1404152-02 plume well |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

**GENERAL NOTES:**
1. Report results with 'J' or 'B' flag, (report estimated results).
2. ERIS required. VELAP Accreditation required
3. Project specific MDL/QLs attached.

JVE 4/14/2014

Clients Special Instructions: level 4 with edd. 0.8°C, 0.9°C

Received by lab in Good Condition ✓ Yes ___ No Custody Seal Intact ✓ Yes ___ No Temperature upon arrival ✓ Received on Ice ✓ Yes ___ No
Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/21/14 | #1 Relinquished by (Signature): | Date: 4/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/21/14 | #1 Received by (Signature): | Date: 4/23/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: CompuChem | Time: 0947 | Company Name: | Time: | |

1/3
JVE 4/14/14

# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 5

SDG: 1404151

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 5W7B | 04/21/14 | 04/23/14 | 04/24/14 | 04/27/14 | 6.1 | 180 | |
| 5W5B | 04/21/14 | 04/23/14 | 04/24/14 | 04/27/14 | 6.2 | 180 | |
| 5WC21 | 04/21/14 | 04/23/14 | 04/24/14 | 04/27/14 | 6.1 | 180 | |
| 5WDUP | 04/21/14 | 04/23/14 | 04/24/14 | 04/27/14 | 6.1 | 180 | |
| 5WC22 | 04/21/14 | 04/23/14 | 04/24/14 | 04/27/14 | 6.0 | 180 | |
| 5WC23 | 04/22/14 | 04/23/14 | 04/24/14 | 04/27/14 | 5.3 | 180 | |

# HOLDING TIME SUMMARY

*EPA 7470A*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 5

SDG: 1404151

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 5W7B | 04/21/14 | 04/23/14 | 04/24/14 | 04/25/14 | 3.9 | 28 | |
| 5W5B | 04/21/14 | 04/23/14 | 04/24/14 | 04/25/14 | 4.0 | 28 | |
| 5WC21 | 04/21/14 | 04/23/14 | 04/24/14 | 04/25/14 | 3.9 | 28 | |
| 5WDUP | 04/21/14 | 04/23/14 | 04/24/14 | 04/25/14 | 3.9 | 28 | |
| 5WC22 | 04/21/14 | 04/23/14 | 04/24/14 | 04/25/14 | 3.9 | 28 | |
| 5WC23 | 04/22/14 | 04/23/14 | 04/24/14 | 04/25/14 | 3.1 | 28 | |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404151

**Client:** DRAPER **Project:** RAAP APPIX 2014 UNIT 5

**Matrix:** Water **Instrument:** PEMS

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Antimony | 0.4 | 2.00 | ug/L | EPA 6020A |
| Arsenic | 2 | 10.0 | ug/L | EPA 6020A |
| Barium | 1 | 10.0 | ug/L | EPA 6020A |
| Beryllium | 0.2 | 1.00 | ug/L | EPA 6020A |
| Cadmium | 0.2 | 1.00 | ug/L | EPA 6020A |
| Chromium | 1 | 5.00 | ug/L | EPA 6020A |
| Cobalt | 1 | 5.00 | ug/L | EPA 6020A |
| Copper | 1 | 5.00 | ug/L | EPA 6020A |
| Lead | 0.2 | 1.00 | ug/L | EPA 6020A |
| Nickel | 2 | 10.0 | ug/L | EPA 6020A |
| Selenium | 3 | 10.0 | ug/L | EPA 6020A |
| Silver | 0.2 | 2.00 | ug/L | EPA 6020A |
| Thallium | 0.2 | 1.00 | ug/L | EPA 6020A |
| Vanadium | 1 | 10.0 | ug/L | EPA 6020A |
| Zinc | 3 | 10.0 | ug/L | EPA 6020A |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404151

**Client:** DRAPER **Project:** RAAP APPIX 2014 UNIT 5

**Matrix:** Water **Instrument:** V4

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Mercury | 0.2 | 2.00 | ug/L | EPA 7470A |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042404-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042404

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Mercury | 4.000 | 3.73 | 93 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042405-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042405

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Antimony | 220.0 | 204 | 92.7 | | 80 - 120 |
| Arsenic | 220.0 | 215 | 97.6 | | 80 - 120 |
| Barium | 110.0 | 105 | 95.2 | | 80 - 120 |
| Beryllium | 110.0 | 107 | 97.5 | | 80 - 120 |
| Cadmium | 110.0 | 102 | 92.6 | | 80 - 120 |
| Chromium | 110.0 | 106 | 96.2 | | 80 - 120 |
| Cobalt | 110.0 | 107 | 97.5 | | 80 - 120 |
| Copper | 110.0 | 111 | 101 | | 80 - 120 |
| Lead | 220.0 | 222 | 101 | | 80 - 120 |
| Nickel | 110.0 | 109 | 99.0 | | 80 - 120 |
| Selenium | 220.0 | 213 | 96.8 | | 80 - 120 |
| Silver | 110.0 | 102 | 92.6 | | 80 - 120 |
| Thallium | 220.0 | 225 | 102 | | 80 - 120 |
| Vanadium | 110.0 | 105 | 95.3 | | 80 - 120 |
| Zinc | 220.0 | 216 | 98.1 | | 80 - 120 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 7470A*

**5W7BS**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042404-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Mercury | 1.000 | 2.00 U | 0.881 | 88 | | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 7470A*

**5W7BSD**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042404-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Mercury | 1.000 | 0.854 | 85 | 3 | | 20 | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**5W7BS**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042405-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Antimony | 220.0 | 2.00 U | 192 | 87.5 | | 75 - 125 |
| Arsenic | 220.0 | 10.0 U | 192 | 87.2 | | 75 - 125 |
| Barium | 110.0 | 32.7 | 131 | 89.0 | | 75 - 125 |
| Beryllium | 110.0 | 1.00 U | 97.9 | 89.0 | | 75 - 125 |
| Cadmium | 110.0 | 1.00 U | 95.3 | 86.6 | | 75 - 125 |
| Chromium | 110.0 | 5.00 U | 98.9 | 89.9 | | 75 - 125 |
| Cobalt | 110.0 | 2.23 J | 101 | 89.9 | | 75 - 125 |
| Copper | 110.0 | 1.33 J | 104 | 93.0 | | 75 - 125 |
| Lead | 220.0 | 0.630 J | 211 | 95.6 | | 75 - 125 |
| Nickel | 110.0 | 10.0 U | 101 | 91.5 | | 75 - 125 |
| Selenium | 220.0 | 10.0 U | 191 | 86.8 | | 75 - 125 |
| Silver | 110.0 | 2.00 U | 96.9 | 88.1 | | 75 - 125 |
| Thallium | 220.0 | 1.00 U | 212 | 96.5 | | 75 - 125 |
| Vanadium | 110.0 | 10.0 U | 99.6 | 90.6 | | 75 - 125 |
| Zinc | 220.0 | 5.37 J | 210 | 93.2 | | 75 - 125 |

Environmental Testing Laboratories

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**5W7BSD**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042405-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Antimony | 220.0 | 194 | 88.2 | 0.870 | | 20 | 75 - 125 |
| Arsenic | 220.0 | 191 | 86.7 | 0.603 | | 20 | 75 - 125 |
| Barium | 110.0 | 130 | 88.7 | 0.299 | | 20 | 75 - 125 |
| Beryllium | 110.0 | 99.7 | 90.6 | 1.82 | | 20 | 75 - 125 |
| Cadmium | 110.0 | 95.5 | 86.9 | 0.274 | | 20 | 75 - 125 |
| Chromium | 110.0 | 98.4 | 89.4 | 0.547 | | 20 | 75 - 125 |
| Cobalt | 110.0 | 102 | 90.6 | 0.793 | | 20 | 75 - 125 |
| Copper | 110.0 | 103 | 92.9 | 0.129 | | 20 | 75 - 125 |
| Lead | 220.0 | 216 | 97.8 | 2.24 | | 20 | 75 - 125 |
| Nickel | 110.0 | 104 | 94.5 | 3.20 | | 20 | 75 - 125 |
| Selenium | 220.0 | 190 | 86.5 | 0.420 | | 20 | 75 - 125 |
| Silver | 110.0 | 97.5 | 88.6 | 0.612 | | 20 | 75 - 125 |
| Thallium | 220.0 | 222 | 101 | 4.25 | | 20 | 75 - 125 |
| Vanadium | 110.0 | 99.3 | 90.3 | 0.341 | | 20 | 75 - 125 |
| Zinc | 220.0 | 198 | 87.4 | 6.36 | | 20 | 75 - 125 |

Environmental Testing Laboratories

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# SERIAL DILUTION

*EPA 6020A*

**5W7BL**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4D27002-SRD6 Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

Sequence: 4D27002 Dilution: 5 Report to MDL: YES

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Antimony | 2.00 U | 10.00 U | 2.00 | | | EPA 6020A | 10 |
| Arsenic | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Barium | 32.68 | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Beryllium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Cadmium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Chromium | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Cobalt | 2.23 J | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Copper | 1.33 J | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Lead | 0.63 J | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Nickel | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Selenium | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Silver | 2.00 U | 10.00 U | 2.00 | | | EPA 6020A | 10 |
| Thallium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Vanadium | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Zinc | 5.37 J | 50.00 U | 10.0 | | | EPA 6020A | 10 |

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# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**5W7BA**

Laboratory: COMPUCHEM
Client: DRAPER
Matrix: Water

SDG: 1404151
Project: RAAP APPIX 2014 UNIT 5
Laboratory ID: 4042405-PS1
Lab Source ID: 1404151-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Antimony | 18.0 | U | 20.00 | 89.9 | 75 - 125 |
| Arsenic | 9.33 | U | 10.00 | 92.9 | 75 - 125 |
| Barium | 123 | 32.7 | 100.0 | 90.5 | 75 - 125 |
| Beryllium | 9.41 | U | 10.00 | 92.8 | 75 - 125 |
| Cadmium | 9.01 | U | 10.00 | 89.6 | 75 - 125 |
| Chromium | 19.7 | U | 20.00 | 95.1 | 75 - 125 |
| Cobalt | 11.9 | 2.23 J | 10.00 | 96.5 | 75 - 125 |
| Copper | 20.9 | 1.33 J | 20.00 | 97.8 | 75 - 125 |
| Lead | 10.4 | 0.630 J | 10.00 | 98.0 | 75 - 125 |
| Nickel | 11.7 | U | 10.00 | 101 | 75 - 125 |
| Selenium | 44.9 | U | 50.00 | 89.6 | 75 - 125 |
| Silver | 9.23 | U | 10.00 | 92.4 | 75 - 125 |
| Thallium | 10.0 | U | 10.00 | 99.7 | 75 - 125 |
| Vanadium | 47.5 | U | 50.00 | 95.0 | 75 - 125 |
| Zinc | 23.3 | 5.37 J | 20.00 | 89.8 | 75 - 125 |

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# DUPLICATES

*EPA 7470A*

**5W7BD**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042404-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Mercury | 20 | *2.00 U* | 2.00 U | | | EPA 7470A |

# DUPLICATES

*EPA 6020A*

**5W7BD**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042405-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Antimony | 20 | *2.00 U* | 2.00 U | | | EPA 6020A |
| Arsenic | 20 | *10.0 U* | 10.0 U | | | EPA 6020A |
| Barium | 20 | *32.7* | 30.7 | 6.10 | | EPA 6020A |
| Beryllium | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Cadmium | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Chromium | 20 | *5.00 U* | 5.00 U | | | EPA 6020A |
| Cobalt | 20 | *2.23 J* | 2.13 J | 4.83 | | EPA 6020A |
| Copper | 20 | *1.33 J* | 1.23 J | 7.48 | | EPA 6020A |
| Lead | 20 | *0.630 J* | 0.611 J | 3.07 | | EPA 6020A |
| Nickel | 20 | *10.0 U* | 10.0 U | | | EPA 6020A |
| Selenium | 20 | *10.0 U* | 10.0 U | | | EPA 6020A |
| Silver | 20 | *2.00 U* | 2.00 U | | | EPA 6020A |
| Thallium | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Vanadium | 20 | *10.0 U* | 10.0 U | | | EPA 6020A |
| Zinc | 20 | *5.37 J* | 5.24 J | 2.38 | | EPA 6020A |

# PREPARATION BATCH SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Batch: 4042404 Matrix: Water Preparation: EPA 7470A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 5W7B | 1404151-01 | 04/24/14 09:45 | 100 | 100 |
| 5W5B | 1404151-02 | 04/24/14 09:45 | 100 | 100 |
| 5WC21 | 1404151-03 | 04/24/14 09:45 | 100 | 100 |
| 5WDUP | 1404151-04 | 04/24/14 09:45 | 100 | 100 |
| 5WC22 | 1404151-05 | 04/24/14 09:45 | 100 | 100 |
| 5WC23 | 1404151-06 | 04/24/14 09:45 | 100 | 100 |
| PBW01 | 4042404-BLK1 | 04/24/14 09:45 | 100 | 100 |
| MLCS01 | 4042404-BS1 | 04/24/14 09:45 | 100 | 100 |
| 5W7BD | 4042404-DUP1 | 04/24/14 09:45 | 100 | 100 |
| 5W7BS | 4042404-MS1 | 04/24/14 09:45 | 100 | 100 |
| 5W7BSD | 4042404-MSD1 | 04/24/14 09:45 | 100 | 100 |

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# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Batch: 4042405 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 5W7B | 1404151-01 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W5B | 1404151-02 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5WC21 | 1404151-03 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5WDUP | 1404151-04 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5WC22 | 1404151-05 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5WC23 | 1404151-06 | 04/24/14 09:40 | 50.0 | 50.0 |
| PBW01 | 4042405-BLK1 | 04/24/14 09:40 | 50.0 | 50.0 |
| MLCS01 | 4042405-BS1 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W7BD | 4042405-DUP1 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W7BS | 4042405-MS1 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W7BSD | 4042405-MSD1 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W7BA | 4042405-PS1 | 04/24/14 09:40 | 50.0 | 50.0 |

# ANALYSIS SEQUENCE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D25007 Calibration: 4042703 Instrument: V4

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| S0 | 4D25007-CAL1 | 4D25007_P-001 | 04/25/14 10:12:22 |
| 0.2 | 4D25007-CAL2 | 4D25007_P-002 | 04/25/14 10:15:18 |
| S0.5 | 4D25007-CAL3 | 4D25007_P-003 | 04/25/14 10:18:22 |
| S1.0 | 4D25007-CAL4 | 4D25007_P-004 | 04/25/14 10:21:28 |
| S5.0 | 4D25007-CAL5 | 4D25007_P-005 | 04/25/14 10:24:33 |
| S10.0 | 4D25007-CAL6 | 4D25007_P-006 | 04/25/14 10:27:33 |
| ICV | 4D25007-ICV1 | 4D25007_P-007 | 04/25/14 10:30:39 |
| ICB | 4D25007-ICB1 | 4D25007_P-008 | 04/25/14 10:33:35 |
| CCV | 4D25007-CCV1 | 4D25007_P-010 | 04/25/14 10:39:32 |
| CCB | 4D25007-CCB1 | 4D25007_P-011 | 04/25/14 10:42:40 |
| PBW01 | 4042404-BLK1 | 4D25007_P-012 | 04/25/14 10:45:34 |
| MLCS01 | 4042404-BS1 | 4D25007_P-013 | 04/25/14 10:48:27 |
| 5W7B | 1404151-01 | 4D25007_P-014 | 04/25/14 10:51:23 |
| 5W7BD | 4042404-DUP1 | 4D25007_P-015 | 04/25/14 10:54:16 |
| 5W7BS | 4042404-MS1 | 4D25007_P-016 | 04/25/14 10:57:12 |
| 5W7BSD | 4042404-MSD1 | 4D25007_P-017 | 04/25/14 11:00:07 |
| 5W5B | 1404151-02 | 4D25007_P-018 | 04/25/14 11:03:30 |
| CCV | 4D25007-CCV2 | 4D25007_P-019 | 04/25/14 11:06:38 |
| CCB | 4D25007-CCB2 | 4D25007_P-020 | 04/25/14 11:09:33 |
| 5WC21 | 1404151-03 | 4D25007_P-021 | 04/25/14 11:12:30 |
| 5WDUP | 1404151-04 | 4D25007_P-022 | 04/25/14 11:15:54 |
| 5WC22 | 1404151-05 | 4D25007_P-023 | 04/25/14 11:18:51 |
| 5WC23 | 1404151-06 | 4D25007_P-024 | 04/25/14 11:21:56 |
| CCV | 4D25007-CCV3 | 4D25007_P-025 | 04/25/14 11:24:50 |
| CCB | 4D25007-CCB3 | 4D25007_P-026 | 04/25/14 11:27:53 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Calibration: 4042802 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUNE | 4D27002-TUN1 | 4D27002_P-001 | 04/27/14 12:08:24 |
| S0 | 4D27002-CAL1 | 4D27002_P-002 | 04/27/14 12:41:33 |
| S 6020-MS1 | 4D27002-CAL2 | 4D27002_P-003 | 04/27/14 12:43:18 |
| S 6020-MS2 | 4D27002-CAL3 | 4D27002_P-004 | 04/27/14 12:45:03 |
| S 6020-MS3 | 4D27002-CAL4 | 4D27002_P-005 | 04/27/14 12:46:47 |
| S 6020-MS4 | 4D27002-CAL5 | 4D27002_P-006 | 04/27/14 12:48:31 |
| S 6020-MS5 | 4D27002-CAL6 | 4D27002_P-007 | 04/27/14 12:50:16 |
| LLICV | 4D27002-CRL1 | 4D27002_P-008 | 04/27/14 12:53:42 |
| ICV | 4D27002-ICV1 | 4D27002_P-009 | 04/27/14 12:55:28 |
| ICB | 4D27002-ICB1 | 4D27002_P-010 | 04/27/14 12:57:13 |
| ICSA | 4D27002-IFA1 | 4D27002_P-011 | 04/27/14 12:58:58 |
| ICSAB | 4D27002-IFB1 | 4D27002_P-012 | 04/27/14 13:00:43 |
| LLICV | 4D27002-CRL2 | 4D27002_P-013 | 04/27/14 13:02:28 |
| CCV | 4D27002-CCV1 | 4D27002_P-014 | 04/27/14 13:04:14 |
| CCB | 4D27002-CCB1 | 4D27002_P-015 | 04/27/14 13:05:58 |
| CCV | 4D27002-CCV2 | 4D27002_P-026 | 04/27/14 13:45:40 |
| CCB | 4D27002-CCB2 | 4D27002_P-027 | 04/27/14 13:47:25 |
| LLCCV | 4D27002-CRL3 | 4D27002_P-037 | 04/27/14 14:04:53 |
| CCV | 4D27002-CCV3 | 4D27002_P-038 | 04/27/14 14:06:39 |
| CCB | 4D27002-CCB3 | 4D27002_P-039 | 04/27/14 14:08:24 |
| CCV | 4D27002-CCV4 | 4D27002_P-050 | 04/27/14 14:34:45 |
| CCB | 4D27002-CCB4 | 4D27002_P-051 | 04/27/14 14:36:29 |
| LLCCV | 4D27002-CRL4 | 4D27002_P-061 | 04/27/14 14:53:56 |
| CCV | 4D27002-CCV5 | 4D27002_P-062 | 04/27/14 14:55:42 |
| CCB | 4D27002-CCB5 | 4D27002_P-063 | 04/27/14 14:57:27 |
| LLCCV | 4D27002-CRL5 | 4D27002_P-069 | 04/27/14 15:08:06 |
| CCV | 4D27002-CCV6 | 4D27002_P-070 | 04/27/14 15:09:52 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Calibration: 4042802 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| CCB | 4D27002-CCB6 | 4D27002_P-071 | 04/27/14 15:11:36 |
| LLCCV | 4D27002-CRL6 | 4D27002_P-074 | 04/27/14 15:24:06 |
| CCV | 4D27002-CCV7 | 4D27002_P-075 | 04/27/14 15:25:52 |
| CCB | 4D27002-CCB7 | 4D27002_P-076 | 04/27/14 15:27:36 |
| PBW01 | 4042405-BLK1 | 4D27002_P-077 | 04/27/14 15:32:16 |
| MLCS01 | 4042405-BS1 | 4D27002_P-078 | 04/27/14 15:34:00 |
| 5W7B | 1404151-01 | 4D27002_P-079 | 04/27/14 15:35:45 |
| 5W7BD | 4042405-DUP1 | 4D27002_P-080 | 04/27/14 15:37:29 |
| 5W7BS | 4042405-MS1 | 4D27002_P-081 | 04/27/14 15:39:14 |
| 5W7BSD | 4042405-MSD1 | 4D27002_P-082 | 04/27/14 15:40:58 |
| 5W7BL | 4D27002-SRD6 | 4D27002_P-083 | 04/27/14 15:42:43 |
| 5W7BA | 4042405-PS1 | 4D27002_P-084 | 04/27/14 15:44:27 |
| 5W5B | 1404151-02 | 4D27002_P-085 | 04/27/14 15:46:12 |
| 5WC21 | 1404151-03 | 4D27002_P-086 | 04/27/14 15:47:56 |
| CCV | 4D27002-CCV8 | 4D27002_P-087 | 04/27/14 15:49:43 |
| CCB | 4D27002-CCB8 | 4D27002_P-088 | 04/27/14 15:51:27 |
| 5WDUP | 1404151-04 | 4D27002_P-089 | 04/27/14 15:53:13 |
| 5WC22 | 1404151-05 | 4D27002_P-090 | 04/27/14 15:54:58 |
| 5WC23 | 1404151-06 | 4D27002_P-091 | 04/27/14 15:56:42 |
| LLCCV | 4D27002-CRL7 | 4D27002_P-098 | 04/27/14 16:08:55 |
| CCV | 4D27002-CCV9 | 4D27002_P-099 | 04/27/14 16:10:41 |
| CCB | 4D27002-CCB9 | 4D27002_P-100 | 04/27/14 16:12:25 |

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# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**5W7B**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 1404151-01 % Solid: Matrix: Water Sampled: 04/21/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-39-3 | Barium | 32.7 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-48-4 | Cobalt | 2.23 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-50-8 | Copper | 1.33 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7439-92-1 | Lead | 0.630 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D25007 | 4/25/14 10:51 |
| 7440-02-0 | Nickel | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7782-49-2 | Selenium | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-22-4 | Silver | | 0.200 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:35 |
| 7440-66-6 | Zinc | 5.37 | 3.00 | 10.0 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:35 |

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# ANALYSIS DATA SHEET

**5W5B**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 1404151-02 % Solid: Matrix: Water Sampled: 04/21/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-39-3 | Barium | 27.0 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-48-4 | Cobalt | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-50-8 | Copper | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D25007 | 4/25/14 11:03 |
| 7440-02-0 | Nickel | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7782-49-2 | Selenium | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-22-4 | Silver | | 0.200 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |
| 7440-66-6 | Zinc | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:46 |

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# ANALYSIS DATA SHEET

**5WC21**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 1404151-03 % Solid: Matrix: Water Sampled: 04/21/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-39-3 | Barium | 12.7 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-41-7 | Beryllium | 0.997 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-43-9 | Cadmium | 0.514 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-47-3 | Chromium | 4.74 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-48-4 | Cobalt | 62.3 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-50-8 | Copper | 3.77 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7439-92-1 | Lead | 0.279 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D25007 | 4/25/14 11:12 |
| 7440-02-0 | Nickel | 30.9 | 2.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7782-49-2 | Selenium | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-22-4 | Silver | | 0.200 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-62-2 | Vanadium | 1.89 | 1.00 | 10.0 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:47 |
| 7440-66-6 | Zinc | 36.6 | 3.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:47 |

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# ANALYSIS DATA SHEET

**5WDUP**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 1404151-04 % Solid: Matrix: Water Sampled: 04/21/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-39-3 | Barium | 13.3 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-41-7 | Beryllium | 0.909 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-43-9 | Cadmium | 0.477 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-47-3 | Chromium | 5.07 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-48-4 | Cobalt | 59.5 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-50-8 | Copper | 3.77 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7439-92-1 | Lead | 0.333 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D25007 | 4/25/14 11:15 |
| 7440-02-0 | Nickel | 30.4 | 2.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7782-49-2 | Selenium | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-22-4 | Silver | | 0.200 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-62-2 | Vanadium | 2.31 | 1.00 | 10.0 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:53 |
| 7440-66-6 | Zinc | 25.7 | 3.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:53 |

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# ANALYSIS DATA SHEET

**5WC22**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 1404151-05 % Solid: Matrix: Water Sampled: 04/21/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-39-3 | Barium | 31.6 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-43-9 | Cadmium | 0.289 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-48-4 | Cobalt | 13.9 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-50-8 | Copper | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D25007 | 4/25/14 11:18 |
| 7440-02-0 | Nickel | 7.71 | 2.00 | 10.0 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7782-49-2 | Selenium | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-22-4 | Silver | | 0.200 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |
| 7440-66-6 | Zinc | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:54 |

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# ANALYSIS DATA SHEET

**5WC23**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 1404151-06 % Solid: Matrix: Water Sampled: 04/22/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-39-3 | Barium | 24.0 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-48-4 | Cobalt | 2.97 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-50-8 | Copper | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D25007 | 4/25/14 11:21 |
| 7440-02-0 | Nickel | 5.65 | 2.00 | 10.0 | 1 | J | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7782-49-2 | Selenium | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-22-4 | Silver | | 0.200 | 2.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |
| 7440-66-6 | Zinc | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:56 |

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# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4D27002-CRL1 | Antimony | 2.000 | 2.08 | 104 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Arsenic | 1.000 | 1.24 | 124 | ug/L | U | 70 - 130 |
| LLICV | 4D27002-CRL1 | Barium | 10.00 | 9.80 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL1 | Beryllium | 1.000 | 0.948 | 95 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL1 | Cadmium | 1.000 | 1.07 | 107 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Chromium | 2.000 | 2.04 | 102 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Cobalt | 1.000 | 1.15 | 115 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Copper | 2.000 | 2.20 | 110 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Lead | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Nickel | 1.000 | 1.23 | 123 | ug/L | U | 70 - 130 |
| LLICV | 4D27002-CRL1 | Selenium | 5.000 | 5.04 | 101 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Silver | 1.000 | 1.04 | 104 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Thallium | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL1 | Vanadium | 5.000 | 4.87 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL1 | Zinc | 2.000 | 2.22 | 111 | ug/L | U | 70 - 130 |
| LLICV | 4D27002-CRL2 | Antimony | 2.000 | 1.93 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Arsenic | 1.000 | 1.03 | 103 | ug/L | U | 70 - 130 |
| LLICV | 4D27002-CRL2 | Barium | 10.00 | 9.70 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Beryllium | 1.000 | 0.920 | 92 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Cadmium | 1.000 | 0.944 | 94 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Chromium | 2.000 | 1.97 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Cobalt | 1.000 | 0.998 | 100 | ug/L | U | 70 - 130 |
| LLICV | 4D27002-CRL2 | Copper | 2.000 | 2.13 | 106 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL2 | Lead | 1.000 | 0.958 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Nickel | 1.000 | 0.987 | 99 | ug/L | U | 70 - 130 |
| LLICV | 4D27002-CRL2 | Selenium | 5.000 | 4.98 | 100 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Silver | 1.000 | 0.952 | 95 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Thallium | 1.000 | 0.981 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Vanadium | 5.000 | 4.94 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4D27002-CRL2 | Zinc | 2.000 | 2.00 | 100 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Antimony | 2.000 | 1.90 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Arsenic | 1.000 | 1.07 | 107 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Barium | 10.00 | 9.60 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Beryllium | 1.000 | 0.907 | 91 | ug/L | J | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4D27002-CRL3 | Cadmium | 1.000 | 0.954 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Chromium | 2.000 | 1.98 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Cobalt | 1.000 | 0.999 | 100 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Copper | 2.000 | 2.10 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Lead | 1.000 | 0.983 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Nickel | 1.000 | 1.04 | 104 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Selenium | 5.000 | 4.96 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Silver | 1.000 | 0.956 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Thallium | 1.000 | 0.969 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Vanadium | 5.000 | 4.98 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Zinc | 2.000 | 1.99 | 100 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Antimony | 2.000 | 1.86 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Arsenic | 1.000 | 0.934 | 93 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Barium | 10.00 | 9.59 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Beryllium | 1.000 | 0.925 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Cadmium | 1.000 | 0.974 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Chromium | 2.000 | 1.83 | 92 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Cobalt | 1.000 | 0.983 | 98 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Copper | 2.000 | 2.05 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Lead | 1.000 | 0.962 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Nickel | 1.000 | 0.997 | 100 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Selenium | 5.000 | 4.73 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Silver | 1.000 | 0.933 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Thallium | 1.000 | 0.960 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Vanadium | 5.000 | 4.74 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Zinc | 2.000 | 1.93 | 97 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Antimony | 2.000 | 1.88 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Arsenic | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Barium | 10.00 | 9.58 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Beryllium | 1.000 | 0.969 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Cadmium | 1.000 | 0.930 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Chromium | 2.000 | 1.90 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Cobalt | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Copper | 2.000 | 2.09 | 104 | ug/L | | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4D27002-CRL5 | Lead | 1.000 | 0.971 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Nickel | 1.000 | 0.962 | 96 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Selenium | 5.000 | 4.90 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Silver | 1.000 | 0.973 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Thallium | 1.000 | 0.980 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Vanadium | 5.000 | 4.78 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Zinc | 2.000 | 2.08 | 104 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Antimony | 2.000 | 1.88 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Arsenic | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Barium | 10.00 | 9.41 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Beryllium | 1.000 | 0.928 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Cadmium | 1.000 | 0.910 | 91 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Chromium | 2.000 | 1.93 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Cobalt | 1.000 | 0.986 | 99 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Copper | 2.000 | 2.04 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Lead | 1.000 | 0.989 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Nickel | 1.000 | 1.01 | 101 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Selenium | 5.000 | 4.95 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Silver | 1.000 | 0.931 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Thallium | 1.000 | 0.962 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Vanadium | 5.000 | 4.83 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Zinc | 2.000 | 2.07 | 103 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Antimony | 2.000 | 1.87 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Arsenic | 1.000 | 0.977 | 98 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Barium | 10.00 | 9.50 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Beryllium | 1.000 | 0.869 | 87 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Cadmium | 1.000 | 0.966 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Chromium | 2.000 | 1.89 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Cobalt | 1.000 | 0.974 | 97 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Copper | 2.000 | 2.06 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Lead | 1.000 | 0.957 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Nickel | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Selenium | 5.000 | 4.71 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Silver | 1.000 | 0.932 | 93 | ug/L | J | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4D27002-CRL7 | Thallium | 1.000 | 0.975 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Vanadium | 5.000 | 4.84 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Zinc | 2.000 | 1.96 | 98 | ug/L | U | 70 - 130 |

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# INITIAL CALIBRATION DATA

*EPA 7470A*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Calibration: 4042703 Instrument: V4

Calibration Date: 4/25/2014 10:12:55

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Mercury | CAL1 | S0 | 357 | 0 |
| Mercury | CAL2 | 0.2 | 2237 | 0.2 |
| Mercury | CAL3 | S0.5 | 5679 | 0.5 |
| Mercury | CAL4 | S1.0 | 10769 | 1 |
| Mercury | CAL5 | S5.0 | 49501 | 5 |
| Mercury | CAL6 | S10.0 | 96388 | 10 |

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# INITIAL CALIBRATION DATA (Continued)

*EPA 7470A*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Calibration: 4042703 Instrument: V4

Calibration Date: 4/25/2014 10:12:55

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Mercury | 0.0001041 | -0.07874 | 0.9999 | 0.995 | |

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# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Calibration: 4042802 Instrument: PEMS

Calibration Date: 4/27/2014 12:08:27

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Antimony | CAL1 | S0 | 44.445 | 0 |
| Antimony | CAL2 | S 6020-MS1 | 12272.8 | 2 |
| Antimony | CAL3 | S 6020-MS2 | 23513.73 | 4 |
| Antimony | CAL4 | S 6020-MS3 | 742245.8 | 125 |
| Antimony | CAL5 | S 6020-MS4 | 1491378 | 250 |
| Antimony | CAL6 | S 6020-MS5 | 3041938 | 500 |
| Arsenic | CAL1 | S0 | -174.987 | 0 |
| Arsenic | CAL2 | S 6020-MS1 | 1556.339 | 1 |
| Arsenic | CAL3 | S 6020-MS2 | 3068.275 | 2 |
| Arsenic | CAL4 | S 6020-MS3 | 210168.7 | 125 |
| Arsenic | CAL5 | S 6020-MS4 | 429164.2 | 250 |
| Arsenic | CAL6 | S 6020-MS5 | 837306.2 | 500 |
| Barium | CAL1 | S0 | 28.889 | 0 |
| Barium | CAL2 | S 6020-MS1 | 29573.67 | 10 |
| Barium | CAL3 | S 6020-MS2 | 57580.87 | 20 |
| Barium | CAL4 | S 6020-MS3 | 361112.4 | 125 |
| Barium | CAL5 | S 6020-MS4 | 745613.8 | 250 |
| Barium | CAL6 | S 6020-MS5 | 1464870 | 500 |
| Beryllium | CAL1 | S0 | 1.667 | 0 |
| Beryllium | CAL2 | S 6020-MS1 | 395.008 | 1 |
| Beryllium | CAL3 | S 6020-MS2 | 808.366 | 2 |
| Beryllium | CAL4 | S 6020-MS3 | 51396.2 | 125 |
| Beryllium | CAL5 | S 6020-MS4 | 100961.6 | 250 |
| Beryllium | CAL6 | S 6020-MS5 | 198447.7 | 500 |
| Cadmium | CAL1 | S0 | 14.193 | 0 |

| | | | | |
|---|---|---|---|---|
| Cadmium | CAL2 | S 6020-MS1 | 2084.391 | 1 |
| Cadmium | CAL3 | S 6020-MS2 | 4004.976 | 2 |
| Cadmium | CAL4 | S 6020-MS3 | 251253.2 | 125 |
| Cadmium | CAL5 | S 6020-MS4 | 505347.8 | 250 |
| Cadmium | CAL6 | S 6020-MS5 | 999040.6 | 500 |
| Chromium | CAL1 | S0 | 7962.615 | 0 |
| Chromium | CAL2 | S 6020-MS1 | 27304.46 | 2 |
| Chromium | CAL3 | S 6020-MS2 | 45426.28 | 4 |
| Chromium | CAL4 | S 6020-MS3 | 1196354 | 125 |
| Chromium | CAL5 | S 6020-MS4 | 2390210 | 250 |
| Chromium | CAL6 | S 6020-MS5 | 4852797 | 500 |
| Cobalt | CAL1 | S0 | 37.222 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 12140.7 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 24350.72 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 1493061 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 3017168 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 6009591 | 500 |
| Copper | CAL1 | S0 | 92.593 | 0 |
| Copper | CAL2 | S 6020-MS1 | 12252.88 | 2 |
| Copper | CAL3 | S 6020-MS2 | 24026.05 | 4 |
| Copper | CAL4 | S 6020-MS3 | 744480.8 | 125 |
| Copper | CAL5 | S 6020-MS4 | 1484651 | 250 |
| Copper | CAL6 | S 6020-MS5 | 2925825 | 500 |
| Lead | CAL1 | S0 | 118.056 | 0 |
| Lead | CAL2 | S 6020-MS1 | 16897.19 | 1 |
| Lead | CAL3 | S 6020-MS2 | 33229.52 | 2 |
| Lead | CAL4 | S 6020-MS3 | 2025243 | 125 |
| Lead | CAL5 | S 6020-MS4 | 4102484 | 250 |
| Lead | CAL6 | S 6020-MS5 | 8217175 | 500 |
| Nickel | CAL1 | S0 | 28.704 | 0 |
| Nickel | CAL2 | S 6020-MS1 | 2586.446 | 1 |
| Nickel | CAL3 | S 6020-MS2 | 4979.945 | 2 |
| Nickel | CAL4 | S 6020-MS3 | 326418.2 | 125 |

| | | | | |
|---|---|---|---|---|
| Nickel | CAL5 | S 6020-MS4 | 655294.8 | 250 |
| Nickel | CAL6 | S 6020-MS5 | 1269148 | 500 |
| Selenium | CAL1 | S0 | 43.148 | 0 |
| Selenium | CAL2 | S 6020-MS1 | 919.857 | 5 |
| Selenium | CAL3 | S 6020-MS2 | 1713.48 | 10 |
| Selenium | CAL4 | S 6020-MS3 | 21547.46 | 125 |
| Selenium | CAL5 | S 6020-MS4 | 43659.73 | 250 |
| Selenium | CAL6 | S 6020-MS5 | 85483.15 | 500 |
| Silver | CAL1 | S0 | 226.855 | 0 |
| Silver | CAL2 | S 6020-MS1 | 9232.037 | 1 |
| Silver | CAL3 | S 6020-MS2 | 18386.33 | 2 |
| Silver | CAL4 | S 6020-MS3 | 1126267 | 125 |
| Silver | CAL5 | S 6020-MS4 | 2229005 | 250 |
| Silver | CAL6 | S 6020-MS5 | 4495544 | 500 |
| Thallium | CAL1 | S0 | 38.889 | 0 |
| Thallium | CAL2 | S 6020-MS1 | 18354.33 | 1 |
| Thallium | CAL3 | S 6020-MS2 | 35493.46 | 2 |
| Thallium | CAL4 | S 6020-MS3 | 2147045 | 125 |
| Thallium | CAL5 | S 6020-MS4 | 4408243 | 250 |
| Thallium | CAL6 | S 6020-MS5 | 8943235 | 500 |
| Vanadium | CAL1 | S0 | 2714.907 | 0 |
| Vanadium | CAL2 | S 6020-MS1 | 58570.19 | 5 |
| Vanadium | CAL3 | S 6020-MS2 | 110751.4 | 10 |
| Vanadium | CAL4 | S 6020-MS3 | 1335818 | 125 |
| Vanadium | CAL5 | S 6020-MS4 | 2700542 | 250 |
| Vanadium | CAL6 | S 6020-MS5 | 5557319 | 500 |
| Zinc | CAL1 | S0 | 83.334 | 0 |
| Zinc | CAL2 | S 6020-MS1 | 3437.628 | 2 |
| Zinc | CAL3 | S 6020-MS2 | 6292.722 | 4 |
| Zinc | CAL4 | S 6020-MS3 | 204409.5 | 125 |
| Zinc | CAL5 | S 6020-MS4 | 407352.5 | 250 |
| Zinc | CAL6 | S 6020-MS5 | 779733.7 | 500 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Calibration: 4042802 Instrument: PEMS

Calibration Date: 4/27/2014 12:08:27

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Antimony | 0.001930 | 0 | 0.9999 | 0.998 | |
| Arsenic | 0.001303 | 0 | 0.9999 | 0.998 | |
| Barium | 0.0009367 | 0 | 0.9999 | 0.998 | |
| Beryllium | 0.0009972 | 0 | 0.9999 | 0.998 | |
| Cadmium | 0.0008245 | 0 | 0.9999 | 0.998 | |
| Chromium | 0.007471 | 0 | 0.9999 | 0.998 | |
| Cobalt | 0.009308 | 0 | 0.9999 | 0.998 | |
| Copper | 0.004547 | 0 | 0.9999 | 0.998 | |
| Lead | 0.01017 | 0 | 0.9999 | 0.998 | |
| Nickel | 0.001980 | 0 | 0.9999 | 0.998 | |
| Selenium | 0.0001329 | 0 | 0.9999 | 0.998 | |
| Silver | 0.003771 | 0 | 0.9998 | 0.998 | |
| Thallium | 0.01103 | 0 | 0.9998 | 0.998 | |
| Vanadium | 0.008537 | 0 | 0.9999 | 0.998 | |
| Zinc | 0.001220 | 0 | 0.9998 | 0.998 | |

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# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 7470A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D25007 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D25007-ICV1 | Mercury | 4.000 | 3.99 | 100 | ug/L | | +/-20 |
| CCV | 4D25007-CCV1 | Mercury | 5.000 | 5.03 | 101 | ug/L | | +/-20 |
| CCV | 4D25007-CCV2 | Mercury | 5.000 | 5.26 | 105 | ug/L | | +/-20 |
| CCV | 4D25007-CCV3 | Mercury | 5.000 | 5.24 | 105 | ug/L | | +/-20 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D27002-ICV1 | Antimony | 220.0 | 211 | 96 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Arsenic | 220.0 | 216 | 98 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Barium | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Beryllium | 110.0 | 107 | 98 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Cadmium | 110.0 | 106 | 96 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Chromium | 110.0 | 106 | 97 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Cobalt | 110.0 | 107 | 97 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Copper | 110.0 | 111 | 101 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Lead | 220.0 | 211 | 96 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Nickel | 110.0 | 110 | 100 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Selenium | 220.0 | 220 | 100 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Silver | 110.0 | 106 | 97 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Thallium | 220.0 | 213 | 97 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Vanadium | 110.0 | 107 | 97 | ug/L | | +/-10 |
| ICV | 4D27002-ICV1 | Zinc | 220.0 | 217 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Antimony | 300.0 | 272 | 91 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Arsenic | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Barium | 300.0 | 280 | 93 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Beryllium | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Cadmium | 300.0 | 282 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Chromium | 300.0 | 282 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Cobalt | 300.0 | 286 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Copper | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Lead | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Nickel | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Selenium | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Silver | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Thallium | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Vanadium | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Zinc | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Antimony | 300.0 | 274 | 91 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Arsenic | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Barium | 300.0 | 278 | 93 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Beryllium | 300.0 | 281 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Cadmium | 300.0 | 277 | 92 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Chromium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Cobalt | 300.0 | 294 | 98 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4D27002-CCV2 | Copper | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Lead | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Nickel | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Selenium | 300.0 | 286 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Silver | 300.0 | 282 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Thallium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Zinc | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Antimony | 300.0 | 270 | 90 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Arsenic | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Barium | 300.0 | 276 | 92 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Beryllium | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Cadmium | 300.0 | 275 | 92 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Chromium | 300.0 | 289 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Cobalt | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Copper | 300.0 | 282 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Lead | 300.0 | 292 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Nickel | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Selenium | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Silver | 300.0 | 282 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Thallium | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Vanadium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Zinc | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Antimony | 300.0 | 283 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Arsenic | 300.0 | 289 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Barium | 300.0 | 281 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Beryllium | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Cadmium | 300.0 | 271 | 91 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Chromium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Cobalt | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Copper | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Lead | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Nickel | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Selenium | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Silver | 300.0 | 277 | 92 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Thallium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |

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# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4D27002-CCV4 | Zinc | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Antimony | 300.0 | 274 | 91 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Arsenic | 300.0 | 290 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Barium | 300.0 | 276 | 92 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Beryllium | 300.0 | 283 | 94 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Cadmium | 300.0 | 275 | 92 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Chromium | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Cobalt | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Copper | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Lead | 300.0 | 290 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Nickel | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Selenium | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Silver | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Thallium | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Vanadium | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Zinc | 300.0 | 292 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Antimony | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Arsenic | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Barium | 300.0 | 274 | 91 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Beryllium | 300.0 | 280 | 93 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Cadmium | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Chromium | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Cobalt | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Copper | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Lead | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Nickel | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Selenium | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Silver | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Thallium | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Vanadium | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Zinc | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Antimony | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Arsenic | 300.0 | 310 | 103 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Barium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Beryllium | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Cadmium | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Chromium | 300.0 | 313 | 104 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4D27002-CCV7 | Cobalt | 300.0 | 319 | 106 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Copper | 300.0 | 306 | 102 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Lead | 300.0 | 314 | 105 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Nickel | 300.0 | 309 | 103 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Selenium | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Silver | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Thallium | 300.0 | 320 | 107 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Vanadium | 300.0 | 317 | 106 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Zinc | 300.0 | 309 | 103 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Antimony | 300.0 | 289 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Arsenic | 300.0 | 312 | 104 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Barium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Beryllium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Cadmium | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Chromium | 300.0 | 317 | 106 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Cobalt | 300.0 | 320 | 107 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Copper | 300.0 | 311 | 104 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Lead | 300.0 | 310 | 103 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Nickel | 300.0 | 316 | 105 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Selenium | 300.0 | 311 | 104 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Silver | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Thallium | 300.0 | 320 | 107 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Vanadium | 300.0 | 323 | 108 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Zinc | 300.0 | 312 | 104 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Antimony | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Arsenic | 300.0 | 309 | 103 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Barium | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Beryllium | 300.0 | 290 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Cadmium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Chromium | 300.0 | 323 | 108 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Cobalt | 300.0 | 323 | 108 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Copper | 300.0 | 312 | 104 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Lead | 300.0 | 311 | 104 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Nickel | 300.0 | 314 | 105 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Selenium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Silver | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Thallium | 300.0 | 319 | 106 | ug/L | | +/-10 |

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# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4D27002-CCV9 | Vanadium | 300.0 | 323 | 108 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Zinc | 300.0 | 315 | 105 | ug/L | | +/-10 |

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# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4D27002-IFA1 | Antimony | | 0.03 | 4 | ug/L |
| ICSA | 4D27002-IFA1 | Arsenic | | 0.01 | 20 | ug/L |
| ICSA | 4D27002-IFA1 | Barium | | 0.01 | 20 | ug/L |
| ICSA | 4D27002-IFA1 | Beryllium | | 0.01 | 2 | ug/L |
| ICSA | 4D27002-IFA1 | Cadmium | | 0.00 | 2 | ug/L |
| ICSA | 4D27002-IFA1 | Chromium | | 0.04 | 10 | ug/L |
| ICSA | 4D27002-IFA1 | Cobalt | | 0.01 | 10 | ug/L |
| ICSA | 4D27002-IFA1 | Copper | | 0.08 | 10 | ug/L |
| ICSA | 4D27002-IFA1 | Lead | | 0.02 | 2 | ug/L |
| ICSA | 4D27002-IFA1 | Nickel | | 0.10 | 20 | ug/L |
| ICSA | 4D27002-IFA1 | Selenium | | 0.02 | 20 | ug/L |
| ICSA | 4D27002-IFA1 | Silver | | -0.02 | 4 | ug/L |
| ICSA | 4D27002-IFA1 | Thallium | | 0.00 | 2 | ug/L |
| ICSA | 4D27002-IFA1 | Vanadium | | -0.01 | 20 | ug/L |
| ICSA | 4D27002-IFA1 | Zinc | | 0.29 | 20 | ug/L |
| ICSAB | 4D27002-IFB1 | Antimony | | 0.02 | 4 | ug/L |
| ICSAB | 4D27002-IFB1 | Arsenic | 25.00 | 24.16 | 97 | ug/L |
| ICSAB | 4D27002-IFB1 | Barium | | 0.01 | 20 | ug/L |
| ICSAB | 4D27002-IFB1 | Beryllium | | 0.00 | 2 | ug/L |
| ICSAB | 4D27002-IFB1 | Cadmium | 25.00 | 23.71 | 95 | ug/L |
| ICSAB | 4D27002-IFB1 | Chromium | 50.00 | 48.06 | 96 | ug/L |
| ICSAB | 4D27002-IFB1 | Cobalt | 50.00 | 47.96 | 96 | ug/L |
| ICSAB | 4D27002-IFB1 | Copper | 50.00 | 48.36 | 97 | ug/L |
| ICSAB | 4D27002-IFB1 | Lead | | 0.01 | 2 | ug/L |
| ICSAB | 4D27002-IFB1 | Nickel | 50.00 | 48.30 | 97 | ug/L |
| ICSAB | 4D27002-IFB1 | Selenium | 25.00 | 23.74 | 95 | ug/L |
| ICSAB | 4D27002-IFB1 | Silver | 12.50 | 12.23 | 98 | ug/L |
| ICSAB | 4D27002-IFB1 | Thallium | | 0.00 | 2 | ug/L |
| ICSAB | 4D27002-IFB1 | Vanadium | 50.00 | 48.83 | 98 | ug/L |
| ICSAB | 4D27002-IFB1 | Zinc | 25.00 | 24.08 | 96 | ug/L |

* The absence of an entry in the “True” column denotes the lack of a true value for that analyte. The entry in the “%R” column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

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# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Date: 04/27/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 8.875 | 0.737 | 10 | 2.008 |
| Mg - 24 | 24.025 | 0.692 | 10 | 1.337 |
| Mg - 25 | 24.975 | 0.656 | 10 | 1.405 |
| Mg - 26 | 26.025 | 0.710 | 10 | 2.118 |
| Co - 59 | 58.925 | 0.685 | 10 | 1.132 |
| In - 113 | 112.975 | 0.685 | 10 | 1.284 |
| In - 115 | 114.875 | 0.689 | 10 | 0.921 |
| Pb - 206 | 205.925 | 0.725 | 10 | 0.458 |
| Pb - 207 | 206.925 | 0.714 | 10 | 0.714 |
| Pb - 208 | 207.925 | 0.697 | 10 | 0.609 |

Comments:

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404151

Sequence: 4D27002

Project: RAAP APPIX 2014 UNIT 5

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 4/27/14 12:41 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 4/27/14 12:43 | 102 | 101 | 98 | 100 | 100 |
| S 6020-MS2 | 4/27/14 12:45 | 99 | 99 | 96 | 100 | 98 |
| S 6020-MS3 | 4/27/14 12:46 | 98 | 98 | 96 | 100 | 98 |
| S 6020-MS4 | 4/27/14 12:48 | 98 | 99 | 99 | 104 | 98 |
| S 6020-MS5 | 4/27/14 12:50 | 94 | 98 | 100 | 104 | 96 |
| LLICV | 4/27/14 12:53 | 98 | 100 | 100 | 103 | 100 |
| ICV | 4/27/14 12:55 | 96 | 99 | 102 | 103 | 100 |
| ICB | 4/27/14 12:57 | 96 | 99 | 104 | 104 | 100 |
| ICSA | 4/27/14 12:58 | 94 | 97 | 100 | 104 | 96 |
| ICSAB | 4/27/14 13:00 | 94 | 98 | 98 | 101 | 95 |
| LLICV | 4/27/14 13:02 | 94 | 96 | 100 | 103 | 97 |
| CCV | 4/27/14 13:04 | 95 | 100 | 102 | 106 | 97 |
| CCB | 4/27/14 13:05 | 92 | 97 | 99 | 102 | 96 |
| CCV | 4/27/14 13:45 | 90 | 91 | 93 | 97 | 88 |
| CCB | 4/27/14 13:47 | 89 | 87 | 93 | 93 | 89 |
| LLCCV | 4/27/14 14:04 | 91 | 86 | 89 | 92 | 85 |
| CCV | 4/27/14 14:06 | 88 | 87 | 89 | 92 | 83 |
| CCB | 4/27/14 14:08 | 90 | 86 | 91 | 94 | 87 |
| CCV | 4/27/14 14:34 | 93 | 94 | 99 | 101 | 91 |
| CCB | 4/27/14 14:36 | 95 | 94 | 100 | 101 | 92 |
| LLCCV | 4/27/14 14:53 | 97 | 94 | 96 | 99 | 90 |
| CCV | 4/27/14 14:55 | 92 | 90 | 94 | 98 | 89 |
| CCB | 4/27/14 14:57 | 97 | 95 | 101 | 103 | 92 |
| LLCCV | 4/27/14 15:08 | 102 | 95 | 96 | 98 | 89 |
| CCV | 4/27/14 15:09 | 92 | 90 | 92 | 99 | 85 |
| CCB | 4/27/14 15:11 | 101 | 96 | 104 | 103 | 91 |

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404151

Sequence: 4D27002

Project: RAAP APPIX 2014 UNIT 5

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| LLCCV | 4/27/14 15:24 | 101 | 97 | 104 | 103 | 93 |
| CCV | 4/27/14 15:25 | 99 | 98 | 104 | 105 | 92 |
| CCB | 4/27/14 15:27 | 98 | 98 | 103 | 104 | 95 |
| PBW01 | 4/27/14 15:32 | 101 | 99 | 107 | 107 | 96 |
| MLCS01 | 4/27/14 15:34 | 101 | 101 | 106 | 106 | 94 |
| 5W7B | 4/27/14 15:35 | 97 | 97 | 98 | 103 | 84 |
| 5W7BD | 4/27/14 15:37 | 104 | 101 | 103 | 106 | 89 |
| 5W7BS | 4/27/14 15:39 | 99 | 98 | 99 | 103 | 89 |
| 5W7BSD | 4/27/14 15:40 | 98 | 100 | 100 | 102 | 87 |
| 5W7BL | 4/27/14 15:42 | 97 | 93 | 97 | 100 | 87 |
| 5W7BA | 4/27/14 15:44 | 97 | 94 | 97 | 98 | 83 |
| 5W5B | 4/27/14 15:46 | 86 | 86 | 79 | 88 | 72 |
| 5WC21 | 4/27/14 15:47 | 86 | 90 | 84 | 94 | 74 |
| CCV | 4/27/14 15:49 | 87 | 84 | 90 | 93 | 83 |
| CCB | 4/27/14 15:51 | 91 | 91 | 97 | 96 | 87 |
| 5WDUP | 4/27/14 15:53 | 83 | 89 | 83 | 95 | 75 |
| 5WC22 | 4/27/14 15:54 | 84 | 85 | 88 | 95 | 73 |
| 5WC23 | 4/27/14 15:56 | 82 | 86 | 87 | 95 | 73 |
| LLCCV | 4/27/14 16:08 | 97 | 92 | 96 | 97 | 88 |
| CCV | 4/27/14 16:10 | 94 | 90 | 95 | 100 | 88 |
| CCB | 4/27/14 16:12 | 94 | 92 | 97 | 98 | 88 |

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# BLANKS

*EPA 7470A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D25007 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D25007-ICB1 | Mercury | -0.00200 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D25007-CCB1 | Mercury | 0.0300 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| PBW01 | 4042404-BLK1 | Mercury | | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D25007-CCB2 | Mercury | -0.0440 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D25007-CCB3 | Mercury | -0.0520 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |

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# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D27002-ICB1 | Antimony | 0.0503 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Arsenic | 0.0117 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Barium | 0.00788 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Beryllium | 0.00557 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Cadmium | -0.00204 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Chromium | -0.0207 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Cobalt | 0.00811 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Copper | 0.0110 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Lead | 0.0175 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Nickel | 0.00378 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Selenium | 0.0274 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Silver | -0.00837 | 0.200 | 2.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Thallium | 0.0255 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Vanadium | 0.000180 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D27002-ICB1 | Zinc | 0.0206 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Antimony | 0.0650 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Arsenic | 0.0180 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Barium | 0.00787 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Beryllium | 0.00755 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Cadmium | 0.00611 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Chromium | -0.0352 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Cobalt | 0.00884 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Copper | 0.0142 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Lead | 0.00944 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Nickel | 0.00375 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Selenium | 0.0259 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Silver | 0.00303 | 0.200 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Thallium | 0.0131 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Vanadium | -0.00800 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB1 | Zinc | 0.197 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Antimony | 0.0948 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Arsenic | 0.0851 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Barium | 0.0454 | 1.00 | 10.0 | ug/L | U | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4D27002-CCB2 | Beryllium | 0.120 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Cadmium | 0.0317 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Chromium | 0.100 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Cobalt | 0.0849 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Copper | 0.0952 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Lead | 0.0744 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Nickel | 0.0779 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Selenium | 0.0560 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Silver | 0.0375 | 0.200 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Thallium | 0.0488 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Vanadium | 0.118 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB2 | Zinc | 0.280 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Antimony | 0.0600 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Arsenic | 0.0393 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Barium | 0.00191 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Beryllium | 0.00197 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Cadmium | 0.000760 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Chromium | -0.0457 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Cobalt | 0.00742 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Copper | 0.0185 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Lead | 0.00667 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Nickel | 0.000560 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Selenium | 0.0310 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Silver | 0.00471 | 0.200 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Thallium | 0.00992 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Vanadium | -0.00767 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB3 | Zinc | 0.202 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB4 | Antimony | 0.0767 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB4 | Arsenic | 0.0196 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB4 | Barium | 0.0105 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB4 | Beryllium | 0.0211 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB4 | Cadmium | 0.00881 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB4 | Chromium | -0.0321 | 1.00 | 5.00 | ug/L | U | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4D27002-CCB4 | Cobalt | 0.0106 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Copper | 0.0199 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Lead | 0.0121 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Nickel | 0.00558 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Selenium | 0.00400 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Silver | 0.00650 | 0.200 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Thallium | 0.0165 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Vanadium | -0.00186 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Zinc | 0.243 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Antimony | 0.0605 | 0.400 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Arsenic | 0.0102 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Barium | 0.00831 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Beryllium | 0.00829 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Cadmium | 0.00858 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Chromium | -0.0475 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Cobalt | 0.00738 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Copper | 0.0158 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Lead | 0.00645 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Nickel | 0.000610 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Selenium | 0.00291 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Silver | -0.000390 | 0.200 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Thallium | 0.0125 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Vanadium | -0.00840 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Zinc | 0.226 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Antimony | 0.0901 | 0.400 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Arsenic | 0.0590 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Barium | 0.0269 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Beryllium | 0.0466 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Cadmium | 0.0321 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Chromium | 0.0333 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Cobalt | 0.0800 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Copper | 0.0757 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Lead | 0.0271 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4D27002-CCB6 | Nickel | 0.0725 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Selenium | 0.0299 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Silver | 0.0289 | 0.200 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Thallium | 0.0344 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Vanadium | 0.0565 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Zinc | 0.149 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Antimony | 0.0724 | 0.400 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Arsenic | 0.0206 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Barium | 0.0114 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Beryllium | 0.0230 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Cadmium | 0.00861 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Chromium | -0.0326 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Cobalt | 0.0106 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Copper | 0.0170 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Lead | 0.0128 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Nickel | 0.00280 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Selenium | 0.0181 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Silver | 0.00763 | 0.200 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Thallium | 0.0157 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Vanadium | -0.00186 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Zinc | 0.0922 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Antimony | | 0.400 | 2.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Arsenic | | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Barium | | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Beryllium | | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Cadmium | | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Chromium | | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Cobalt | | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Copper | | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Lead | | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Nickel | | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Selenium | | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Silver | | 0.200 | 2.00 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| PBW01 | 4042405-BLK1 | Thallium | | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042405-BLK1 | Vanadium | | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| PBW01 | 4042405-BLK1 | Zinc | | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Antimony | 0.0767 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Arsenic | 0.0404 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Barium | 0.0277 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Beryllium | 0.0852 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Cadmium | 0.0120 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Chromium | 0.00855 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Cobalt | 0.0591 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Copper | 0.0531 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Lead | 0.0685 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Nickel | 0.0551 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Selenium | 0.0127 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Silver | 0.0205 | 0.200 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Thallium | 0.0483 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Vanadium | 0.0702 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB8 | Zinc | 0.139 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Antimony | 0.0943 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Arsenic | 0.0579 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Barium | 0.0301 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Beryllium | 0.0471 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Cadmium | 0.00710 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Chromium | 0.0319 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Cobalt | 0.0801 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Copper | 0.0791 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Lead | 0.0249 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Nickel | 0.0697 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Selenium | 0.00928 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Silver | 0.0231 | 0.200 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Thallium | 0.0270 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Vanadium | 0.0718 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D27002-CCB9 | Zinc | 0.137 | 3.00 | 10.0 | ug/L | U | EPA 6020A |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3010A / 6010C
Mercury Method: 7470A
Prepared By: SAB

CompuChem
A Division Of
Liberty Analytical Corp.

Preparation Date: 4-24-14
Preparation Time: 0945
Batch Number: 4042404
Blue Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042404-BLK1 | PBW01 | MB | | | 100 | 100 | CS/CL | | N/A |
| 4042404-BS1 | MLCS01 | LCS | | | 100 | 100 | CS/CL | | N/A |
| 4042404-DUP1 | 5W7BD | DUP | | | 100 | 100 | CS/CL | | 12 |
| 4042404-MS1 | 5W7BS | MS | | | 100 | 100 | CS/CL | | 12 |
| 4042404-MSD1 | 5W7BSD | MSD | | | 100 | 100 | CS/CL | | 12 |
| 1404151-01 | 5W7B | SAMPLE | | | 100 | 100 | CS/CL | | 12 |
| 1404151-02 | 5W5B | SAMPLE | | | 100 | 100 | CS/CL | | 12 |
| 1404151-03 | 5WC21 | SAMPLE | | | 100 | 100 | BR/CY | | 12 |
| 1404151-04 | 5WDUP | SAMPLE | | | 100 | 100 | BR/CY | | 12 |
| 1404151-05 | 5WC22 | SAMPLE | | | 100 | 100 | CS/CY | | 12 |
| 1404151-06 | 5WC23 | SAMPLE | | | 100 | 100 | CS/CL | | 12 |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | | C |
| Hot Block Temp Out: | | C |
| Hot Block Identifier | | |
| Time Hg in water bath: | 10:05 | |
| Time Hg out water bath: | 12:05 | |
| Water Bath Temp In: | 94 | C |
| Water Bath Temp Out: | 92 | C |
| Water Bath Identifier | Hg Bath #1 | |

**MS Reference**
ICAP: 0.5 mL ICCV-6
Ref #:
ICAP: 0.5 mL ICCV-4
Ref#:
HG: 1.0mL 100ppb Hg
Ref# 4D24001

**LCS Reference**
ICAP: 0.5mL ICCV-6
REF:
ICAP: 0.5mL ICCV-4
REF:
HG: 0.4 mL of HGMS-1PPM
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Bolton
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** M. Bu
***Date:*** 4/24/14

JCF 111711

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

CompuChem
A Division Of
Liberty Analytical Corp.

Preparation Date: 4-24-14
Preparation Time: 0940
Batch Number: 4042405
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042405-BLK1 | PBW01 | MB | 50 | 50 | | | CS/CL | CS/CL | N/A |
| 4042405-BS1 | MLCS01 | LCS | 50 | 50 | | | CS/CL | CS/CL | N/A |
| 1404151-01 | 5W7B | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-DUP1 | 5W7BD | DUP | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-MS1 | 5W7BS | MS | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-MSD1 | 5W7BSD | MSD | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404152-01 | 5W8B | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-DUP2 | 5W8BD | DUP | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-MS2 | 5W8BS | MS | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-MSD2 | 5W8BSD | MSD | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404153-01 | MW-3A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-DUP3 | MW-3AD | DUP | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-MS3 | MW-3AS | MS | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 4042405-MSD3 | MW-3ASD | MSD | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404151-02 | 5W5B | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404151-03 | 5WC21 | SAMPLE | 50 | 50 | | | BRICK | CS/CL | 2 |
| 1404151-04 | 5WDUP | SAMPLE | 50 | 50 | | | BRICK | CS/CL | 2 |
| 1404151-05 | 5WC22 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404151-06 | 5WC23 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404152-02 | 5W12A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404153-02 | MW-1A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404153-03 | MW-2A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404153-04 | MW-4A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| 1404153-05 | MW-5A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 2 |
| | | | | | | | | | |
| | | | | | | | | | |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 92 | C |
| Hot Block Temp Out: | 95 | C |
| Hot Block Identifier | HOTBLOCK#2 | |
| Time Hg in water bath: | | |
| Time Hg out water bath: | | |
| Water Bath Temp In: | | C |
| Water Bath Temp Out: | | C |
| Water Bath Identifier | | |

**MS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: 1.0mL 100ppb Hg
Ref#

**LCS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: 1.0 mL of ICCV-5
Ref#

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Bolton
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** Un Bun
***Date:*** 4/24/14

111611 JCF

# Standards/QC Preparation Log for ICP/MS Metals

COMPUCHEM a division of Liberty Analytical Corp. WORKSHEET 1 YYY

Case/SDG: 4042405

| Reagents | Ref # [1] | Manufacturer | Lot # | Expiration |
|---|---|---|---|---|
| Hydrochloric Acid - Distilled (HCl) | HCL-D-022414-SAB | EMD | 51122/3J18034 | 10/18 |
| Nitric Acid – Distilled ($HNO_3$) | HNO3-D-020414-SAB | VERITAS | C359970/3L05002 | 10/18 |
| **Standards** | | | | |
| ICCV-6 | 3I18011 | Inorganic Ventures | G2-MEB448711 | 09/01/14 |
| ICCV-4 | 4D01014 | Inorganic Ventures | H2-MEB522016 | 05/01/15 |
| ERA PPT (540) | 3I23031 | ERA | 540 | 04/30/14 |

| Standard Lot Number [2] | Preparation Instructions |
|---|---|
| $HNO_3$– 040414-SAB<br>Nitric Acid | Place in a 100 mL volumetric flask:<br>25 mL of Deionized water<br>50 mL of **Distilled** concentrated $HNO_3$, Baker Instra-analyzed or equivalent<br>Dilute to 100 mL with DI water. Prepare as needed. |
| HCl– 040114 SAB<br>Hydrochloric Acid | Place in a 100 mL volumetric flask:<br>25 mL of Deionized water<br>50 mL of **Distilled** concentrated HCl, Baker Instra-analyzed or equivalent<br>Dilute to 100 mL with DI water. Prepare as needed. |

Standard Solutions Prepared By: S. Bolton Date: 4-24-14

Entered By: S. Bolton Date: 4-24-14

Reviewed By: [signature] Date: 4/24/14

[1]Ref# = Logbook ID, Page number, and item number from Materials Receipt Log

[2]Standard Lot Number consists of standard ID, date prepared, and initials of preparer.

[3]Raw Material sub-boiled from specified lot # in accordance with SOP SPP.9.10

The presence of the Chemist's/Analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation.

10/06/11:jcf

CompuChem

A Division Of

Liberty Analytical Corp.

4/30/2014

Abridged Data Package.

Full Deliverable Available

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP UNIT 5/2014 Co ONLY

WorkOrder: 1404152

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404152

**Project:** RAAP UNIT 5/2014 Co ONLY **Sdg:** 1404152

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404152-01 | 5W8B | Water | 04/21/2014 10:40 | 04/23/2014 09:47 |
| 1404152-02 | 5W12A | Water | 04/22/2014 10:25 | 04/23/2014 09:47 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP UNIT 5/2014 Co ONLY

**Laboratory:** COMPUCHEM

**SDG:** 1404152

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 5W8B | EPA 6020A | 1404152-01 |
| 5W12A | EPA 6020A | 1404152-02 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 04/29/2014

Title: Senior Chemist

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

**CompuChem**
**a Division of Liberty Analytical Corp.**
501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1404152
# Client: DRAPER
# Project: RAAP UNIT 5/2014 Co ONLY

The indicated Sample Delivery Group (SDG) consisting of two (2) water samples was received into the laboratory information management system (LIMS) on April 23, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 0.8 to 0.9 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6020A methodology for the requested metal cobalt.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Cobalt for sample 5W8B

$$\frac{0.74504\ \mu g/L\ (C) \times 0.05\ L\ (F)}{0.05\ L\ (I)} = 0.745\ \mu g/L \text{ reported as } 5.0\ U\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

The ICP/MS sample matrix spike, CCN = 4042405-MS2 (5W8BS) was found to be inside control limits.

The ICP/MS sample matrix duplicate spike, CCN = 4042405-MSD2 (5W8BSD) was found to be inside control limits.

The ICP/MS sample duplicate, CCN = 4042405-DUP2 (5W8BD) was found to be inside control limits.

A five-fold serial dilution of sample, CCN = SDI1404152-01 (5W8BL) was performed in accordance with SW-846 requirements for ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP/MS sample post digestion spike, CCN =4042405-PS2 (5W8BA) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
April 29, 2014

# CHAIN OF CUSTODY RECORD

OK - JLK 4/14/2014

Laboratory: CompuChem Environmental, 501 Madison Avenue, Cary NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | |
|---|---|---|---|
| **Client:** Draper Aden Associates<br>**Attn:** 0<br>**Address:** 0<br>0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU5<br>2nd Quarter 2014 Groundwater Corrective Action Monitoring Event<br>**Event:**<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>WPS: 12-237-301-01-9313-7248<br>**Carrier:**<br>**Tracking Number:** 12-237-301-01-9311-2431 |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
**Copy to Consultant:** YES
**Bill:** CLIENT OTHER _____
**Preserved and shipped on Ice:** YES

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | G | G | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | U | U | | | | | | |
| **Required pH of Sample** | | | | | <2 | <2 | | | | | | | |
| **Box 2 - Preservative** | | | | | B | B | H | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 1-500ml P | 1-500ml P | 2-1L A | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **(Metals-Total) 6020A(3005A)/ 7470A** | **Cobalt only-Total 6020A/3005A** | **8270D/3510C (Semivolatiles)** | **metals pH** | | | **ORG + 6020A/7470A** | | |
| 5W8B | 4/21 | 1040 | GW | 1 | | X | | <2 | | | ~~1404151-01~~ | | Co only 1404152-01 upgradient monitoring well |
| 5W5B | 4/21 | 1135 | GW | 3 | X | | X | <2 | | | 1404151-02 | | |
| 5W7B | | | GW | | X | | X | | | | | | USE FOR QC |
| 5WC21 | 4/21 | 1340 | GW | 3 | X | | X | <2 | | | | -03 | |
| 5WDUP | 4/21 | 1355 | GW | 3 | X | | X | <2 | | | | -04 | |
| 5WC22 | 4/21 | 1450 | GW | 3 | X | | X | <2 | | | | -05 | |
| 5WC23 | 4/22 | 0930 | GW | 3 | X | | X | <2 | | | ✓ | -06 | |
| 5W12A | 4/22 | 1025 | GW | 1 | | X | | <2 | | | | | 1404152-02 plume well |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**GENERAL NOTES:**
1. Report results with 'J' or 'B' flag, (report estimated results).
2. ERIS required. VELAP Accreditation required
3. Project specific MDL/QL's attached.

JLK 4/14/2014

**Clients Special Instructions:** level 4 with edd. 0.8°C, 0.9°C

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/21/14 | #1 Relinquished by (Signature): | Date: 4/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/21/14 | #1 Received by (Signature): | Date: 4/23/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: CompuChem | Time: 0947 | Company Name: | Time: | |

1/3
JLK 4/14/14

# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP UNIT 5/2014 Co ONLY

SDG: 1404152

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 5W8B | 04/21/14 | 04/23/14 | 04/24/14 | 04/27/14 | 6.2 | 180 | |
| 5W12A | 04/22/14 | 04/23/14 | 04/24/14 | 04/27/14 | 5.2 | 180 | |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404152

**Client:** DRAPER **Project:** RAAP UNIT 5/2014 Co ONLY

**Matrix:** Water **Instrument:** PEMS

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Cobalt | 1 | 5.00 | ug/L | EPA 6020A |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4042405-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042405

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Cobalt | 110.0 | 107 | 97.5 | | 80 - 120 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**5W8BS**

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4042405-MS2 % Solid: NA Matrix: Water Lab Source ID: 1404152-01 Source Sample: 5W8B

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Cobalt | 110.0 | 5.00 U | 109 | 99.4 | | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**5W8BSD**

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4042405-MSD2 % Solid: NA Matrix: Water Lab Source ID: 1404152-01 Source Sample: 5W8B

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Cobalt | 110.0 | 111 | 101 | 1.35 | | 20 | 75 - 125 |

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# SERIAL DILUTION

*EPA 6020A*

**5W8BL**

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4D27002-SRD7 Matrix: Water Lab Source ID: 1404152-01 Source Sample: 5W8B

Sequence: 4D27002 Dilution: 5 Report to MDL: YES

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Cobalt | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |

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# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**5W8BA**

Laboratory: COMPUCHEM

Client: DRAPER

Matrix: Water

SDG: 1404152

Project: RAAP UNIT 5/2014 Co ONLY

Laboratory ID: 4042405-PS2

Lab Source ID: 1404152-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Cobalt | 10.8 | U | 10.00 | 101 | 75 - 125 |

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# DUPLICATES

*EPA 6020A*

**5W8BD**

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4042405-DUP2 % Solid: NA Matrix: Water Lab Source ID: 1404152-01 Source Sample: 5W8B

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Cobalt | 20 | *5.00 U* | 5.00 U | | | EPA 6020A |

# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Batch: 4042405 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 5W8B | 1404152-01 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W12A | 1404152-02 | 04/24/14 09:40 | 50.0 | 50.0 |
| PBW01 | 4042405-BLK1 | 04/24/14 09:40 | 50.0 | 50.0 |
| MLCS01 | 4042405-BS1 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W8BD | 4042405-DUP2 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W8BS | 4042405-MS2 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W8BSD | 4042405-MSD2 | 04/24/14 09:40 | 50.0 | 50.0 |
| 5W8BA | 4042405-PS2 | 04/24/14 09:40 | 50.0 | 50.0 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4D27002 Calibration: 4042802 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUNE | 4D27002-TUN1 | 4D27002_P-001 | 04/27/14 12:08:24 |
| S0 | 4D27002-CAL1 | 4D27002_P-002 | 04/27/14 12:41:33 |
| S 6020-MS1 | 4D27002-CAL2 | 4D27002_P-003 | 04/27/14 12:43:18 |
| S 6020-MS2 | 4D27002-CAL3 | 4D27002_P-004 | 04/27/14 12:45:03 |
| S 6020-MS3 | 4D27002-CAL4 | 4D27002_P-005 | 04/27/14 12:46:47 |
| S 6020-MS4 | 4D27002-CAL5 | 4D27002_P-006 | 04/27/14 12:48:31 |
| S 6020-MS5 | 4D27002-CAL6 | 4D27002_P-007 | 04/27/14 12:50:16 |
| LLICV | 4D27002-CRL1 | 4D27002_P-008 | 04/27/14 12:53:42 |
| ICV | 4D27002-ICV1 | 4D27002_P-009 | 04/27/14 12:55:28 |
| ICB | 4D27002-ICB1 | 4D27002_P-010 | 04/27/14 12:57:13 |
| ICSA | 4D27002-IFA1 | 4D27002_P-011 | 04/27/14 12:58:58 |
| ICSAB | 4D27002-IFB1 | 4D27002_P-012 | 04/27/14 13:00:43 |
| LLICV | 4D27002-CRL2 | 4D27002_P-013 | 04/27/14 13:02:28 |
| CCV | 4D27002-CCV1 | 4D27002_P-014 | 04/27/14 13:04:14 |
| CCB | 4D27002-CCB1 | 4D27002_P-015 | 04/27/14 13:05:58 |
| CCV | 4D27002-CCV2 | 4D27002_P-026 | 04/27/14 13:45:40 |
| CCB | 4D27002-CCB2 | 4D27002_P-027 | 04/27/14 13:47:25 |
| LLCCV | 4D27002-CRL3 | 4D27002_P-037 | 04/27/14 14:04:53 |
| CCV | 4D27002-CCV3 | 4D27002_P-038 | 04/27/14 14:06:39 |
| CCB | 4D27002-CCB3 | 4D27002_P-039 | 04/27/14 14:08:24 |
| CCV | 4D27002-CCV4 | 4D27002_P-050 | 04/27/14 14:34:45 |
| CCB | 4D27002-CCB4 | 4D27002_P-051 | 04/27/14 14:36:29 |
| LLCCV | 4D27002-CRL4 | 4D27002_P-061 | 04/27/14 14:53:56 |
| CCV | 4D27002-CCV5 | 4D27002_P-062 | 04/27/14 14:55:42 |
| CCB | 4D27002-CCB5 | 4D27002_P-063 | 04/27/14 14:57:27 |
| LLCCV | 4D27002-CRL5 | 4D27002_P-069 | 04/27/14 15:08:06 |
| CCV | 4D27002-CCV6 | 4D27002_P-070 | 04/27/14 15:09:52 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4D27002 Calibration: 4042802 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| CCB | 4D27002-CCB6 | 4D27002_P-071 | 04/27/14 15:11:36 |
| LLCCV | 4D27002-CRL6 | 4D27002_P-074 | 04/27/14 15:24:06 |
| CCV | 4D27002-CCV7 | 4D27002_P-075 | 04/27/14 15:25:52 |
| CCB | 4D27002-CCB7 | 4D27002_P-076 | 04/27/14 15:27:36 |
| PBW01 | 4042405-BLK1 | 4D27002_P-077 | 04/27/14 15:32:16 |
| MLCS01 | 4042405-BS1 | 4D27002_P-078 | 04/27/14 15:34:00 |
| CCV | 4D27002-CCV8 | 4D27002_P-087 | 04/27/14 15:49:43 |
| CCB | 4D27002-CCB8 | 4D27002_P-088 | 04/27/14 15:51:27 |
| 5W8B | 1404152-01 | 4D27002_P-092 | 04/27/14 15:58:27 |
| 5W8BD | 4042405-DUP2 | 4D27002_P-093 | 04/27/14 16:00:11 |
| 5W8BS | 4042405-MS2 | 4D27002_P-094 | 04/27/14 16:01:56 |
| 5W8BSD | 4042405-MSD2 | 4D27002_P-095 | 04/27/14 16:03:40 |
| 5W8BL | 4D27002-SRD7 | 4D27002_P-096 | 04/27/14 16:05:25 |
| 5W8BA | 4042405-PS2 | 4D27002_P-097 | 04/27/14 16:07:09 |
| LLCCV | 4D27002-CRL7 | 4D27002_P-098 | 04/27/14 16:08:55 |
| CCV | 4D27002-CCV9 | 4D27002_P-099 | 04/27/14 16:10:41 |
| CCB | 4D27002-CCB9 | 4D27002_P-100 | 04/27/14 16:12:25 |
| 5W12A | 1404152-02 | 4D27002_P-101 | 04/27/14 16:16:23 |
| CCV | 4D27002-CCVA | 4D27002_P-111 | 04/27/14 16:33:49 |
| CCB | 4D27002-CCBA | 4D27002_P-112 | 04/27/14 16:35:33 |
| LLCCV | 4D27002-CRL8 | 4D27002_P-122 | 04/27/14 16:54:18 |
| CCV | 4D27002-CCVB | 4D27002_P-123 | 04/27/14 16:56:04 |
| CCB | 4D27002-CCBB | 4D27002_P-124 | 04/27/14 16:57:49 |

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# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**5W8B**

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1404152-01 % Solid: Matrix: Water Sampled: 04/21/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 15:58 |

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# ANALYSIS DATA SHEET

**5W12A**

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1404152-02 % Solid: Matrix: Water Sampled: 04/22/14 Received: 04/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D27002 | 4/27/14 16:16 |

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# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4D27002-CRL1 | Cobalt | 1.000 | 1.15 | 115 | ug/L | | 70 - 130 |
| LLICV | 4D27002-CRL2 | Cobalt | 1.000 | 0.998 | 100 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL3 | Cobalt | 1.000 | 0.999 | 100 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL4 | Cobalt | 1.000 | 0.983 | 98 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL5 | Cobalt | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4D27002-CRL6 | Cobalt | 1.000 | 0.986 | 99 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL7 | Cobalt | 1.000 | 0.974 | 97 | ug/L | U | 70 - 130 |
| LLCCV | 4D27002-CRL8 | Cobalt | 1.000 | 1.01 | 101 | ug/L | | 70 - 130 |

# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1404152

Project: RAAP UNIT 5/2014 Co ONLY

Calibration: 4042802 Instrument: PEMS

Calibration Date: 4/27/2014 12:08:27

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Cobalt | CAL1 | S0 | 37.222 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 12140.7 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 24350.72 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 1493061 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 3017168 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 6009591 | 500 |

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# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1404152

Project: RAAP UNIT 5/2014 Co ONLY

Calibration: 4042802 Instrument: PEMS

Calibration Date: 4/27/2014 12:08:27

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Cobalt | 0.009308 | 0 | 0.9999 | 0.998 | |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D27002-ICV1 | Cobalt | 110.0 | 107 | 97 | ug/L | | +/-10 |
| CCV | 4D27002-CCV1 | Cobalt | 300.0 | 286 | 95 | ug/L | | +/-10 |
| CCV | 4D27002-CCV2 | Cobalt | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV3 | Cobalt | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV4 | Cobalt | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV5 | Cobalt | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4D27002-CCV6 | Cobalt | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D27002-CCV7 | Cobalt | 300.0 | 319 | 106 | ug/L | | +/-10 |
| CCV | 4D27002-CCV8 | Cobalt | 300.0 | 320 | 107 | ug/L | | +/-10 |
| CCV | 4D27002-CCV9 | Cobalt | 300.0 | 323 | 108 | ug/L | | +/-10 |
| CCV | 4D27002-CCVA | Cobalt | 300.0 | 319 | 106 | ug/L | | +/-10 |
| CCV | 4D27002-CCVB | Cobalt | 300.0 | 318 | 106 | ug/L | | +/-10 |

# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4D27002-IFA1 | Cobalt | | 0.01 | 10 | ug/L |
| ICSAB | 4D27002-IFB1 | Cobalt | 50.00 | 47.96 | 96 | ug/L |

* The absence of an entry in the “True” column denotes the lack of a true value for that analyte. The entry in the “%R” column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

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# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1404152

Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4D27002 Date: 04/27/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 8.875 | 0.737 | 10 | 2.008 |
| Mg - 24 | 24.025 | 0.692 | 10 | 1.337 |
| Mg - 25 | 24.975 | 0.656 | 10 | 1.405 |
| Mg - 26 | 26.025 | 0.710 | 10 | 2.118 |
| Co - 59 | 58.925 | 0.685 | 10 | 1.132 |
| In - 113 | 112.975 | 0.685 | 10 | 1.284 |
| In - 115 | 114.875 | 0.689 | 10 | 0.921 |
| Pb - 206 | 205.925 | 0.725 | 10 | 0.458 |
| Pb - 207 | 206.925 | 0.714 | 10 | 0.714 |
| Pb - 208 | 207.925 | 0.697 | 10 | 0.609 |

Comments:

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404152

Sequence: 4D27002

Project: RAAP UNIT 5/2014 Co ONLY

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 4/27/14 12:41 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 4/27/14 12:43 | 102 | 101 | 98 | 100 | 100 |
| S 6020-MS2 | 4/27/14 12:45 | 99 | 99 | 96 | 100 | 98 |
| S 6020-MS3 | 4/27/14 12:46 | 98 | 98 | 96 | 100 | 98 |
| S 6020-MS4 | 4/27/14 12:48 | 98 | 99 | 99 | 104 | 98 |
| S 6020-MS5 | 4/27/14 12:50 | 94 | 98 | 100 | 104 | 96 |
| LLICV | 4/27/14 12:53 | 98 | 100 | 100 | 103 | 100 |
| ICV | 4/27/14 12:55 | 96 | 99 | 102 | 103 | 100 |
| ICB | 4/27/14 12:57 | 96 | 99 | 104 | 104 | 100 |
| ICSA | 4/27/14 12:58 | 94 | 97 | 100 | 104 | 96 |
| ICSAB | 4/27/14 13:00 | 94 | 98 | 98 | 101 | 95 |
| LLICV | 4/27/14 13:02 | 94 | 96 | 100 | 103 | 97 |
| CCV | 4/27/14 13:04 | 95 | 100 | 102 | 106 | 97 |
| CCB | 4/27/14 13:05 | 92 | 97 | 99 | 102 | 96 |
| CCV | 4/27/14 13:45 | 90 | 91 | 93 | 97 | 88 |
| CCB | 4/27/14 13:47 | 89 | 87 | 93 | 93 | 89 |
| LLCCV | 4/27/14 14:04 | 91 | 86 | 89 | 92 | 85 |
| CCV | 4/27/14 14:06 | 88 | 87 | 89 | 92 | 83 |
| CCB | 4/27/14 14:08 | 90 | 86 | 91 | 94 | 87 |
| CCV | 4/27/14 14:34 | 93 | 94 | 99 | 101 | 91 |
| CCB | 4/27/14 14:36 | 95 | 94 | 100 | 101 | 92 |
| LLCCV | 4/27/14 14:53 | 97 | 94 | 96 | 99 | 90 |
| CCV | 4/27/14 14:55 | 92 | 90 | 94 | 98 | 89 |
| CCB | 4/27/14 14:57 | 97 | 95 | 101 | 103 | 92 |
| LLCCV | 4/27/14 15:08 | 102 | 95 | 96 | 98 | 89 |
| CCV | 4/27/14 15:09 | 92 | 90 | 92 | 99 | 85 |
| CCB | 4/27/14 15:11 | 101 | 96 | 104 | 103 | 91 |

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404152

Sequence: 4D27002

Project: RAAP UNIT 5/2014 Co ONLY

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| LLCCV | 4/27/14 15:24 | 101 | 97 | 104 | 103 | 93 |
| CCV | 4/27/14 15:25 | 99 | 98 | 104 | 105 | 92 |
| CCB | 4/27/14 15:27 | 98 | 98 | 103 | 104 | 95 |
| PBW01 | 4/27/14 15:32 | 101 | 99 | 107 | 107 | 96 |
| MLCS01 | 4/27/14 15:34 | 101 | 101 | 106 | 106 | 94 |
| CCV | 4/27/14 15:49 | 87 | 84 | 90 | 93 | 83 |
| CCB | 4/27/14 15:51 | 91 | 91 | 97 | 96 | 87 |
| 5W8B | 4/27/14 15:58 | 101 | 96 | 99 | 102 | 85 |
| 5W8BD | 4/27/14 16:00 | 93 | 88 | 93 | 95 | 81 |
| 5W8BS | 4/27/14 16:01 | 97 | 93 | 96 | 97 | 85 |
| 5W8BSD | 4/27/14 16:03 | 94 | 91 | 94 | 97 | 84 |
| 5W8BL | 4/27/14 16:05 | 95 | 89 | 96 | 96 | 84 |
| 5W8BA | 4/27/14 16:07 | 92 | 90 | 93 | 94 | 81 |
| LLCCV | 4/27/14 16:08 | 97 | 92 | 96 | 97 | 88 |
| CCV | 4/27/14 16:10 | 94 | 90 | 95 | 100 | 88 |
| CCB | 4/27/14 16:12 | 94 | 92 | 97 | 98 | 88 |
| 5W12A | 4/27/14 16:16 | 91 | 90 | 93 | 96 | 81 |
| CCV | 4/27/14 16:33 | 92 | 91 | 97 | 100 | 85 |
| CCB | 4/27/14 16:35 | 96 | 92 | 99 | 99 | 86 |
| LLCCV | 4/27/14 16:54 | 92 | 89 | 96 | 97 | 87 |
| CCV | 4/27/14 16:56 | 94 | 91 | 96 | 99 | 87 |
| CCB | 4/27/14 16:57 | 92 | 90 | 97 | 99 | 87 |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404152 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4D27002 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D27002-ICB1 | Cobalt | 0.00811 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB1 | Cobalt | 0.00884 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB2 | Cobalt | 0.0849 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB3 | Cobalt | 0.00742 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB4 | Cobalt | 0.0106 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB5 | Cobalt | 0.00738 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB6 | Cobalt | 0.0800 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB7 | Cobalt | 0.0106 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042405-BLK1 | Cobalt | | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB8 | Cobalt | 0.0591 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCB9 | Cobalt | 0.0801 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCBA | Cobalt | 0.0409 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D27002-CCBB | Cobalt | 0.0109 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

Environmental Testing Laboratories — CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 4-24-14
Preparation Time: 0940
Batch Number: 4042405
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042405-BLK1 | PBW01 | MB | 50 | 50 | | | CS/CL | CS/CL | N/A |
| 4042405-BS1 | MLCS01 | LCS | 50 | 50 | | | CS/CL | CS/CL | N/A |
| 1404151-01 | 5W7B | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-DUP1 | 5W7BD | DUP | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-MS1 | 5W7BS | MS | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-MSD1 | 5W7BSD | MSD | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404152-01 | 5W8B | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-DUP2 | 5W8BD | DUP | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-MS2 | 5W8BS | MS | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-MSD2 | 5W8BSD | MSD | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404153-01 | MW-3A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-DUP3 | MW-3AD | DUP | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-MS3 | MW-3AS | MS | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 4042405-MSD3 | MW-3ASD | MSD | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404151-02 | 5W5B | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404151-03 | 5WC21 | SAMPLE | 50 | 50 | | | BRICK | CS/CL | 12 |
| 1404151-04 | 5WDUP | SAMPLE | 50 | 50 | | | BRICK | CS/CL | 12 |
| 1404151-05 | 5WC22 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404151-06 | 5WC23 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404152-02 | 5W12A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404153-02 | MW-1A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404153-03 | MW-2A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404153-04 | MW-4A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| 1404153-05 | MW-5A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 12 |
| | | | | | | | | | |
| | | | | | | | | | |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 92 | C |
| Hot Block Temp Out: | 95 | C |
| Hot Block Identifier | HOTBLOCK#2 | |
| Time Hg in water bath: | | |
| Time Hg out water bath: | | |
| Water Bath Temp In: | | C |
| Water Bath Temp Out: | | C |
| Water Bath Identifier | | |

**MS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: 1.0mL 100ppb Hg
Ref#

**LCS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: 1.0 mL of ICCV-5
Ref#

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Bolton
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** Un Bun
***Date:*** 4/24/14

111611 JCF

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 · 717-656-2300 · Fax: 717-656-2681 · www.LancasterLabs.com

# Type I Data Package

**Prepared for:**

**Draper Aden Associates, Inc.**
2206 South Main Street
Blacksburg VA 24060

Abridged Data Package.

Full Deliverable Available

Project: RAAP - Radford, VA - HWMU-5
Groundwater and Water Samples
Collected on 04/21/14-04/22/14

## SDG# RAE16

| GROUP | SAMPLE NUMBERS |
|---|---|
| 1469210 | 7439821-7439832 |

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

**Authorized by:** Dana M Kauffman **Date: 05/13/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

2425 New Holland Pike, Lancaster, PA 17601 · 717-656-2300 · Fax: 717-656-2681 · www.LancasterLabs.com

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## Sample Reference List for SDG Number RAE16
## with a Data Package Type of I

**11200 - Draper Aden Associates, Inc.**

Project: RAAP - Radford, VA - HWMU-5

| Lab Sample Number | Lab Sample Code | Client Sample Description |
|---|---|---|
| 7439821 | 5W8B- | 5W8B Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439822 | 5W5B- | 5W5B Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439823 | 5W7B- | 5W7B Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439824 | 5W7B- | 5W7B Matrix Spike Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439825 | 5W7B- | 5W7B Matrix Spike Dup Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439826 | 5WC21 | 5WC21 Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439827 | 5WDUP | 5WDUP Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439828 | 5WC22 | 5WC22 Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439829 | 5WC23 | 5WC23 Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439830 | 5W12A | 5W12A Grab Groundwater 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439831 | 5WTB1 | Trip Blank 1 Water 2 Qtr 2014 Corrective Action Annual Monitoring |
| 7439832 | 5WTB2 | Trip Blank 2 Water 2 Qtr 2014 Corrective Action Annual Monitoring |

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# Sample pH Log

**SDG: RAE16**

| LLI Sample Number | Bottle Code | Actual pH | Exp. pH | pH Check Code | Adj. pH | Adjusted Date | Adjusted Time | Preservative Added | Preservative Lot # | LLI Supplied Bottle? | Sulfide Present? | Corrective Substance | CS Lot # | Res. Cl. Present? | Corrective Substance | CS Lot # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7439821 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439822 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439823 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439824 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439825 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439826 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439827 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439828 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439829 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439830 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439831 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7439832 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |

| Check Code Key |
|---|
| **PK** = Original container checked - pH is within the correct range. (No preservative was added) |
| **PA** = Original container checked - pH adjusted to correct range. (Preservative was added) |
| **PV** = Volatile container checked |
| **PC** = pH checked (unpreserved container) |
| **SPK** = Subsampled from an original container. Original container checked - pH is within correct range |
| **SPA** = Subsampled from an original container. Subsample container checked - pH adjusted to correct range. |
| **SPC** = Subsampled from an original container. pH checked (unpreserved container). |
| **SUP** = Subsampled from original container. Unable to be preserved due to the matrix of the sample. |
| **UP** = Unable to preserve due to matrix of the sample. |
| **NA** = Not applicable |

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### 01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030C, May 2003.

---

### 11996 8260C Water(25ml) Master

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

# Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

May 13, 2014

Project: RAAP - Radford, VA - HWMU-5

Submittal Date: 04/23/2014
Group Number: 1469210
SDG: RAE16
State of Sample Origin: VA

| Client Sample Description | Lancaster Labs (LL) # |
|---|---|
| 5W8B Grab Groundwater | 7439821 |
| 5W5B Grab Groundwater | 7439822 |
| 5W7B Grab Groundwater | 7439823 |
| 5W7B Matrix Spike Grab Groundwater | 7439824 |
| 5W7B Matrix Spike Dup Grab Groundwater | 7439825 |
| 5WC21 Grab Groundwater | 7439826 |
| 5WDUP Grab Groundwater | 7439827 |
| 5WC22 Grab Groundwater | 7439828 |
| 5WC23 Grab Groundwater | 7439829 |
| 5W12A Grab Groundwater | 7439830 |
| Trip Blank 1 Water | 7439831 |
| Trip Blank 2 Water | 7439832 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU-5
LLI Group #: 1469210

**General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

**Analysis Specific Comments:**

SW-846 8260C, GC/MS Volatiles

Batch #: H141191AA (Sample number(s): 7439821-7439832 UNSPK: 7439823)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: Dichlorodifluoromethane, Chloroform

**Sample Description: 5W8B Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439821**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 10:40 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5W8B- SDG#: RAE16-01

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.8 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 1.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H141191AA | 04/29/2014 23:53 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/29/2014 23:53 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W5B Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439822**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 11:35 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5W5B- SDG#: RAE16-02

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | Acetone | 67-64-1 | N.D. | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 1.1 | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 00:16 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 00:16 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W7B Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439823**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 12:30 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5W7B- SDG#: RAE16-03BKG

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | Acetone | 67-64-1 | N.D. | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 19 | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 00:38 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 00:38 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W7B Matrix Spike Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439824**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 12:30 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5W7B- SDG#: RAE16-03MS

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | 38 | | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | 36 | | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 24 | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | 6.7 | | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | 5.1 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 5.3 | | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | 5.2 | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | 5.3 | | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 5.2 | J | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 5.2 | | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | 5.1 | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.2 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | 6.0 | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | 16 | | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 01:00 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 01:00 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** **5W7B Matrix Spike Dup Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439825**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 12:30 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5W7B- SDG#: RAE16-03MSD

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | 39 | | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | 37 | | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 26 | E | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | 7.1 | | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 5.8 | | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | 5.7 | | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 5.5 | J | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 5.4 | | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.6 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | 6.3 | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | 17 | | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 01:22 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 01:22 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WC21 Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439826**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 13:40 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5WC21 SDG#: RAE16-04

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 0.6 | J | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 2.5 | J | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 4.8 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 01:44 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 01:44 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WDUP Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439827**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 13:55 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5WDUP SDG#: RAE16-05FD

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 0.6 | J | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 2.5 | J | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 4.9 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 02:06 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 02:06 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WC22 Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439828**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014 14:50 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5WC22 SDG#: RAE16-06

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 0.7 | J | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 4.5 | J | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 4.0 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 02:27 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 02:27 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WC23 Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439829**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/22/2014 09:30 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5WC23 SDG#: RAE16-07

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | 0.9 | J | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 16 | | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.5 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/30/2014 02:49 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 02:49 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W12A Grab Groundwater**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439830**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/22/2014 10:25 by KC

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5W12A SDG#: RAE16-08

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.8 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 1.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H141191AA | 04/30/2014 03:11 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/30/2014 03:11 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: Trip Blank 1 Water**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439831**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5WTB1 SDG#: RAE16-09TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | Acetone | 67-64-1 | N.D. | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/29/2014 23:09 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/29/2014 23:09 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: Trip Blank 2 Water**
**2 Qtr 2014 Corrective Action Annual Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7439832**
**LL Group # 1469210**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 04/21/2014

Submitted: 04/23/2014 09:40
Reported: 05/13/2014 10:31

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

5WTB2 SDG#: RAE16-10TB*

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | 3.0 | 10 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | Chloroform | 67-66-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.4 | 1.0 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.8 | 1.0 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 0.4 | 12 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.2 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" and "K" lists | SW-846 8260C | 1 | H141191AA | 04/29/2014 23:31 | Kevin A Sposito | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141191AA | 04/29/2014 23:31 | Kevin A Sposito | 1 |

*=This limit was used in the evaluation of the final result

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1469210
Reported: 05/13/14 at 10:31 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank MDL** | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: H141191AA | Sample number(s): 7439821-7439832 | | | | | | | | |
| Acetone | N.D. | 3.0 | 10 | ug/l | 95 | | 60-139 | | |
| 2-Butanone | N.D. | 1.0 | 10 | ug/l | 96 | | 63-137 | | |
| Chloroform | N.D. | 0.1 | 1.0 | ug/l | 104 | | 80-120 | | |
| Dichlorodifluoromethane | N.D. | 0.3 | 1.0 | ug/l | 136 | | 27-141 | | |
| 1,2-Dichloroethane | N.D. | 0.1 | 1.0 | ug/l | 104 | | 80-127 | | |
| 1,1-Dichloroethene | N.D. | 0.4 | 1.0 | ug/l | 105 | | 80-123 | | |
| cis-1,2-Dichloroethene | N.D. | 0.1 | 1.0 | ug/l | 104 | | 80-120 | | |
| trans-1,2-Dichloroethene | N.D. | 0.8 | 1.0 | ug/l | 104 | | 80-120 | | |
| Ethyl ether | N.D. | 0.4 | 12 | ug/l | 101 | | 61-122 | | |
| Methylene Chloride | N.D. | 0.2 | 1.0 | ug/l | 102 | | 80-120 | | |
| Toluene | N.D. | 0.1 | 1.0 | ug/l | 102 | | 80-120 | | |
| Trichloroethene | N.D. | 0.2 | 1.0 | ug/l | 103 | | 80-120 | | |
| Vinyl Chloride | N.D. | 0.1 | 1.0 | ug/l | 115 | | 59-124 | | |
| Xylene (Total) | N.D. | 0.2 | 3.0 | ug/l | 103 | | 80-120 | | |

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: H141191AA | Sample number(s): 7439821-7439832 UNSPK: 7439823 | | | | | | | | |
| Acetone | 100 | 105 | 57-163 | 4 | 30 | | | | |
| 2-Butanone | 95 | 98 | 56-160 | 2 | 30 | | | | |
| Chloroform | 106 | 140* | 86-136 | 7 | 30 | | | | |
| Dichlorodifluoromethane | 135 | 143* | 28-136 | 6 | 30 | | | | |
| 1,2-Dichloroethane | 102 | 108 | 82-135 | 6 | 30 | | | | |
| 1,1-Dichloroethene | 107 | 115 | 86-132 | 8 | 30 | | | | |
| cis-1,2-Dichloroethene | 103 | 108 | 82-129 | 5 | 30 | | | | |
| trans-1,2-Dichloroethene | 106 | 113 | 88-127 | 7 | 30 | | | | |
| Ethyl ether | 105 | 110 | 57-139 | 5 | 30 | | | | |
| Methylene Chloride | 104 | 109 | 77-135 | 5 | 30 | | | | |
| Toluene | 102 | 110 | 83-127 | 8 | 30 | | | | |
| Trichloroethene | 104 | 111 | 85-131 | 7 | 30 | | | | |
| Vinyl Chloride | 121 | 127 | 62-135 | 5 | 30 | | | | |
| Xylene (Total) | 103 | 112 | 81-137 | 8 | 30 | | | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1469210
Reported: 05/13/14 at 10:31 AM

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C (25 ml)
Batch number: H141191AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7439821 | 103 | 102 | 99 | 99 |
| 7439822 | 102 | 104 | 99 | 99 |
| 7439823 | 103 | 102 | 99 | 100 |
| 7439824 | 103 | 100 | 100 | 101 |
| 7439825 | 103 | 102 | 100 | 100 |
| 7439826 | 103 | 96 | 98 | 99 |
| 7439827 | 103 | 97 | 98 | 99 |
| 7439828 | 103 | 104 | 99 | 99 |
| 7439829 | 103 | 95 | 99 | 99 |
| 7439830 | 103 | 102 | 100 | 99 |
| 7439831 | 102 | 102 | 98 | 98 |
| 7439832 | 103 | 101 | 99 | 99 |
| Blank | 101 | 102 | 99 | 99 |
| LCS | 102 | 102 | 101 | 100 |
| MS | 103 | 100 | 100 | 101 |
| MSD | 103 | 102 | 100 | 100 |
| Limits: | 77-114 | 74-113 | 77-110 | 78-110 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

A-11200 G-146910 S-743982/32 **CHAIN OF CUSTODY RECORD**

**Laboratory:** Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300

OK JJR 4.14.14

| | | | | | |
|---|---|---|---|---|---|
| **Client:** Draper Aden Associates<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU5<br>**Event:** 2 Qtr 2014 Corrective Action Annual Monitoring Event<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** *YES*<br>UPS<br>**Carrier:** 1Z-75Y-02X-Y0-4200-0421<br>**Tracking Number:** | | |

| | | | | |
|---|---|---|---|---|
| **Box 1: Matrix**<br>SW Surface Water<br>GW Groundwater<br>L Leachate<br>S Soil<br>T Trip Blank<br>E Equipment Blank<br>P Product<br>O Other | **Box 2: Preservative**<br>A HCL<br>B $HNO_3$<br>C $H_2SO_4$<br>D $Na_2S_2O_3$<br>E NaOH<br>F ZnAc<br>G Other (Specify)<br>H None | **Box 3: Filtered/Unfiltered**<br>F Filtered<br>U Unfiltered<br>**Box 5: Sample Container Type**<br>P Plastic<br>AG Amber Glass<br>V VOA<br>CG Clear Glass | **Box 4: Sample Type**<br>G Grab<br>C Composite | **Invoice**<br>**Copy to Consultant:** *YES*<br>**Bill:** *CLIENT* *OTHER* _____<br>**Preserved and shipped on ice:** *YES* |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | | | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | | | | | | | | |
| **Required pH of Sample** | | | | | <2 | | | | | | | | |
| **Box 2 - Preservative** | | | | | A | | | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 3-40ml V | | | | | | | | |
| **Sample ID** | **2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **8260C/5030B 25 ml purge Appendix J Analyte List** | **8260C/5030B 25 ml purge Appendix K Analyte List** | | | | | | | |
| 5W8B | 4/21 | 1040 | GW | 3 | X | | | | | | | | |
| 5W5B | 4/21 | 1135 | GW | 3 | X | X | | | | | | | |
| 5W7B | 4/21 | 1230 | GW | 9 | X | X | | | | | | | |
| 5WC21 | 4/21 | 1340 | GW | 3 | X | X | | | | | | | |
| 5WDUP | 4/21 | 1355 | GW | 3 | X | X | | | | | | | |
| 5WC22 | 4/21 | 1450 | GW | 3 | X | X | | | | | | | |
| 5WC23 | 4/22 | 0930 | GW | 3 | X | X | | | | | | | |
| 5W12A | 4/22 | 1025 | GW | 3 | X | | | | | | | | |
| Trip Blank 1 | 4/21 | — | T | 2 | X | X | | | | | | | |
| Trip Blank 2 | 4/21 | — | T | 2 | X | X | | | | | | | |

**GENERAL NOTES:**

1. **See attached analyte list.**
2. **Report permit required LOQ/MDL or lab MDL if higher than permit MDL. Report Results to MDL with "J" Flags.**
3. VELAP accreditation required.
4. Analyze samples once, but report analytes as noted. See attached list. JJR 4/14/14

USE FOR QC

**Clients Special Instructions: level 1 with edd.**

Received by lab in Good Condition ____ Yes ____ No Custody Seal Intact ____ Yes ____ No Temperature upon arrival 1.1 Received on Ice ✓ Yes ____ No

Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/21/14 | #1 Relinquished by (Signature): | Date: 4/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/21/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 4/23/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: | Time: | Company Name: ELLE | Time: 0940 | |



Y3

A-11200
G-146920
S-743982/32



213

**ANALYTICAL METHOD: 8260C/5030B**
**TYPE METHOD: GCMS**
**CLASS: VOLATILE**

# Appendix – K Target Analyte List

| No. | ANALYTE | CAS RN | Required QL (µg/l) | Required MDL (µg/l) |
|---|---|---|---|---|
| 1. | Acetone | 67-64-1 | 10 | 3 |
| 2. | Chloroform (trichloromethane) | 67-66-3 | 1 | 0.1 |
| 3. | 2-butanone (methyl ethyl ketone - MEK) | 78-93-3 | 10 | 1 |
| 4. | 1,2-dichloroethane | 107-06-2 | 1 | 0.147 |
| 5. | Methylene chloride (Dichloromethane) | 75-09-2 | 1 | 0.182 |
| 6. | Toluene (methyl benzene) | 108-88-3 | 1 | 0.1 |
| 7. | Xylenes (total) | 1330-20-7 | 3 | 0.208 |
| 8. | Diethyl ether | 60-29-7 | 12 | 0.39 |
| 9. | Dichlorodifluoromethane | 75-71-8 | 1 | 0.28 |

**Note.**
**2Q2010 is the first event under corrective action monitoring. Analyte list and monitoring wells sampled have changed from previous event.**

**Final Report must list the project required QLs and MDLs listed above. Report results between the project required QL and MDL as estimated value.**

QLs and MDLs noted above reflect permit modification data Nov 5, 2009. JCF

**25 ml purge volume**

.t:\environmental\bbg\databases\raap\sample event set up\semi-annual events\hwmu-5\hwmu5 - coc rev 2010\hwmu5 - appendix k cap target analyte list- rev 2010.doc

A-11200
G-146921O
S-743982/-32



3/3

**ANALYTICAL METHOD: 8260C/5030B**
**TYPE METHOD: GCMS**
**CLASS: VOLATILE**

# Appendix – J Target Analyte List

| No. | ANALYTE | CAS RN | Required QL (µg/l) | Required MDL* |
|---|---|---|---|---|
| 1. | Trichloroethene | 79-01-6 | 1 | 0.177 |
| 2. | 1,1-Dichloroethene | 75-35-4 | 1 | 0.44 |
| 3. | Cis-1,2-Dichloroethene | 156-59-2 | 1 | 0.1 |
| 4. | Trans-1,2-Dichloroethene | 156-60-5 | 1 | 0.8 |
| 5. | Vinyl Chloride | 75-01-4 | 1 | 0.1 |

**Note: *Report current lab MDL if higher.**

**25 ml purge volume**

.t:\environmental\bbg\databases\raap\sample event set up\semi-annual events\hwmu-5\hwmu5 - coc rev 2010\hwmu 5 - appendix j cap target analyte list - rev 2010.doc

eurofins | Lancaster Laboratories Environmental

# Sample Administration Receipt Documentation Log

Doc Log ID: 12495

Group Number(s): 1469210

Client: Draper Aden

## Delivery and Receipt Information

| | | | |
|---|---|---|---|
| Delivery Method: | UPS | Arrival Timestamp: | 04/23/2014 9:40 |
| Number of Packages: | 2 | Number of Projects: | 2 |
| State/Province of Origin: | VA | | |

## Arrival Condition Summary

| | | | |
|---|---|---|---|
| Shipping Container Sealed: | Yes | Total Trip Blank Qty: | 4 |
| Custody Seal Present: | Yes | Trip Blank Type: | 2-HCL 2-Na2S2O30 |
| Custody Seal Intact: | Yes | Air Quality Samples Present: | No |
| Samples Chilled: | Yes | Air Quality Flow Controllers Present: | N/A |
| Paperwork Enclosed: | Yes | Flow Controller Quantity: | 0 |
| Samples Intact: | Yes | Air Quality Returns: | N/A |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |
| Sample IDs on COC match Containers: | Yes | | |
| Sample Date/Times match COC: | No | | |
| VOA Vial Headspace ≥ 6mm: | No | | |
| VOA IDs ( ≥ 6mm): | N/A | | |

Unpacked by Joseph Gruber (5200) at 11:33 on 04/23/2014

## Samples Chilled Details

*Thermometer Types: DT = Digital IR = Infrared*

| Cooler # | Thermometer ID | Raw Temp (°C) | Corrected Temp (°C) | Thermometer Type | Ice Type | Ice Present? | Ice Container | Elevated Temp? |
|---|---|---|---|---|---|---|---|---|
| 1 | DT131 | 1.1 | 1.1 | DT | Wet | Y | Bagged | N |

## Sample Date/Time Discrepancy Details

| Sample ID on COC | Date/Time on Label | Comments |
|---|---|---|
| MW-8 | 4/21/2014 10:50 | |

General Comments:



2425 New Holland Pike
Lancaster, PA 17601-5994
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **RL** | Reporting Limit | **BMQL** | Below Minimum Quantitation Level |
| **N.D.** | none detected | **MPN** | Most Probable Number |
| **TNTC** | Too Numerous To Count | **CP Units** | cobalt-chloroplatinate units |
| **IU** | International Units | **NTU** | nephelometric turbidity units |
| **umhos/cm** | micromhos/cm | **ng** | nanogram(s) |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **meq** | milliequivalents | **lb.** | pound(s) |
| **g** | gram(s) | **kg** | kilogram(s) |
| **µg** | microgram(s) | **mg** | milligram(s) |
| **mL** | milliliter(s) | **L** | liter(s) |
| **m3** | cubic meter(s) | **µL** | microliter(s) |
| | | **pg/L** | picogram/liter |

**<** less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*Data Qualifiers:*

**C –** result confirmed by reanalysis.

**J -** estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

*U.S. EPA CLP Data Qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quantitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike sample not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

**Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

CompuChem
A Division Of
Liberty Analytical Corp.

4/30/2014

Abridged Data Package.

Full Deliverable Available

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP APPIX 2014 UNIT 5

WorkOrder: 1404151

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404151

**Project:** RAAP APPIX 2014 UNIT 5 **Sdg:** 1404151

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404151-01 | 5W7B | Water | 04/21/2014 12:30 | 04/23/2014 09:47 |
| 1404151-02 | 5W5B | Water | 04/21/2014 11:35 | 04/23/2014 09:47 |
| 1404151-03 | 5WC21 | Water | 04/21/2014 13:40 | 04/23/2014 09:47 |
| 1404151-04 | 5WDUP | Water | 04/21/2014 13:55 | 04/23/2014 09:47 |
| 1404151-05 | 5WC22 | Water | 04/21/2014 14:50 | 04/23/2014 09:47 |
| 1404151-06 | 5WC23 | Water | 04/22/2014 09:30 | 04/23/2014 09:47 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2014 UNIT 5

**Laboratory:** COMPUCHEM

**SDG:** 1404151

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 5W7B | SW8270D | 1404151-01 |
| 5W5B | SW8270D | 1404151-02 |
| 5WC21 | SW8270D | 1404151-03 |
| 5WDUP | SW8270D | 1404151-04 |
| 5WC22 | SW8270D | 1404151-05 |
| 5WC23 | SW8270D | 1404151-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Patricia A Murphy

Name: Pat Murphy

Date: 04/29/2014

Title: Senior Chemist

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

# CompuChem

**A division of Liberty Analytical Corporation**
**501 Madison Avenue**
**Cary, N.C. 27513**
**Tel: 919/379-4100 Fax: 919/379-4050**


## SDG NARRATIVE
## SDG # 1404151
## PROTOCOL: SW-846

**SAMPLE IDENTIFICATIONS: 5W7B 5W5B 5WC21 5WDUP 5WC22 5WC23**

The 6 aqueous samples listed above were received intact, temperatures ranging from 0.8°C to 0.9°C, with proper documentation, in sealed shipping containers, on April 22, 2014. These samples were scheduled for the requested analyses of the semivolatile fraction. SW-846, 3rd Edition, Update 3, Separatory Funnel extraction (Method 3510C), and Method 8270D were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the narrative deals with the semivolatile fraction only.

**Semivolatile**

Extraction and analysis holding time requirements were met for these samples.

There were no semivolatile project analytes identified above the Quantitation Limit (QL) in these samples.

Manual integrations were performed on one or more of the process files associated with this SDG. Please see the detailed Manual Integration Summary report that is located in section S. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Tailing factor criteria were met for pentachlorophenol and benzidine. The breakdown criterion was met for DDT. These three compounds have been added to the DFTPP solution and analyzed together.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of these samples.

All of the internal standards met response and retention time criteria in the analyses of these samples.

The associated method blanks met all quality control criteria.

Laboratory Control Sample (LCS/LCSD) was prepared and analyzed along with these samples.

5W7B was used as the original to prepare the duplicate matrix spikes as requested. The associated duplicate matrix spikes met all of the advisory accuracy criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Patricia A. Murphy
Senior Scientist
April 29, 2014

# CHAIN OF CUSTODY RECORD

OK - JLC 4/14/2014

Laboratory: CompuChem Environmental, 501 Madison Avenue, Cary NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | |
|---|---|---|---|
| **Client:** Draper Aden Associates<br>**Attn:** 0<br>**Address:** 0<br>0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU5<br>2nd Quarter 2014 Groundwater Corrective Action Monitoring Event<br>**Event:**<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>WPS: 12-237-301-01-9313-7248<br>**Carrier:**<br>**Tracking Number:** 12-237-301-01-9311-2431 |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
**Copy to Consultant:** YES
**Bill:** CLIENT **OTHER**
**Preserved and shipped on Ice:** YES

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | G | G | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | U | U | | | | | | |
| **Required pH of Sample** | | | | | <2 | <2 | | | | | | | |
| **Box 2 - Preservative** | | | | | B | B | H | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 1-500ml P | 1-500ml P | 2-1L A | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **(Metals-Total) 6020A(3005A)/ 7470A** | **Cobalt only-Total 6020A/3005A** | **8270D/3510C (Semivolatiles)** | **metals pH** | | | **ORG + 6020A/7470A** | | **Co only** |
| 5W8B | 4/21 | 1040 | GW | 1 | | X | | <2 | | | ~~1404151-01~~ | | 1404152-01 upgradient monitoring well |
| 5W5B | 4/21 | 1135 | GW | 3 | X | | X | <2 | | | 1404151-02 | | |
| 5W7B | | | GW | | | | | | | | | | USE FOR QB |
| 5WC21 | 4/21 | 1340 | GW | 3 | X | | X | <2 | | | | -03 | |
| 5WDUP | 4/21 | 1355 | GW | 3 | X | | X | <2 | | | | -04 | |
| 5WC22 | 4/21 | 1450 | GW | 3 | X | | X | <2 | | | | -05 | |
| 5WC23 | 4/22 | 0930 | GW | 3 | X | | X | <2 | | | ✓ | -06 | |
| 5W12A | 4/22 | 1025 | GW | 1 | | X | | <2 | | | | | 1404152-02 plume well |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**GENERAL NOTES:**
1. Report results with 'J' or 'B' flag, (report estimated results).
2. ERIS required. VELAP Accreditation required
3. Project specific MDL/QLs attached.

JLC 4/14/2014

**Clients Special Instructions:** level 4 with edd. 0.8°C, 0.9°C

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/21/14 | #1 Relinquished by (Signature): | Date: 4/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/21/14 | #1 Received by (Signature): | Date: 4/23/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: CompuChem | Time: 0947 | Company Name: | Time: | |

1/3
JLC 4/14/14

# HOLDING TIME SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 5W7B | 04/21/14 | 04/23/14 | 04/24/14 | 3 | 7 | 04/24/14 | 0.3 | 40 | |
| 5W5B | 04/21/14 | 04/23/14 | 04/24/14 | 3 | 7 | 04/24/14 | 0.4 | 40 | |
| 5WC21 | 04/21/14 | 04/23/14 | 04/24/14 | 3 | 7 | 04/24/14 | 0.4 | 40 | |
| 5WDUP | 04/21/14 | 04/23/14 | 04/24/14 | 3 | 7 | 04/24/14 | 0.4 | 40 | |
| 5WC22 | 04/21/14 | 04/23/14 | 04/24/14 | 3 | 7 | 04/25/14 | 1.1 | 40 | |
| 5WC23 | 04/22/14 | 04/23/14 | 04/24/14 | 2 | 7 | 04/24/14 | 0.5 | 40 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 5

SDG: 1404151 Instrument: 5972hp66

Sequence: 4D24008 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Blank (4042308-BLK1 ) ug/L** Lab File ID: 4042308-BLK166.d Analyzed: 04/24/14 15:23 | | | | |
| 2-Fluorophenol | 100.0 | 68 | 33 - 110 | |
| Phenol-d5 | 100.0 | 44 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 98 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 94 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 92 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 95 | 59 - 110 | |
| **LCS (4042308-BS1 ) ug/L** Lab File ID: 4042308-BS166.d Analyzed: 04/24/14 16:03 | | | | |
| 2-Fluorophenol | 100.0 | 71 | 33 - 110 | |
| Phenol-d5 | 100.0 | 44 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 98 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 96 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 106 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 86 | 59 - 110 | |
| **5W7B (1404151-01 ) ug/L** Lab File ID: 1404151-0166.d Analyzed: 04/24/14 16:42 | | | | |
| 2-Fluorophenol | 100.0 | 59 | 33 - 110 | |
| Phenol-d5 | 100.0 | 34 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 78 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 90 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 98 | 59 - 110 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 5

SDG: 1404151 Instrument: 5972hp66

Sequence: 4D24008 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Matrix Spike (4042308-MS1 ) ug/L** Lab File ID: 4042308-MS166.d Analyzed: 04/24/14 17:21 | | | | |
| 2-Fluorophenol | 100.0 | 64 | 33 - 110 | |
| Phenol-d5 | 100.0 | 37 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 93 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 91 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 108 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 91 | 59 - 110 | |
| **Matrix Spike Dup (4042308-MSD1 ) ug/L** Lab File ID: 4042308-MSD166.d Analyzed: 04/24/14 18:01 | | | | |
| 2-Fluorophenol | 100.0 | 59 | 33 - 110 | |
| Phenol-d5 | 100.0 | 34 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 92 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 90 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 106 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 89 | 59 - 110 | |
| **5W5B (1404151-02 ) ug/L** Lab File ID: 1404151-0266.d Analyzed: 04/24/14 18:41 | | | | |
| 2-Fluorophenol | 100.0 | 64 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 90 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 87 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 94 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 91 | 59 - 110 | |

# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 5

SDG: 1404151 Instrument: 5972hp66

Sequence: 4D24008 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **5WC21 (1404151-03 ) ug/L** Lab File ID: 1404151-0366.d Analyzed: 04/24/14 19:20 | | | | |
| 2-Fluorophenol | 100.0 | 62 | 33 - 110 | |
| Phenol-d5 | 100.0 | 35 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 93 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 89 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 96 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 95 | 59 - 110 | |
| **5WDUP (1404151-04 ) ug/L** Lab File ID: 1404151-0466.d Analyzed: 04/24/14 20:00 | | | | |
| 2-Fluorophenol | 100.0 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 38 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 96 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 90 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 98 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 97 | 59 - 110 | |
| **5WC23 (1404151-06 ) ug/L** Lab File ID: 1404151-0666.d Analyzed: 04/24/14 21:19 | | | | |
| 2-Fluorophenol | 100.0 | 62 | 33 - 110 | |
| Phenol-d5 | 100.0 | 37 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 95 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 92 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 97 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 94 | 59 - 110 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 5

SDG: 1404151 Instrument: 5972hp66

Sequence: 4D25003 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **5WC22 (1404151-05 ) ug/L** Lab File ID: 1404151-05J66.d Analyzed: 04/25/14 12:24 | | | | |
| 2-Fluorophenol | 100.0 | 57 | 33 - 110 | |
| Phenol-d5 | 100.0 | 34 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 95 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 91 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 98 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 93 | 59 - 110 | |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042308-BS1 Matrix: Water Client ID: SLCSPB Batch: 4042308

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Nitrobenzene | 40.00 | 36.92 | 92 | | 59 - 100 |
| 2-Nitroaniline | 40.00 | 32.83 | 82 | | 67 - 110 |
| 2,6-Dinitrotoluene | 40.00 | 42.74 | 107 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 41.63 | 104 | | 58 - 123 |
| Diethylphthalate | 40.00 | 38.85 | 97 | | 64 - 114 |
| 4-Nitroaniline | 40.00 | 42.58 | 106 | | 78 - 124 |
| bis(2-ethylhexyl)Phthalate | 40.00 | 42.69 | 107 | | 75 - 114 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**5W7BMS**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042308-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Nitrobenzene | 40.00 | 5.0 U | 35.56 | 89 | | 59 - 100 |
| 2-Nitroaniline | 40.00 | 10 U | 32.48 | 81 | | 67 - 110 |
| 2,6-Dinitrotoluene | 40.00 | 5.0 U | 39.85 | 100 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 5.0 U | 40.03 | 100 | | 58 - 123 |
| Diethylphthalate | 40.00 | 5.0 U | 37.46 | 94 | | 64 - 114 |
| 4-Nitroaniline | 40.00 | 10 U | 41.32 | 103 | | 78 - 124 |
| bis(2-ethylhexyl)Phthalate | 40.00 | 5.0 U | 42.67 | 107 | | 75 - 114 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**5W7BMSD**

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Lab ID: 4042308-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404151-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Nitrobenzene | 40.00 | 36.20 | 91 | 2 | | 30 | 59 - 100 |
| 2-Nitroaniline | 40.00 | 31.27 | 78 | 4 | | 30 | 67 - 110 |
| 2,6-Dinitrotoluene | 40.00 | 39.20 | 98 | 2 | | 30 | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 40.45 | 101 | 1 | | 30 | 58 - 123 |
| Diethylphthalate | 40.00 | 38.60 | 96 | 3 | | 30 | 64 - 114 |
| 4-Nitroaniline | 40.00 | 40.80 | 102 | 1 | | 30 | 78 - 124 |
| bis(2-ethylhexyl)Phthalate | 40.00 | 42.46 | 106 | 0.5 | | 30 | 75 - 114 |

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# PREPARATION BATCH SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Batch: 4042308 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 5W7B | 1404151-01 | 04/24/14 09:38 | 1000 | 1000 |
| 5W5B | 1404151-02 | 04/24/14 09:38 | 1000 | 1000 |
| 5WC21 | 1404151-03 | 04/24/14 09:38 | 1000 | 1000 |
| 5WDUP | 1404151-04 | 04/24/14 09:38 | 1000 | 1000 |
| 5WC22 | 1404151-05 | 04/24/14 09:38 | 1000 | 1000 |
| 5WC23 | 1404151-06 | 04/24/14 09:38 | 1000 | 1000 |
| SBLKPB | 4042308-BLK1 | 04/24/14 09:38 | 1000 | 1000 |
| SLCSPB | 4042308-BS1 | 04/24/14 09:38 | 1000 | 1000 |
| 5W7BMS | 4042308-MS1 | 04/24/14 09:38 | 1000 | 1000 |
| 5W7BMSD | 4042308-MSD1 | 04/24/14 09:38 | 1000 | 1000 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D22009 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCJ | 4D22009-TUN1 | 4D22009-TUN166.d | 04/22/14 12:18:00 |
| SSTD060CJ | 4D22009-CAL6 | 4D22009-CAL666.d | 04/22/14 12:46:00 |
| SSTD050CJ | 4D22009-CAL5 | 4D22009-CAL566.d | 04/22/14 13:26:00 |
| SSTD040CJ | 4D22009-CAL4 | 4D22009-CAL466.d | 04/22/14 14:06:00 |
| SSTD025CJ | 4D22009-CAL3 | 4D22009-CAL366.d | 04/22/14 14:46:00 |
| SSTD010CJ | 4D22009-CAL2 | 4D22009-CAL266.d | 04/22/14 15:26:00 |
| SSTD005CJ | 4D22009-CAL1 | 4D22009-CAL166.d | 04/22/14 16:06:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D24008 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCM | 4D24008-TUN1 | 4D24008-TUN166.d | 04/24/14 14:22:00 |
| SSTD025CM | 4D24008-ICV1 | 4D24008-ICV166.d | 04/24/14 14:44:00 |
| SBLKPB | 4042308-BLK1 | 4042308-BLK166.d | 04/24/14 15:23:00 |
| SLCSPB | 4042308-BS1 | 4042308-BS166.d | 04/24/14 16:03:00 |
| 5W7B | 1404151-01 | 1404151-0166.d | 04/24/14 16:42:00 |
| 5W7BMS | 4042308-MS1 | 4042308-MS166.d | 04/24/14 17:21:00 |
| 5W7BMSD | 4042308-MSD1 | 4042308-MSD166.d | 04/24/14 18:01:00 |
| 5W5B | 1404151-02 | 1404151-0266.d | 04/24/14 18:41:00 |
| 5WC21 | 1404151-03 | 1404151-0366.d | 04/24/14 19:20:00 |
| 5WDUP | 1404151-04 | 1404151-0466.d | 04/24/14 20:00:00 |
| 5WC23 | 1404151-06 | 1404151-0666.d | 04/24/14 21:19:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404151 Project: RAAP APPIX 2014 UNIT 5

Sequence: 4D25003 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCO | 4D25003-TUN1 | 4D25003-TUN166.d | 04/25/14 11:22:00 |
| SSTD025CO | 4D25003-ICV1 | 4D25003-ICV166.d | 04/25/14 11:43:00 |
| 5WC22 | 1404151-05 | 1404151-05J66.d | 04/25/14 12:24:00 |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404151 |
| Client: | DRAPER | Project: | RAAP APPIX 2014 UNIT 5 |
| Lab File ID: | 4D22009-TUN166.d | Injection Date: | 04/22/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 12:18 |
| Sequence: | 4D22009 | Lab Sample ID: | 4D22009-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 55.7 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 68.1 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 53.9 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.58 | PASS |
| 275 | 10 - 60% of 198 | 20.2 | PASS |
| 365 | Greater than 1% of 198 | 2.32 | PASS |
| 441 | Less than 100% of 443 | 79 | PASS |
| 442 | 50 - 100% of 198 | 60.4 | PASS |
| 443 | 15 - 24% of 442 | 19.5 | PASS |

# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404151 |
| Client: | DRAPER | Project: | RAAP APPIX 2014 UNIT 5 |
| Lab File ID: | 4D24008-TUN166.d | Injection Date: | 04/24/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 14:22 |
| Sequence: | 4D24008 | Lab Sample ID: | 4D24008-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 60 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 72.1 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 58.9 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.57 | PASS |
| 275 | 10 - 60% of 198 | 20.8 | PASS |
| 365 | Greater than 1% of 198 | 2.42 | PASS |
| 441 | Less than 100% of 443 | 76.4 | PASS |
| 442 | 50 - 100% of 198 | 60 | PASS |
| 443 | 15 - 24% of 442 | 19.5 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404151 |
| Client: | DRAPER | Project: | RAAP APPIX 2014 UNIT 5 |
| Lab File ID: | 4D25003-TUN166.d | Injection Date: | 04/25/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 11:22 |
| Sequence: | 4D25003 | Lab Sample ID: | 4D25003-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 54.3 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 64.6 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 51.6 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.45 | PASS |
| 275 | 10 - 60% of 198 | 21.7 | PASS |
| 365 | Greater than 1% of 198 | 2.82 | PASS |
| 441 | Less than 100% of 443 | 86.7 | PASS |
| 442 | 50 - 100% of 198 | 69.6 | PASS |
| 443 | 15 - 24% of 442 | 18.4 | PASS |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4D24008
SDG: 1404151
Project: RAAP APPIX 2014 UNIT 5
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4D24008-ICV1 )** | | | Lab File ID: 4D24008-ICV166.d | | | Analyzed: 04/24/14 14:44 | | | |
| 1,4-Dichlorobenzene-d4 | 40672 | 7.574 | 44930 | 7.608 | 91 | 50 - 200 | -0.0340 | +/-0.50 | |
| Naphthalene-d8 | 143614 | 10.396 | 165817 | 10.43 | 87 | 50 - 200 | -0.0340 | +/-0.50 | |
| Acenaphthene-d10 | 82589 | 14.444 | 95627 | 14.478 | 86 | 50 - 200 | -0.0340 | +/-0.50 | |
| Phenanthrene-d10 | 144703 | 17.316 | 175900 | 17.341 | 82 | 50 - 200 | -0.0250 | +/-0.50 | |
| Chrysene-d12 | 163360 | 21.671 | 191030 | 21.685 | 86 | 50 - 200 | -0.0140 | +/-0.50 | |
| Perylene-d12 | 108481 | 23.757 | 132118 | 23.771 | 82 | 50 - 200 | -0.0140 | +/-0.50 | |
| **Blank (4042308-BLK1 )** | | | Lab File ID: 4042308-BLK166.d | | | Analyzed: 04/24/14 15:23 | | | |
| 1,4-Dichlorobenzene-d4 | 43752 | 7.578 | 40672 | 7.574 | 108 | 50 - 200 | 0.0040 | +/-0.50 | |
| Naphthalene-d8 | 158342 | 10.4 | 143614 | 10.396 | 110 | 50 - 200 | 0.0040 | +/-0.50 | |
| Acenaphthene-d10 | 88871 | 14.448 | 82589 | 14.444 | 108 | 50 - 200 | 0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 164276 | 17.32 | 144703 | 17.316 | 114 | 50 - 200 | 0.0040 | +/-0.50 | |
| Chrysene-d12 | 168016 | 21.665 | 163360 | 21.671 | 103 | 50 - 200 | -0.0060 | +/-0.50 | |
| Perylene-d12 | 103824 | 23.761 | 108481 | 23.757 | 96 | 50 - 200 | 0.0040 | +/-0.50 | |
| **LCS (4042308-BS1 )** | | | Lab File ID: 4042308-BS166.d | | | Analyzed: 04/24/14 16:03 | | | |
| 1,4-Dichlorobenzene-d4 | 53393 | 7.578 | 40672 | 7.574 | 131 | 50 - 200 | 0.0040 | +/-0.50 | |
| Naphthalene-d8 | 192728 | 10.399 | 143614 | 10.396 | 134 | 50 - 200 | 0.0030 | +/-0.50 | |
| Acenaphthene-d10 | 110652 | 14.458 | 82589 | 14.444 | 134 | 50 - 200 | 0.0140 | +/-0.50 | |
| Phenanthrene-d10 | 202645 | 17.32 | 144703 | 17.316 | 140 | 50 - 200 | 0.0040 | +/-0.50 | |
| Chrysene-d12 | 221845 | 21.675 | 163360 | 21.671 | 136 | 50 - 200 | 0.0040 | +/-0.50 | |
| Perylene-d12 | 146953 | 23.761 | 108481 | 23.757 | 135 | 50 - 200 | 0.0040 | +/-0.50 | |
| **5W7B (1404151-01 )** | | | Lab File ID: 1404151-0166.d | | | Analyzed: 04/24/14 16:42 | | | |
| 1,4-Dichlorobenzene-d4 | 37174 | 7.577 | 40672 | 7.574 | 91 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 132017 | 10.399 | 143614 | 10.396 | 92 | 50 - 200 | 0.0030 | +/-0.50 | |
| Acenaphthene-d10 | 75607 | 14.447 | 82589 | 14.444 | 92 | 50 - 200 | 0.0030 | +/-0.50 | |
| Phenanthrene-d10 | 141224 | 17.319 | 144703 | 17.316 | 98 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 139459 | 21.674 | 163360 | 21.671 | 85 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 86747 | 23.76 | 108481 | 23.757 | 80 | 50 - 200 | 0.0030 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4D24008
SDG: 1404151
Project: RAAP APPIX 2014 UNIT 5
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike (4042308-MS1 )** | | | Lab File ID: 4042308-MS166.d | | | Analyzed: 04/24/14 17:21 | | | |
| 1,4-Dichlorobenzene-d4 | 45766 | 7.582 | 40672 | 7.574 | 113 | 50 - 200 | 0.0080 | +/-0.50 | |
| Naphthalene-d8 | 171509 | 10.404 | 143614 | 10.396 | 119 | 50 - 200 | 0.0080 | +/-0.50 | |
| Acenaphthene-d10 | 100250 | 14.452 | 82589 | 14.444 | 121 | 50 - 200 | 0.0080 | +/-0.50 | |
| Phenanthrene-d10 | 177981 | 17.325 | 144703 | 17.316 | 123 | 50 - 200 | 0.0090 | +/-0.50 | |
| Chrysene-d12 | 193382 | 21.669 | 163360 | 21.671 | 118 | 50 - 200 | -0.0020 | +/-0.50 | |
| Perylene-d12 | 134954 | 23.765 | 108481 | 23.757 | 124 | 50 - 200 | 0.0080 | +/-0.50 | |
| **Matrix Spike Dup (4042308-MSD1 )** | | | Lab File ID: 4042308-MSD166.d | | | Analyzed: 04/24/14 18:01 | | | |
| 1,4-Dichlorobenzene-d4 | 41928 | 7.588 | 40672 | 7.574 | 103 | 50 - 200 | 0.0140 | +/-0.50 | |
| Naphthalene-d8 | 140663 | 10.399 | 143614 | 10.396 | 98 | 50 - 200 | 0.0030 | +/-0.50 | |
| Acenaphthene-d10 | 80297 | 14.458 | 82589 | 14.444 | 97 | 50 - 200 | 0.0140 | +/-0.50 | |
| Phenanthrene-d10 | 150921 | 17.32 | 144703 | 17.316 | 104 | 50 - 200 | 0.0040 | +/-0.50 | |
| Chrysene-d12 | 157775 | 21.675 | 163360 | 21.671 | 97 | 50 - 200 | 0.0040 | +/-0.50 | |
| Perylene-d12 | 106861 | 23.761 | 108481 | 23.757 | 99 | 50 - 200 | 0.0040 | +/-0.50 | |
| **5W5B (1404151-02 )** | | | Lab File ID: 1404151-0266.d | | | Analyzed: 04/24/14 18:41 | | | |
| 1,4-Dichlorobenzene-d4 | 49049 | 7.579 | 40672 | 7.574 | 121 | 50 - 200 | 0.0050 | +/-0.50 | |
| Naphthalene-d8 | 177928 | 10.4 | 143614 | 10.396 | 124 | 50 - 200 | 0.0040 | +/-0.50 | |
| Acenaphthene-d10 | 99237 | 14.448 | 82589 | 14.444 | 120 | 50 - 200 | 0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 184703 | 17.321 | 144703 | 17.316 | 128 | 50 - 200 | 0.0050 | +/-0.50 | |
| Chrysene-d12 | 194019 | 21.676 | 163360 | 21.671 | 119 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 124769 | 23.761 | 108481 | 23.757 | 115 | 50 - 200 | 0.0040 | +/-0.50 | |
| **5WC21 (1404151-03 )** | | | Lab File ID: 1404151-0366.d | | | Analyzed: 04/24/14 19:20 | | | |
| 1,4-Dichlorobenzene-d4 | 46422 | 7.579 | 40672 | 7.574 | 114 | 50 - 200 | 0.0050 | +/-0.50 | |
| Naphthalene-d8 | 164643 | 10.4 | 143614 | 10.396 | 115 | 50 - 200 | 0.0040 | +/-0.50 | |
| Acenaphthene-d10 | 90860 | 14.448 | 82589 | 14.444 | 110 | 50 - 200 | 0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 160295 | 17.321 | 144703 | 17.316 | 111 | 50 - 200 | 0.0050 | +/-0.50 | |
| Chrysene-d12 | 168143 | 21.666 | 163360 | 21.671 | 103 | 50 - 200 | -0.0050 | +/-0.50 | |
| Perylene-d12 | 101985 | 23.761 | 108481 | 23.757 | 94 | 50 - 200 | 0.0040 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404151
Client: DRAPER
Project: RAAP APPIX 2014 UNIT 5
Sequence: 4D24008
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **5WDUP (1404151-04 )** | | | Lab File ID: 1404151-0466.d | | | Analyzed: 04/24/14 20:00 | | | |
| 1,4-Dichlorobenzene-d4 | 58823 | 7.576 | 40672 | 7.574 | 145 | 50 - 200 | 0.0020 | +/-0.50 | |
| Naphthalene-d8 | 216384 | 10.398 | 143614 | 10.396 | 151 | 50 - 200 | 0.0020 | +/-0.50 | |
| Acenaphthene-d10 | 120906 | 14.446 | 82589 | 14.444 | 146 | 50 - 200 | 0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 213663 | 17.319 | 144703 | 17.316 | 148 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 220190 | 21.674 | 163360 | 21.671 | 135 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 141923 | 23.759 | 108481 | 23.757 | 131 | 50 - 200 | 0.0020 | +/-0.50 | |
| **5WC23 (1404151-06 )** | | | Lab File ID: 1404151-0666.d | | | Analyzed: 04/24/14 21:19 | | | |
| 1,4-Dichlorobenzene-d4 | 44253 | 7.576 | 40672 | 7.574 | 109 | 50 - 200 | 0.0020 | +/-0.50 | |
| Naphthalene-d8 | 155846 | 10.387 | 143614 | 10.396 | 109 | 50 - 200 | -0.0090 | +/-0.50 | |
| Acenaphthene-d10 | 88258 | 14.446 | 82589 | 14.444 | 107 | 50 - 200 | 0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 159165 | 17.318 | 144703 | 17.316 | 110 | 50 - 200 | 0.0020 | +/-0.50 | |
| Chrysene-d12 | 164419 | 21.673 | 163360 | 21.671 | 101 | 50 - 200 | 0.0020 | +/-0.50 | |
| Perylene-d12 | 99702 | 23.759 | 108481 | 23.757 | 92 | 50 - 200 | 0.0020 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404151
Client: DRAPER
Project: RAAP APPIX 2014 UNIT 5
Sequence: 4D25003
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4D25003-ICV1 )** | | | Lab File ID: 4D25003-ICV166.d | | | Analyzed: 04/25/14 11:43 | | | |
| 1,4-Dichlorobenzene-d4 | 55658 | 7.583 | 44930 | 7.608 | 124 | 50 - 200 | -0.0250 | +/-0.50 | |
| Naphthalene-d8 | 201148 | 10.394 | 165817 | 10.43 | 121 | 50 - 200 | -0.0360 | +/-0.50 | |
| Acenaphthene-d10 | 111707 | 14.453 | 95627 | 14.478 | 117 | 50 - 200 | -0.0250 | +/-0.50 | |
| Phenanthrene-d10 | 202300 | 17.325 | 175900 | 17.341 | 115 | 50 - 200 | -0.0160 | +/-0.50 | |
| Chrysene-d12 | 217146 | 21.68 | 191030 | 21.685 | 114 | 50 - 200 | -0.0050 | +/-0.50 | |
| Perylene-d12 | 147564 | 23.766 | 132118 | 23.771 | 112 | 50 - 200 | -0.0050 | +/-0.50 | |
| **5WC22 (1404151-05 )** | | | Lab File ID: 1404151-05J66.d | | | Analyzed: 04/25/14 12:24 | | | |
| 1,4-Dichlorobenzene-d4 | 54590 | 7.593 | 55658 | 7.583 | 98 | 50 - 200 | 0.0100 | +/-0.50 | |
| Naphthalene-d8 | 193092 | 10.404 | 201148 | 10.394 | 96 | 50 - 200 | 0.0100 | +/-0.50 | |
| Acenaphthene-d10 | 106174 | 14.462 | 111707 | 14.453 | 95 | 50 - 200 | 0.0090 | +/-0.50 | |
| Phenanthrene-d10 | 198021 | 17.325 | 202300 | 17.325 | 98 | 50 - 200 | 0.0000 | +/-0.50 | |
| Chrysene-d12 | 204174 | 21.68 | 217146 | 21.68 | 94 | 50 - 200 | 0.0000 | +/-0.50 | |
| Perylene-d12 | 131373 | 23.765 | 147564 | 23.766 | 89 | 50 - 200 | -0.0010 | +/-0.50 | |

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# K. Target Compound Results

## (ANALYSIS DATA SHEETS)

### Analysis Data Sheets (ADS), Tentatively Identified Compounds (TICs), and Surrogate Recovery Results

Sample data shall be arranged in packets with the Analysis Data Sheet, followed by the raw data for volatile or semivolatile samples. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (ANALYSIS DATA SHEET)

Tabulated results (identification and quantitation) and Tentatively Identified Compounds (TICs) shall be included.

b. Reconstructed Ion Chromatograms (RICs)

Include for each sample or sample extract, including dilutions and reanalyses. The RIC shall contain the following header information: Client Sample ID Number, date and time of analysis, instrument ID, Lab file ID, and analyst ID.

d. Quantitation Report for target analytes and TICs.

Include a printout of the Extracted Ion Current Profile (EICP) for all manual changes to all compounds, internal standards, and surrogate compounds.

e. Copies of raw spectra and copies of background-subtracted mass spectra of target analytes plus TICs identified in the sample.

- The spectra shall include the following information: Client Sample ID number, Lab file ID, date and time of analysis, and instrument ID.
- The compound name must be clearly marked.

# ANALYSIS DATA SHEET

*SW8270D*

**5W5B**

Client: DRAPER SDG 1404151 Project: RAAP APPIX 2014 UNIT 5

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404151-0266.d Sampled: 04/21/14 11:35

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404151-02 Received: 04/23/14 09:47

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/24/14 09:38

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 04/24/14 18:41

Batch: 4042308 Sequence: 4D24008 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 63.53 | 64 | 33 - 110 | |
| Phenol-d5 | 100.0 | 35.78 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 45.20 | 90 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.73 | 87 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 94.47 | 94 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 45.62 | 91 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**5W7B**

Client: DRAPER SDG 1404151 Project: RAAP APPIX 2014 UNIT 5

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404151-0166.d Sampled: 04/21/14 12:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404151-01 Received: 04/23/14 09:47

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/24/14 09:38

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 04/24/14 16:42

Batch: 4042308 Sequence: 4D24008 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 58.68 | 59 | 33 - 110 | |
| Phenol-d5 | 100.0 | 34.38 | 34 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 43.53 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 39.23 | 78 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 90.29 | 90 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 49.03 | 98 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**5WC21**

Client: DRAPER | SDG 1404151 | Project: RAAP APPIX 2014 UNIT 5

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404151-0366.d | Sampled: 04/21/14 13:40

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404151-03 | Received: 04/23/14 09:47

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/24/14 09:38

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 04/24/14 19:20

Batch: 4042308 | Sequence: 4D24008 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 61.99 | 62 | 33 - 110 | |
| Phenol-d5 | 100.0 | 35.27 | 35 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 46.49 | 93 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 44.31 | 89 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 96.14 | 96 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 47.50 | 95 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**5WC22**

Client: DRAPER SDG 1404151 Project: RAAP APPIX 2014 UNIT 5

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404151-05J66.d Sampled: 04/21/14 14:50

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404151-05 Received: 04/23/14 09:47

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/24/14 09:38

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 04/25/14 12:24

Batch: 4042308 Sequence: 4D25003 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 57.49 | 57 | 33 - 110 | |
| Phenol-d5 | 100.0 | 33.66 | 34 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 47.64 | 95 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 45.75 | 91 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 98.16 | 98 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 46.38 | 93 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**5WC23**

Client: DRAPER SDG 1404151 Project: RAAP APPIX 2014 UNIT 5

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404151-0666.d Sampled: 04/22/14 09:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404151-06 Received: 04/23/14 09:47

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/24/14 09:38

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 04/24/14 21:19

Batch: 4042308 Sequence: 4D24008 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | 1.8 | 1.5 | 10 | *J* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 61.89 | 62 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36.90 | 37 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 47.74 | 95 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 46.04 | 92 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 97.49 | 97 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 47.20 | 94 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**5WDUP**

Client: DRAPER SDG 1404151 Project: RAAP APPIX 2014 UNIT 5

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404151-0466.d Sampled: 04/21/14 13:55

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404151-04 Received: 04/23/14 09:47

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/24/14 09:38

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 04/24/14 20:00

Batch: 4042308 Sequence: 4D24008 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 64.77 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 38.40 | 38 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 47.86 | 96 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 45.14 | 90 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 98.04 | 98 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 48.35 | 97 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# INITIAL CALIBRATION DATA

*SW8270D*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| Nitrobenzene | 5 | 0.3832066 | 10 | 0.3777684 | 25 | 0.3808488 | 40 | 0.3787373 | 50 | 0.3760694 | 60 | 0.3854268 |
| 2-Nitroaniline | 5 | 0.4433166 | 10 | 0.4670112 | 25 | 0.4827089 | 40 | 0.5062273 | 50 | 0.5360717 | 60 | 0.5376904 |
| 2,6-Dinitrotoluene | 5 | 0.2762765 | 10 | 0.309431 | 25 | 0.3058132 | 40 | 0.3352447 | 50 | 0.3398496 | 60 | 0.3189316 |
| 2,4-Dinitrotoluene | 5 | 0.3425319 | 10 | 0.4294307 | 25 | 0.4038106 | 40 | 0.4381392 | 50 | 0.4420014 | 60 | 0.4437619 |
| Diethylphthalate | 5 | 1.462673 | 10 | 1.608279 | 25 | 1.517454 | 40 | 1.673174 | 50 | 1.675542 | 60 | 1.558416 |
| 4-Nitroaniline | 5 | 0.2910991 | 10 | 0.3251633 | 25 | 0.331078 | 40 | 0.357856 | 50 | 0.339495 | 60 | 0.3444759 |
| bis(2-ethylhexyl)Phthalate | 5 | 0.671079 | 10 | 0.707517 | 25 | 0.7778548 | 40 | 0.8748133 | 50 | 0.862684 | 60 | 0.8829897 |
| 2-Fluorophenol | 5 | 1.200806 | 10 | 1.092518 | 25 | 1.041282 | 40 | 1.04436 | 50 | 1.110219 | 60 | 1.153749 |
| Phenol-d5 | 5 | 1.300859 | 10 | 1.421597 | 25 | 1.326775 | 40 | 1.225576 | 50 | 1.386654 | 60 | 1.420304 |
| Nitrobenzene-d5 | 5 | 0.3271642 | 10 | 0.3601098 | 25 | 0.3629785 | 40 | 0.3640401 | 50 | 0.3857748 | 60 | 0.3812708 |
| 2-Fluorobiphenyl | 5 | 1.251505 | 10 | 1.231516 | 25 | 1.235793 | 40 | 1.270715 | 50 | 1.29251 | 60 | 1.299213 |
| 2,4,6-Tribromophenol | 5 | 0.2098512 | 10 | 0.2455995 | 25 | 0.2821797 | 40 | 0.2947091 | 50 | 0.2893745 | 60 | 0.2872632 |
| Terphenyl-d14 | 5 | 0.7924192 | 10 | 0.7046688 | 25 | 0.6886793 | 40 | 0.7161451 | 50 | 0.7246377 | 60 | 0.7173678 |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Nitrobenzene | 0.3803429 | 0.9240529 | 8.8745 | 6.310448E-02 | | | CCC (20) | |
| 2-Nitroaniline | 0.4955044 | 7.67929 | 13.51883 | 0.0166055 | | | CCC (20) | |
| 2,6-Dinitrotoluene | 0.3142578 | 7.331849 | 14.14933 | 2.177386E-02 | | | CCC (20) | |
| 2,4-Dinitrotoluene | 0.4166126 | 9.395741 | 15.01667 | 3.320153E-02 | | | CCC (20) | |
| Diethylphthalate | 1.58259 | 5.414426 | 15.64717 | 4.180689E-02 | | | CCC (20) | |
| 4-Nitroaniline | 0.3315279 | 6.877637 | 15.74083 | 5.735518E-02 | | | CCC (20) | |
| bis(2-ethylhexyl)Phthalate | 0.7961563 | 11.51027 | 21.99367 | 1.727018E-02 | | | CCC (20) | |
| 2-Fluorophenol | 1.107156 | 5.632986 | 4.9625 | 0.1426166 | | | CCC (20) | |
| Phenol-d5 | 1.346961 | 5.730769 | 7.046167 | 4.705705E-02 | | | CCC (20) | |
| Nitrobenzene-d5 | 0.3635564 | 5.696206 | 8.835167 | 4.219197E-02 | | | CCC (20) | |
| 2-Fluorobiphenyl | 1.263542 | 2.267339 | 13.047 | 3.035135E-02 | | | CCC (20) | |
| 2,4,6-Tribromophenol | 0.2681629 | 12.50803 | 16.1035 | 2.098516E-02 | | | CCC (20) | |
| Terphenyl-d14 | 0.7239863 | 4.944976 | 20.10933 | 1.637711E-02 | | | CCC (20) | |

# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4D24008-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4D24008 Injection Date: 04/24/14

Lab Sample ID: 4D24008-ICV1 Injection Time: 14:44

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| Nitrobenzene | Avg | 25.00 | 26.50 | 0.3803429 | 0.4032977 | 0.2 | 6.0 | 20 |
| 2-Nitroaniline | Avg | 25.00 | 25.50 | 0.4955044 | 0.5040574 | 0.01 | 1.7 | 20 |
| 2,6-Dinitrotoluene | Avg | 25.00 | 23.50 | 0.3142578 | 0.2957682 | 0.2 | -5.9 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 24.50 | 0.4166126 | 0.4085968 | 0.2 | -1.9 | 20 |
| Diethylphthalate | Avg | 25.00 | 24.00 | 1.58259 | 1.511184 | 0.01 | -4.5 | 20 |
| 4-Nitroaniline | Avg | 25.00 | 24.00 | 0.3315279 | 0.3172045 | 0.01 | -4.3 | 20 |
| bis(2-ethylhexyl)Phthalate | Avg | 25.00 | 25.00 | 0.7961563 | 0.7992018 | 0.01 | 0.4 | 20 |
| 2-Fluorophenol | Avg | 25.00 | 23.50 | 1.107156 | 1.046696 | 0.05 | -5.5 | 20 |
| Phenol-d5 | Avg | 25.00 | 24.50 | 1.346961 | 1.327282 | 0.05 | -1.5 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 26.00 | 0.3635564 | 0.3804253 | 0.05 | 4.6 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 25.00 | 1.263542 | 1.275569 | 0.05 | 1.0 | 20 |
| 2,4,6-Tribromophenol | Avg | 25.00 | 25.00 | 0.2681629 | 0.2665924 | 0.05 | -0.6 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 24.00 | 0.7239863 | 0.6890597 | 0.05 | -4.8 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404151

Project: RAAP APPIX 2014 UNIT 5

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4D25003-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4D25003 Injection Date: 04/25/14

Lab Sample ID: 4D25003-ICV1 Injection Time: 11:43

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| Nitrobenzene | Avg | 25.00 | 25.00 | 0.3803429 | 0.3766381 | 0.2 | -1.0 | 20 |
| 2-Nitroaniline | Avg | 25.00 | 27.50 | 0.4955044 | 0.5453051 | 0.01 | 10.1 | 20 |
| 2,6-Dinitrotoluene | Avg | 25.00 | 26.00 | 0.3142578 | 0.3242554 | 0.2 | 3.2 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 26.00 | 0.4166126 | 0.4329183 | 0.2 | 3.9 | 20 |
| Diethylphthalate | Avg | 25.00 | 24.50 | 1.58259 | 1.550571 | 0.01 | -2.0 | 20 |
| 4-Nitroaniline | Avg | 25.00 | 25.00 | 0.3315279 | 0.3335297 | 0.01 | 0.6 | 20 |
| bis(2-ethylhexyl)Phthalate | Avg | 25.00 | 25.00 | 0.7961563 | 0.8052683 | 0.01 | 1.1 | 20 |
| 2-Fluorophenol | Avg | 25.00 | 24.00 | 1.107156 | 1.068827 | 0.05 | -3.5 | 20 |
| Phenol-d5 | Avg | 25.00 | 24.50 | 1.346961 | 1.323555 | 0.05 | -1.7 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 26.00 | 0.3635564 | 0.379625 | 0.05 | 4.4 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 25.50 | 1.263542 | 1.296227 | 0.05 | 2.6 | 20 |
| 2,4,6-Tribromophenol | Avg | 25.00 | 27.00 | 0.2681629 | 0.2892925 | 0.05 | 7.9 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 25.00 | 0.7239863 | 0.7173349 | 0.05 | -0.9 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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Data File: /chem/5972hp66.i/D4D22009A66.b/4D22009-TUN166.d

Date : 22-APR-2014 12:18

Client ID: DFTPPCJ

Instrument: 5972hp66.i

Sample Info: 4D22009-TUN1:OWS

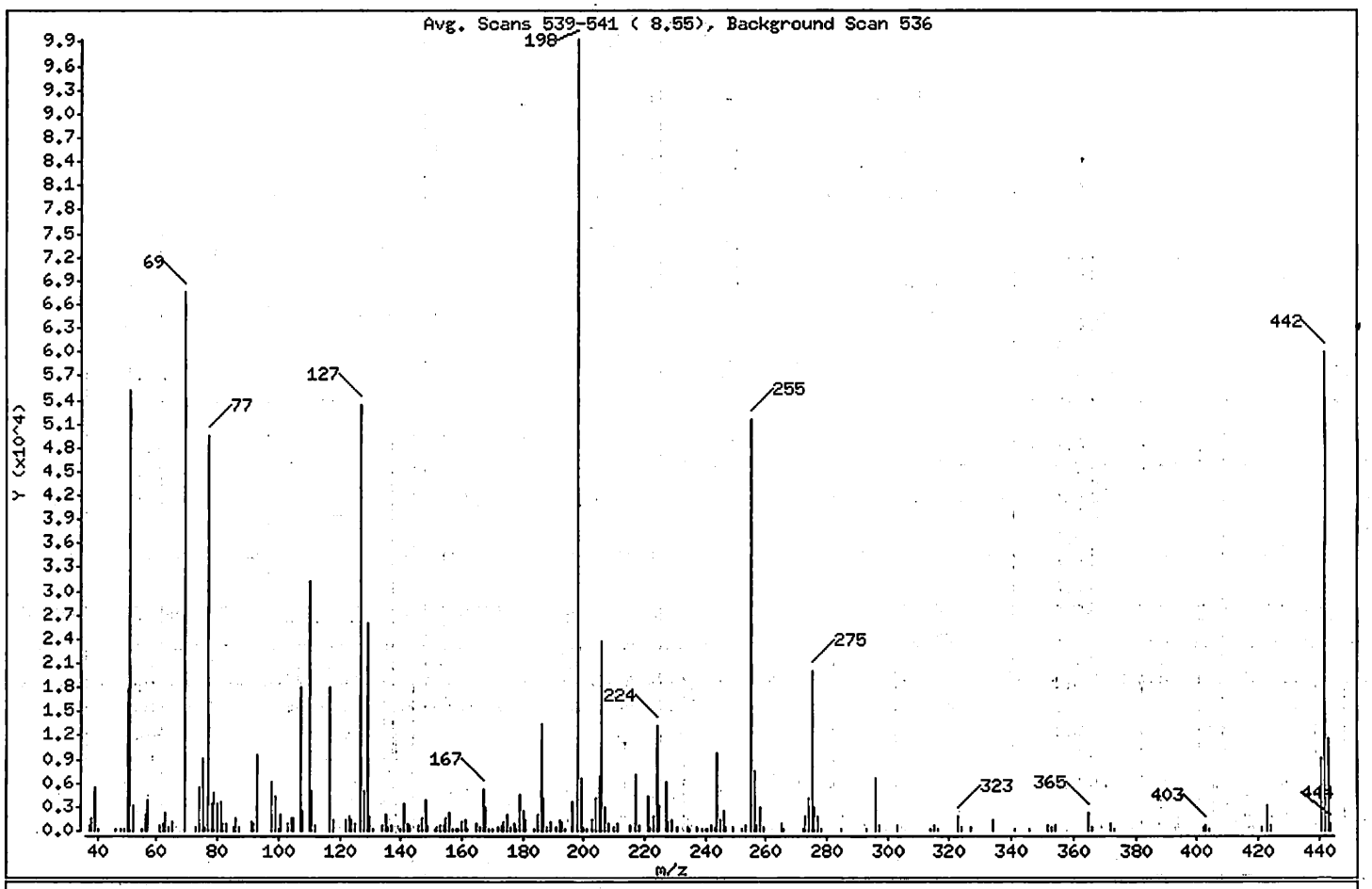
Volume Injected (uL): 2.0

Operator: OWS

Column phase: RTX-5MS

Column diameter: 0.32

1 Decafluorotriphenylphosphine




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 |
| 51 | 10.00 - 80.00% of mass 198 | 55.65 |
| 68 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 69 | Mass 69 relative abundance | 68.08 |
| 70 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 127 | 10.00 - 80.00% of mass 198 | 53.90 |
| 197 | Less than 2.00% of mass 198 | 0.00 |
| 199 | 5.00 - 9.00% of mass 198 | 6.58 |
| 275 | 10.00 - 60.00% of mass 198 | 20.20 |
| 365 | Greater than 1.00% of mass 198 | 2.32 |
| 441 | Present, but less than mass 443 | 9.29 |
| 442 | 50.00 - 100.00% of mass 198 | 60.44 |
| 443 | 15.00 - 24.00% of mass 442 | 11.76 ( 19.46) |

Rakdu Ham 4/23/2014

DFTPP TUNE/TAILING FACTOR/DEGRADATION SUMMARY RESULTS

DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 55.65 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 68.08 | | PASS |
| 70 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 127 | 10 - 80% of mass 198 | 53.90 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.58 | | PASS |
| 275 | 10 - 60% of mass 198 | 20.20 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.32 | | PASS |
| 441 | Present, but less than mass 443 | 9.29 | ( 78.98) | PASS |
| 442 | 50 - 100% of mass 198 | 60.44 | | PASS |
| 443 | 15 - 24% of mass 442 | 11.76 | ( 19.46) | PASS |

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 0.80 | 2.0 | PASS |
| Benzidine | 0.93 | 2.0 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 298592 | | | N/A |
| 4,4-DDE | 0 | 0.0 | 20.0 | PASS |
| 4,4-DDD | 1211 | 0.4 | 20.0 | PASS |
| 4,4-DDD + DDE | 1211 | 0.4 | 20.0 | PASS |

Tuning Sample, /chem/5972hp66.i/D4D22009A66.b/4D22009-TUN166.d/4D22009-TUN166.d,

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Data File: /chem/5972hp66.i/D4D24008A66.b/4D24008-TUN166.d

Date : 24-APR-2014 14:22

Client ID: DFTPPCM

Instrument: 5972hp66.i

Sample Info: 4D24008-TUN1:OWS

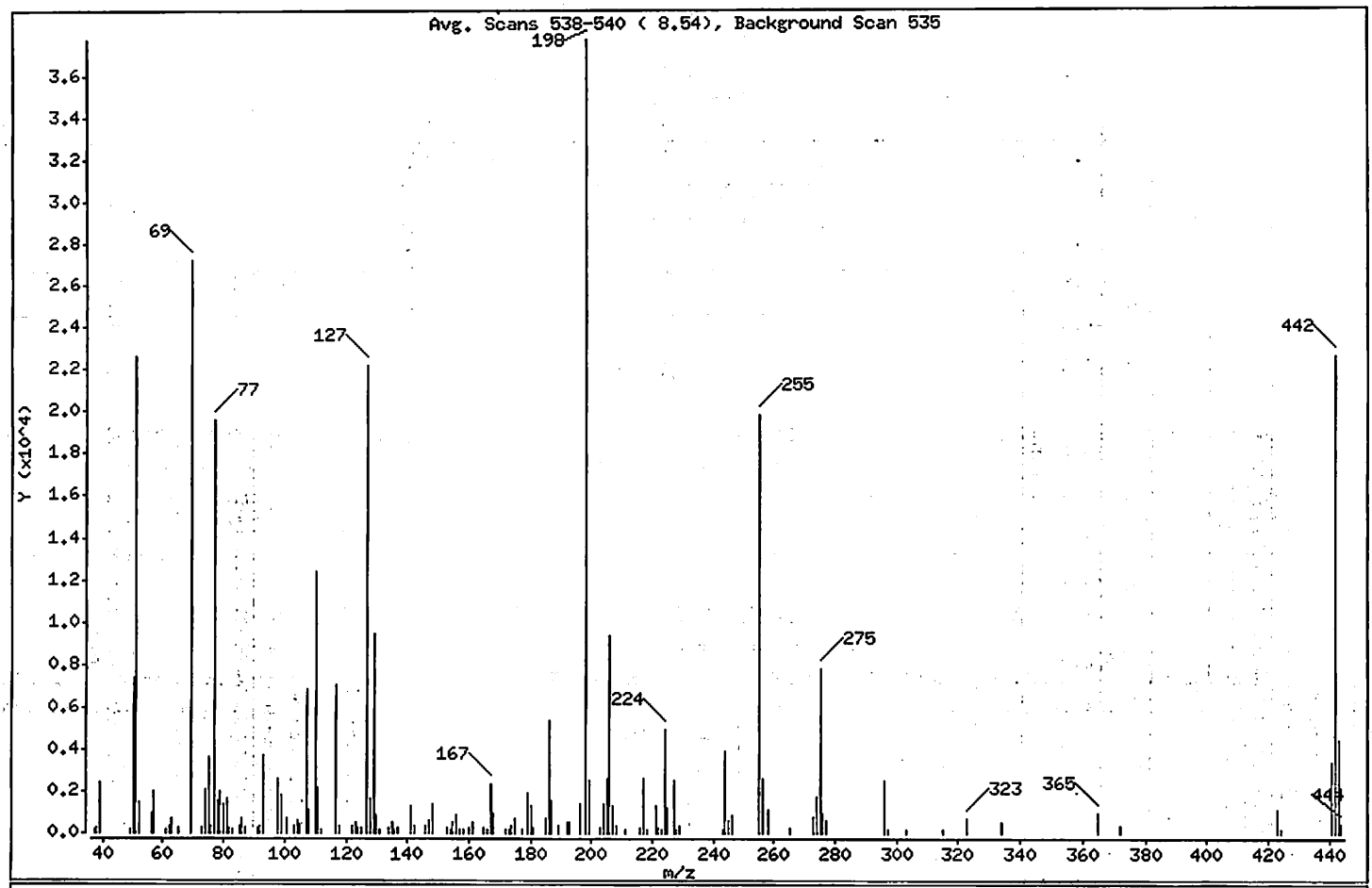
Volume Injected (uL): 2.0

Operator: OWS

Column phase: RTX-5MS

Column diameter: 0.32

1 Decafluorotriphenylphosphine




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 |
| 51 | 10.00 - 80.00% of mass 198 | 59.97 |
| 68 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 69 | Mass 69 relative abundance | 72.11 |
| 70 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 127 | 10.00 - 80.00% of mass 198 | 58.93 |
| 197 | Less than 2.00% of mass 198 | 0.00 |
| 199 | 5.00 - 9.00% of mass 198 | 6.57 |
| 275 | 10.00 - 60.00% of mass 198 | 20.76 |
| 365 | Greater than 1.00% of mass 198 | 2.42 |
| 441 | Present, but less than mass 443 | 8.92 |
| 442 | 50.00 - 100.00% of mass 198 | 60.03 |
| 443 | 15.00 - 24.00% of mass 442 | 11.69 ( 19.47) |



Rakdu Ham 4/27/2014

DFTPP TUNE/TAILING FACTOR/DEGRADATION SUMMARY RESULTS

DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 59.97 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 72.11 | | PASS |
| 70 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 127 | 10 - 80% of mass 198 | 58.93 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.57 | | PASS |
| 275 | 10 - 60% of mass 198 | 20.76 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.42 | | PASS |
| 441 | Present, but less than mass 443 | 8.92 | ( 76.36) | PASS |
| 442 | 50 - 100% of mass 198 | 60.03 | | PASS |
| 443 | 15 - 24% of mass 442 | 11.69 | ( 19.47) | PASS |

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 0.84 | 2.0 | PASS |
| Benzidine | 1.80 | 2.0 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

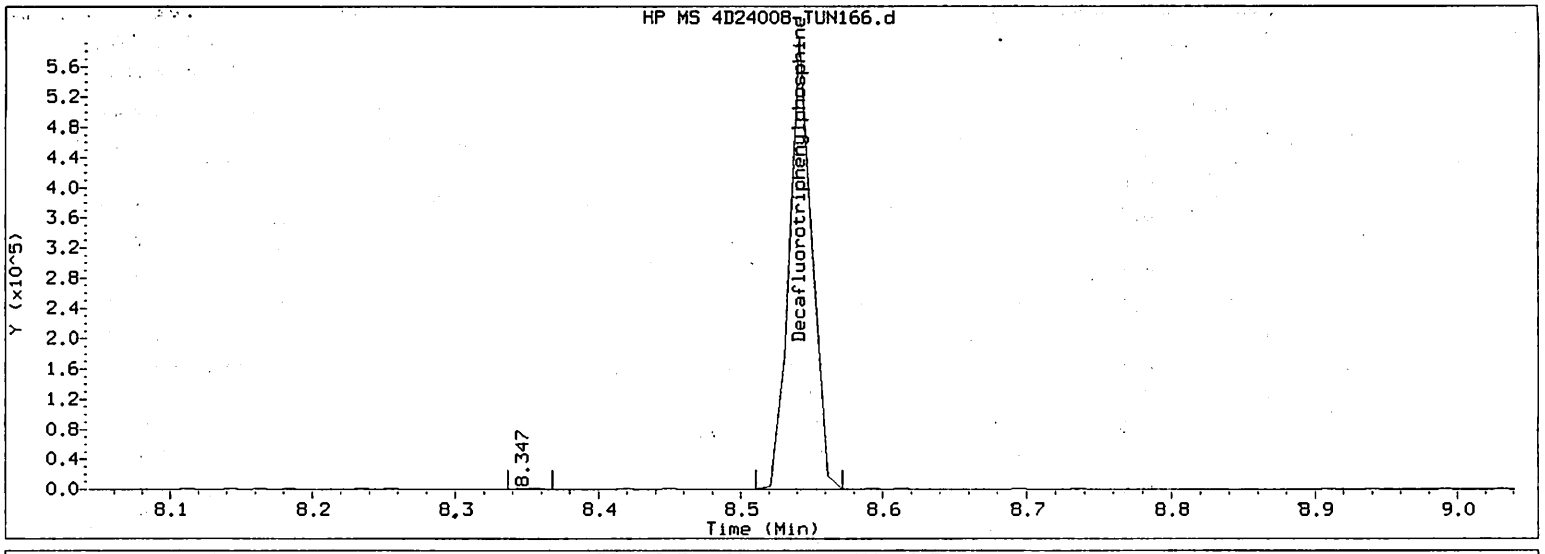
| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 105449 | | | N/A |
| 4,4-DDE | 0 | 0.0 | 20.0 | PASS |
| 4,4-DDD | 908 | 0.9 | 20.0 | PASS |
| 4,4-DDD + DDE | 908 | 0.9 | 20.0 | PASS |

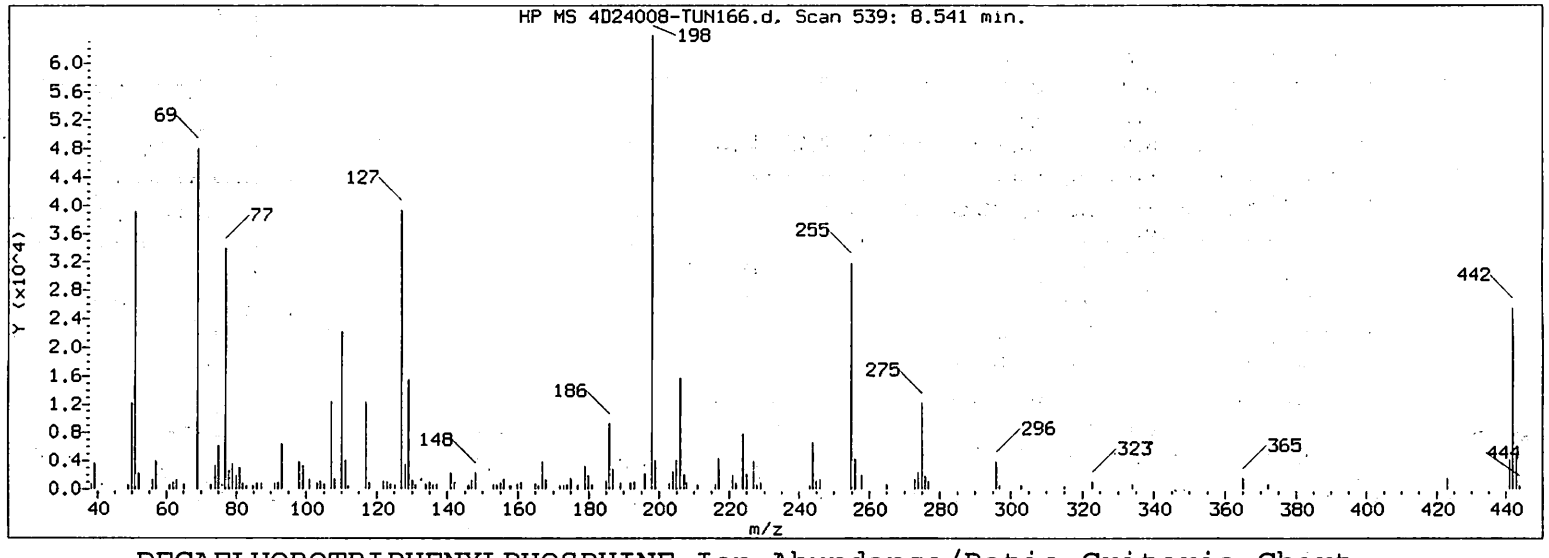
Tuning Sample, /chem/5972hp66.i/D4D24008A66.b/4D24008-TUN166.d/4D24008-TUN166.d,

Robin Hamm 4/27/2014

Report Date: 04/24/2014 17:05

Datafile Analyzed: /chem/5972hp66.i/D4D24008A66.b/4D24008-TUN166.d/4D24008-TUN16
Method Used: /chem/5972hp66.i/D4D24008A66.b/dftpp8270D.m Inst: 5972hp66
Injection Date: 24-APR-2014 14:22 Operator: OWS
Sample Info: 4D24008-TUN1 4D24008-TUN1:OWS
Misc Info: DFTPPCM




DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 59.97 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 72.11 | | PASS |
| 70 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 127 | 10 - 80% of mass 198 | 58.93 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.57 | | PASS |
| 275 | 10 - 60% of mass 198 | 20.76 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.42 | | PASS |
| 441 | Present, but less than mass 443 | 8.92 | ( 76.36) | PASS |
| 442 | 50 - 100% of mass 198 | 60.03 | | PASS |
| 443 | 15 - 24% of mass 442 | 11.69 | ( 19.47) | PASS |

4/27/2014

Data File: /chem/5972hp66.i/D4D25003A66.b/4D25003-TUN166.d

Date : 25-APR-2014 11:22

Client ID: DFTPPCO

Instrument: 5972hp66.i

Sample Info: 4D25003-TUN1:OWS

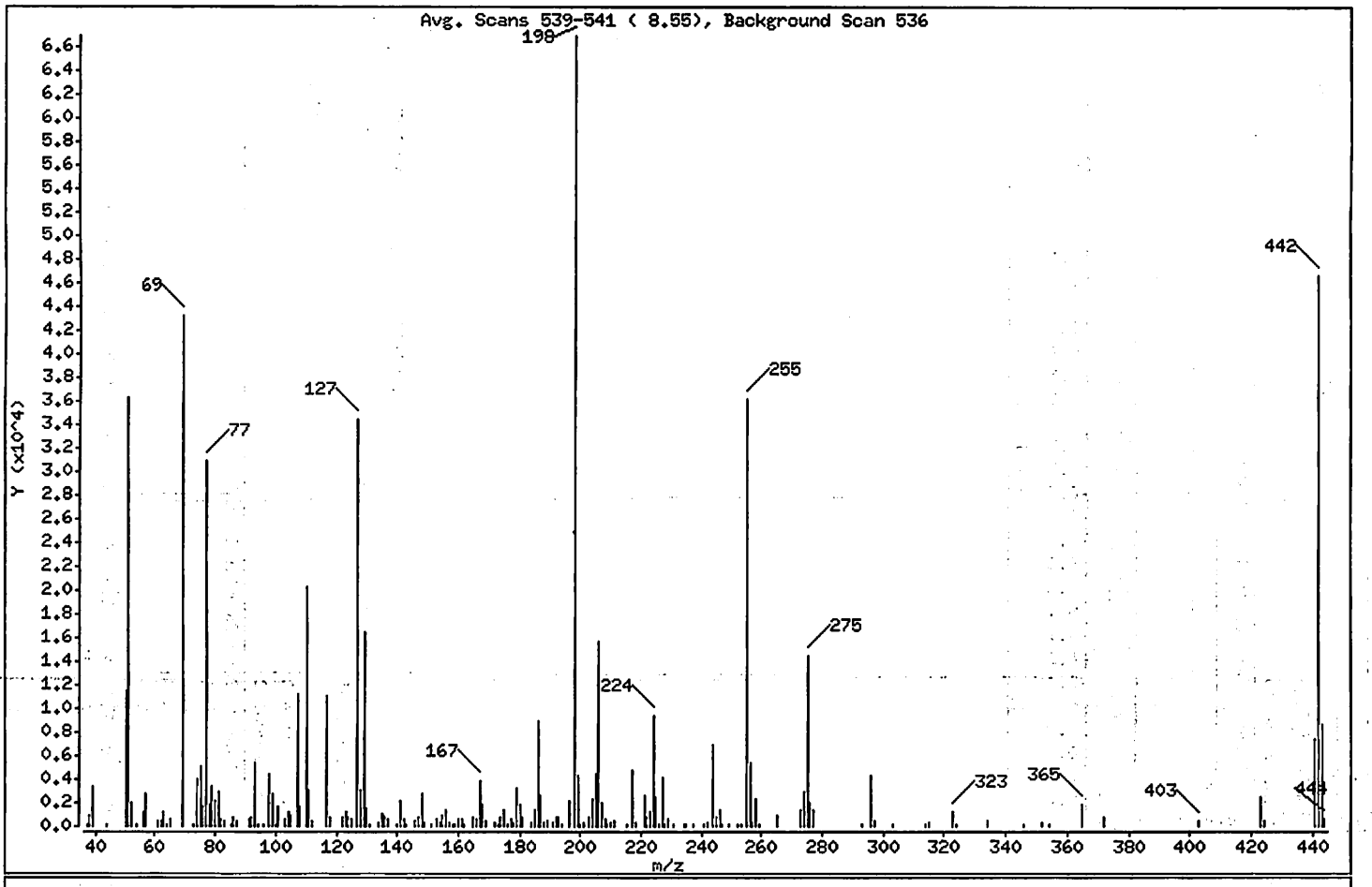
Volume Injected (uL): 2.0

Operator: OWS

Column phase: RTX-5MS

Column diameter: 0.32

1 Decafluorotriphenylphosphine




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 |
| 51 | 10.00 - 80.00% of mass 198 | 54.27 |
| 68 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 69 | Mass 69 relative abundance | 64.63 |
| 70 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 127 | 10.00 - 80.00% of mass 198 | 51.60 |
| 197 | Less than 2.00% of mass 198 | 0.00 |
| 199 | 5.00 - 9.00% of mass 198 | 6.45 |
| 275 | 10.00 - 60.00% of mass 198 | 21.66 |
| 365 | Greater than 1.00% of mass 198 | 2.82 |
| 441 | Present, but less than mass 443 | 11.10 |
| 442 | 50.00 - 100.00% of mass 198 | 69.64 |
| 443 | 15.00 - 24.00% of mass 442 | 12.80 ( 18.38) |

Rakdw Ham 4/27/2014

DFTPP TUNE/TAILING FACTOR/DEGRADATION SUMMARY RESULTS

DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 54.27 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 64.63 | | PASS |
| 70 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 127 | 10 - 80% of mass 198 | 51.60 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.45 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.66 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.82 | | PASS |
| 441 | Present, but less than mass 443 | 11.10 | ( 86.72) | PASS |
| 442 | 50 - 100% of mass 198 | 69.64 | | PASS |
| 443 | 15 - 24% of mass 442 | 12.80 | ( 18.38) | PASS |

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 1.42 | 2.0 | PASS |
| Benzidine | 1.40 | 2.0 | PASS |

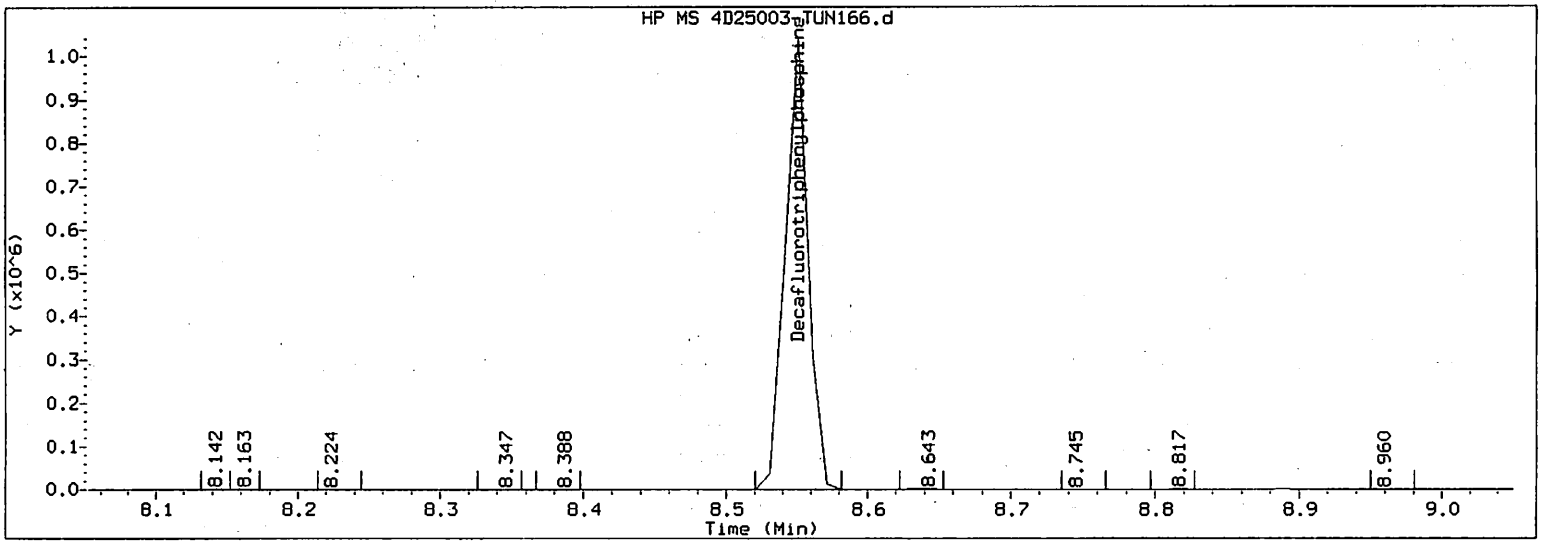
DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

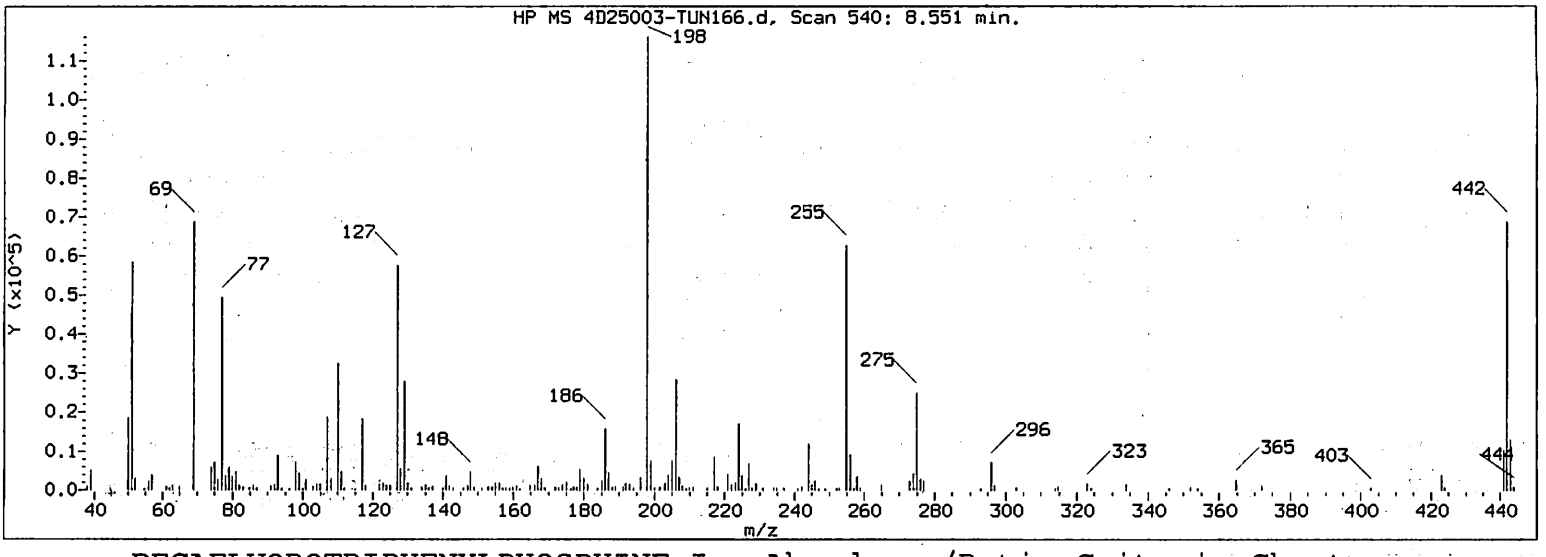
| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 195786 | | | N/A |
| 4,4-DDE | 0 | 0.0 | 20.0 | PASS |
| 4,4-DDD | 890 | 0.5 | 20.0 | PASS |
| 4,4-DDD + DDE | 890 | 0.5 | 20.0 | PASS |

*
Tuning Sample, /chem/5972hp66.i/D4D25003A66.b/4D25003-TUN166.d/4D25003-TUN166.d,
*

Report Date: 04/25/2014 13:56

Datafile Analyzed: /chem/5972hp66.i/D4D25003A66.b/4D25003-TUN166.d/4D25003-TUN16
Method Used: /chem/5972hp66.i/D4D25003A66.b/dftpp8270D.m Inst: 5972hp66
Injection Date: 25-APR-2014 11:22 Operator: OWS
Sample Info: 4D25003-TUN1 4D25003-TUN1:OWS
Misc Info: DFTPPCO




DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 54.27 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 64.63 | | PASS |
| 70 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 127 | 10 - 80% of mass 198 | 51.60 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.45 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.66 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.82 | | PASS |
| 441 | Present, but less than mass 443 | 11.10 | ( 86.72) | PASS |
| 442 | 50 - 100% of mass 198 | 69.64 | | PASS |
| 443 | 15 - 24% of mass 442 | 12.80 | ( 18.38) | PASS |

4/27/2014

# ANALYSIS DATA SHEET

*SW8270D*

**SBLKPB**

Client: DRAPER | SDG: 1404151 | Project: RAAP APPIX 2014 UNIT 5

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042308-BLK166.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042308-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/24/14 09:38

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 04/24/14 15:23

Batch: 4042308 | Sequence: 4D24008 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | U |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | U |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | U |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | U |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | U |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | U |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 68.48 | 68 | 33 - 110 | |
| Phenol-d5 | 100.0 | 44.21 | 44 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 48.90 | 98 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 46.84 | 94 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 92.11 | 92 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 47.72 | 95 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

B. Patterson
Assigned To

2713
Employee ID Number

# PREPARATION BENCH SHEET

H: 4/28
D: 5/13

4042308

## SVOC 8270D

Matrix: Water

Prepared using: SVOA - EPA 3510C_SVOA

Date/Time Extracted: 4-24-14 @ 0938

| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH | | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | A/N | BASE | | | |
| 1404151-01 | 5W7B | Sample | 1000 | 1000 | 1.6 | 13 | QC | 500 | |
| 1404151-02 | 5W5B | Sample | 1000 | 1000 | 1.6 | 13 | N/A | 500 | |
| 1404151-03 | 5WC21 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404151-04 | 5WDUP | Sample | 1000 | 1000 | 1.9 | 13 | | 500 | |
| 1404151-05 | 5WC22 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404151-06 | 5WC23 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042308-BLK1 | SBLKPB | Blank | 1000 | 1000 | 1.9 | 13 | | 500 | |
| 4042308-BS1 | SLCSPB | LCS | 1000 | 1000 | 1.9 | 13 | | 500 | |
| 4042308-MS1 | 5W7BMS | Matrix Spike | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042308-MSD1 | 5W7BMSD | Matrix Spike Dup | 1000 | 1000 | 1.6 | 13 | N/A | 500 | |

4-24-14

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 3K20009 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | LCS/LCSD | 4B14024 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | MS/MSD | 4B14024 |

Surrogate & Spike Added By: BFP 4-24-14
Initials / Date

Spiking Witnessed By: CH 4-24-14
Initials / Date

Final Vol Verified:

Reviewed By: CHooley

Analysts Initials: Extracted: BFP KD: BFP, CH N2: CH, BFP Bottled up: BFP

Manuf. and lot # of reagents/solvents used: $Na_2SO_4$-4D22010, $CH_2Cl_2$-4C14004, $H_2SO_4$ 3L05001, 10N NaOH-4D18019

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5/20/2014

Abridged data package.

Full deliverable available.

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1404171

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404171

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1404171

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404171-01 | 16WC1A | Water | 04/24/2014 11:45 | 04/25/2014 13:15 |
| 1404171-02 | 16C1 | Water | 04/24/2014 15:25 | 04/25/2014 13:15 |
| 1404171-03 | 16MW8 | Water | 04/24/2014 09:15 | 04/25/2014 13:15 |
| 1404171-04 | 16MW9 | Water | 04/24/2014 10:30 | 04/25/2014 13:15 |
| 1404171-05 | 16WDUP | Water | 04/24/2014 12:00 | 04/25/2014 13:15 |
| 1404171-06 | 16WC1B | Water | 04/24/2014 14:05 | 04/25/2014 13:15 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1404171

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16WC1A | EPA 6020A | 1404171-01 |
| 16WC1A | EPA 7470A | 1404171-01 |
| 16WC1A | EPA 9010C/9012B | 1404171-01 |
| 16WC1A | EPA 6010C | 1404171-01 |
| 16C1 | EPA 6010C | 1404171-02 |
| 16C1 | EPA 6020A | 1404171-02 |
| 16C1 | EPA 7470A | 1404171-02 |
| 16C1 | EPA 9010C/9012B | 1404171-02 |
| 16MW8 | EPA 6010C | 1404171-03 |
| 16MW8 | EPA 6020A | 1404171-03 |
| 16MW8 | EPA 7470A | 1404171-03 |
| 16MW8 | EPA 9010C/9012B | 1404171-03 |
| 16MW9 | EPA 6020A | 1404171-04 |
| 16MW9 | EPA 6010C | 1404171-04 |
| 16MW9 | EPA 7470A | 1404171-04 |
| 16MW9 | EPA 9010C/9012B | 1404171-04 |
| 16MW9 | EPA 6020A | 1404171-04RE1 |
| 16WDUP | EPA 6010C | 1404171-05 |
| 16WDUP | EPA 6020A | 1404171-05 |
| 16WDUP | EPA 7470A | 1404171-05 |
| 16WDUP | EPA 9010C/9012B | 1404171-05 |
| 16WC1B | EPA 9010C/9012B | 1404171-06 |
| 16WC1B | EPA 6010C | 1404171-06 |
| 16WC1B | EPA 6020A | 1404171-06 |
| 16WC1B | EPA 7470A | 1404171-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 05/07/2014

Title: Senior Chemist

Environmental Testing Laboratories

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**CompuChem**
**a Division of Liberty Analytical Corp.**
501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1404171
# Client: DRAPER
# Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

The indicated Sample Delivery Group (SDG) consisting of six (6) water samples was received into the laboratory information management system (LIMS) on April 25, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 1.2 to 3.1 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6010C/6020A/7470A/9010C/9012B methodology for the requested metals, mercury, and cyanide.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Cobalt for sample 16WC1A

$$\frac{5.23887\ \mu g/L\ (C) \times 0.10\ L\ (F)}{0.10\ L\ (I)} = 5.239\ \mu g/L \text{ reported as } 5.24\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

The ICP sample matrix spike, CCN = 4042802-MS1 (16WC1AS) was found to be inside control limits.

The ICP/MS sample matrix spike, CCN = 4042804-MS1 (16WC1AS) was found to be inside control limits.

The mercury sample matrix spike, CCN = 4042803-MS1 (16WC1AS) was found to be inside control limits.

The cyanide sample matrix spike, CCN = 4042809-MS1 (16WC1AS) was found to be inside control limits.

The ICP sample matrix duplicate spike, CCN = 4042802-MSD1 (16WC1ASD) was found to be inside control limits.

The ICP/MS sample matrix duplicate spike, CCN = 4042804-MSD1 (16WC1ASD) was found to be inside control limits.

The mercury sample matrix duplicate spike, CCN = 4042803-MSD1 (16WC1ASD) was found to be inside control limits.

The cyanide sample matrix duplicate spike, CCN = 4042809-MSD1 (16WC1ASD) was found to be inside control limits.

The ICP sample duplicate, CCN = 4042802-DUP1 (16WC1AD) was found to be inside control limits.

The ICP/MS sample duplicate, CCN = 4042804-DUP1 (16WC1AD) was found to be inside control limits.

The mercury sample duplicate, CCN = 4042803-DUP1 (16WC1AD) was found to be inside control limits.

The cyanide sample duplicate, CCN = 4042809-DUP1 (16WC1AD) was found to be inside control limits.

A five-fold serial dilution of sample, CCN = SDI1404171-01 (16WC1AL) was performed in accordance with SW-846 requirements for ICP and ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP and ICP/MS sample post digestion spike, CCN =4042802/04-PS1 (16WC1AA) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
May 7, 2014

# CHAIN OF CUSTODY RECORD

JK JLe 4/24/14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | 0 | **Consultant:** | Draper Aden Associates | **Sample Site:** | RAAP, Radford, Virginia |
| **Attn:** | 0 | **Attn:** | Janet C. Frazier | **Location:** | HWMU16 |
| **Address:** | 0 | **Address:** | 2206 South Main Street | **Event:** | t Semiannual 2014 Groundwater Verification Monitoring Ev |
| | 0 | | Blacksburg, Virginia 24060 | **DAA JN:** | B03204-12 |
| **Phone:** | 0 | **Phone:** | (540) 552-0444 | **Lab JN:** | |
| **Fax:** | 0 | **Fax:** | (540) 552-0291 | | |
| **Fax:** | 0 | | | | |

**Project Specific (PS) or Batch (B) QC:**
~~Sample Collection for Project Complete?~~ YES
**Carrier:** DASH COURIER
**Tracking Number:** SERVICE

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on Ice: YES

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | G | G | G | G | G | TG | G | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | U | U | U | U | U | U | U | | | | |
| **Required pH of Sample** | | | | <2 | <2 | | | >12 | <2 | | | | | |
| **Box 2 - Preservative** | | | | B | B | H | H | E | B | H | | | | |
| **Box 5 - Sample Container Type** | | | | 1-500 ml P | | 2-1LAG | 2-1L AG | 1-500-P | 1-500mL P | 2-1LAG | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **ICP/MS 6020A/3005A and 6010C/3010A (Metals-Total)** | **7470A (Mercury-Total)** | **8151A (Herbicides)** | **8270D/3510C (Semivolatiles)** | **9012B/9010C(Cyanide)** | **6020A - COBALT ONLY - (DISSOLVED)** | **8081B (Pesticides) W/CLEANUP** | | | |
| 16C1 | 4/24 | 1525 | GW | 8 | X | X | X | X | X | | X | | | |
| 16MW8 | 4/24 | 0915 | GW | 8 | X | X | X | X | X | | X | | | |
| 16MW9 | 4/24 | 1030 | GW | 8 | X | X | X | X | X | | X | | | |
| 16WC1A | 4/24 | 1145 | GW | 24 | X | X | X | X | X | | X | | | |
| 16WDUP | 4/24 | 1200 | GW | 8 | X | X | X | X | X | | X | | | |
| 16WC1B | 4/24 | 1405 | GW | 9 (4/25/14) | X | X | X | X | X | X | X | | | |
| 16-1 | 4/23 | 0925 | GW | 3 | X | X | | X | | | | | | |
| 16-2 | 4/23 | 1015 | GW | 3 | X | X | | X | | | | | | |
| 16-3 | 4/23 | 1115 | GW | 3 | X | X | | X | | | | | | |
| 16-5 | 4/23 | 1205 | GW | 3 | X | X | | X | | | | | | |
| 16WC2B | 4/23 | 1330 | GW | 3 | X | X | | X | | | | | | |
| 16SPRING | 4/23 | 1225 | GW | 3 | X | X | | X | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

**GENERAL NOTES:**
1. Report results to detection limit, with J flags, for italicized wells.
2. Report results at or greater than QL for non-italicized wells. 3. ERIS Deliverable required.
4. VELAP accreditation required.
5. Full deliverable.

DISS. Co

1404171-02
-03
-04
-01 USE FOR QC
-05
-06 * 1404173-01

1404172-01
-02
-03
-04
-05
-06

diss. Co in this cooler

**Clients Special Instructions:** Level 4 with edd. See attached target analyte list. 2.2°C, 1.7°C, 3.1°C, 2.3°C, 1.9°C, 1.2°C IR GUN: SN0010

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Ken Coddington | Date: 4/25/14 | #2 Relinquished by (Signature): | Date: 4/25/14 | Sample Storage Time Requested: |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: DAA | Time: 0930 | Company Name: Dash Courier | Time: 1315 | 30 DYS ORG/6 MTHS INORG |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: 4-25-14 | #2 Received by (Signature): | Date: 4/25/14 | |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: Dash Courier | Time: 0930 | Company Name: CompuChem | Time: 1315 | |

JJK 4/25/2014 1/10

# HOLDING TIME SUMMARY

*EPA 6010C*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/28/14 | 05/06/14 | 11.6 | 180 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/28/14 | 05/06/14 | 11.5 | 180 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/28/14 | 05/06/14 | 11.7 | 180 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/28/14 | 05/06/14 | 11.7 | 180 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/28/14 | 05/06/14 | 11.6 | 180 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/28/14 | 05/06/14 | 11.6 | 180 | |

# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 180 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 4.8 | 180 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.1 | 180 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 180 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/28/14 | 05/05/14 | 11.3 | 180 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 180 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 4.9 | 180 | |

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# HOLDING TIME SUMMARY

*EPA 7470A*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 28 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 4.8 | 28 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.1 | 28 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 28 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 28 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 4.9 | 28 | |

# HOLDING TIME SUMMARY

*EPA 9010C/9012B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 14 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 4.8 | 14 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.1 | 14 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 14 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.0 | 14 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/28/14 | 04/29/14 | 4.9 | 14 | |

# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404171

**Client:** DRAPER **Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Matrix:** WATER **Instrument:** C2

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Cyanide | 4 | 20.0 | ug/L | EPA 9010C/9012B |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404171

**Client:** DRAPER **Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Matrix:** Water **Instrument:** P4

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Tin | 17.4 | 50.0 | ug/L | EPA 6010C |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404171

**Client:** DRAPER **Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Matrix:** Water **Instrument:** PEMS

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Antimony | 0.4 | 2.00 | ug/L | EPA 6020A |
| Arsenic | 2 | 10.0 | ug/L | EPA 6020A |
| Barium | 1 | 10.0 | ug/L | EPA 6020A |
| Beryllium | 0.2 | 1.00 | ug/L | EPA 6020A |
| Cadmium | 0.2 | 1.00 | ug/L | EPA 6020A |
| Chromium | 1 | 5.00 | ug/L | EPA 6020A |
| Cobalt | 1 | 5.00 | ug/L | EPA 6020A |
| Copper | 1 | 5.00 | ug/L | EPA 6020A |
| Lead | 0.2 | 1.00 | ug/L | EPA 6020A |
| Nickel | 2 | 10.0 | ug/L | EPA 6020A |
| Selenium | 3 | 5.00 | ug/L | EPA 6020A |
| Silver | 0.2 | 1.00 | ug/L | EPA 6020A |
| Thallium | 0.2 | 1.00 | ug/L | EPA 6020A |
| Vanadium | 1 | 10.0 | ug/L | EPA 6020A |
| Zinc | 3 | 10.0 | ug/L | EPA 6020A |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404171

**Client:** DRAPER **Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Matrix:** Water **Instrument:** V4

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Mercury | 0.2 | 2.00 | ug/L | EPA 7470A |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042802-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042802

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Tin | 1100 | 1170 | 106 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042803-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042803

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Mercury | 4.000 | 3.88 | 97 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042804-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042804

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Antimony | 220.0 | 216 | 98.1 | | 80 - 120 |
| Arsenic | 220.0 | 214 | 97.3 | | 80 - 120 |
| Barium | 110.0 | 108 | 97.8 | | 80 - 120 |
| Beryllium | 110.0 | 106 | 96.1 | | 80 - 120 |
| Cadmium | 110.0 | 107 | 96.9 | | 80 - 120 |
| Chromium | 110.0 | 108 | 98.5 | | 80 - 120 |
| Cobalt | 110.0 | 108 | 97.9 | | 80 - 120 |
| Copper | 110.0 | 109 | 99.3 | | 80 - 120 |
| Lead | 220.0 | 211 | 95.8 | | 80 - 120 |
| Nickel | 110.0 | 110 | 100 | | 80 - 120 |
| Selenium | 220.0 | 219 | 99.4 | | 80 - 120 |
| Silver | 110.0 | 107 | 97.1 | | 80 - 120 |
| Thallium | 220.0 | 216 | 98.1 | | 80 - 120 |
| Vanadium | 110.0 | 108 | 98.2 | | 80 - 120 |
| Zinc | 220.0 | 218 | 99.1 | | 80 - 120 |

# LCS / LCS DUPLICATE SUMMARY

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042809-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042809

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Cyanide | 250.0 | 258 | 103 | | 72 - 128 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6010C*

**16WC1AS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042802-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Tin | 1100 | 50.0 U | 1150 | 105 | | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6010C*

**16WC1ASD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042802-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Tin | 1100 | 1160 | 106 | 1.02 | | 20 | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 7470A*

**16WC1AS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042803-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Mercury | 1.000 | 2.00 U | 1.06 | 106 | | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 7470A*

**16WC1ASD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042803-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Mercury | 1.000 | 1.08 | 108 | 2 | | 20 | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**16WC1AS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042804-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Antimony | 220.0 | 2.00 U | 210 | 95.4 | | 75 - 125 |
| Arsenic | 220.0 | 10.0 U | 204 | 92.8 | | 75 - 125 |
| Barium | 110.0 | 274 | 380 | 96.5 | | 75 - 125 |
| Beryllium | 110.0 | 1.00 U | 104 | 94.4 | | 75 - 125 |
| Cadmium | 110.0 | 1.00 U | 105 | 95.8 | | 75 - 125 |
| Chromium | 110.0 | 5.00 U | 107 | 97.5 | | 75 - 125 |
| Cobalt | 110.0 | 5.24 | 111 | 96.4 | | 75 - 125 |
| Copper | 110.0 | 5.00 U | 101 | 92.2 | | 75 - 125 |
| Lead | 220.0 | 1.00 U | 228 | 104 | | 75 - 125 |
| Nickel | 110.0 | 8.10 J | 113 | 95.1 | | 75 - 125 |
| Selenium | 220.0 | 5.00 U | 200 | 91.0 | | 75 - 125 |
| Silver | 110.0 | 1.00 U | 105 | 95.3 | | 75 - 125 |
| Thallium | 220.0 | 1.00 U | 234 | 107 | | 75 - 125 |
| Vanadium | 110.0 | 10.0 U | 108 | 98.3 | | 75 - 125 |
| Zinc | 220.0 | 6.70 J | 194 | 85.3 | | 75 - 125 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**16WC1ASD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042804-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Antimony | 220.0 | 197 | 89.6 | 6.34 | | 20 | 75 - 125 |
| Arsenic | 220.0 | 197 | 89.7 | 3.37 | | 20 | 75 - 125 |
| Barium | 110.0 | 368 | 85.2 | 12.4 | | 20 | 75 - 125 |
| Beryllium | 110.0 | 97.5 | 88.6 | 6.40 | | 20 | 75 - 125 |
| Cadmium | 110.0 | 99.9 | 90.8 | 5.38 | | 20 | 75 - 125 |
| Chromium | 110.0 | 103 | 93.7 | 3.88 | | 20 | 75 - 125 |
| Cobalt | 110.0 | 103 | 89.3 | 7.60 | | 20 | 75 - 125 |
| Copper | 110.0 | 99.9 | 90.8 | 1.52 | | 20 | 75 - 125 |
| Lead | 220.0 | 222 | 101 | 2.39 | | 20 | 75 - 125 |
| Nickel | 110.0 | 108 | 90.8 | 4.62 | | 20 | 75 - 125 |
| Selenium | 220.0 | 193 | 87.6 | 3.86 | | 20 | 75 - 125 |
| Silver | 110.0 | 101 | 91.5 | 4.08 | | 20 | 75 - 125 |
| Thallium | 220.0 | 228 | 104 | 2.81 | | 20 | 75 - 125 |
| Vanadium | 110.0 | 103 | 93.2 | 5.29 | | 20 | 75 - 125 |
| Zinc | 220.0 | 190 | 83.3 | 2.44 | | 20 | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 9010C/9012B*

**16WC1AS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042809-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Cyanide | 100.0 | 20.0 U | 97.1 | 97.1 | | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 9010C/9012B*

**16WC1ASD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042809-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Cyanide | 100.0 | 98.1 | 98.1 | 1.06 | | 20 | 75 - 125 |

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# SERIAL DILUTION

*EPA 6020A*

**16WC1AL**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4D29007-SRD1 Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

Sequence: 4D29007 Dilution: 5 Report to MDL: YES

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Antimony | 2.00 U | 10.00 U | 2.00 | | | EPA 6020A | 10 |
| Arsenic | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Barium | 273.82 | 270.25 | 10.0 | 1.30 | | EPA 6020A | 10 |
| Beryllium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Cadmium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Chromium | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Cobalt | 5.24 | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Copper | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Lead | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Nickel | 8.10 J | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Selenium | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Silver | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Thallium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Vanadium | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Zinc | 6.70 J | 50.00 U | 10.0 | | | EPA 6020A | 10 |

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# SERIAL DILUTION

*EPA 6010C*

**16WC1AL**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4E06001-SRDA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

Sequence: 4E06001 Dilution: 5 Report to MDL: YES

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Tin | 50.00 U | 250.00 U | 50.0 | | | EPA 6010C | 10 |

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# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6010C*

**16WC1AA**

Laboratory: COMPUCHEM

Client: DRAPER

Matrix: Water

SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Laboratory ID: 4042802-PS1

Lab Source ID: 1404171-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Tin | 1030 | U | 1000 | 103 | 75 - 125 |

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# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**16WC1AA**

Laboratory: COMPUCHEM
Client: DRAPER
Matrix: Water

SDG: 1404171
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Laboratory ID: 4042804-PS1
Lab Source ID: 1404171-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Antimony | 18.4 | U | 20.00 | 91.8 | 75 - 125 |
| Arsenic | 9.92 | U | 10.00 | 92.4 | 75 - 125 |
| Barium | 356 | 274 | 100.0 | 82.3 | 75 - 125 |
| Beryllium | 8.99 | U | 10.00 | 89.8 | 75 - 125 |
| Cadmium | 9.16 | U | 10.00 | 91.5 | 75 - 125 |
| Chromium | 19.2 | U | 20.00 | 95.6 | 75 - 125 |
| Cobalt | 14.6 | 5.24 | 10.00 | 93.8 | 75 - 125 |
| Copper | 18.5 | U | 20.00 | 90.1 | 75 - 125 |
| Lead | 10.3 | U | 10.00 | 102 | 75 - 125 |
| Nickel | 17.2 | 8.10 J | 10.00 | 91.4 | 75 - 125 |
| Selenium | 44.4 | U | 50.00 | 88.2 | 75 - 125 |
| Silver | 9.25 | U | 10.00 | 92.4 | 75 - 125 |
| Thallium | 10.6 | U | 10.00 | 106 | 75 - 125 |
| Vanadium | 47.7 | U | 50.00 | 95.3 | 75 - 125 |
| Zinc | 23.6 | 6.70 J | 20.00 | 84.4 | 75 - 125 |

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# DUPLICATES

*EPA 6010C*

**16WC1AD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042802-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Tin | 20 | *50.0 U* | 50.0 U | | | EPA 6010C |

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# DUPLICATES

*EPA 7470A*

**16WC1AD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042803-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Mercury | 20 | *2.00 U* | 2.00 U | | | EPA 7470A |

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# DUPLICATES

*EPA 6020A*

**16WC1AD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042804-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Antimony | 20 | *2.00 U* | 2.00 U | | | EPA 6020A |
| Arsenic | 20 | *10.0 U* | 10.0 U | | | EPA 6020A |
| Barium | 20 | *274* | 269 | 1.68 | | EPA 6020A |
| Beryllium | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Cadmium | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Chromium | 20 | *5.00 U* | 5.00 U | | | EPA 6020A |
| Cobalt | 20 | *5.24* | 5.10 | 2.61 | | EPA 6020A |
| Copper | 20 | *5.00 U* | 5.00 U | | | EPA 6020A |
| Lead | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Nickel | 20 | *8.10 J* | 8.04 J | 0.817 | | EPA 6020A |
| Selenium | 20 | *5.00 U* | 5.00 U | | | EPA 6020A |
| Silver | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Thallium | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Vanadium | 20 | *10.0 U* | 10.0 U | | | EPA 6020A |
| Zinc | 20 | *6.70 J* | 3.61 J | 60.0 | | EPA 6020A |

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# DUPLICATES

*EPA 9010C/9012B*

**16WC1AD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042809-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Cyanide | 20 | *20.0 U* | 20.0 U | | | EPA 9010C/9012B |

# PREPARATION BATCH SUMMARY

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042802 Matrix: Water Preparation: EPA 3010A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16C1 | 1404171-02 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16MW8 | 1404171-03 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16MW9 | 1404171-04 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16WDUP | 1404171-05 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16WC1B | 1404171-06 | 04/28/14 11:35 | 50.0 | 50.0 |
| PBW01 | 4042802-BLK1 | 04/28/14 11:35 | 50.0 | 50.0 |
| MLCS01 | 4042802-BS1 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16WC1AD | 4042802-DUP1 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16WC1AS | 4042802-MS1 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16WC1ASD | 4042802-MSD1 | 04/28/14 11:35 | 50.0 | 50.0 |
| 16WC1AA | 4042802-PS1 | 04/28/14 11:35 | 50.0 | 50.0 |

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# PREPARATION BATCH SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042803 Matrix: Water Preparation: EPA 7470A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/28/14 11:35 | 100 | 100 |
| 16C1 | 1404171-02 | 04/28/14 11:35 | 100 | 100 |
| 16MW8 | 1404171-03 | 04/28/14 11:35 | 100 | 100 |
| 16MW9 | 1404171-04 | 04/28/14 11:35 | 100 | 100 |
| 16WDUP | 1404171-05 | 04/28/14 11:35 | 100 | 100 |
| 16WC1B | 1404171-06 | 04/28/14 11:35 | 100 | 100 |
| PBW01 | 4042803-BLK1 | 04/28/14 11:35 | 100 | 100 |
| MLCS01 | 4042803-BS1 | 04/28/14 11:35 | 100 | 100 |
| 16WC1AD | 4042803-DUP1 | 04/28/14 11:35 | 100 | 100 |
| 16WC1AS | 4042803-MS1 | 04/28/14 11:35 | 100 | 100 |
| 16WC1ASD | 4042803-MSD1 | 04/28/14 11:35 | 100 | 100 |

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# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042804 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/28/14 10:00 | 100 | 100 |
| 16C1 | 1404171-02 | 04/28/14 10:00 | 100 | 100 |
| 16MW8 | 1404171-03 | 04/28/14 10:00 | 100 | 100 |
| 16MW9 | 1404171-04 | 04/28/14 10:00 | 100 | 100 |
| 16MW9 | 1404171-04RE1 | 04/28/14 10:00 | 100 | 100 |
| 16WDUP | 1404171-05 | 04/28/14 10:00 | 100 | 100 |
| 16WC1B | 1404171-06 | 04/28/14 10:00 | 100 | 100 |
| PBW01 | 4042804-BLK1 | 04/28/14 10:00 | 100 | 100 |
| MLCS01 | 4042804-BS1 | 04/28/14 10:00 | 100 | 100 |
| 16WC1AD | 4042804-DUP1 | 04/28/14 10:00 | 100 | 100 |
| 16WC1AS | 4042804-MS1 | 04/28/14 10:00 | 100 | 100 |
| 16WC1ASD | 4042804-MSD1 | 04/28/14 10:00 | 100 | 100 |
| 16WC1AA | 4042804-PS1 | 04/28/14 10:00 | 100 | 100 |

# PREPARATION BATCH SUMMARY

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042809 Matrix: Water Preparation: EPA 9010C

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16C1 | 1404171-02 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16MW8 | 1404171-03 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16MW9 | 1404171-04 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16WDUP | 1404171-05 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16WC1B | 1404171-06 | 04/28/14 14:05 | 50.0 | 50.0 |
| PBW01 | 4042809-BLK1 | 04/28/14 14:05 | 50.0 | 50.0 |
| MLCS01 | 4042809-BS1 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16WC1AD | 4042809-DUP1 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16WC1AS | 4042809-MS1 | 04/28/14 14:05 | 50.0 | 50.0 |
| 16WC1ASD | 4042809-MSD1 | 04/28/14 14:05 | 50.0 | 50.0 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29004 Calibration: 4042904 Instrument: C2

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| S400 | 4D29004-CAL8 | 4D29004_P-001 | 04/29/14 11:01:13 |
| S300 | 4D29004-CAL7 | 4D29004_P-002 | 04/29/14 11:02:19 |
| S200 | 4D29004-CAL6 | 4D29004_P-003 | 04/29/14 11:03:23 |
| S100 | 4D29004-CAL5 | 4D29004_P-004 | 04/29/14 11:04:29 |
| S50 | 4D29004-CAL4 | 4D29004_P-005 | 04/29/14 11:05:34 |
| S20 | 4D29004-CAL3 | 4D29004_P-006 | 04/29/14 11:06:41 |
| S10 | 4D29004-CAL2 | 4D29004_P-007 | 04/29/14 11:07:48 |
| S0 | 4D29004-CAL1 | 4D29004_P-008 | 04/29/14 11:08:55 |
| ICV | 4D29004-ICV1 | 4D29004_P-009 | 04/29/14 11:10:01 |
| ICB | 4D29004-ICB1 | 4D29004_P-010 | 04/29/14 11:11:08 |
| CCV | 4D29004-CCV1 | 4D29004_P-011 | 04/29/14 11:12:13 |
| CCB | 4D29004-CCB1 | 4D29004_P-012 | 04/29/14 11:13:20 |
| LRS | 4D29004-LCV1 | 4D29004_P-013 | 04/29/14 11:14:26 |
| HRS | 4D29004-HCV1 | 4D29004_P-014 | 04/29/14 11:15:31 |
| PBW01 | 4042809-BLK1 | 4D29004_P-015 | 04/29/14 11:16:38 |
| MLCS01 | 4042809-BS1 | 4D29004_P-016 | 04/29/14 11:17:44 |
| 16WC1A | 1404171-01 | 4D29004_P-017 | 04/29/14 11:18:50 |
| 16WC1AD | 4042809-DUP1 | 4D29004_P-018 | 04/29/14 11:19:55 |
| 16WC1AS | 4042809-MS1 | 4D29004_P-019 | 04/29/14 11:21:01 |
| 16WC1ASD | 4042809-MSD1 | 4D29004_P-020 | 04/29/14 11:22:07 |
| 16C1 | 1404171-02 | 4D29004_P-021 | 04/29/14 11:23:12 |
| 16MW8 | 1404171-03 | 4D29004_P-022 | 04/29/14 11:24:18 |
| CCV | 4D29004-CCV2 | 4D29004_P-023 | 04/29/14 11:25:23 |
| CCB | 4D29004-CCB2 | 4D29004_P-024 | 04/29/14 11:26:30 |
| 16MW9 | 1404171-04 | 4D29004_P-025 | 04/29/14 11:27:36 |
| 16WDUP | 1404171-05 | 4D29004_P-026 | 04/29/14 11:28:41 |
| 16WC1B | 1404171-06 | 4D29004_P-027 | 04/29/14 11:29:45 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29004 Calibration: 4042904 Instrument: C2

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| CCV | 4D29004-CCV3 | 4D29004_P-029 | 04/29/14 11:34:26 |
| CCB | 4D29004-CCB3 | 4D29004_P-030 | 04/29/14 11:35:33 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29005 Calibration: 4042903 Instrument: V4

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| S0 | 4D29005-CAL1 | 4D29005_P-001 | 04/29/14 10:05:46 |
| 0.2 | 4D29005-CAL2 | 4D29005_P-002 | 04/29/14 10:08:41 |
| S0.5 | 4D29005-CAL3 | 4D29005_P-003 | 04/29/14 10:11:44 |
| S1.0 | 4D29005-CAL4 | 4D29005_P-004 | 04/29/14 10:14:40 |
| S5.0 | 4D29005-CAL5 | 4D29005_P-005 | 04/29/14 10:17:47 |
| S10.0 | 4D29005-CAL6 | 4D29005_P-006 | 04/29/14 10:21:06 |
| ICV | 4D29005-ICV1 | 4D29005_P-007 | 04/29/14 10:24:12 |
| ICB | 4D29005-ICB1 | 4D29005_P-008 | 04/29/14 10:27:07 |
| CCV | 4D29005-CCV1 | 4D29005_P-010 | 04/29/14 10:33:26 |
| CCB | 4D29005-CCB1 | 4D29005_P-011 | 04/29/14 10:36:25 |
| PBW01 | 4042803-BLK1 | 4D29005_P-012 | 04/29/14 10:39:18 |
| MLCS01 | 4042803-BS1 | 4D29005_P-013 | 04/29/14 10:42:23 |
| 16WC1A | 1404171-01 | 4D29005_P-014 | 04/29/14 10:45:15 |
| 16WC1AD | 4042803-DUP1 | 4D29005_P-015 | 04/29/14 10:48:18 |
| 16WC1AS | 4042803-MS1 | 4D29005_P-016 | 04/29/14 10:51:36 |
| 16WC1ASD | 4042803-MSD1 | 4D29005_P-017 | 04/29/14 10:54:31 |
| 16C1 | 1404171-02 | 4D29005_P-018 | 04/29/14 10:57:44 |
| 16MW8 | 1404171-03 | 4D29005_P-019 | 04/29/14 11:00:42 |
| 16MW9 | 1404171-04 | 4D29005_P-020 | 04/29/14 11:03:37 |
| 16WDUP | 1404171-05 | 4D29005_P-021 | 04/29/14 11:06:44 |
| CCV | 4D29005-CCV2 | 4D29005_P-022 | 04/29/14 11:09:37 |
| CCB | 4D29005-CCB2 | 4D29005_P-023 | 04/29/14 11:12:44 |
| 16WC1B | 1404171-06 | 4D29005_P-024 | 04/29/14 11:15:42 |
| CCV | 4D29005-CCV3 | 4D29005_P-034 | 04/29/14 11:45:56 |
| CCB | 4D29005-CCB3 | 4D29005_P-035 | 04/29/14 11:48:51 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Calibration: 4042907 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUNE | 4D29007-TUN1 | 4D29007_P-001 | 04/29/14 09:59:13 |
| S0 | 4D29007-CAL1 | 4D29007_P-002 | 04/29/14 10:30:50 |
| S 6020-MS1 | 4D29007-CAL2 | 4D29007_P-003 | 04/29/14 10:32:36 |
| S 6020-MS2 | 4D29007-CAL3 | 4D29007_P-004 | 04/29/14 10:34:20 |
| S 6020-MS3 | 4D29007-CAL4 | 4D29007_P-005 | 04/29/14 10:36:04 |
| S 6020-MS4 | 4D29007-CAL5 | 4D29007_P-006 | 04/29/14 10:37:49 |
| S 6020-MS5 | 4D29007-CAL6 | 4D29007_P-007 | 04/29/14 10:39:33 |
| LLICV | 4D29007-CRL1 | 4D29007_P-008 | 04/29/14 10:42:59 |
| ICV | 4D29007-ICV1 | 4D29007_P-009 | 04/29/14 10:44:45 |
| ICB | 4D29007-ICB1 | 4D29007_P-010 | 04/29/14 10:46:30 |
| ICSA | 4D29007-IFA1 | 4D29007_P-011 | 04/29/14 10:48:15 |
| ICSAB | 4D29007-IFB1 | 4D29007_P-012 | 04/29/14 10:50:00 |
| LLICV | 4D29007-CRL2 | 4D29007_P-013 | 04/29/14 10:51:45 |
| CCV | 4D29007-CCV1 | 4D29007_P-014 | 04/29/14 10:53:31 |
| CCB | 4D29007-CCB1 | 4D29007_P-015 | 04/29/14 10:55:15 |
| PBW01 | 4042804-BLK1 | 4D29007_P-016 | 04/29/14 11:18:29 |
| MLCS01 | 4042804-BS1 | 4D29007_P-017 | 04/29/14 11:20:13 |
| 16WC1A | 1404171-01 | 4D29007_P-019 | 04/29/14 11:23:44 |
| 16WC1AD | 4042804-DUP1 | 4D29007_P-020 | 04/29/14 11:25:28 |
| 16WC1AS | 4042804-MS1 | 4D29007_P-021 | 04/29/14 11:27:13 |
| 16WC1ASD | 4042804-MSD1 | 4D29007_P-022 | 04/29/14 11:28:57 |
| 16WC1AL | 4D29007-SRD1 | 4D29007_P-023 | 04/29/14 11:30:42 |
| 16WC1AA | 4042804-PS1 | 4D29007_P-024 | 04/29/14 11:32:26 |
| 16C1 | 1404171-02 | 4D29007_P-025 | 04/29/14 11:34:11 |
| CCV | 4D29007-CCV2 | 4D29007_P-026 | 04/29/14 11:35:57 |
| CCB | 4D29007-CCB2 | 4D29007_P-027 | 04/29/14 11:37:41 |
| 16MW8 | 1404171-03 | 4D29007_P-028 | 04/29/14 11:39:28 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Calibration: 4042907 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| 16MW9 | 1404171-04 | 4D29007_P-029 | 04/29/14 11:41:12 |
| 16WDUP | 1404171-05 | 4D29007_P-030 | 04/29/14 11:42:57 |
| 16WC1B | 1404171-06 | 4D29007_P-031 | 04/29/14 11:44:41 |
| LLCCV | 4D29007-CRL3 | 4D29007_P-037 | 04/29/14 11:55:09 |
| CCV | 4D29007-CCV3 | 4D29007_P-038 | 04/29/14 11:56:55 |
| CCB | 4D29007-CCB3 | 4D29007_P-039 | 04/29/14 11:58:39 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Calibration: 4050604 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUN1 | 4E05012-TUN1 | 4E05012_P-001 | 05/05/14 15:31:53 |
| S0 | 4E05012-CAL1 | 4E05012_P-002 | 05/05/14 17:07:28 |
| S 6020-MS1 | 4E05012-CAL2 | 4E05012_P-003 | 05/05/14 17:09:14 |
| S 6020-MS2 | 4E05012-CAL3 | 4E05012_P-004 | 05/05/14 17:10:58 |
| S 6020-MS3 | 4E05012-CAL4 | 4E05012_P-005 | 05/05/14 17:12:43 |
| S 6020-MS4 | 4E05012-CAL5 | 4E05012_P-006 | 05/05/14 17:14:27 |
| S 6020-MS5 | 4E05012-CAL6 | 4E05012_P-007 | 05/05/14 17:16:12 |
| LLICV | 4E05012-CRL1 | 4E05012_P-008 | 05/05/14 17:19:38 |
| ICV | 4E05012-ICV1 | 4E05012_P-009 | 05/05/14 17:21:24 |
| ICB | 4E05012-ICB1 | 4E05012_P-010 | 05/05/14 17:23:10 |
| ICSA | 4E05012-IFA1 | 4E05012_P-011 | 05/05/14 17:24:55 |
| ICSAB | 4E05012-IFB1 | 4E05012_P-012 | 05/05/14 17:26:39 |
| LLICV | 4E05012-CRL2 | 4E05012_P-013 | 05/05/14 17:28:25 |
| CCV | 4E05012-CCV1 | 4E05012_P-014 | 05/05/14 17:30:11 |
| CCB | 4E05012-CCB1 | 4E05012_P-015 | 05/05/14 17:31:55 |
| 16MW9 | 1404171-04RE1 | 4E05012_P-016 | 05/05/14 17:53:33 |
| CCV | 4E05012-CCV2 | 4E05012_P-025 | 05/05/14 18:10:29 |
| CCB | 4E05012-CCB2 | 4E05012_P-026 | 05/05/14 18:12:13 |
| LLCCV | 4E05012-CRL3 | 4E05012_P-031 | 05/05/14 18:22:53 |
| CCV | 4E05012-CCV3 | 4E05012_P-032 | 05/05/14 18:24:38 |
| CCB | 4E05012-CCB3 | 4E05012_P-033 | 05/05/14 18:26:23 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E06001 Calibration: UNASSIGI Instrument: P4

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| S0 | 4E06001-CAL1 | 4E06001_P-001 | 05/05/14 15:24:17 |
| S RSTD-4 | 4E06001-CAL5 | 4E06001_P-005 | 05/05/14 15:50:52 |
| LLICV | 4E06001-CRL1 | 4E06001_P-006 | 05/05/14 15:56:32 |
| ICV | 4E06001-ICV1 | 4E06001_P-007 | 05/05/14 16:03:45 |
| ICB | 4E06001-ICB1 | 4E06001_P-008 | 05/05/14 16:10:58 |
| ICSA | 4E06001-IFA1 | 4E06001_P-009 | 05/05/14 16:18:11 |
| ICSAB | 4E06001-IFB1 | 4E06001_P-010 | 05/05/14 16:25:24 |
| LLCCV | 4E06001-CRL2 | 4E06001_P-011 | 05/05/14 16:32:37 |
| CCV1 | 4E06001-CCV1 | 4E06001_P-012 | 05/05/14 16:39:50 |
| CCB1 | 4E06001-CCB1 | 4E06001_P-013 | 05/05/14 16:47:04 |
| CCV1 | 4E06001-CCV2 | 4E06001_P-024 | 05/05/14 18:08:04 |
| CCB1 | 4E06001-CCB2 | 4E06001_P-025 | 05/05/14 18:15:18 |
| LLCCV | 4E06001-CRL3 | 4E06001_P-035 | 05/05/14 19:29:39 |
| CCV1 | 4E06001-CCV3 | 4E06001_P-036 | 05/05/14 19:36:52 |
| CCB1 | 4E06001-CCB3 | 4E06001_P-037 | 05/05/14 19:44:06 |
| CCV1 | 4E06001-CCV4 | 4E06001_P-048 | 05/05/14 21:04:06 |
| CCB1 | 4E06001-CCB4 | 4E06001_P-049 | 05/05/14 21:11:20 |
| LLCCV | 4E06001-CRL4 | 4E06001_P-058 | 05/05/14 22:16:15 |
| CCV1 | 4E06001-CCV5 | 4E06001_P-059 | 05/05/14 22:23:28 |
| CCB1 | 4E06001-CCB5 | 4E06001_P-060 | 05/05/14 22:30:42 |
| CCV1 | 4E06001-CCV6 | 4E06001_P-071 | 05/05/14 23:50:03 |
| CCB1 | 4E06001-CCB6 | 4E06001_P-072 | 05/05/14 23:57:17 |
| LLCCV | 4E06001-CRL5 | 4E06001_P-082 | 05/06/14 01:09:26 |
| CCV1 | 4E06001-CCV7 | 4E06001_P-083 | 05/06/14 01:16:39 |
| CCB1 | 4E06001-CCB7 | 4E06001_P-084 | 05/06/14 01:23:53 |
| PBW01 | 4042802-BLK1 | 4E06001_P-087 | 05/06/14 01:45:32 |
| MLCS01 | 4042802-BS1 | 4E06001_P-088 | 05/06/14 01:52:45 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E06001 Calibration: UNASSIGI Instrument: P4

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| 16WC1A | 1404171-01 | 4E06001_P-089 | 05/06/14 01:59:58 |
| 16WC1AD | 4042802-DUP1 | 4E06001_P-090 | 05/06/14 02:07:11 |
| 16WC1AS | 4042802-MS1 | 4E06001_P-091 | 05/06/14 02:14:24 |
| 16WC1ASD | 4042802-MSD1 | 4E06001_P-092 | 05/06/14 02:21:37 |
| 16WC1AL | 4E06001-SRDA | 4E06001_P-093 | 05/06/14 02:28:51 |
| 16WC1AA | 4042802-PS1 | 4E06001_P-094 | 05/06/14 02:36:04 |
| CCV1 | 4E06001-CCV8 | 4E06001_P-095 | 05/06/14 02:43:17 |
| CCB1 | 4E06001-CCB8 | 4E06001_P-096 | 05/06/14 02:50:31 |
| 16C1 | 1404171-02 | 4E06001_P-097 | 05/06/14 02:57:44 |
| 16MW8 | 1404171-03 | 4E06001_P-098 | 05/06/14 03:04:57 |
| 16MW9 | 1404171-04 | 4E06001_P-099 | 05/06/14 03:12:10 |
| 16WDUP | 1404171-05 | 4E06001_P-100 | 05/06/14 03:19:24 |
| 16WC1B | 1404171-06 | 4E06001_P-101 | 05/06/14 03:26:37 |
| LLCCV | 4E06001-CRL6 | 4E06001_P-102 | 05/06/14 03:33:49 |
| CCV1 | 4E06001-CCV9 | 4E06001_P-103 | 05/06/14 03:41:03 |
| CCB1 | 4E06001-CCB9 | 4E06001_P-104 | 05/06/14 03:48:17 |

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# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**16WC1A**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404171-01 % Solid: Matrix: Water Sampled: 04/24/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-39-3 | Barium | 274 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-48-4 | Cobalt | 5.24 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-50-8 | Copper | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 57-12-5 | Cyanide | | 4.00 | 20.0 | 1 | U | EPA 9010C/9012B | 4D29004 | 4/29/14 11:18 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 10:45 |
| 7440-02-0 | Nickel | 8.10 | 2.00 | 10.0 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7782-49-2 | Selenium | | 3.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-22-4 | Silver | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:23 |
| 7440-31-5 | Tin | | 17.4 | 50.0 | 1 | U | EPA 6010C | 4E06001 | 5/6/14 1:59 |
| 7440-66-6 | Zinc | 6.70 | 3.00 | 10.0 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:23 |

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# ANALYSIS DATA SHEET

**16C1**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404171-02 % Solid: Matrix: Water Sampled: 04/24/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-39-3 | Barium | 159 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-48-4 | Cobalt | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-50-8 | Copper | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 57-12-5 | Cyanide | | 4.00 | 20.0 | 1 | U | EPA 9010C/9012B | 4D29004 | 4/29/14 11:23 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 10:57 |
| 7440-02-0 | Nickel | 4.65 | 2.00 | 10.0 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7782-49-2 | Selenium | | 3.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-22-4 | Silver | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |
| 7440-31-5 | Tin | | 17.4 | 50.0 | 1 | U | EPA 6010C | 4E06001 | 5/6/14 2:57 |
| 7440-66-6 | Zinc | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:34 |

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# ANALYSIS DATA SHEET

**16MW8**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404171-03 % Solid: Matrix: Water Sampled: 04/24/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-39-3 | Barium | 123 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-41-7 | Beryllium | 0.253 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-43-9 | Cadmium | 0.220 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-48-4 | Cobalt | 2.47 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-50-8 | Copper | 9.44 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 57-12-5 | Cyanide | | 4.00 | 20.0 | 1 | U | EPA 9010C/9012B | 4D29004 | 4/29/14 11:24 |
| 7439-92-1 | Lead | 0.604 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:00 |
| 7440-02-0 | Nickel | 5.17 | 2.00 | 10.0 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7782-49-2 | Selenium | | 3.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-22-4 | Silver | 0.207 | 0.200 | 1.00 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:39 |
| 7440-31-5 | Tin | | 17.4 | 50.0 | 1 | U | EPA 6010C | 4E06001 | 5/6/14 3:04 |
| 7440-66-6 | Zinc | 35.1 | 3.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:39 |

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# ANALYSIS DATA SHEET

**16MW9**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404171-04 % Solid: Matrix: Water Sampled: 04/24/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-39-3 | Barium | 579 | 2.00 | 20.0 | 2 | D | EPA 6020A | 4E05012 | 5/5/14 17:53 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-48-4 | Cobalt | 4.49 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-50-8 | Copper | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 57-12-5 | Cyanide | | 4.00 | 20.0 | 1 | U | EPA 9010C/9012B | 4D29004 | 4/29/14 11:27 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:03 |
| 7440-02-0 | Nickel | 16.8 | 2.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7782-49-2 | Selenium | | 3.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-22-4 | Silver | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |
| 7440-31-5 | Tin | | 17.4 | 50.0 | 1 | U | EPA 6010C | 4E06001 | 5/6/14 3:12 |
| 7440-66-6 | Zinc | | 3.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:41 |

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# ANALYSIS DATA SHEET

**16WDUP**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404171-05 % Solid: Matrix: Water Sampled: 04/24/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-39-3 | Barium | 261 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-48-4 | Cobalt | 5.19 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-50-8 | Copper | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 57-12-5 | Cyanide | | 4.00 | 20.0 | 1 | U | EPA 9010C/9012B | 4D29004 | 4/29/14 11:28 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:06 |
| 7440-02-0 | Nickel | 8.01 | 2.00 | 10.0 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7782-49-2 | Selenium | | 3.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-22-4 | Silver | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:42 |
| 7440-31-5 | Tin | | 17.4 | 50.0 | 1 | U | EPA 6010C | 4E06001 | 5/6/14 3:19 |
| 7440-66-6 | Zinc | 6.93 | 3.00 | 10.0 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:42 |

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# ANALYSIS DATA SHEET

**16WC1B**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404171-06 % Solid: Matrix: Water Sampled: 04/24/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-36-0 | Antimony | | 0.400 | 2.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-38-2 | Arsenic | | 2.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-39-3 | Barium | 111 | 1.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-41-7 | Beryllium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-43-9 | Cadmium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-47-3 | Chromium | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-48-4 | Cobalt | 46.8 | 1.00 | 5.00 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-50-8 | Copper | 2.17 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 57-12-5 | Cyanide | | 4.00 | 20.0 | 1 | U | EPA 9010C/9012B | 4D29004 | 4/29/14 11:29 |
| 7439-92-1 | Lead | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:15 |
| 7440-02-0 | Nickel | 9.35 | 2.00 | 10.0 | 1 | J | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7782-49-2 | Selenium | | 3.00 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-22-4 | Silver | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-28-0 | Thallium | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-62-2 | Vanadium | | 1.00 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:44 |
| 7440-31-5 | Tin | | 17.4 | 50.0 | 1 | U | EPA 6010C | 4E06001 | 5/6/14 3:26 |
| 7440-66-6 | Zinc | 10.2 | 3.00 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:44 |

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# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4D29007-CRL1 | Antimony | 2.000 | 2.10 | 105 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL1 | Arsenic | 1.000 | 1.03 | 103 | ug/L | U | 70 - 130 |
| LLICV | 4D29007-CRL1 | Barium | 10.00 | 9.75 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Beryllium | 1.000 | 0.901 | 90 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Cadmium | 1.000 | 0.962 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Chromium | 2.000 | 1.99 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Cobalt | 1.000 | 0.981 | 98 | ug/L | U | 70 - 130 |
| LLICV | 4D29007-CRL1 | Copper | 2.000 | 2.06 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL1 | Lead | 1.000 | 0.980 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Nickel | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLICV | 4D29007-CRL1 | Selenium | 5.000 | 4.89 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Silver | 1.000 | 1.12 | 112 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL1 | Thallium | 1.000 | 0.982 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Vanadium | 5.000 | 4.92 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Zinc | 2.000 | 2.02 | 101 | ug/L | U | 70 - 130 |
| LLICV | 4D29007-CRL2 | Antimony | 2.000 | 1.92 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Arsenic | 1.000 | 0.941 | 94 | ug/L | U | 70 - 130 |
| LLICV | 4D29007-CRL2 | Barium | 10.00 | 9.67 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Beryllium | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL2 | Cadmium | 1.000 | 0.979 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Chromium | 2.000 | 1.99 | 100 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Cobalt | 1.000 | 0.991 | 99 | ug/L | U | 70 - 130 |
| LLICV | 4D29007-CRL2 | Copper | 2.000 | 2.05 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL2 | Lead | 1.000 | 0.960 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Nickel | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLICV | 4D29007-CRL2 | Selenium | 5.000 | 4.71 | 94 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Silver | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL2 | Thallium | 1.000 | 0.973 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Vanadium | 5.000 | 4.89 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Zinc | 2.000 | 1.90 | 95 | ug/L | U | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Antimony | 2.000 | 1.88 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Arsenic | 1.000 | 0.944 | 94 | ug/L | U | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Barium | 10.00 | 9.77 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Beryllium | 1.000 | 0.881 | 88 | ug/L | J | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4D29007-CRL3 | Cadmium | 1.000 | 0.927 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Chromium | 2.000 | 1.99 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Cobalt | 1.000 | 0.978 | 98 | ug/L | U | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Copper | 2.000 | 2.09 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Lead | 1.000 | 0.985 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Nickel | 1.000 | 1.00 | 100 | ug/L | U | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Selenium | 5.000 | 4.75 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Silver | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Thallium | 1.000 | 0.988 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Vanadium | 5.000 | 4.92 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Zinc | 2.000 | 2.07 | 103 | ug/L | U | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4E05012-CRL1 | Antimony | 2.000 | 2.06 | 103 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL1 | Arsenic | 1.000 | 1.01 | 101 | ug/L | U | 70 - 130 |
| LLICV | 4E05012-CRL1 | Barium | 10.00 | 9.63 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL1 | Beryllium | 1.000 | 0.989 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL1 | Cadmium | 1.000 | 0.998 | 100 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL1 | Chromium | 2.000 | 1.96 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL1 | Cobalt | 1.000 | 1.01 | 101 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL1 | Copper | 2.000 | 2.05 | 103 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL1 | Lead | 1.000 | 0.993 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL1 | Nickel | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLICV | 4E05012-CRL1 | Selenium | 5.000 | 4.69 | 94 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL1 | Silver | 1.000 | 1.28 | 128 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL1 | Thallium | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL1 | Vanadium | 5.000 | 4.94 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL1 | Zinc | 2.000 | 2.05 | 102 | ug/L | U | 70 - 130 |
| LLICV | 4E05012-CRL2 | Antimony | 2.000 | 1.91 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Arsenic | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLICV | 4E05012-CRL2 | Barium | 10.00 | 9.69 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Beryllium | 1.000 | 0.967 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Cadmium | 1.000 | 0.976 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Chromium | 2.000 | 1.99 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Cobalt | 1.000 | 1.00 | 100 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL2 | Copper | 2.000 | 2.04 | 102 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL2 | Lead | 1.000 | 1.01 | 101 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL2 | Nickel | 1.000 | 0.972 | 97 | ug/L | U | 70 - 130 |
| LLICV | 4E05012-CRL2 | Selenium | 5.000 | 4.77 | 95 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Silver | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLICV | 4E05012-CRL2 | Thallium | 1.000 | 0.990 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Vanadium | 5.000 | 4.86 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4E05012-CRL2 | Zinc | 2.000 | 2.07 | 103 | ug/L | U | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Antimony | 2.000 | 1.90 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Arsenic | 1.000 | 0.957 | 96 | ug/L | U | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Barium | 10.00 | 9.64 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Beryllium | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4E05012-CRL3 | Cadmium | 1.000 | 0.900 | 90 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Chromium | 2.000 | 2.08 | 104 | ug/L | | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Cobalt | 1.000 | 0.992 | 99 | ug/L | U | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Copper | 2.000 | 2.04 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Lead | 1.000 | 0.953 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Nickel | 1.000 | 1.02 | 102 | ug/L | U | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Selenium | 5.000 | 4.76 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Silver | 1.000 | 0.948 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Thallium | 1.000 | 0.964 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Vanadium | 5.000 | 4.99 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4E05012-CRL3 | Zinc | 2.000 | 2.08 | 104 | ug/L | U | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E06001 Instrument ID: P4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4E06001-CRL1 | Tin | 50.00 | 53.4 | 107 | ug/L | | 70 - 130 |
| LLCCV | 4E06001-CRL2 | Tin | 50.00 | 52.3 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4E06001-CRL3 | Tin | 50.00 | 53.1 | 106 | ug/L | | 70 - 130 |
| LLCCV | 4E06001-CRL4 | Tin | 50.00 | 52.8 | 106 | ug/L | | 70 - 130 |
| LLCCV | 4E06001-CRL5 | Tin | 50.00 | 53.2 | 106 | ug/L | | 70 - 130 |
| LLCCV | 4E06001-CRL6 | Tin | 50.00 | 52.2 | 104 | ug/L | | 70 - 130 |

# INITIAL CALIBRATION DATA

*EPA 7470A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042903 Instrument: V4

Calibration Date: 4/29/2014 10:05:36

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Mercury | CAL1 | S0 | 511 | 0 |
| Mercury | CAL2 | 0.2 | 2905 | 0.2 |
| Mercury | CAL3 | S0.5 | 5644 | 0.5 |
| Mercury | CAL4 | S1.0 | 11340 | 1 |
| Mercury | CAL5 | S5.0 | 55739 | 5 |
| Mercury | CAL6 | S10.0 | 110094 | 10 |

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# INITIAL CALIBRATION DATA (Continued)

*EPA 7470A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042903 Instrument: V4

Calibration Date: 4/29/2014 10:05:36

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Mercury | 0.00009109 | -0.04427 | 0.9999 | 0.995 | |

Environmental Testing Laboratories

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# INITIAL CALIBRATION DATA

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042904 Instrument: C2

Calibration Date: 4/29/2014 11:01:57

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Cyanide | CAL1 | S0 | 0.0301 | 0 |
| Cyanide | CAL2 | S10 | 0.3913 | 10 |
| Cyanide | CAL3 | S20 | 0.7738 | 20 |
| Cyanide | CAL4 | S50 | 1.9786 | 50 |
| Cyanide | CAL5 | S100 | 3.9202 | 100 |
| Cyanide | CAL6 | S200 | 7.7427 | 200 |
| Cyanide | CAL7 | S300 | 11.4952 | 300 |
| Cyanide | CAL8 | S400 | 15.1989 | 400 |

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# INITIAL CALIBRATION DATA (Continued)

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042904 Instrument: C2

Calibration Date: 4/29/2014 11:01:57

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Cyanide | 26.28 | -1.447 | 0.9999 | 0.995 | |

# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042907 Instrument: PEMS

Calibration Date: 4/29/2014 9:59:47

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Antimony | CAL1 | S0 | 90.278 | 0 |
| Antimony | CAL2 | S 6020-MS1 | 11699.9 | 2 |
| Antimony | CAL3 | S 6020-MS2 | 24133.26 | 4 |
| Antimony | CAL4 | S 6020-MS3 | 747716.8 | 125 |
| Antimony | CAL5 | S 6020-MS4 | 1460264 | 250 |
| Antimony | CAL6 | S 6020-MS5 | 3024448 | 500 |
| Arsenic | CAL1 | S0 | -150.966 | 0 |
| Arsenic | CAL2 | S 6020-MS1 | 1508.833 | 1 |
| Arsenic | CAL3 | S 6020-MS2 | 3350.114 | 2 |
| Arsenic | CAL4 | S 6020-MS3 | 213849.7 | 125 |
| Arsenic | CAL5 | S 6020-MS4 | 415635.6 | 250 |
| Arsenic | CAL6 | S 6020-MS5 | 847503.2 | 500 |
| Barium | CAL1 | S0 | 34.445 | 0 |
| Barium | CAL2 | S 6020-MS1 | 28523.96 | 10 |
| Barium | CAL3 | S 6020-MS2 | 59349.49 | 20 |
| Barium | CAL4 | S 6020-MS3 | 365017.8 | 125 |
| Barium | CAL5 | S 6020-MS4 | 714372.4 | 250 |
| Barium | CAL6 | S 6020-MS5 | 1443708 | 500 |
| Beryllium | CAL1 | S0 | 0.556 | 0 |
| Beryllium | CAL2 | S 6020-MS1 | 391.119 | 1 |
| Beryllium | CAL3 | S 6020-MS2 | 823.923 | 2 |
| Beryllium | CAL4 | S 6020-MS3 | 51713.39 | 125 |
| Beryllium | CAL5 | S 6020-MS4 | 100274.8 | 250 |
| Beryllium | CAL6 | S 6020-MS5 | 200669.8 | 500 |
| Cadmium | CAL1 | S0 | 6.39 | 0 |

| | | | | |
|---|---|---|---|---|
| Cadmium | CAL2 | S 6020-MS1 | 2044.606 | 1 |
| Cadmium | CAL3 | S 6020-MS2 | 3934.997 | 2 |
| Cadmium | CAL4 | S 6020-MS3 | 253229.5 | 125 |
| Cadmium | CAL5 | S 6020-MS4 | 493785.3 | 250 |
| Cadmium | CAL6 | S 6020-MS5 | 995099 | 500 |
| Chromium | CAL1 | S0 | 7255.965 | 0 |
| Chromium | CAL2 | S 6020-MS1 | 26329.07 | 2 |
| Chromium | CAL3 | S 6020-MS2 | 47646.58 | 4 |
| Chromium | CAL4 | S 6020-MS3 | 1218313 | 125 |
| Chromium | CAL5 | S 6020-MS4 | 2339396 | 250 |
| Chromium | CAL6 | S 6020-MS5 | 4735043 | 500 |
| Cobalt | CAL1 | S0 | 51.111 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 12488.91 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 25441.21 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 1518144 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 2971373 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 6079982 | 500 |
| Copper | CAL1 | S0 | 96.297 | 0 |
| Copper | CAL2 | S 6020-MS1 | 12632.05 | 2 |
| Copper | CAL3 | S 6020-MS2 | 25646.78 | 4 |
| Copper | CAL4 | S 6020-MS3 | 754351 | 125 |
| Copper | CAL5 | S 6020-MS4 | 1454837 | 250 |
| Copper | CAL6 | S 6020-MS5 | 2958147 | 500 |
| Lead | CAL1 | S0 | 79.167 | 0 |
| Lead | CAL2 | S 6020-MS1 | 16261.92 | 1 |
| Lead | CAL3 | S 6020-MS2 | 33436.63 | 2 |
| Lead | CAL4 | S 6020-MS3 | 2071490 | 125 |
| Lead | CAL5 | S 6020-MS4 | 3988988 | 250 |
| Lead | CAL6 | S 6020-MS5 | 8150918 | 500 |
| Nickel | CAL1 | S0 | 25.926 | 0 |
| Nickel | CAL2 | S 6020-MS1 | 2665.171 | 1 |
| Nickel | CAL3 | S 6020-MS2 | 5591.378 | 2 |
| Nickel | CAL4 | S 6020-MS3 | 336198.3 | 125 |

| | | | | |
|---|---|---|---|---|
| Nickel | CAL5 | S 6020-MS4 | 641005.5 | 250 |
| Nickel | CAL6 | S 6020-MS5 | 1275762 | 500 |
| Selenium | CAL1 | S0 | 39.074 | 0 |
| Selenium | CAL2 | S 6020-MS1 | 880.039 | 5 |
| Selenium | CAL3 | S 6020-MS2 | 1774.417 | 10 |
| Selenium | CAL4 | S 6020-MS3 | 21578.26 | 125 |
| Selenium | CAL5 | S 6020-MS4 | 42203.88 | 250 |
| Selenium | CAL6 | S 6020-MS5 | 84549.83 | 500 |
| Silver | CAL1 | S0 | 36.111 | 0 |
| Silver | CAL2 | S 6020-MS1 | 9422.959 | 1 |
| Silver | CAL3 | S 6020-MS2 | 18319.56 | 2 |
| Silver | CAL4 | S 6020-MS3 | 1128584 | 125 |
| Silver | CAL5 | S 6020-MS4 | 2173793 | 250 |
| Silver | CAL6 | S 6020-MS5 | 4344749 | 500 |
| Thallium | CAL1 | S0 | 29.167 | 0 |
| Thallium | CAL2 | S 6020-MS1 | 17902.12 | 1 |
| Thallium | CAL3 | S 6020-MS2 | 36660.14 | 2 |
| Thallium | CAL4 | S 6020-MS3 | 2159199 | 125 |
| Thallium | CAL5 | S 6020-MS4 | 4218530 | 250 |
| Thallium | CAL6 | S 6020-MS5 | 8785117 | 500 |
| Vanadium | CAL1 | S0 | 2463.366 | 0 |
| Vanadium | CAL2 | S 6020-MS1 | 56948.14 | 5 |
| Vanadium | CAL3 | S 6020-MS2 | 117287.2 | 10 |
| Vanadium | CAL4 | S 6020-MS3 | 1373759 | 125 |
| Vanadium | CAL5 | S 6020-MS4 | 2690130 | 250 |
| Vanadium | CAL6 | S 6020-MS5 | 5551815 | 500 |
| Zinc | CAL1 | S0 | 98.149 | 0 |
| Zinc | CAL2 | S 6020-MS1 | 3282.946 | 2 |
| Zinc | CAL3 | S 6020-MS2 | 6767.104 | 4 |
| Zinc | CAL4 | S 6020-MS3 | 204413.8 | 125 |
| Zinc | CAL5 | S 6020-MS4 | 397059.3 | 250 |
| Zinc | CAL6 | S 6020-MS5 | 780273.6 | 500 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042907 Instrument: PEMS

Calibration Date: 4/29/2014 9:59:47

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Antimony | 0.001958 | 0 | 0.9999 | 0.998 | |
| Arsenic | 0.001330 | 0 | 0.9999 | 0.998 | |
| Barium | 0.0009404 | 0 | 0.9999 | 0.998 | |
| Beryllium | 0.0009941 | 0 | 0.9999 | 0.998 | |
| Cadmium | 0.0008774 | 0 | 0.9999 | 0.998 | |
| Chromium | 0.007430 | 0 | 0.9999 | 0.998 | |
| Cobalt | 0.009527 | 0 | 0.9999 | 0.998 | |
| Copper | 0.004645 | 0 | 0.9999 | 0.998 | |
| Lead | 0.009962 | 0 | 0.9999 | 0.998 | |
| Nickel | 0.002015 | 0 | 0.9999 | 0.998 | |
| Selenium | 0.0001331 | 0 | 0.9999 | 0.998 | |
| Thallium | 0.01068 | 0 | 0.9998 | 0.998 | |
| Vanadium | 0.008676 | 0 | 0.9999 | 0.998 | |
| Zinc | 0.001235 | 0 | 0.9998 | 0.998 | |

# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4050604 Instrument: PEMS

Calibration Date: 5/5/2014 15:31:48

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Antimony | CAL1 | S0 | 123.612 | 0 |
| Antimony | CAL2 | S 6020-MS1 | 11918.21 | 2 |
| Antimony | CAL3 | S 6020-MS2 | 24446.51 | 4 |
| Antimony | CAL4 | S 6020-MS3 | 799164.2 | 125 |
| Antimony | CAL5 | S 6020-MS4 | 1537715 | 250 |
| Antimony | CAL6 | S 6020-MS5 | 2873829 | 500 |
| Arsenic | CAL1 | S0 | -147.246 | 0 |
| Arsenic | CAL2 | S 6020-MS1 | 1513.659 | 1 |
| Arsenic | CAL3 | S 6020-MS2 | 3400.438 | 2 |
| Arsenic | CAL4 | S 6020-MS3 | 224742 | 125 |
| Arsenic | CAL5 | S 6020-MS4 | 428491.2 | 250 |
| Arsenic | CAL6 | S 6020-MS5 | 818688.7 | 500 |
| Barium | CAL1 | S0 | 24.444 | 0 |
| Barium | CAL2 | S 6020-MS1 | 28944.62 | 10 |
| Barium | CAL3 | S 6020-MS2 | 59836.27 | 20 |
| Barium | CAL4 | S 6020-MS3 | 392977.1 | 125 |
| Barium | CAL5 | S 6020-MS4 | 747639.3 | 250 |
| Barium | CAL6 | S 6020-MS5 | 1423129 | 500 |
| Beryllium | CAL1 | S0 | 2.222 | 0 |
| Beryllium | CAL2 | S 6020-MS1 | 414.453 | 1 |
| Beryllium | CAL3 | S 6020-MS2 | 822.812 | 2 |
| Beryllium | CAL4 | S 6020-MS3 | 54161.35 | 125 |
| Beryllium | CAL5 | S 6020-MS4 | 103676.9 | 250 |
| Beryllium | CAL6 | S 6020-MS5 | 197357.3 | 500 |
| Cadmium | CAL1 | S0 | 0.858 | 0 |

| | | | | |
|---|---|---|---|---|
| Cadmium | CAL2 | S 6020-MS1 | 2028.592 | 1 |
| Cadmium | CAL3 | S 6020-MS2 | 4010.913 | 2 |
| Cadmium | CAL4 | S 6020-MS3 | 262547.4 | 125 |
| Cadmium | CAL5 | S 6020-MS4 | 492555.6 | 250 |
| Cadmium | CAL6 | S 6020-MS5 | 934059 | 500 |
| Chromium | CAL1 | S0 | 6298.65 | 0 |
| Chromium | CAL2 | S 6020-MS1 | 24974.48 | 2 |
| Chromium | CAL3 | S 6020-MS2 | 44942.99 | 4 |
| Chromium | CAL4 | S 6020-MS3 | 1225236 | 125 |
| Chromium | CAL5 | S 6020-MS4 | 2327599 | 250 |
| Chromium | CAL6 | S 6020-MS5 | 4483042 | 500 |
| Cobalt | CAL1 | S0 | 23.889 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 11910.42 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 24218.74 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 1564974 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 2956611 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 5616972 | 500 |
| Copper | CAL1 | S0 | 69.445 | 0 |
| Copper | CAL2 | S 6020-MS1 | 12072.1 | 2 |
| Copper | CAL3 | S 6020-MS2 | 25196.52 | 4 |
| Copper | CAL4 | S 6020-MS3 | 800580.1 | 125 |
| Copper | CAL5 | S 6020-MS4 | 1493140 | 250 |
| Copper | CAL6 | S 6020-MS5 | 2742334 | 500 |
| Lead | CAL1 | S0 | 87.5 | 0 |
| Lead | CAL2 | S 6020-MS1 | 17525.55 | 1 |
| Lead | CAL3 | S 6020-MS2 | 35496.14 | 2 |
| Lead | CAL4 | S 6020-MS3 | 2292809 | 125 |
| Lead | CAL5 | S 6020-MS4 | 4274610 | 250 |
| Lead | CAL6 | S 6020-MS5 | 8295824 | 500 |
| Nickel | CAL1 | S0 | 15.741 | 0 |
| Nickel | CAL2 | S 6020-MS1 | 2548.473 | 1 |
| Nickel | CAL3 | S 6020-MS2 | 5299.552 | 2 |
| Nickel | CAL4 | S 6020-MS3 | 349409.8 | 125 |

| | | | | |
|---|---|---|---|---|
| Nickel | CAL5 | S 6020-MS4 | 658366.4 | 250 |
| Nickel | CAL6 | S 6020-MS5 | 1183559 | 500 |
| Selenium | CAL1 | S0 | 38.889 | 0 |
| Selenium | CAL2 | S 6020-MS1 | 863.741 | 5 |
| Selenium | CAL3 | S 6020-MS2 | 1759.044 | 10 |
| Selenium | CAL4 | S 6020-MS3 | 22722.27 | 125 |
| Selenium | CAL5 | S 6020-MS4 | 43456.45 | 250 |
| Selenium | CAL6 | S 6020-MS5 | 83485.95 | 500 |
| Silver | CAL1 | S0 | 114.815 | 0 |
| Silver | CAL2 | S 6020-MS1 | 8794.606 | 1 |
| Silver | CAL3 | S 6020-MS2 | 18058.88 | 2 |
| Silver | CAL4 | S 6020-MS3 | 1149910 | 125 |
| Silver | CAL5 | S 6020-MS4 | 2127022 | 250 |
| Silver | CAL6 | S 6020-MS5 | 4025009 | 500 |
| Thallium | CAL1 | S0 | 23.611 | 0 |
| Thallium | CAL2 | S 6020-MS1 | 18322.33 | 1 |
| Thallium | CAL3 | S 6020-MS2 | 37206.61 | 2 |
| Thallium | CAL4 | S 6020-MS3 | 2263503 | 125 |
| Thallium | CAL5 | S 6020-MS4 | 4477258 | 250 |
| Thallium | CAL6 | S 6020-MS5 | 8691271 | 500 |
| Vanadium | CAL1 | S0 | 2136.201 | 0 |
| Vanadium | CAL2 | S 6020-MS1 | 54545.2 | 5 |
| Vanadium | CAL3 | S 6020-MS2 | 109714.9 | 10 |
| Vanadium | CAL4 | S 6020-MS3 | 1388744 | 125 |
| Vanadium | CAL5 | S 6020-MS4 | 2650172 | 250 |
| Vanadium | CAL6 | S 6020-MS5 | 5170068 | 500 |
| Zinc | CAL1 | S0 | 83.334 | 0 |
| Zinc | CAL2 | S 6020-MS1 | 3280.168 | 2 |
| Zinc | CAL3 | S 6020-MS2 | 6503.04 | 4 |
| Zinc | CAL4 | S 6020-MS3 | 212508.4 | 125 |
| Zinc | CAL5 | S 6020-MS4 | 407884.3 | 250 |
| Zinc | CAL6 | S 6020-MS5 | 747262.8 | 500 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4050604 Instrument: PEMS

Calibration Date: 5/5/2014 15:31:48

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Antimony | 0.001950 | 0 | 0.9995 | 0.998 | |
| Arsenic | 0.001397 | 0 | 0.9999 | 0.998 | |
| Barium | 0.000962 | 0 | 0.9996 | 0.998 | |
| Beryllium | 0.001019 | 0 | 0.9999 | 0.998 | |
| Cadmium | 0.0008701 | 0 | 0.9995 | 0.998 | |
| Chromium | 0.007621 | 0 | 0.9999 | 0.998 | |
| Cobalt | 0.0096 | 0 | 0.9999 | 0.998 | |
| Copper | 0.004729 | 0 | 0.9996 | 0.998 | |
| Lead | 0.009774 | 0 | 0.9999 | 0.998 | |
| Nickel | 0.002051 | 0 | 0.9994 | 0.998 | |
| Selenium | 0.0001422 | 0 | 0.9999 | 0.998 | |
| Thallium | 0.01021 | 0 | 0.9999 | 0.998 | |
| Vanadium | 0.008773 | 0 | 0.9999 | 0.998 | |
| Zinc | 0.001287 | 0 | 0.9997 | 0.998 | |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29004 Instrument ID: C2

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D29004-ICV1 | Cyanide | 250.0 | 256 | 102 | ug/L | | +/-15 |
| CCV | 4D29004-CCV1 | Cyanide | 200.0 | 202 | 101 | ug/L | | +/-15 |
| CCV | 4D29004-CCV2 | Cyanide | 200.0 | 202 | 101 | ug/L | | +/-15 |
| CCV | 4D29004-CCV3 | Cyanide | 200.0 | 204 | 102 | ug/L | | +/-15 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 7470A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29005 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D29005-ICV1 | Mercury | 4.000 | 4.16 | 104 | ug/L | | +/-20 |
| CCV | 4D29005-CCV1 | Mercury | 5.000 | 5.09 | 102 | ug/L | | +/-20 |
| CCV | 4D29005-CCV2 | Mercury | 5.000 | 5.19 | 104 | ug/L | | +/-20 |
| CCV | 4D29005-CCV3 | Mercury | 5.000 | 5.42 | 108 | ug/L | | +/-20 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D29007-ICV1 | Antimony | 220.0 | 209 | 95 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Arsenic | 220.0 | 209 | 95 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Barium | 110.0 | 108 | 99 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Beryllium | 110.0 | 107 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Cadmium | 110.0 | 106 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Chromium | 110.0 | 107 | 98 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Cobalt | 110.0 | 106 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Copper | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Lead | 220.0 | 212 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Nickel | 110.0 | 110 | 100 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Selenium | 220.0 | 213 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Silver | 110.0 | 110 | 100 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Thallium | 220.0 | 213 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Vanadium | 110.0 | 105 | 95 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Zinc | 220.0 | 211 | 96 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Antimony | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Arsenic | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Beryllium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Cadmium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Chromium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Cobalt | 300.0 | 310 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Copper | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Lead | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Nickel | 300.0 | 309 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Selenium | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Silver | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Thallium | 300.0 | 310 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Vanadium | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Zinc | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Antimony | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Arsenic | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Barium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Beryllium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Cadmium | 300.0 | 298 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Chromium | 300.0 | 312 | 104 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Cobalt | 300.0 | 306 | 102 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4D29007-CCV2 | Copper | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Lead | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Nickel | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Selenium | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Silver | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Thallium | 300.0 | 309 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Vanadium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Zinc | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Antimony | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Arsenic | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Barium | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Beryllium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Cadmium | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Chromium | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Cobalt | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Copper | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Lead | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Nickel | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Selenium | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Silver | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Thallium | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Vanadium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Zinc | 300.0 | 296 | 99 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4E05012-ICV1 | Antimony | 220.0 | 211 | 96 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Arsenic | 220.0 | 214 | 97 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Barium | 110.0 | 110 | 100 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Beryllium | 110.0 | 110 | 100 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Cadmium | 110.0 | 110 | 100 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Chromium | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Cobalt | 110.0 | 112 | 102 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Copper | 110.0 | 112 | 102 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Lead | 220.0 | 223 | 101 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Nickel | 110.0 | 114 | 104 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Selenium | 220.0 | 219 | 100 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Silver | 110.0 | 115 | 104 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Thallium | 220.0 | 223 | 101 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Vanadium | 110.0 | 108 | 98 | ug/L | | +/-10 |
| ICV | 4E05012-ICV1 | Zinc | 220.0 | 217 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Antimony | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Arsenic | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Barium | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Beryllium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Cadmium | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Chromium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Cobalt | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Copper | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Lead | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Nickel | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Selenium | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Silver | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Thallium | 300.0 | 295 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Vanadium | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV1 | Zinc | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Antimony | 300.0 | 282 | 94 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Arsenic | 300.0 | 285 | 95 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Barium | 300.0 | 282 | 94 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Beryllium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Cadmium | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Chromium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Cobalt | 300.0 | 300 | 100 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4E05012-CCV2 | Copper | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Lead | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Nickel | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Selenium | 300.0 | 287 | 96 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Silver | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Thallium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Vanadium | 300.0 | 298 | 100 | ug/L | | +/-10 |
| CCV | 4E05012-CCV2 | Zinc | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Antimony | 300.0 | 289 | 96 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Arsenic | 300.0 | 289 | 97 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Barium | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Beryllium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Cadmium | 300.0 | 280 | 94 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Chromium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Cobalt | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Copper | 300.0 | 289 | 97 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Lead | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Nickel | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Selenium | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Silver | 300.0 | 286 | 95 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Thallium | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4E05012-CCV3 | Zinc | 300.0 | 292 | 98 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E06001 Instrument ID: P4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4E06001-ICV1 | Tin | 1100 | 1150 | 105 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV1 | Tin | 1000 | 1010 | 101 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV2 | Tin | 1000 | 1010 | 101 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV3 | Tin | 1000 | 1020 | 102 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV4 | Tin | 1000 | 1020 | 102 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV5 | Tin | 1000 | 1010 | 101 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV6 | Tin | 1000 | 1020 | 102 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV7 | Tin | 1000 | 1030 | 103 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV8 | Tin | 1000 | 1040 | 104 | ug/L | | +/-10 |
| CCV1 | 4E06001-CCV9 | Tin | 1000 | 1030 | 103 | ug/L | | +/-10 |

# LOW RANGE STANDARD

## EPA 9010C/9012B

**Client:** DRAPER **SDG:** 1404171 **Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Lab ID:** 4D29004-LCV1 **Sequence:** 4D29004 **Standard ID:** 4D28011

| ANALYTE | TRUE (ug/L) | FOUND (ug/L) | % Rec | Q | QC LIMIT |
|---|---|---|---|---|---|
| Cyanide | 40.00 | 40.4 | 101 | | 90-110 |

* Values outside of QC limits

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# HIGH RANGE STANDARD

## EPA 9010C/9012B

**Client:** DRAPER **SDG:** 1404171 **Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Lab ID:** 4D29004-HCV1 **Sequence:** 4D29004 **Standard ID:** 4D28010

| ANALYTE | EXPECTED (ug/L) | FOUND (ug/L) | % Rec | Q | QC LIMIT |
|---|---|---|---|---|---|
| Cyanide | 300.0 | 296 | 98.6 | | 90-110 |

* Values outside of QC limits

# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4D29007-IFA1 | Antimony | | 0.01 | 4 | ug/L |
| ICSA | 4D29007-IFA1 | Arsenic | | -0.01 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Barium | | 0.01 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Beryllium | | 0.01 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Cadmium | | -0.01 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Chromium | | 0.00 | 10 | ug/L |
| ICSA | 4D29007-IFA1 | Cobalt | | 0.01 | 10 | ug/L |
| ICSA | 4D29007-IFA1 | Copper | | 0.08 | 10 | ug/L |
| ICSA | 4D29007-IFA1 | Lead | | 0.03 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Nickel | | 0.09 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Selenium | | -0.03 | 10 | ug/L |
| ICSA | 4D29007-IFA1 | Silver | | 0.00 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Thallium | | 0.00 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Vanadium | | -0.03 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Zinc | | 0.30 | 20 | ug/L |
| ICSAB | 4D29007-IFB1 | Antimony | | 0.02 | 4 | ug/L |
| ICSAB | 4D29007-IFB1 | Arsenic | 25.00 | 24.26 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Barium | | 0.01 | 20 | ug/L |
| ICSAB | 4D29007-IFB1 | Beryllium | | 0.00 | 2 | ug/L |
| ICSAB | 4D29007-IFB1 | Cadmium | 25.00 | 23.64 | 95 | ug/L |
| ICSAB | 4D29007-IFB1 | Chromium | 50.00 | 48.86 | 98 | ug/L |
| ICSAB | 4D29007-IFB1 | Cobalt | 50.00 | 48.23 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Copper | 50.00 | 49.92 | 100 | ug/L |
| ICSAB | 4D29007-IFB1 | Lead | | 0.01 | 2 | ug/L |
| ICSAB | 4D29007-IFB1 | Nickel | 50.00 | 50.66 | 101 | ug/L |
| ICSAB | 4D29007-IFB1 | Selenium | 25.00 | 24.26 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Silver | 12.50 | 12.16 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Thallium | | 0.00 | 2 | ug/L |
| ICSAB | 4D29007-IFB1 | Vanadium | 50.00 | 48.31 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Zinc | 25.00 | 25.72 | 103 | ug/L |

* The absence of an entry in the “True” column denotes the lack of a true value for that analyte. The entry in the “%R” column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

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# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4E05012-IFA1 | Antimony | | 0.01 | 4 | ug/L |
| ICSA | 4E05012-IFA1 | Arsenic | | 0.00 | 20 | ug/L |
| ICSA | 4E05012-IFA1 | Barium | | 0.01 | 20 | ug/L |
| ICSA | 4E05012-IFA1 | Beryllium | | 0.00 | 2 | ug/L |
| ICSA | 4E05012-IFA1 | Cadmium | | -0.01 | 2 | ug/L |
| ICSA | 4E05012-IFA1 | Chromium | | 0.05 | 10 | ug/L |
| ICSA | 4E05012-IFA1 | Cobalt | | 0.00 | 10 | ug/L |
| ICSA | 4E05012-IFA1 | Copper | | 0.07 | 10 | ug/L |
| ICSA | 4E05012-IFA1 | Lead | | 0.01 | 2 | ug/L |
| ICSA | 4E05012-IFA1 | Nickel | | 0.09 | 20 | ug/L |
| ICSA | 4E05012-IFA1 | Selenium | | 0.02 | 10 | ug/L |
| ICSA | 4E05012-IFA1 | Silver | | -0.01 | 2 | ug/L |
| ICSA | 4E05012-IFA1 | Thallium | | 0.00 | 2 | ug/L |
| ICSA | 4E05012-IFA1 | Vanadium | | -0.02 | 20 | ug/L |
| ICSA | 4E05012-IFA1 | Zinc | | 0.12 | 20 | ug/L |
| ICSAB | 4E05012-IFB1 | Antimony | | 0.01 | 4 | ug/L |
| ICSAB | 4E05012-IFB1 | Arsenic | 25.00 | 25.10 | 100 | ug/L |
| ICSAB | 4E05012-IFB1 | Barium | | 0.01 | 20 | ug/L |
| ICSAB | 4E05012-IFB1 | Beryllium | | 0.00 | 2 | ug/L |
| ICSAB | 4E05012-IFB1 | Cadmium | 25.00 | 24.40 | 98 | ug/L |
| ICSAB | 4E05012-IFB1 | Chromium | 50.00 | 50.26 | 101 | ug/L |
| ICSAB | 4E05012-IFB1 | Cobalt | 50.00 | 50.50 | 101 | ug/L |
| ICSAB | 4E05012-IFB1 | Copper | 50.00 | 52.02 | 104 | ug/L |
| ICSAB | 4E05012-IFB1 | Lead | | 0.01 | 2 | ug/L |
| ICSAB | 4E05012-IFB1 | Nickel | 50.00 | 52.47 | 105 | ug/L |
| ICSAB | 4E05012-IFB1 | Selenium | 25.00 | 24.86 | 99 | ug/L |
| ICSAB | 4E05012-IFB1 | Silver | 12.50 | 12.67 | 101 | ug/L |
| ICSAB | 4E05012-IFB1 | Thallium | | 0.00 | 2 | ug/L |
| ICSAB | 4E05012-IFB1 | Vanadium | 50.00 | 50.00 | 100 | ug/L |
| ICSAB | 4E05012-IFB1 | Zinc | 25.00 | 25.26 | 101 | ug/L |

* The absence of an entry in the “True” column denotes the lack of a true value for that analyte. The entry in the “%R” column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

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# ICP INTERFERENCE CHECK SAMPLE

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E06001 Instrument ID: P4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4E06001-IFA1 | Tin | | -3.39 | 100 | ug/L |
| ICSAB | 4E06001-IFB1 | Tin | 1000 | 1003.24 | 100 | ug/L |

* The absence of an entry in the "True" column denotes the lack of a true value for that analyte. The entry in the "%R" column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

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# ICP-AES LINEAR RANGES

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: P4

| Analyte | Concentration ug/L | LR Date |
|---|---|---|
| Tin | 50000 | 02/27/2014 |

## ICP-AES INTERELEMENT CORRECTION FACTORS

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG No.: 1404171 Instrument: P4 Date: 4/2/14

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Al | Ca | Fe | Mg | Ag |
|---|---|---|---|---|---|---|
| Tin | 189.99 | (0.00002) | | | | |

Comments:

## ICP-AES INTERELEMENT CORRECTION FACTORS

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG No.: 1404171 Instrument: P4 Date: 4/2/14

| Analyte | Wave-length (nm) | Interelement Correction Factors for: As | B | Ba | Be | Cd |
|---|---|---|---|---|---|---|
| Tin | 189.99 | | | | | |

Comments:

## ICP-AES INTERELEMENT CORRECTION FACTORS

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG No.: 1404171 Instrument: P4 Date: 4/2/14

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Co | Cr | Cu | K | Mn |
|---|---|---|---|---|---|---|
| Tin | 189.99 | | | | | |

Comments:

## ICP-AES INTERELEMENT CORRECTION FACTORS

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG No.: 1404171 Instrument: P4 Date: 4/2/14

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Mo | Na | Ni | Pb | Sb |
|---|---|---|---|---|---|---|
| Tin | 189.99 | | | | | |

Comments:

**ICP-AES INTERELEMENT CORRECTION FACTORS**

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG No.: 1404171 Instrument: P4 Date: 4/2/14

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Se | Sn | Ti | Tl | V |
|---|---|---|---|---|---|---|
| Tin | 189.99 | | | | | |

Comments:

## ICP-AES INTERELEMENT CORRECTION FACTORS

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG No.: 1404171 Instrument: P4 Date: 4/2/14

| Analyte | Wave-length (nm) | Interelement Correction Factors for: Zn | | | | |
|---|---|---|---|---|---|---|
| Tin | 189.99 | | | | | |

Comments:

# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Date: 04/29/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 9.025 | 0.724 | 10 | 0.747 |
| Mg - 24 | 24.025 | 0.689 | 10 | 1.341 |
| Mg - 25 | 25.025 | 0.660 | 10 | 1.216 |
| Mg - 26 | 25.975 | 0.706 | 10 | 0.518 |
| Co - 59 | 58.975 | 0.687 | 10 | 0.916 |
| In - 113 | 112.875 | 0.698 | 10 | 1.002 |
| In - 115 | 114.875 | 0.683 | 10 | 0.539 |
| Pb - 206 | 205.975 | 0.727 | 10 | 0.497 |
| Pb - 207 | 206.975 | 0.710 | 10 | 0.561 |
| Pb - 208 | 208.025 | 0.696 | 10 | 0.797 |

Comments:

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404171

Sequence: 4D29007

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 4/29/14 10:30 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 4/29/14 10:32 | 102 | 104 | 104 | 102 | 102 |
| S 6020-MS2 | 4/29/14 10:34 | 104 | 104 | 105 | 103 | 104 |
| S 6020-MS3 | 4/29/14 10:36 | 100 | 102 | 103 | 104 | 101 |
| S 6020-MS4 | 4/29/14 10:37 | 96 | 100 | 103 | 101 | 98 |
| S 6020-MS5 | 4/29/14 10:39 | 99 | 102 | 105 | 105 | 99 |
| LLICV | 4/29/14 10:42 | 102 | 102 | 106 | 103 | 101 |
| ICV | 4/29/14 10:44 | 107 | 106 | 109 | 109 | 104 |
| ICB | 4/29/14 10:46 | 96 | 99 | 104 | 101 | 95 |
| ICSA | 4/29/14 10:48 | 101 | 103 | 104 | 106 | 98 |
| ICSAB | 4/29/14 10:50 | 100 | 101 | 106 | 103 | 99 |
| LLICV | 4/29/14 10:51 | 100 | 101 | 106 | 104 | 101 |
| CCV | 4/29/14 10:53 | 103 | 103 | 107 | 108 | 100 |
| CCB | 4/29/14 10:55 | 97 | 101 | 106 | 102 | 98 |
| PBW01 | 4/29/14 11:18 | 96 | 98 | 105 | 99 | 97 |
| MLCS01 | 4/29/14 11:20 | 94 | 94 | 99 | 99 | 94 |
| 16WC1A | 4/29/14 11:23 | 91 | 100 | 99 | 98 | 85 |
| 16WC1AD | 4/29/14 11:25 | 97 | 101 | 102 | 102 | 88 |
| 16WC1AS | 4/29/14 11:27 | 94 | 98 | 99 | 100 | 87 |
| 16WC1ASD | 4/29/14 11:28 | 101 | 104 | 106 | 107 | 92 |
| 16WC1AL | 4/29/14 11:30 | 100 | 97 | 104 | 102 | 92 |
| 16WC1AA | 4/29/14 11:32 | 95 | 98 | 100 | 100 | 86 |
| 16C1 | 4/29/14 11:34 | 101 | 103 | 104 | 105 | 88 |
| CCV | 4/29/14 11:35 | 106 | 102 | 107 | 108 | 100 |
| CCB | 4/29/14 11:37 | 103 | 102 | 109 | 105 | 98 |
| 16MW8 | 4/29/14 11:39 | 101 | 100 | 103 | 101 | 90 |
| 16MW9 | 4/29/14 11:41 | 94 | 98 | 101 | 103 | 83 |

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404171

Sequence: 4D29007

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| 16WDUP | 4/29/14 11:42 | 102 | 104 | 108 | 108 | 89 |
| 16WC1B | 4/29/14 11:44 | 100 | 100 | 107 | 108 | 91 |
| LLCCV | 4/29/14 11:55 | 111 | 105 | 112 | 108 | 101 |
| CCV | 4/29/14 11:56 | 103 | 103 | 107 | 106 | 98 |
| CCB | 4/29/14 11:58 | 108 | 105 | 114 | 110 | 100 |

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Date: 05/05/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 9.025 | 0.707 | 10 | 0.922 |
| Mg - 24 | 24.025 | 0.605 | 10 | 1.29 |
| Mg - 25 | 24.975 | 0.675 | 10 | 1.654 |
| Mg - 26 | 26.025 | 0.686 | 10 | 0.925 |
| Co - 59 | 58.975 | 0.704 | 10 | 1.916 |
| In - 113 | 112.875 | 0.737 | 10 | 1.304 |
| In - 115 | 114.975 | 0.708 | 10 | 0.861 |
| Pb - 206 | 205.925 | 0.736 | 10 | 1.626 |
| Pb - 207 | 206.975 | 0.720 | 10 | 0.826 |
| Pb - 208 | 207.975 | 0.711 | 10 | 1.551 |

Comments:

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404171

Sequence: 4E05012

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 5/5/14 17:07 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 5/5/14 17:09 | 103 | 102 | 103 | 103 | 103 |
| S 6020-MS2 | 5/5/14 17:10 | 105 | 101 | 103 | 103 | 104 |
| S 6020-MS3 | 5/5/14 17:12 | 106 | 103 | 103 | 104 | 103 |
| S 6020-MS4 | 5/5/14 17:14 | 104 | 102 | 103 | 103 | 101 |
| S 6020-MS5 | 5/5/14 17:16 | 99 | 98 | 103 | 103 | 98 |
| LLICV | 5/5/14 17:19 | 105 | 103 | 108 | 106 | 101 |
| ICV | 5/5/14 17:21 | 102 | 102 | 106 | 106 | 98 |
| ICB | 5/5/14 17:23 | 105 | 104 | 109 | 106 | 102 |
| ICSA | 5/5/14 17:24 | 102 | 102 | 104 | 104 | 97 |
| ICSAB | 5/5/14 17:26 | 101 | 100 | 107 | 104 | 98 |
| LLICV | 5/5/14 17:28 | 104 | 103 | 108 | 107 | 102 |
| CCV | 5/5/14 17:30 | 103 | 103 | 107 | 108 | 101 |
| CCB | 5/5/14 17:31 | 105 | 103 | 111 | 107 | 102 |
| 16MW9 | 5/5/14 17:53 | 99 | 102 | 104 | 107 | 92 |
| CCV | 5/5/14 18:10 | 93 | 95 | 100 | 101 | 92 |
| CCB | 5/5/14 18:12 | 96 | 96 | 103 | 101 | 93 |
| LLCCV | 5/5/14 18:22 | 92 | 90 | 97 | 94 | 89 |
| CCV | 5/5/14 18:24 | 91 | 88 | 94 | 94 | 87 |
| CCB | 5/5/14 18:26 | 90 | 88 | 94 | 93 | 86 |

# BLANKS

*EPA 9010C/9012B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29004 Instrument ID: C2

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D29004-ICB1 | Cyanide | -0.667 | 4.00 | 20.0 | ug/L | *U* | EPA 9010C/9012B |
| CCB | 4D29004-CCB1 | Cyanide | -0.427 | 4.00 | 20.0 | ug/L | *U* | EPA 9010C/9012B |
| PBW01 | 4042809-BLK1 | Cyanide | | 4.00 | 20.0 | ug/L | *U* | EPA 9010C/9012B |
| CCB | 4D29004-CCB2 | Cyanide | -0.500 | 4.00 | 20.0 | ug/L | *U* | EPA 9010C/9012B |
| CCB | 4D29004-CCB3 | Cyanide | -0.440 | 4.00 | 20.0 | ug/L | *U* | EPA 9010C/9012B |

# BLANKS

*EPA 7470A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29005 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D29005-ICB1 | Mercury | -0.00400 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D29005-CCB1 | Mercury | -0.00600 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| PBW01 | 4042803-BLK1 | Mercury | | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D29005-CCB2 | Mercury | 0.00900 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D29005-CCB3 | Mercury | -0.00900 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D29007-ICB1 | Antimony | 0.0459 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Arsenic | 0.00715 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Barium | 0.0113 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Beryllium | 0.00566 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Cadmium | 0.00578 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Chromium | -0.0151 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Cobalt | 0.00978 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Copper | 0.0138 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Lead | 0.00912 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Nickel | 0.00340 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Selenium | -0.00140 | 3.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Silver | 0.0126 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Thallium | 0.00966 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Vanadium | 0.000840 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4D29007-ICB1 | Zinc | 0.00535 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Antimony | 0.0542 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Arsenic | 0.0160 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Barium | 0.00208 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Beryllium | 0.0155 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Cadmium | 0.000880 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Chromium | -0.0538 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Cobalt | 0.00677 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Copper | 0.0142 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Lead | 0.00696 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Nickel | 0.00314 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Selenium | 0.0121 | 3.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Silver | 0.0160 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Thallium | 0.00963 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Vanadium | -0.00907 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB1 | Zinc | 0.0310 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Antimony | | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Arsenic | | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Barium | | 1.00 | 10.0 | ug/L | U | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| PBW01 | 4042804-BLK1 | Beryllium | | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Cadmium | | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Chromium | | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Cobalt | | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Copper | | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Lead | | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Nickel | | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Selenium | | 3.00 | 5.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Silver | | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Thallium | | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Vanadium | | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| PBW01 | 4042804-BLK1 | Zinc | | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Antimony | 0.0528 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Arsenic | 0.0233 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Barium | 0.0107 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Beryllium | 0.0106 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Cadmium | 0.00321 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Chromium | -0.0224 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Cobalt | 0.00507 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Copper | 0.0133 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Lead | 0.0105 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Nickel | 0.00450 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Selenium | 0.0241 | 3.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Silver | 0.0151 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Thallium | 0.00911 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Vanadium | -0.00143 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB2 | Zinc | 0.0384 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB3 | Antimony | 0.0462 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB3 | Arsenic | 0.0142 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB3 | Barium | 0.00575 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB3 | Beryllium | 0.00626 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB3 | Cadmium | 0.000660 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4D29007-CCB3 | Chromium | -0.0345 | 1.00 | 5.00 | ug/L | U | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4D29007-CCB3 | Cobalt | 0.00379 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Copper | 0.00873 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Lead | 0.00720 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Nickel | 0.00371 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Selenium | -0.00347 | 3.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Silver | 0.0142 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Thallium | 0.0102 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Vanadium | -0.00333 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Zinc | 0.0399 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4E05012-ICB1 | Antimony | 0.0329 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Arsenic | 0.00848 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Barium | 0.00233 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Beryllium | 0.00372 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Cadmium | 0.00377 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Chromium | 0.00366 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Cobalt | 0.00488 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Copper | 0.0105 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Lead | 0.00712 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Nickel | 0.00486 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Selenium | 0.00819 | 3.00 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Silver | 0.00334 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Thallium | 0.00994 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Vanadium | 0.00777 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4E05012-ICB1 | Zinc | 0.0156 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Antimony | 0.0431 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Arsenic | 0.0172 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Barium | 0.00515 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Beryllium | 0.00236 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Cadmium | 0.00415 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Chromium | 0.0210 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Cobalt | 0.00581 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Copper | 0.0168 | 1.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Lead | 0.00560 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Nickel | 0.00642 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Selenium | 0.0277 | 3.00 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Silver | 0.00502 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Thallium | 0.00735 | 0.200 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Vanadium | 0.0113 | 1.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB1 | Zinc | 0.0126 | 3.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB2 | Antimony | 0.0544 | 0.400 | 2.00 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB2 | Arsenic | 0.00895 | 2.00 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4E05012-CCB2 | Barium | 0.0106 | 1.00 | 10.0 | ug/L | U | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05012 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4E05012-CCB2 | Beryllium | 0.00883 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Cadmium | 0.0104 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Chromium | 0.0500 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Cobalt | 0.00798 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Copper | 0.0139 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Lead | 0.00754 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Nickel | 0.00497 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Selenium | 0.0226 | 3.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Silver | 0.00548 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Thallium | 0.00787 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Vanadium | 0.0262 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB2 | Zinc | 0.0309 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Antimony | 0.0465 | 0.400 | 2.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Arsenic | 0.0119 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Barium | 0.0120 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Beryllium | 0.0177 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Cadmium | 0.00718 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Chromium | 0.0941 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Cobalt | 0.00904 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Copper | 0.0144 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Lead | 0.00734 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Nickel | 0.0132 | 2.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Selenium | -0.00866 | 3.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Silver | 0.00351 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Thallium | 0.00809 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Vanadium | 0.0272 | 1.00 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4E05012-CCB3 | Zinc | 0.0113 | 3.00 | 10.0 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6010C*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E06001 Instrument ID: P4

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4E06001-ICB1 | Tin | -1.61 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB1 | Tin | 0.331 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB2 | Tin | 1.65 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB3 | Tin | -0.0202 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB4 | Tin | 0.461 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB5 | Tin | -0.721 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB6 | Tin | -1.30 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB7 | Tin | -0.306 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| PBW01 | 4042802-BLK1 | Tin | | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB8 | Tin | -1.03 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |
| CCB1 | 4E06001-CCB9 | Tin | -0.678 | 17.4 | 50.0 | ug/L | *U* | EPA 6010C |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3010A / 6010C
Mercury Method: 7470A
Prepared By: NSD

CompuChem
A Division Of
Liberty Analytical Corp.

Preparation Date: 4/28/14
Preparation Time: 1135
Batch Number: 4042802/03
Blue Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042802/03-BLK1 | PBW01 | MB | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/3-BS1 | MLCS01 | LCS | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-01 | 16WC1A | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/03-DUP1 | 16WC1AD | DUP | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/03-MS1 | 16WC1AS | MS | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/03-MSD1 | 16WC1ASD | MSD | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-02 | 16C1 | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-03 | 16MW8 | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-04 | 16MW9 | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-05 | 16WDUP | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-06 | 16WC1B | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |

Mercury Standards and QC S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached Standard/QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 95° | C |
| Hot Block Temp Out: | 95° | C |
| Hot Block Identifier | Block #2 | |
| Time Hg in water bath: | 12:25 | |
| Time Hg out water bath: | 14:45 | |
| Water Bath Temp In: | 95° | C |
| Water Bath Temp Out: | 96° | C |
| Water Bath Identifier | Hg bath 2 | |

**MS Reference**
ICAP: 0.5 mL ICCV-6
Ref #: 3I18011
ICAP: 0.5 mL ICCV-4
Ref#: 4D01014
HG: 1.0mL 100ppb Hg
Ref# 4D28001

**LCS Reference**
ICAP: 0.5mL ICCV-6
REF: 3I18011
ICAP: 0.5mL ICCV-4
REF: 4D01014
HG: 0.4 mL of HGMS-1PPM
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** _____
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** _____
***Date:*** 04/29/14

JCF 111711

# METALS/MERCURY PREPARATION LOG

Metals Method: 3010A / 6010C
Mercury Method: 7470A
Prepared By: NSB

CompuChem
A Division Of
Liberty Analytical Corp.

Preparation Date: 4/28/14
Preparation Time: 1135
Batch Number: 4042802/03
Blue Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042802/03-BLK1 | PBW01 | MB | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/3-BS1 | MLCS01 | LCS | 50 | 50 | 100 | 100 | CS/CL | Y/CL | <2 |
| 1404171-01 | 16WC1A | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/03-DUP1 | 16WC1AD | DUP | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/03-MS1 | 16WC1AS | MS | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 4042802/03-MSD1 | 16WC1ASD | MSD | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-02 | 16C1 | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-03 | 16MW8 | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-04 | 16MW9 | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-05 | 16WDUP | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404171-06 | 16WC1B | SAMPLE | 50 | 50 | 100 | 100 | CS/CL | CS/CL | <2 |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached Standard/QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 95° | C |
| Hot Block Temp Out: | 95° | C |
| Hot Block Identifier | BLOCK #2 | |
| Time Hg in water bath: | 12:25 | |
| Time Hg out water bath: | 14:45 | |
| Water Bath Temp In: | 95° | C |
| Water Bath Temp Out: | 96° | C |
| Water Bath Identifier | Hg bath 2 | |

**MS Reference**

ICAP: 0.5 mL ICCV-6
Ref #: 3I18011
ICAP: 0.5 mL ICCV-4
Ref#: 4D01014
HG: 1.0mL 100ppb Hg
Ref# 4D28001

**LCS Reference**

ICAP: 0.5mL ICCV-6
REF: 3I18011
ICAP: 0.5mL ICCV-4
REF: 4D01014
HG: 0.4 mL of HGMS-1PPM
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

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**Sample Verification Signature:** _____
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** _____
***Date:*** 04/29/14

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: NS

CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 4/28/14
Preparation Time: 10:00
Batch Number: 4042804/05
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042804/05-BLK1 | PBW01 | MB | 50 100 | 100 | 100 | 100 | CS/CL | CS/CL | N/A |
| 4042804/05-BS1 | MLCS01 | LCS | 100 | 100 | 100 | 100 | CS/CL | Y/CL | N/A |
| 4042804/05-BSD1 | MLCSD01 | BSD1 | 100 | 100 | 100 | 100 | CS/CL | Y/CL | N/A |
| 1404171-01 | 16WC1A | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-DUP1 | 16WC1AD | DUP | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-MS1 | 16WC1AS | MS | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-MSD1 | 16WC1ASD | MSD | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-02 | 16C1 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-03 | 16MW8 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-04 | 16MW9 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-05 | 16WDUP | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-06 | 16WC1B | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404172-01 | 16-1 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-02 | 16-2 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-03 | 16-3 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-04 | 16-5 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-05 | 16WC2B | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-06 | 16SPRING | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached Standard/QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 96° | C |
| Hot Block Temp Out: | 96° | C |
| Hot Block Identifier | BLOCK #5 | |
| Time Hg in water bath: | 1223 | |
| Time Hg out water bath: | 1425 | |
| Water Bath Temp In: | 94° | C |
| Water Bath Temp Out: | 95° | C |
| Water Bath Identifier | Hg bath 3 | |

**MS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: 1.0mL 100ppb Hg
Ref# 4h28001

**LCS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: ~~1.0 mL of ICCV-5~~ 0.4mL Hg ms-1ppm
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

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**Sample Verification Signature:** _____
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** _____
***Date:*** 4/29/14

4/28/14

111611 JCF

## Cyanide Preparation

Worksheet: CN Prep

Method (Circle One): 335.2 CLP-M 335.4 (9010C/9012B) 4500-CN I ILM05.4-DW2 ILM05.4-DS2

**Case/SDG:** 1404157/1404171 **Prepared By:** NSB **Date/Time:** 4/28/14 1405 **Batch:** 4042809

| # | CCN (Lab ID) | Client ID | Initial (mL) | Final (mL) | Description Before | Description After | S-* | Cl2* | pH | Amen Prep** | Free Prep** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4042809-BLK1 | PBW01 | 50 | 50 | CS/CL | CS/CL | NA | NA | NA | | |
| 2 | 4042809-BS1 | MLCS01 | 50 | 50 | CS/CL | CS/CL | | | NA | | |
| 3 | 1404171-01 | 16WC1A | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 4 | 4042809-DUP1 | 16WC1AD | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 5 | 4042809-MS1 | 16WC1AS | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 6 | 4042809-MSD1 | 16WC1ASD | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 7 | 1404171-02 | 16C1 | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 8 | 1404171-03 | 16MW8 | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 9 | 1404171-04 | 16MW9 | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 10 | 1404171-05 | 16WDUP | 50 | 50 | CS/CL | CS/CL | | | ≥12 | | |
| 11 | 1404171-06 | 16WC1B | 50 | 50 | BR/CY | CS/CL | | | ≥12 | | |
| 12 | 1404157-03 | 4/16/2014 | 50 | 50 | BR/CY | CS/CL | | | ≥12 | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
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| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| | ~~MB~~ 4B | LRS | | | | | | | | | |
| | | HRS | | | | | | | | | |
| | | MRS | | | | | | | | | |
| | | ICV-6 | | | | | | | | | |

| MS/MSD Ref: | LRS Ref: | HRS Ref: | MRS Ref: | ICV Ref: | | |
|---|---|---|---|---|---|---|
| 0.5 ml 10 ppm CN Ref ID: 4A10007 | 0.2 ml 10 ppm CN Ref ID: 4A10007 | 1.5 ml 10 ppm CN Ref ID: 4A10007 | 1.0 ml 10 ppm CN Ref ID: | 0.125 mL of 100 PPM CN Ref ID: 4A28005 | Distillation Start Time | 1425 |
| | | | | | Distillation End Time | 1555 |
| | | | | | Temperature In: | 1235 |
| | | | | | Temperature Out: | 1250 |
| | | | | LCSW Ref: | CN Block Identifier | CN block 1, 3 |
| | | | | 0.125 mL of 100 PPM CN Ref ID: 4A28005 | Chlorination Start Time | |
| | | | | | Chlorination End Time | |

Reviewed By: [signature] Date: 04/29/14

Comments: _____

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black, GY=grey
F=fine M=medium C=coarse CL=clear, CY=cloudy, OP=opaque D= Dectected ND=Not Detected

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations require documentation documentation by the responsible chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out.***

012213:JCF

CompuChem
A Division Of
Liberty Analytical Corp.

5/16/2014

Abridged data package.

Full deliverable available.

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1404172

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404172

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1404172

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404172-01 | 16-1 | Water | 04/23/2014 09:25 | 04/25/2014 13:15 |
| 1404172-02 | 16-2 | Water | 04/23/2014 10:15 | 04/25/2014 13:15 |
| 1404172-03 | 16-3 | Water | 04/23/2014 11:15 | 04/25/2014 13:15 |
| 1404172-04 | 16-5 | Water | 04/23/2014 12:05 | 04/25/2014 13:15 |
| 1404172-05 | 16WC2B | Water | 04/23/2014 13:30 | 04/25/2014 13:15 |
| 1404172-06 | 16SPRING | Water | 04/23/2014 12:25 | 04/25/2014 13:15 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1404172

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16-1 | EPA 7470A | 1404172-01 |
| 16-1 | EPA 6020A | 1404172-01 |
| 16-2 | EPA 7470A | 1404172-02 |
| 16-2 | EPA 6020A | 1404172-02 |
| 16-3 | EPA 7470A | 1404172-03 |
| 16-3 | EPA 6020A | 1404172-03 |
| 16-3 | EPA 6020A | 1404172-03RE1 |
| 16-5 | EPA 7470A | 1404172-04 |
| 16-5 | EPA 6020A | 1404172-04 |
| 16WC2B | EPA 7470A | 1404172-05 |
| 16WC2B | EPA 6020A | 1404172-05 |
| 16SPRING | EPA 7470A | 1404172-06 |
| 16SPRING | EPA 6020A | 1404172-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 04/29/2014

Title: Senior Chemist

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

**CompuChem**
**a Division of Liberty Analytical Corp.**
501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1404172
# Client: DRAPER
# Project: RAAP 2013 UNIT 16 & 10/B03204-12

The indicated Sample Delivery Group (SDG) consisting of six (6) water samples was received into the laboratory information management system (LIMS) on April 25, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 1.2 to 2.3 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6020A/7470A methodology for the requested metals and mercury.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Barium for sample 16-1

$$\frac{147.4605\ \mu g/L\ (C) \times 0.05\ L\ (F)}{0.05\ L\ (I)} = 147.46\ \mu g/L \text{ reported as } 147\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

No matrix spikes were requested for these samples.

A five-fold serial dilution of sample, CCN = SDI1404172-01 (16-1L) was performed in accordance with SW-846 requirements for ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP/MS sample post digestion spike, CCN =4042804-PS2 (16-1A) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
April 29, 2014

# CHAIN OF CUSTODY RECORD

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

OK JVC 4/24/14

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | 0 | **Consultant:** | Draper Aden Associates | **Sample Site:** | RAAP, Radford, Virginia |
| **Attn:** | 0 | **Attn:** | Janet C. Frazier | **Location:** | HWMU16 |
| **Address:** | 0 | **Address:** | 2206 South Main Street | **Event:** | t Semiannual 2014 Groundwater Verification Monitoring Ev |
| | 0 | | Blacksburg, Virginia 24060 | **DAA JN:** | B03204-12 |
| **Phone:** | 0 | **Phone:** | (540) 552-0444 | **Lab JN:** | |
| **Fax:** | 0 | **Fax:** | (540) 552-0291 | | |
| **Fax:** | 0 | | | | |

**Project Specific (PS) or Batch (B) QC:**
~~Sample Collection for Project Complete?~~ YES
Carrier: DASH COURIER
Tracking Number: SERVICE

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on Ice: YES

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | G | G | G | G | G | TB | G | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | U | U | U | U | U | U | U | | | | |
| **Required pH of Sample** | | | | <2 | <2 | | | >12 | <2 | | | | | |
| **Box 2 - Preservative** | | | | B | B | H | H | E | B | H | | | | |
| **Box 5 - Sample Container Type** | | | | 1-500 ml P | | 2-1LAG | 2-1L AG | 1-500-P | 1-500mL P | 2-1LAG | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **ICP/MS 6020A/3005A and 6010C/3010A (Metals-Total)** | **7470A (Mercury-Total)** | **8151A (Herbicides)** | **8270D/3510C (Semivolatiles)** | **9012B/9010C(Cyanide)** | **6020A - COBALT ONLY - (DISSOLVED)** | **8081B (Pesticides) W/CLEANUP** | | | |
| 16C1 | 4/24 | 1525 | GW | 8 | X | X | X | X | X | | X | | | 1404171-02 DISS. Co |
| 16MW8 | 4/24 | 0915 | GW | 8 | X | X | X | X | X | | X | | | 1404171-03 |
| 16MW9 | 4/24 | 1030 | GW | 8 | X | X | X | X | X | | X | | | 1404171-04 |
| 16WC1A | 4/24 | 1145 | GW | 24 | X | X | X | X | X | | X | | | 1404171-01 USE FOR QC |
| 16WDUP | 4/24 | 1200 | GW | 8 | X | X | X | X | X | | X | | | 1404171-05 |
| 16WC1B | 4/24 | 1405 | GW | 8 (4/25/14) | X | X | X | X | X | X | X | | | 1404171-06 * 1404173-01 |
| 16-1 | 4/23 | 0925 | GW | 3 | X | X | | X | | | | | | 1404172-01 |
| 16-2 | 4/23 | 1015 | GW | 3 | X | X | | X | | | | | | 1404172-02 |
| 16-3 | 4/23 | 1115 | GW | 3 | X | X | | X | | | | | | 1404172-03 |
| 16-5 | 4/23 | 1205 | GW | 3 | X | X | | X | | | | | | 1404172-04 |
| 16WC2B | 4/23 | 1330 | GW | 3 | X | X | | X | | | | | | 1404172-05 |
| 16SPRING | 4/23 | 1225 | GW | 3 | X | X | | X | | | | | | 1404172-06 |
| | | | | | | | | | | | | | | diss. Co in this cooler |
| | | | | | | | | | | | | | | |

**GENERAL NOTES:**
1. Report results to detection limit, with J flags, for italicized wells.
2. Report results at or greater than QL for non-italicized wells. 3. ERIS Deliverable required.
4. VELAP accreditation required.
5. Full deliverable.

**Clients Special Instructions:** Level 4 with edd. See attached target analyte list. 2.2°C, 1.7°C, 3.1°C, 2.3°C, 1.9°C, 1.2°C IR GUN: SN0010

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No

Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Ken Coddington | Date: 4/25/14 | #2 Relinquished by (Signature): | Date: 4/25/14 | Sample Storage Time Requested: |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: DAA | Time: 0930 | Company Name: Dash Courier | Time: 1315 | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: 4-25-14 | #2 Received by (Signature): | Date: 4/25/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: Dash Courier | Time: 0930 | Company Name: CompuChem | Time: 1315 | |

JVC 4/25/2014 1/0

# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1404172

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16-1 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.1 | 180 | |
| 16-2 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.1 | 180 | |
| 16-3 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.0 | 180 | |
| 16-3 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.0 | 180 | |
| 16-5 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.0 | 180 | |
| 16WC2B | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.9 | 180 | |
| 16SPRING | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.0 | 180 | |

# HOLDING TIME SUMMARY

*EPA 7470A*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1404172

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16-1 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.1 | 28 | |
| 16-2 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.1 | 28 | |
| 16-3 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.0 | 28 | |
| 16-5 | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.0 | 28 | |
| 16WC2B | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 5.9 | 28 | |
| 16SPRING | 04/23/14 | 04/25/14 | 04/28/14 | 04/29/14 | 6.0 | 28 | |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404172

**Client:** DRAPER **Project:** RAAP 2013 UNIT 16 & 10/B03204-12

**Matrix:** Water **Instrument:** PEMS

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Arsenic | 0.14 | 10.0 | ug/L | EPA 6020A |
| Barium | 0.1 | 10.0 | ug/L | EPA 6020A |
| Beryllium | 0.033 | 1.00 | ug/L | EPA 6020A |
| Cadmium | 0.011 | 1.00 | ug/L | EPA 6020A |
| Chromium | 0.068 | 5.00 | ug/L | EPA 6020A |
| Cobalt | 0.0095 | 5.00 | ug/L | EPA 6020A |
| Copper | 0.12 | 5.00 | ug/L | EPA 6020A |
| Lead | 0.021 | 1.00 | ug/L | EPA 6020A |
| Nickel | 0.0091 | 10.0 | ug/L | EPA 6020A |
| Vanadium | 0.056 | 10.0 | ug/L | EPA 6020A |
| Zinc | 0.12 | 10.0 | ug/L | EPA 6020A |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1404172

**Client:** DRAPER **Project:** RAAP 2013 UNIT 16 & 10/B03204-12

**Matrix:** Water **Instrument:** V4

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Mercury | 0.2 | 2.00 | ug/L | EPA 7470A |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042804-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042804

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Arsenic | 220.0 | 214 | 97.3 | | 80 - 120 |
| Barium | 110.0 | 108 | 97.8 | | 80 - 120 |
| Beryllium | 110.0 | 106 | 96.1 | | 80 - 120 |
| Cadmium | 110.0 | 107 | 96.9 | | 80 - 120 |
| Chromium | 110.0 | 108 | 98.5 | | 80 - 120 |
| Cobalt | 110.0 | 108 | 97.9 | | 80 - 120 |
| Copper | 110.0 | 109 | 99.3 | | 80 - 120 |
| Lead | 220.0 | 211 | 95.8 | | 80 - 120 |
| Nickel | 110.0 | 110 | 100 | | 80 - 120 |
| Vanadium | 110.0 | 108 | 98.2 | | 80 - 120 |
| Zinc | 220.0 | 218 | 99.1 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042804-BSD1 Matrix: Water Client ID: MLCSD01 Batch: 4042804

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Arsenic | 220.0 | 209 | 95.1 | 2.27 | 20 | | 80 - 120 |
| Barium | 110.0 | 107 | 97.4 | 0.442 | 20 | | 80 - 120 |
| Beryllium | 110.0 | 106 | 96.4 | 0.391 | 20 | | 80 - 120 |
| Cadmium | 110.0 | 107 | 97.0 | 0.0960 | 20 | | 80 - 120 |
| Chromium | 110.0 | 107 | 96.9 | 1.69 | 20 | | 80 - 120 |
| Cobalt | 110.0 | 104 | 94.9 | 3.11 | 20 | | 80 - 120 |
| Copper | 110.0 | 107 | 97.2 | 2.18 | 20 | | 80 - 120 |
| Lead | 220.0 | 209 | 94.9 | 0.890 | 20 | | 80 - 120 |
| Nickel | 110.0 | 108 | 97.9 | 2.52 | 20 | | 80 - 120 |
| Vanadium | 110.0 | 105 | 95.4 | 2.92 | 20 | | 80 - 120 |
| Zinc | 220.0 | 214 | 97.1 | 2.06 | 20 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042805-BS1 Matrix: Water Client ID: MLCS01 Batch: 4042805

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Mercury | 4.000 | 4.03 | 101 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042805-BSD1 Matrix: Water Client ID: MLCSD01 Batch: 4042805

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Mercury | 4.000 | 3.94 | 99 | 2 | 20 | | 80 - 120 |

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# SERIAL DILUTION

*EPA 6020A*

**16-1L**

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4D29007-SRD2 Matrix: Water Lab Source ID: 1404172-01 Source Sample: 16-1

Sequence: 4D29007 Dilution: 5 Report to MDL: NO

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Arsenic | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Barium | 147.46 | 153.90 | 10.0 | 4.37 | | EPA 6020A | 10 |
| Beryllium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Cadmium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Chromium | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Cobalt | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Copper | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Lead | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Nickel | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Vanadium | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Zinc | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |

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# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**16-1A**

Laboratory: COMPUCHEM

Client: DRAPER

Matrix: Water

SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Laboratory ID: 4042804-PS2

Lab Source ID: 1404172-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Arsenic | 9.45 | U | 10.00 | 93.0 | 75 - 125 |
| Barium | 235 | 147 | 100.0 | 87.5 | 75 - 125 |
| Beryllium | 9.38 | U | 10.00 | 93.6 | 75 - 125 |
| Cadmium | 9.03 | U | 10.00 | 89.9 | 75 - 125 |
| Chromium | 20.4 | U | 20.00 | 96.3 | 75 - 125 |
| Cobalt | 9.66 | U | 10.00 | 94.6 | 75 - 125 |
| Copper | 19.5 | U | 20.00 | 94.5 | 75 - 125 |
| Lead | 10.3 | U | 10.00 | 101 | 75 - 125 |
| Nickel | 10.6 | U | 10.00 | 95.7 | 75 - 125 |
| Vanadium | 47.9 | U | 50.00 | 95.1 | 75 - 125 |
| Zinc | 19.3 | U | 20.00 | 85.9 | 75 - 125 |

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# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Batch: 4042804 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16-1 | 1404172-01 | 04/28/14 10:00 | 100 | 100 |
| 16-2 | 1404172-02 | 04/28/14 10:00 | 100 | 100 |
| 16-3 | 1404172-03 | 04/28/14 10:00 | 100 | 100 |
| 16-3 | 1404172-03RE1 | 04/28/14 10:00 | 100 | 100 |
| 16-5 | 1404172-04 | 04/28/14 10:00 | 100 | 100 |
| 16WC2B | 1404172-05 | 04/28/14 10:00 | 100 | 100 |
| 16SPRING | 1404172-06 | 04/28/14 10:00 | 100 | 100 |
| PBW01 | 4042804-BLK1 | 04/28/14 10:10 | 100 | 100 |
| MLCS01 | 4042804-BS1 | 04/28/14 10:10 | 100 | 100 |
| MLCSD01 | 4042804-BSD1 | 04/28/14 10:10 | 100 | 100 |
| 16-1A | 4042804-PS2 | 04/28/14 10:10 | 100 | 100 |

# PREPARATION BATCH SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Batch: 4042805 Matrix: Water Preparation: EPA 7470A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16-1 | 1404172-01 | 04/28/14 10:00 | 100 | 100 |
| 16-2 | 1404172-02 | 04/28/14 10:00 | 100 | 100 |
| 16-3 | 1404172-03 | 04/28/14 10:00 | 100 | 100 |
| 16-5 | 1404172-04 | 04/28/14 10:00 | 100 | 100 |
| 16WC2B | 1404172-05 | 04/28/14 10:00 | 100 | 100 |
| 16SPRING | 1404172-06 | 04/28/14 10:00 | 100 | 100 |
| PBW01 | 4042805-BLK1 | 04/28/14 10:00 | 100 | 100 |
| MLCS01 | 4042805-BS1 | 04/28/14 10:00 | 100 | 100 |
| MLCSD01 | 4042805-BSD1 | 04/28/14 10:00 | 100 | 100 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29005 Calibration: 4042903 Instrument: V4

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| S0 | 4D29005-CAL1 | 4D29005_P-001 | 04/29/14 10:05:46 |
| 0.2 | 4D29005-CAL2 | 4D29005_P-002 | 04/29/14 10:08:41 |
| S0.5 | 4D29005-CAL3 | 4D29005_P-003 | 04/29/14 10:11:44 |
| S1.0 | 4D29005-CAL4 | 4D29005_P-004 | 04/29/14 10:14:40 |
| S5.0 | 4D29005-CAL5 | 4D29005_P-005 | 04/29/14 10:17:47 |
| S10.0 | 4D29005-CAL6 | 4D29005_P-006 | 04/29/14 10:21:06 |
| ICV | 4D29005-ICV1 | 4D29005_P-007 | 04/29/14 10:24:12 |
| ICB | 4D29005-ICB1 | 4D29005_P-008 | 04/29/14 10:27:07 |
| CCV | 4D29005-CCV1 | 4D29005_P-010 | 04/29/14 10:33:26 |
| CCB | 4D29005-CCB1 | 4D29005_P-011 | 04/29/14 10:36:25 |
| CCV | 4D29005-CCV2 | 4D29005_P-022 | 04/29/14 11:09:37 |
| CCB | 4D29005-CCB2 | 4D29005_P-023 | 04/29/14 11:12:44 |
| PBW01 | 4042805-BLK1 | 4D29005_P-025 | 04/29/14 11:18:36 |
| MLCS01 | 4042805-BS1 | 4D29005_P-026 | 04/29/14 11:21:32 |
| MLCSD01 | 4042805-BSD1 | 4D29005_P-027 | 04/29/14 11:24:26 |
| 16-1 | 1404172-01 | 4D29005_P-028 | 04/29/14 11:27:43 |
| 16-2 | 1404172-02 | 4D29005_P-029 | 04/29/14 11:30:58 |
| 16-3 | 1404172-03 | 4D29005_P-030 | 04/29/14 11:33:51 |
| 16-5 | 1404172-04 | 4D29005_P-031 | 04/29/14 11:36:44 |
| 16WC2B | 1404172-05 | 4D29005_P-032 | 04/29/14 11:39:39 |
| 16SPRING | 1404172-06 | 4D29005_P-033 | 04/29/14 11:42:38 |
| CCV | 4D29005-CCV3 | 4D29005_P-034 | 04/29/14 11:45:56 |
| CCB | 4D29005-CCB3 | 4D29005_P-035 | 04/29/14 11:48:51 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Calibration: 4042907 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUNE | 4D29007-TUN1 | 4D29007_P-001 | 04/29/14 09:59:13 |
| S0 | 4D29007-CAL1 | 4D29007_P-002 | 04/29/14 10:30:50 |
| S 6020-MS1 | 4D29007-CAL2 | 4D29007_P-003 | 04/29/14 10:32:36 |
| S 6020-MS2 | 4D29007-CAL3 | 4D29007_P-004 | 04/29/14 10:34:20 |
| S 6020-MS3 | 4D29007-CAL4 | 4D29007_P-005 | 04/29/14 10:36:04 |
| S 6020-MS4 | 4D29007-CAL5 | 4D29007_P-006 | 04/29/14 10:37:49 |
| S 6020-MS5 | 4D29007-CAL6 | 4D29007_P-007 | 04/29/14 10:39:33 |
| LLICV | 4D29007-CRL1 | 4D29007_P-008 | 04/29/14 10:42:59 |
| ICV | 4D29007-ICV1 | 4D29007_P-009 | 04/29/14 10:44:45 |
| ICB | 4D29007-ICB1 | 4D29007_P-010 | 04/29/14 10:46:30 |
| ICSA | 4D29007-IFA1 | 4D29007_P-011 | 04/29/14 10:48:15 |
| ICSAB | 4D29007-IFB1 | 4D29007_P-012 | 04/29/14 10:50:00 |
| LLICV | 4D29007-CRL2 | 4D29007_P-013 | 04/29/14 10:51:45 |
| CCV | 4D29007-CCV1 | 4D29007_P-014 | 04/29/14 10:53:31 |
| CCB | 4D29007-CCB1 | 4D29007_P-015 | 04/29/14 10:55:15 |
| PBW01 | 4042804-BLK1 | 4D29007_P-016 | 04/29/14 11:18:29 |
| MLCS01 | 4042804-BS1 | 4D29007_P-017 | 04/29/14 11:20:13 |
| MLCSD01 | 4042804-BSD1 | 4D29007_P-018 | 04/29/14 11:21:58 |
| CCV | 4D29007-CCV2 | 4D29007_P-026 | 04/29/14 11:35:57 |
| CCB | 4D29007-CCB2 | 4D29007_P-027 | 04/29/14 11:37:41 |
| 16-1 | 1404172-01 | 4D29007_P-032 | 04/29/14 11:46:26 |
| 16-1L | 4D29007-SRD2 | 4D29007_P-033 | 04/29/14 11:48:10 |
| 16-1A | 4042804-PS2 | 4D29007_P-034 | 04/29/14 11:49:55 |
| 16-2 | 1404172-02 | 4D29007_P-035 | 04/29/14 11:51:39 |
| 16-3 | 1404172-03 | 4D29007_P-036 | 04/29/14 11:53:23 |
| LLCCV | 4D29007-CRL3 | 4D29007_P-037 | 04/29/14 11:55:09 |
| CCV | 4D29007-CCV3 | 4D29007_P-038 | 04/29/14 11:56:55 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Calibration: 4042907 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| CCB | 4D29007-CCB3 | 4D29007_P-039 | 04/29/14 11:58:39 |
| 16-5 | 1404172-04 | 4D29007_P-040 | 04/29/14 12:01:03 |
| 16WC2B | 1404172-05 | 4D29007_P-041 | 04/29/14 12:02:47 |
| 16SPRING | 1404172-06 | 4D29007_P-042 | 04/29/14 12:04:32 |
| CCV | 4D29007-CCV4 | 4D29007_P-050 | 04/29/14 12:18:32 |
| CCB | 4D29007-CCB4 | 4D29007_P-051 | 04/29/14 12:20:16 |
| 16-3 | 1404172-03RE1 | 4D29007_P-053 | 04/29/14 12:26:37 |
| LLCCV | 4D29007-CRL4 | 4D29007_P-054 | 04/29/14 12:28:22 |
| CCV | 4D29007-CCV5 | 4D29007_P-055 | 04/29/14 12:30:08 |
| CCB | 4D29007-CCB5 | 4D29007_P-056 | 04/29/14 12:31:53 |

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# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**16-1**

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404172-01 % Solid: Matrix: Water Sampled: 04/23/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | 0.140 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-39-3 | Barium | 147 | 0.100 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-43-9 | Cadmium | | 0.0110 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-47-3 | Chromium | | 0.0680 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-48-4 | Cobalt | | 0.00950 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-50-8 | Copper | | 0.120 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7439-92-1 | Lead | | 0.0210 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:27 |
| 7440-02-0 | Nickel | | 0.00910 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |
| 7440-66-6 | Zinc | | 0.120 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:46 |

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# ANALYSIS DATA SHEET

**16-2**

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404172-02 % Solid: Matrix: Water Sampled: 04/23/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | 0.140 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-39-3 | Barium | 206 | 0.100 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-43-9 | Cadmium | | 0.0110 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-47-3 | Chromium | | 0.0680 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-48-4 | Cobalt | | 0.00950 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-50-8 | Copper | | 0.120 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7439-92-1 | Lead | | 0.0210 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:30 |
| 7440-02-0 | Nickel | | 0.00910 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |
| 7440-66-6 | Zinc | | 0.120 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:51 |

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# ANALYSIS DATA SHEET

**16-3**

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404172-03 % Solid: Matrix: Water Sampled: 04/23/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | 0.140 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7440-39-3 | Barium | 707 | 0.200 | 20.0 | 2 | D | EPA 6020A | 4D29007 | 4/29/14 12:26 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7440-43-9 | Cadmium | | 0.0110 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7440-47-3 | Chromium | | 0.0680 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7440-48-4 | Cobalt | | 0.00950 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7440-50-8 | Copper | | 0.120 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7439-92-1 | Lead | | 0.0210 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:33 |
| 7440-02-0 | Nickel | | 0.00910 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |
| 7440-66-6 | Zinc | | 0.120 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 11:53 |

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# ANALYSIS DATA SHEET

**16-5**

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404172-04 % Solid: Matrix: Water Sampled: 04/23/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | 0.140 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-39-3 | Barium | 164 | 0.100 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-43-9 | Cadmium | | 0.0110 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-47-3 | Chromium | | 0.0680 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-48-4 | Cobalt | | 0.00950 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-50-8 | Copper | | 0.120 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7439-92-1 | Lead | | 0.0210 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:36 |
| 7440-02-0 | Nickel | | 0.00910 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |
| 7440-66-6 | Zinc | | 0.120 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:01 |

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# ANALYSIS DATA SHEET

**16WC2B**

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404172-05 % Solid: Matrix: Water Sampled: 04/23/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | 0.140 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-39-3 | Barium | 114 | 0.100 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-43-9 | Cadmium | | 0.0110 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-47-3 | Chromium | | 0.0680 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-48-4 | Cobalt | | 0.00950 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-50-8 | Copper | | 0.120 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7439-92-1 | Lead | | 0.0210 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:39 |
| 7440-02-0 | Nickel | | 0.00910 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |
| 7440-66-6 | Zinc | | 0.120 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:02 |

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# ANALYSIS DATA SHEET

**16SPRING**

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1404172-06 % Solid: Matrix: Water Sampled: 04/23/14 Received: 04/25/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | 0.140 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-39-3 | Barium | 198 | 0.100 | 10.0 | 1 | | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-43-9 | Cadmium | | 0.0110 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-47-3 | Chromium | | 0.0680 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-48-4 | Cobalt | | 0.00950 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-50-8 | Copper | | 0.120 | 5.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7439-92-1 | Lead | | 0.0210 | 1.00 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7439-97-6 | Mercury | | 0.200 | 2.00 | 1 | U | EPA 7470A | 4D29005 | 4/29/14 11:42 |
| 7440-02-0 | Nickel | | 0.00910 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |
| 7440-66-6 | Zinc | | 0.120 | 10.0 | 1 | U | EPA 6020A | 4D29007 | 4/29/14 12:04 |

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# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4D29007-CRL1 | Arsenic | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL1 | Barium | 10.00 | 9.75 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Beryllium | 1.000 | 0.901 | 90 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Cadmium | 1.000 | 0.962 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Chromium | 2.000 | 1.99 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Cobalt | 1.000 | 0.981 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Copper | 2.000 | 2.06 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL1 | Lead | 1.000 | 0.980 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Nickel | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL1 | Vanadium | 5.000 | 4.92 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL1 | Zinc | 2.000 | 2.02 | 101 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL2 | Arsenic | 1.000 | 0.941 | 94 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Barium | 10.00 | 9.67 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Beryllium | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL2 | Cadmium | 1.000 | 0.979 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Chromium | 2.000 | 1.99 | 100 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Cobalt | 1.000 | 0.991 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Copper | 2.000 | 2.05 | 103 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL2 | Lead | 1.000 | 0.960 | 96 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Nickel | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLICV | 4D29007-CRL2 | Vanadium | 5.000 | 4.89 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4D29007-CRL2 | Zinc | 2.000 | 1.90 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Arsenic | 1.000 | 0.944 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Barium | 10.00 | 9.77 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Beryllium | 1.000 | 0.881 | 88 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Cadmium | 1.000 | 0.927 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Chromium | 2.000 | 1.99 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Cobalt | 1.000 | 0.978 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Copper | 2.000 | 2.09 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Lead | 1.000 | 0.985 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Nickel | 1.000 | 1.00 | 100 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Vanadium | 5.000 | 4.92 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL3 | Zinc | 2.000 | 2.07 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Arsenic | 1.000 | 0.997 | 100 | ug/L | J | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4D29007-CRL4 | Barium | 10.00 | 9.48 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Beryllium | 1.000 | 0.941 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Cadmium | 1.000 | 1.02 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Chromium | 2.000 | 1.98 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Cobalt | 1.000 | 1.01 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Copper | 2.000 | 2.11 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Lead | 1.000 | 0.978 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Nickel | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Vanadium | 5.000 | 4.88 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4D29007-CRL4 | Zinc | 2.000 | 2.00 | 100 | ug/L | J | 70 - 130 |

# INITIAL CALIBRATION DATA

*EPA 7470A*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4042903 Instrument: V4

Calibration Date: 4/29/2014 10:05:36

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Mercury | CAL1 | S0 | 511 | 0 |
| Mercury | CAL2 | 0.2 | 2905 | 0.2 |
| Mercury | CAL3 | S0.5 | 5644 | 0.5 |
| Mercury | CAL4 | S1.0 | 11340 | 1 |
| Mercury | CAL5 | S5.0 | 55739 | 5 |
| Mercury | CAL6 | S10.0 | 110094 | 10 |

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# INITIAL CALIBRATION DATA (Continued)

*EPA 7470A*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4042903 Instrument: V4

Calibration Date: 4/29/2014 10:05:36

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Mercury | 0.00009109 | -0.04427 | 0.9999 | 0.995 | |

# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4042907 Instrument: PEMS

Calibration Date: 4/29/2014 9:59:47

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Arsenic | CAL1 | S0 | -150.966 | 0 |
| Arsenic | CAL2 | S 6020-MS1 | 1508.833 | 1 |
| Arsenic | CAL3 | S 6020-MS2 | 3350.114 | 2 |
| Arsenic | CAL4 | S 6020-MS3 | 213849.7 | 125 |
| Arsenic | CAL5 | S 6020-MS4 | 415635.6 | 250 |
| Arsenic | CAL6 | S 6020-MS5 | 847503.2 | 500 |
| Barium | CAL1 | S0 | 34.445 | 0 |
| Barium | CAL2 | S 6020-MS1 | 28523.96 | 10 |
| Barium | CAL3 | S 6020-MS2 | 59349.49 | 20 |
| Barium | CAL4 | S 6020-MS3 | 365017.8 | 125 |
| Barium | CAL5 | S 6020-MS4 | 714372.4 | 250 |
| Barium | CAL6 | S 6020-MS5 | 1443708 | 500 |
| Beryllium | CAL1 | S0 | 0.556 | 0 |
| Beryllium | CAL2 | S 6020-MS1 | 391.119 | 1 |
| Beryllium | CAL3 | S 6020-MS2 | 823.923 | 2 |
| Beryllium | CAL4 | S 6020-MS3 | 51713.39 | 125 |
| Beryllium | CAL5 | S 6020-MS4 | 100274.8 | 250 |
| Beryllium | CAL6 | S 6020-MS5 | 200669.8 | 500 |
| Cadmium | CAL1 | S0 | 6.39 | 0 |
| Cadmium | CAL2 | S 6020-MS1 | 2044.606 | 1 |
| Cadmium | CAL3 | S 6020-MS2 | 3934.997 | 2 |
| Cadmium | CAL4 | S 6020-MS3 | 253229.5 | 125 |
| Cadmium | CAL5 | S 6020-MS4 | 493785.3 | 250 |
| Cadmium | CAL6 | S 6020-MS5 | 995099 | 500 |
| Chromium | CAL1 | S0 | 7255.965 | 0 |

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| | | | | |
|---|---|---|---|---|
| Chromium | CAL2 | S 6020-MS1 | 26329.07 | 2 |
| Chromium | CAL3 | S 6020-MS2 | 47646.58 | 4 |
| Chromium | CAL4 | S 6020-MS3 | 1218313 | 125 |
| Chromium | CAL5 | S 6020-MS4 | 2339396 | 250 |
| Chromium | CAL6 | S 6020-MS5 | 4735043 | 500 |
| Cobalt | CAL1 | S0 | 51.111 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 12488.91 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 25441.21 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 1518144 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 2971373 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 6079982 | 500 |
| Copper | CAL1 | S0 | 96.297 | 0 |
| Copper | CAL2 | S 6020-MS1 | 12632.05 | 2 |
| Copper | CAL3 | S 6020-MS2 | 25646.78 | 4 |
| Copper | CAL4 | S 6020-MS3 | 754351 | 125 |
| Copper | CAL5 | S 6020-MS4 | 1454837 | 250 |
| Copper | CAL6 | S 6020-MS5 | 2958147 | 500 |
| Lead | CAL1 | S0 | 79.167 | 0 |
| Lead | CAL2 | S 6020-MS1 | 16261.92 | 1 |
| Lead | CAL3 | S 6020-MS2 | 33436.63 | 2 |
| Lead | CAL4 | S 6020-MS3 | 2071490 | 125 |
| Lead | CAL5 | S 6020-MS4 | 3988988 | 250 |
| Lead | CAL6 | S 6020-MS5 | 8150918 | 500 |
| Nickel | CAL1 | S0 | 25.926 | 0 |
| Nickel | CAL2 | S 6020-MS1 | 2665.171 | 1 |
| Nickel | CAL3 | S 6020-MS2 | 5591.378 | 2 |
| Nickel | CAL4 | S 6020-MS3 | 336198.3 | 125 |
| Nickel | CAL5 | S 6020-MS4 | 641005.5 | 250 |
| Nickel | CAL6 | S 6020-MS5 | 1275762 | 500 |
| Vanadium | CAL1 | S0 | 2463.366 | 0 |
| Vanadium | CAL2 | S 6020-MS1 | 56948.14 | 5 |
| Vanadium | CAL3 | S 6020-MS2 | 117287.2 | 10 |
| Vanadium | CAL4 | S 6020-MS3 | 1373759 | 125 |

| | | | | |
|---|---|---|---|---|
| Vanadium | CAL5 | S 6020-MS4 | 2690130 | 250 |
| Vanadium | CAL6 | S 6020-MS5 | 5551815 | 500 |
| Zinc | CAL1 | S0 | 98.149 | 0 |
| Zinc | CAL2 | S 6020-MS1 | 3282.946 | 2 |
| Zinc | CAL3 | S 6020-MS2 | 6767.104 | 4 |
| Zinc | CAL4 | S 6020-MS3 | 204413.8 | 125 |
| Zinc | CAL5 | S 6020-MS4 | 397059.3 | 250 |
| Zinc | CAL6 | S 6020-MS5 | 780273.6 | 500 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4042907 Instrument: PEMS

Calibration Date: 4/29/2014 9:59:47

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Arsenic | 0.001330 | 0 | 0.9999 | 0.998 | |
| Barium | 0.0009404 | 0 | 0.9999 | 0.998 | |
| Beryllium | 0.0009941 | 0 | 0.9999 | 0.998 | |
| Cadmium | 0.0008774 | 0 | 0.9999 | 0.998 | |
| Chromium | 0.007430 | 0 | 0.9999 | 0.998 | |
| Cobalt | 0.009527 | 0 | 0.9999 | 0.998 | |
| Copper | 0.004645 | 0 | 0.9999 | 0.998 | |
| Lead | 0.009962 | 0 | 0.9999 | 0.998 | |
| Nickel | 0.002015 | 0 | 0.9999 | 0.998 | |
| Vanadium | 0.008676 | 0 | 0.9999 | 0.998 | |
| Zinc | 0.001235 | 0 | 0.9998 | 0.998 | |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 7470A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29005 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D29005-ICV1 | Mercury | 4.000 | 4.16 | 104 | ug/L | | +/-20 |
| CCV | 4D29005-CCV1 | Mercury | 5.000 | 5.09 | 102 | ug/L | | +/-20 |
| CCV | 4D29005-CCV2 | Mercury | 5.000 | 5.19 | 104 | ug/L | | +/-20 |
| CCV | 4D29005-CCV3 | Mercury | 5.000 | 5.42 | 108 | ug/L | | +/-20 |

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# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4D29007-ICV1 | Arsenic | 220.0 | 209 | 95 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Barium | 110.0 | 108 | 99 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Beryllium | 110.0 | 107 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Cadmium | 110.0 | 106 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Chromium | 110.0 | 107 | 98 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Cobalt | 110.0 | 106 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Copper | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Lead | 220.0 | 212 | 97 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Nickel | 110.0 | 110 | 100 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Vanadium | 110.0 | 105 | 95 | ug/L | | +/-10 |
| ICV | 4D29007-ICV1 | Zinc | 220.0 | 211 | 96 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Arsenic | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Beryllium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Cadmium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Chromium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Cobalt | 300.0 | 310 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Copper | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Lead | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Nickel | 300.0 | 309 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Vanadium | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV1 | Zinc | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Arsenic | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Barium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Beryllium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Cadmium | 300.0 | 298 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Chromium | 300.0 | 312 | 104 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Cobalt | 300.0 | 306 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Copper | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Lead | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Nickel | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Vanadium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV2 | Zinc | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Arsenic | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Barium | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Beryllium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Cadmium | 300.0 | 287 | 96 | ug/L | | +/-10 |

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# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4D29007-CCV3 | Chromium | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Cobalt | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Copper | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Lead | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Nickel | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Vanadium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV3 | Zinc | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Arsenic | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Barium | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Beryllium | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Cadmium | 300.0 | 286 | 95 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Chromium | 300.0 | 319 | 106 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Cobalt | 300.0 | 312 | 104 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Copper | 300.0 | 306 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Lead | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Nickel | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Vanadium | 300.0 | 311 | 104 | ug/L | | +/-10 |
| CCV | 4D29007-CCV4 | Zinc | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Arsenic | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Barium | 300.0 | 286 | 95 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Beryllium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Cadmium | 300.0 | 283 | 94 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Chromium | 300.0 | 315 | 105 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Cobalt | 300.0 | 318 | 106 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Copper | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Lead | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Nickel | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Vanadium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4D29007-CCV5 | Zinc | 300.0 | 301 | 100 | ug/L | | +/-10 |

# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4D29007-IFA1 | Arsenic | | -0.01 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Barium | | 0.01 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Beryllium | | 0.01 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Cadmium | | -0.01 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Chromium | | 0.00 | 10 | ug/L |
| ICSA | 4D29007-IFA1 | Cobalt | | 0.01 | 10 | ug/L |
| ICSA | 4D29007-IFA1 | Copper | | 0.08 | 10 | ug/L |
| ICSA | 4D29007-IFA1 | Lead | | 0.03 | 2 | ug/L |
| ICSA | 4D29007-IFA1 | Nickel | | 0.09 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Vanadium | | -0.03 | 20 | ug/L |
| ICSA | 4D29007-IFA1 | Zinc | | 0.30 | 20 | ug/L |
| ICSAB | 4D29007-IFB1 | Arsenic | 25.00 | 24.26 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Barium | | 0.01 | 20 | ug/L |
| ICSAB | 4D29007-IFB1 | Beryllium | | 0.00 | 2 | ug/L |
| ICSAB | 4D29007-IFB1 | Cadmium | 25.00 | 23.64 | 95 | ug/L |
| ICSAB | 4D29007-IFB1 | Chromium | 50.00 | 48.86 | 98 | ug/L |
| ICSAB | 4D29007-IFB1 | Cobalt | 50.00 | 48.23 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Copper | 50.00 | 49.92 | 100 | ug/L |
| ICSAB | 4D29007-IFB1 | Lead | | 0.01 | 2 | ug/L |
| ICSAB | 4D29007-IFB1 | Nickel | 50.00 | 50.66 | 101 | ug/L |
| ICSAB | 4D29007-IFB1 | Vanadium | 50.00 | 48.31 | 97 | ug/L |
| ICSAB | 4D29007-IFB1 | Zinc | 25.00 | 25.72 | 103 | ug/L |

* The absence of an entry in the “True” column denotes the lack of a true value for that analyte. The entry in the “%R” column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Date: 04/29/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 9.025 | 0.724 | 10 | 0.747 |
| Mg - 24 | 24.025 | 0.689 | 10 | 1.341 |
| Mg - 25 | 25.025 | 0.660 | 10 | 1.216 |
| Mg - 26 | 25.975 | 0.706 | 10 | 0.518 |
| Co - 59 | 58.975 | 0.687 | 10 | 0.916 |
| In - 113 | 112.875 | 0.698 | 10 | 1.002 |
| In - 115 | 114.875 | 0.683 | 10 | 0.539 |
| Pb - 206 | 205.975 | 0.727 | 10 | 0.497 |
| Pb - 207 | 206.975 | 0.710 | 10 | 0.561 |
| Pb - 208 | 208.025 | 0.696 | 10 | 0.797 |

Comments:

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404172

Sequence: 4D29007

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 4/29/14 10:30 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 4/29/14 10:32 | 102 | 104 | 104 | 102 | 102 |
| S 6020-MS2 | 4/29/14 10:34 | 104 | 104 | 105 | 103 | 104 |
| S 6020-MS3 | 4/29/14 10:36 | 100 | 102 | 103 | 104 | 101 |
| S 6020-MS4 | 4/29/14 10:37 | 96 | 100 | 103 | 101 | 98 |
| S 6020-MS5 | 4/29/14 10:39 | 99 | 102 | 105 | 105 | 99 |
| LLICV | 4/29/14 10:42 | 102 | 102 | 106 | 103 | 101 |
| ICV | 4/29/14 10:44 | 107 | 106 | 109 | 109 | 104 |
| ICB | 4/29/14 10:46 | 96 | 99 | 104 | 101 | 95 |
| ICSA | 4/29/14 10:48 | 101 | 103 | 104 | 106 | 98 |
| ICSAB | 4/29/14 10:50 | 100 | 101 | 106 | 103 | 99 |
| LLICV | 4/29/14 10:51 | 100 | 101 | 106 | 104 | 101 |
| CCV | 4/29/14 10:53 | 103 | 103 | 107 | 108 | 100 |
| CCB | 4/29/14 10:55 | 97 | 101 | 106 | 102 | 98 |
| PBW01 | 4/29/14 11:18 | 96 | 98 | 105 | 99 | 97 |
| MLCS01 | 4/29/14 11:20 | 94 | 94 | 99 | 99 | 94 |
| MLCSD01 | 4/29/14 11:21 | 94 | 96 | 99 | 98 | 95 |
| CCV | 4/29/14 11:35 | 106 | 102 | 107 | 108 | 100 |
| CCB | 4/29/14 11:37 | 103 | 102 | 109 | 105 | 98 |
| 16-1 | 4/29/14 11:46 | 103 | 103 | 105 | 106 | 90 |
| 16-1L | 4/29/14 11:48 | 107 | 104 | 111 | 108 | 98 |
| 16-1A | 4/29/14 11:49 | 104 | 106 | 109 | 109 | 92 |
| 16-2 | 4/29/14 11:51 | 104 | 104 | 107 | 106 | 90 |
| 16-3 | 4/29/14 11:53 | 106 | 101 | 106 | 106 | 94 |
| LLCCV | 4/29/14 11:55 | 111 | 105 | 112 | 108 | 101 |
| CCV | 4/29/14 11:56 | 103 | 103 | 107 | 106 | 98 |
| CCB | 4/29/14 11:58 | 108 | 105 | 114 | 110 | 100 |

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1404172

Sequence: 4D29007

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| 16-5 | 4/29/14 12:01 | 102 | 101 | 104 | 104 | 88 |
| 16WC2B | 4/29/14 12:02 | 104 | 99 | 102 | 102 | 88 |
| 16SPRING | 4/29/14 12:04 | 97 | 97 | 98 | 99 | 85 |
| CCV | 4/29/14 12:18 | 106 | 104 | 113 | 110 | 100 |
| CCB | 4/29/14 12:20 | 109 | 109 | 118 | 114 | 104 |
| 16-3 | 4/29/14 12:26 | 110 | 108 | 118 | 113 | 98 |
| LLCCV | 4/29/14 12:28 | 117 | 111 | 115 | 116 | 105 |
| CCV | 4/29/14 12:30 | 106 | 105 | 115 | 111 | 100 |
| CCB | 4/29/14 12:31 | 108 | 108 | 119 | 116 | 102 |

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# BLANKS

*EPA 7470A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29005 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D29005-ICB1 | Mercury | -0.00400 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D29005-CCB1 | Mercury | -0.00600 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D29005-CCB2 | Mercury | 0.00900 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| PBW01 | 4042805-BLK1 | Mercury | | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4D29005-CCB3 | Mercury | -0.00900 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4D29007-ICB1 | Arsenic | 0.00715 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Barium | 0.0113 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Beryllium | 0.00566 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Cadmium | 0.00578 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Chromium | -0.0151 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Cobalt | 0.00978 | 0.00950 | 5.00 | ug/L | *J* | EPA 6020A |
| ICB | 4D29007-ICB1 | Copper | 0.0138 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Lead | 0.00912 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Nickel | 0.00340 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Vanadium | 0.000840 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| ICB | 4D29007-ICB1 | Zinc | 0.00535 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Arsenic | 0.0160 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Barium | 0.00208 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Beryllium | 0.0155 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Cadmium | 0.000880 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Chromium | -0.0538 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Cobalt | 0.00677 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Copper | 0.0142 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Lead | 0.00696 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Nickel | 0.00314 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Vanadium | -0.00907 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB1 | Zinc | 0.0310 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Arsenic | | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Barium | | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Beryllium | | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Cadmium | | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Chromium | | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Cobalt | | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Copper | | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Lead | | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Nickel | | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Vanadium | | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| PBW01 | 4042804-BLK1 | Zinc | | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4D29007-CCB2 | Arsenic | 0.0233 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Barium | 0.0107 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Beryllium | 0.0106 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Cadmium | 0.00321 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Chromium | -0.0224 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Cobalt | 0.00507 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Copper | 0.0133 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Lead | 0.0105 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Nickel | 0.00450 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Vanadium | -0.00143 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB2 | Zinc | 0.0384 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Arsenic | 0.0142 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Barium | 0.00575 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Beryllium | 0.00626 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Cadmium | 0.000660 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Chromium | -0.0345 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Cobalt | 0.00379 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Copper | 0.00873 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Lead | 0.00720 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Nickel | 0.00371 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Vanadium | -0.00333 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB3 | Zinc | 0.0399 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Arsenic | 0.0106 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Barium | 0.00678 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Beryllium | 0.0136 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Cadmium | 0.00733 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Chromium | -0.0384 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Cobalt | 0.0136 | 0.00950 | 5.00 | ug/L | *J* | EPA 6020A |
| CCB | 4D29007-CCB4 | Copper | 0.0184 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Lead | 0.0102 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Nickel | 0.0123 | 0.00910 | 10.0 | ug/L | *J* | EPA 6020A |
| CCB | 4D29007-CCB4 | Vanadium | 0.00126 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB4 | Zinc | 0.0190 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D29007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4D29007-CCB5 | Arsenic | 0.00508 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Barium | 0.00732 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Beryllium | 0.00874 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Cadmium | 0.00492 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Chromium | -0.0286 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Cobalt | 0.00485 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Copper | 0.0109 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Lead | 0.00994 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Nickel | 0.00360 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Vanadium | -0.00336 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4D29007-CCB5 | Zinc | 0.0143 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: NS

Environmental Testing Laboratories — CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 4/28/14
Preparation Time: 10:00
Batch Number: 4042804/05
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042804/05-BLK1 | PBW01 | MB | 50 100 | 100 | 100 | 100 | CS/CL | CS/CL | N/A |
| 4042804/05-BS1 | MLCS01 | LCS | 100 | 100 | 100 | 100 | CS/CL | Y/CL | N/A |
| 4042804/05-BSD1 | MLCSD01 | BSD1 | 100 | 100 | 100 | 100 | CS/CL | Y/CL | N/A |
| 1404171-01 | 16WC1A | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-DUP1 | 16WC1AD | DUP | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-MS1 | 16WC1AS | MS | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-MSD1 | 16WC1ASD | MSD | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-02 | 16C1 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-03 | 16MW8 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-04 | 16MW9 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-05 | 16WDUP | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-06 | 16WC1B | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404172-01 | 16-1 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-02 | 16-2 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-03 | 16-3 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-04 | 16-5 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-05 | 16WC2B | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-06 | 16SPRING | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached Standard/QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 96° | C |
| Hot Block Temp Out: | 96° | C |
| Hot Block Identifier | BLOCK #5 | |
| Time Hg in water bath: | 1225 | |
| Time Hg out water bath: | 1425 | |
| Water Bath Temp In: | 94° | C |
| Water Bath Temp Out: | 95° | C |
| Water Bath Identifier | Hg bath 3 | |

**MS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: 1.0mL 100ppb Hg
Ref# 4h28001

**LCS Reference**

ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011

ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014

HG: ~~1.0 mL of ICCV-5~~ 0.4mL Hg ms-1ppm
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** _____
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** _____
***Date:*** 4/29/14

4/28/14

111611 JCF

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: NS

CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 4/28/14
Preparation Time: 10:00
Batch Number: 4042804/05
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4042804/05-BLK1 | PBW01 | MB | ~~50~~ 100 | 100 | 100 | 100 | CS/CL | CS/CL | N/A |
| 4042804/05-BS1 | MLCS01 | LCS | 100 | 100 | 100 | 100 | CS/CL | Y/CL | N/A |
| 4042804/05-BSD1 | MLCSD01 | BSD1 | 100 | 100 | 100 | 100 | CS/CL | Y/CL | N/A |
| 1404171-01 | 16WC1A | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-DUP1 | 16WC1AD | DUP | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-MS1 | 16WC1AS | MS | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 4042804-MSD1 | 16WC1ASD | MSD | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-02 | 16C1 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-03 | 16MW8 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-04 | 16MW9 | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-05 | 16WDUP | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404171-06 | 16WC1B | SAMPLE | 100 | 100 | | | CS/CL | CS/CL | <2 |
| 1404172-01 | 16-1 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-02 | 16-2 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-03 | 16-3 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-04 | 16-5 | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-05 | 16WC2B | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |
| 1404172-06 | 16SPRING | SAMPLE | 100 | 100 | 100 | 100 | CS/CL | CS/CL | <2 |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached Standard/QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 96° | C |
| Hot Block Temp Out: | 96° | C |
| Hot Block Identifier | BLOCK #5 | |
| Time Hg in water bath: | 1225 | |
| Time Hg out water bath: | 1425 | |
| Water Bath Temp In: | 94° | C |
| Water Bath Temp Out: | 95° | C |
| Water Bath Identifier | Hg bath 3 | |

**MS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014
HG: 1.0mL 100ppb Hg
Ref# 4h28001

**LCS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18011
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4D01014
HG: ~~1.0 mL of ICCV-5~~ 0.4mL Hg ms - 1ppm
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** _____
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** _____
***Date:*** 4/29/14

4/28/14

111611 JCF

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2425 New Holland Pike, Lancaster, PA 17601 · 717-656-2300 · Fax: 717-656-2681 · www.LancasterLabs.com

# Type I Data Package

Abridged data package.

Full deliverable available.

**Prepared for:**

**Draper Aden Associates, Inc.**
2206 South Main Street
Blacksburg VA 24060

Project: RAAP - Radford, VA - HWMU16
Groundwater Samples
Collected on 06/12/14

## SDG# RAE22

| GROUP | SAMPLE NUMBERS |
|---|---|
| 1481778 | 7498381-7498384 |

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

**Authorized by:** Dana M Kauffman **Date:** **07/10/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

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## Sample Reference List for SDG Number RAE22
## with a Data Package Type of I

**11200 - Draper Aden Associates, Inc.**

Project: RAAP - Radford, VA - HWMU16

| Lab Sample Number | Lab Sample Code | Client Sample Description |
|---|---|---|
| 7498381 | 16MW8 | 16MW8 Grab Groundwater 1st Semiannual 2014 GW Verification Monitoring |
| 7498382 | 16WC1 | 16WC1A Grab Groundwater 1st Semiannual 2014 GW Verification Monitoring |
| 7498383 | 16MWD | 16MWDUP1 Grab Groundwater 1st Semiannual 2014 GW Verification Monitoring |
| 7498384 | 16WCD | 16WCDUP3 Grab Groundwater 1st Semiannual 2014 GW Verification Monitoring |

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# Sample pH Log

**SDG: RAE22**

| LLI Sample Number | Bottle Code | Actual pH | Exp. pH | pH Check Code | Adj. pH | Adjusted Date | Adjusted Time | Preservative Added | Preservative Lot # | LLI Supplied Bottle? | Sulfide Present? | Corrective Substance | CS Lot # | Res. Cl. Present? | Corrective Substance | CS Lot # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7498381 | 008A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7498382 | 008A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7498383 | 008A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7498384 | 008A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |

| Check Code Key |
|---|
| **PK** = Original container checked - pH is within the correct range. (No preservative was added) |
| **PA** = Original container checked - pH adjusted to correct range. (Preservative was added) |
| **PV** = Volatile container checked |
| **PC** = pH checked (unpreserved container) |
| **SPK** = Subsampled from an original container. Original container checked - pH is within correct range |
| **SPA** = Subsampled from an original container. Subsample container checked - pH adjusted to correct range. |
| **SPC** = Subsampled from an original container. pH checked (unpreserved container). |
| **SUP** = Subsampled from original container. Unable to be preserved due to the matrix of the sample. |
| **UP** = Unable to preserve due to matrix of the sample. |
| **NA** = Not applicable |

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 · 717-656-2300 Fax: 717-656-2681 · www.lancasterlabs.com

**06032 Cobalt**
**06042 Silver**

The solution resulting from the metals digestion is analyzed by ICP/MS.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 6020A, February 2007.

---

**10639 ICP/MS SW846 (IV) Water Digest**

The sample is digested with nitric acid.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 3010A Modified, July 1992

# Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

June 23, 2014

Project: RAAP - Radford, VA - HWMU16

Submittal Date: 06/13/2014
Group Number: 1481778
SDG: RAE22
State of Sample Origin: VA

| Client Sample Description | Lancaster Labs (LL) # |
|---|---|
| 16MW8 Grab Groundwater | 7498381 |
| 16WC1A Grab Groundwater | 7498382 |
| 16MWDUP1 Grab Groundwater | 7498383 |
| 16WCDUP3 Grab Groundwater | 7498384 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU16
LL Group #: 1481778

**General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

**Analysis Specific Comments:**

No additional comments are necessary.

**Sample Description: 16MW8 Grab Groundwater**
**1st Semiannual 2014 GW Verification Monitoring**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7498381**
**LL Group # 1481778**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 06/12/2014 10:30 by KC

Submitted: 06/13/2014 09:45
Reported: 06/23/2014 12:48

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW8 SDG#: RAE22-01

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **Metals** | **SW-846 6020A** | | **mg/l** | **mg/l** | **mg/l** | |
| 06042 | Silver | 7440-22-4 | N.D. | 0.0010 | 0.0050 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06042 | Silver | SW-846 6020A | 1 | 141690639001A | 06/23/2014 09:45 | Choon Y Tian | 1 |
| 10639 | ICP/MS SW846 (IV) Water Digest | SW-846 3010A modified | 1 | 141690639001 | 06/20/2014 09:11 | Micaela L Dishong | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A Grab Groundwater**
**1st Semiannual 2014 GW Verification Monitoring**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7498382**
**LL Group # 1481778**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 06/12/2014 09:20 by KC

Submitted: 06/13/2014 09:45
Reported: 06/23/2014 12:48

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16WC1 SDG#: RAE22-02

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **Metals** | **SW-846 6020A** | | **mg/l** | **mg/l** | **mg/l** | |
| 06032 | Cobalt | 7440-48-4 | 0.0050 | 0.00010 | 0.0040 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06032 | Cobalt | SW-846 6020A | 1 | 141690639001A | 06/23/2014 09:48 | Choon Y Tian | 1 |
| 10639 | ICP/MS SW846 (IV) Water Digest | SW-846 3010A modified | 1 | 141690639001 | 06/20/2014 09:11 | Micaela L Dishong | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16MWDUP1 Grab Groundwater**
**1st Semiannual 2014 GW Verification Monitoring**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7498383**
**LL Group # 1481778**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 06/12/2014 10:35 by KC

Submitted: 06/13/2014 09:45
Reported: 06/23/2014 12:48

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MWD SDG#: RAE22-03FD

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **Metals** | **SW-846 6020A** | | **mg/l** | **mg/l** | **mg/l** | |
| 06042 | Silver | 7440-22-4 | N.D. | 0.0010 | 0.0050 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06042 | Silver | SW-846 6020A | 1 | 141690639001A | 06/23/2014 09:51 | Choon Y Tian | 1 |
| 10639 | ICP/MS SW846 (IV) Water Digest | SW-846 3010A modified | 1 | 141690639001 | 06/20/2014 09:11 | Micaela L Dishong | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WCDUP3 Grab Groundwater**
**1st Semiannual 2014 GW Verification Monitoring**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7498384**
**LL Group # 1481778**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 06/12/2014 09:25 by KC

Submitted: 06/13/2014 09:45
Reported: 06/23/2014 12:48

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16WCD SDG#: RAE22-04FD*

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **Metals** | **SW-846 6020A** | | **mg/l** | **mg/l** | **mg/l** | |
| 06032 | Cobalt | 7440-48-4 | 0.0047 | 0.00010 | 0.0040 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 06032 | Cobalt | SW-846 6020A | 1 | 141690639001A | 06/23/2014 09:54 | Choon Y Tian | 1 |
| 10639 | ICP/MS SW846 (IV) Water Digest | SW-846 3010A modified | 1 | 141690639001 | 06/20/2014 09:11 | Micaela L Dishong | 1 |

*=This limit was used in the evaluation of the final result

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1481778
Reported: 06/23/14 at 12:48 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank MDL** | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: 141690639001A | Sample number(s): 7498381-7498384 | | | | | | | | |
| Cobalt | N.D. | 0.00010 | 0.0040 | mg/l | 93 | | 87-113 | | |
| Silver | N.D. | 0.0010 | 0.0050 | mg/l | 102 | | 90-115 | | |

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: 141690639001A | Sample number(s): 7498381-7498384 UNSPK: P495738 BKG: P495738 | | | | | | | | |
| Cobalt | 96 | 99 | 86-114 | 3 | 20 | 0.0691 | 0.0702 | 2 | 20 |
| Silver | 105 | 106 | 84-116 | 1 | 20 | N.D. | N.D. | 0 (1) | 20 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

11200 | 1481778 | 7498381-84

# CHAIN OF CUSTODY RECORD

**Laboratory:** Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300 x1576

6-6-14

| | | | |
|---|---|---|---|
| Client: 0<br>Attn: 0<br>Address: 0<br>0<br>Phone: 0<br>Fax: 0<br>Fax: 0 | Consultant: Draper Aden Associates<br>Attn: Janet C. Frazier<br>Address: 2206 South Main Street<br>Blacksburg, Virginia 24060<br>Phone: (540) 552-0444<br>Fax: (540) 552-0291 | Sample Site: RAAP, Radford, Virginia<br>Location: HWMU16<br>1st Semiannual 2014 Groundwater Verification Monitoring<br>Event: Event<br>DAA JN: B03204-12<br>Lab JN: | Project Specific (PS) or Batch (B) QC:<br>Sample Collection for Project Complete? YES<br>Carrier: ~~12-754-02X-70-4142-2150~~<br>Tracking Number: 12-754-02X-70-4142-2150 |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; V VOA; AG Amber Glass; CG Clear Glass

Invoice
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on ice: YES

| Box 4 - Sample Type | | | | | G | G | G | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 3 - Filtered/Unfiltered | | | | | U | U | U | | | | | | |
| Required pH of Sample | | | | | <2 | <2 | <2 | | | | | | |
| Box 2 - Preservative | | | | | A | B | B | | | | | | |
| Box 5 - Sample Container Type | | | | | 3-40ml V | 1-250mL P | 1-250mL P | | | | | | |
| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | 8260C/5030B - 25 ml purge volume (analyze for 1,1-Dichloroethene ONLY) | ICP/MS 6020A/3005A (Metals-Silver ONLY) | ICP/MS 6020A/3005A (Metals-Cobalt ONLY) | | | | | | |
| 16MW8 | 6/12 | 1030 | GW | 1 | | X | | | | | | | |
| 16MW9 | 6/12 | 1130 | GW | 3 | X | | | | | | | | |
| 16WC1A | 6/12 | 0920 | GW | 1 | | | X | | | | | | |
| Trip Blank 1 | 6/12 | — | T | 2 | X | | | | | | | | |

GENERAL NOTES:
1. Report results to detection limit, with J flags.

Report to permit RL/MDL
- 1,1-DCE : 1/0.2 ug/L
- Silver : 1/0.2 ug/L
- Cobalt 5/1 ug/L.

JWS 6/10/2014

Clients Special Instructions:

Received by lab in Good Condition X Yes ____ No Custody Seal Intact X Yes ____ No Temperature upon arrival 5.6 ° Received on Ice X Yes ____ No
Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 6/12/14 | #1 Relinquished by (Signature): | Date: 6/12/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tyler Emery | Date: 6/12/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 6/13/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0700 | Company Name: | Time: | Company Name: ELLE | Time: 945 | |



6-6-14 1/1

11200/148776/749838-84

# CHAIN OF CUSTODY RECORD

6-6-14

**Laboratory:** Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300 x1576

| | | | | | |
|---|---|---|---|---|---|
| Client: 0<br>Attn: 0<br>Address: 0<br>0<br>Phone: 0<br>Fax: 0<br>Fax: 0 | Consultant: Draper Aden Associates<br>Attn: Janet C. Frazier<br>Address: 2206 South Main Street<br>Blacksburg, Virginia 24060<br>Phone: (540) 552-0444<br>Fax: (540) 552-0291 | Sample Site: RAAP, Radford, Virginia<br>Location: HWMU16<br>1st Semiannual 2014 Groundwater Verification Monitoring<br>Event: Event<br>DAA JN: B03204-12<br>Lab JN: | Project Specific (PS) or Batch (B) QC:<br>Sample Collection for Project Complete? YES<br>UPS:<br>Carrier: 1Z-75Y-02X-YO-<br>Tracking Number: | | |

| Box 1: Matrix | | Box 2: Preservative | | Box 3: Filtered/Unfiltered | Box 4: Sample Type | Invoice |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | Box 5: Sample Container Type | | Preserved and shipped on ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA<br>AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 4 - Sample Type | | | | G | G | G | | | | | | |
| Box 3 - Filtered/Unfiltered | | | | U | U | U | | | | | | |
| Required pH of Sample | | | | <2 | <2 | <2 | | | | | | |
| Box 2 - Preservative | | | | A | B | B | | | | | | |
| Box 5 - Sample Container Type | | | | 3-40ml V | 1- 250mL P | 1- 250mL P | | | | | | |
| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | 8260C/5030B - 25 ml purge volume (analyze for 1,1-Dichloroethene ONLY) | ICP/MS 6020A/3005A (Metals-Silver ONLY) | ICP/MS 6020A/3005A (Metals-Cobalt ONLY) | | | | | |
| 16MWDUP1 | 6/12 | 1035 | GW | 1 | | X | | | | | | |
| 16MWDUP2 | 6/12 | 1135 | GW | 3 | X | | | | | | | |
| 16WCDUP3 | 6/12 | 0925 | GW | 1 | | | X | | | | | |

GENERAL NOTES:

1. Report results to detection limit, with J flags

Report to permit RL/MDL

- 1,1-DCE 1/0.2 µg/L
- Silver 1/0.2 µg/L
- Cobalt 5/1 µg/L

Clients Special Instructions:

Received by lab in Good Condition X Yes ____ No Custody Seal Intact X Yes ____ No Temperature upon arrival 0.C Received on Ice X Yes ____ No

Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN GOODINGTON | Date: 6/12/14 | #1 Relinquished by (Signature): | Date: 6/12/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tyler Emery | Date: 6/12/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 6/13/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0700 | Company Name: | Time: | Company Name: ELLE | Time: 945 | |

6-6-14 1/1

eurofins | Lancaster Laboratories Environmental

# Sample Administration Receipt Documentation Log

Doc Log ID: 17330

Group Number(s): 1481778

Client: Draper Aden

## Delivery and Receipt Information

| | | | |
|---|---|---|---|
| Delivery Method: | UPS | Arrival Timestamp: | 06/13/2014 9:45 |
| Number of Packages: | 1 | Number of Projects: | 1 |
| State/Province of Origin: | VA | | |

## Arrival Condition Summary

| | | | |
|---|---|---|---|
| Shipping Container Sealed: | Yes | Total Trip Blank Qty: | 2 |
| Custody Seal Present: | Yes | Trip Blank Type: | HCl |
| Custody Seal Intact: | Yes | Air Quality Samples Present: | No |
| Samples Chilled: | Yes | Air Quality Flow Controllers Present: | N/A |
| Paperwork Enclosed: | Yes | Flow Controller Quantity: | 0 |
| Samples Intact: | Yes | Air Quality Returns: | N/A |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |
| Sample IDs on COC match Containers: | No | | |
| Sample Date/Times match COC: | Yes | | |
| VOA Vial Headspace ≥ 6mm: | No | | |
| VOA IDs ( ≥ 6mm): | N/A | | |

Unpacked by Wesley Miller (2308) at 12:50 on 06/13/2014

## Samples Chilled Details

*Thermometer Types:* *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

| Cooler # | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Samples Collected Same Day as Receipt? | Elevated Temp? |
|---|---|---|---|---|---|---|---|---|
| 1 | DT121 | 0.6 | DT | Wet | Y | Bagged | N | N |

## Sample ID Discrepancy Details

| Sample ID on COC | Sample ID on Label | Comments |
|---|---|---|
| 16WCDUP3 | 16MWDUP3 | |



2425 New Holland Pike
Lancaster, PA 17605-2425
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

eurofins | Lancaster Laboratories Environmental

# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **RL** | Reporting Limit | **BMQL** | Below Minimum Quantitation Level |
| **N.D.** | none detected | **MPN** | Most Probable Number |
| **TNTC** | Too Numerous To Count | **CP Units** | cobalt-chloroplatinate units |
| **IU** | International Units | **NTU** | nephelometric turbidity units |
| **umhos/cm** | micromhos/cm | **ng** | nanogram(s) |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **meq** | milliequivalents | **lb.** | pound(s) |
| **g** | gram(s) | **kg** | kilogram(s) |
| **µg** | microgram(s) | **mg** | milligram(s) |
| **mL** | milliliter(s) | **L** | liter(s) |
| **m3** | cubic meter(s) | **µL** | microliter(s) |
| | | **pg/L** | picogram/liter |

**<** less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*Data Qualifiers:*

**C –** result confirmed by reanalysis.

**J -** estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

*U.S. EPA CLP Data Qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quantitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike sample not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

**Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

CompuChem
A Division Of
Liberty Analytical Corp.

7/10/2014

Abridged data package.

Full deliverable available.

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

WorkOrder: 1406086

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1406086

**Project:** RAAP UNIT 16 2014/Co & Ag VERF./B03204-12 **Sdg:** 1406086

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1406086-01 | 16MWDUP1 | Water | 06/12/2014 10:35 | 06/13/2014 09:50 |
| 1406086-02 | 16WCDUP3 | Water | 06/12/2014 09:25 | 06/13/2014 09:50 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1406086

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16MWDUP1 | EPA 6020A | 1406086-01 |
| 16WCDUP3 | EPA 6020A | 1406086-02 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 06/20/2014

Title: Senior Chemist

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

**CompuChem**
**a Division of Liberty Analytical Corp.**
501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1406086
# Client: DRAPER
# Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

The indicated Sample Delivery Group (SDG) consisting of two (2) water samples was received into the laboratory information management system (LIMS) on June 13, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 1.2 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6020A methodology for the requested metals silver and cobalt.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Cobalt for sample 16WCDUP3

$$\frac{5.11097\ \mu g/L\ (C) \times 0.05\ L\ (F)}{0.05\ L\ (I)} = 5.111\ \mu g/L \text{ reported as } 5.11\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW, LCSWD, & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

No matrix spikes were requested for these samples.

A five-fold serial dilution of sample, CCN = SDI1406086-01 (16MWDUP1L) was performed in accordance with SW-846 requirements for ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP/MS sample post digestion spike, CCN =4061640-PS3 (16MWDUP1A) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
June 20, 2014

# CHAIN OF CUSTODY RECORD

JVE 6-6-14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0 | **Consultant:** Draper Aden Associates | **Sample Site:** RAAP Radford, Virginia | **Project Specific (PS) or Batch (B) QC:** | |
| **Attn:** 0 | **Attn:** Janet C. Frazier | | **Sample Collection for Project Complete?** YES | |
| **Address:** 0 | **Address:** 2206 South Main Street | **Location:** HWMU16 | UPS: | |
| 0 | Blacksburg, Virginia 24060 | 1st Semiannual 2014 Groundwater Verification Monitoring | **Carrier:** 1Z-237-301-01-9266-6044 | |
| **Phone:** 0 | **Phone:** (540) 552-0444 | **Event:** Event | **Tracking Number:** | |
| **Fax:** 0 | **Fax:** (540) 552-0291 | **DAA JN:** B03204-12 | | |
| **Fax:** 0 | | **Lab JN:** | | |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER
Preserved and shipped on ice: YES

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | G | | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | U | | | | | | | |
| **Required pH of Sample** | | | | | <2 | <2 | | | | | | | |
| **Box 2 - Preservative** | | | | | B | B | | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 1- 250mL P | 1- 250mL P | | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **ICP/MS 6020A/3005A (Metals-Silver ONLY)** | **ICP/MS 6020A/3005A (Metals-Cobalt ONLY)** | metals pH | | | | | | |
| 16MWDUP1 | 6/12 | 1035 | GW | 1 | X | | <2 | | | 1406086-01 | | | |
| 16WCDUP3 | 6/12 | 0925 | GW | 1 | | X | <2 | | | -02 | | | |

**GENERAL NOTES:**

1. Report results to detection limit, with J flags.

use permit QL/DL
. silver 1/0.2 ug/L
Cobalt 5/1 ug/L

JVE 6/11/20

**Clients Special Instructions:**

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival 1.2°C Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 6/12/14 | #1 Relinquished by (Signature): | Date: 6/12/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1200 | Company Name | Time: | |
| Sampler Name (Print): Tyler Emery | Date: 6/12/14 | #1 Received by (Signature): | Date: 6/13/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0700 | Company Name: CompuChem | Time: 0950 | Company Name: | Time: | |

JVE 6-6-14 1/1

# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

SDG: 1406086

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16MWDUP1 | 06/12/14 | 06/13/14 | 06/17/14 | 06/18/14 | 6.3 | 180 | |
| 16WCDUP3 | 06/12/14 | 06/13/14 | 06/17/14 | 06/18/14 | 6.4 | 180 | |

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# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1406086

**Client:** DRAPER **Project:** RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

**Matrix:** Water **Instrument:** PEMS

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Cobalt | 1 | 5.00 | ug/L | EPA 6020A |
| Silver | 0.2 | 1.00 | ug/L | EPA 6020A |

# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Lab ID: 4061640-BS1 Matrix: Water Client ID: MLCSCW Batch: 4061640

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Cobalt | 110.0 | 113 | 103 | | 80 - 120 |
| Silver | 110.0 | 112 | 102 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Lab ID: 4061640-BSD1 Matrix: Water Client ID: MLCSDCW Batch: 4061640

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Cobalt | 110.0 | 115 | 104 | 1.23 | 20 | | 80 - 120 |
| Silver | 110.0 | 112 | 102 | 0.394 | 20 | | 80 - 120 |

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# SERIAL DILUTION

*EPA 6020A*

**16MWDUP1L**

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Lab ID: 4F19007-SRD3 Matrix: Water Lab Source ID: 1406086-01 Source Sample: 16MWDUP1

Sequence: 4F19007 Dilution: 5 Report to MDL: YES

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Silver | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |

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# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**16MWDUP1A**

Laboratory: COMPUCHEM

Client: DRAPER

Matrix: Water

SDG: 1406086

Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Laboratory ID: 4061640-PS3

Lab Source ID: 1406086-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Silver | 10.4 | U | 10.00 | 103 | 75 - 125 |

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# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Batch: 4061640 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16MWDUP1 | 1406086-01 | 06/17/14 10:45 | 50.0 | 50.0 |
| 16WCDUP3 | 1406086-02 | 06/17/14 10:45 | 50.0 | 50.0 |
| PBWCW | 4061640-BLK1 | 06/17/14 10:45 | 50.0 | 50.0 |
| MLCSCW | 4061640-BS1 | 06/17/14 10:45 | 50.0 | 50.0 |
| MLCSDCW | 4061640-BSD1 | 06/17/14 10:45 | 50.0 | 50.0 |
| 16MWDUP1A | 4061640-PS3 | 06/17/14 10:45 | 50.0 | 50.0 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Sequence: 4F19007 Calibration: 4061906 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUN1 | 4F19007-TUN1 | 4F19007_P-001 | 06/18/14 15:23:37 |
| S0 | 4F19007-CAL1 | 4F19007_P-002 | 06/18/14 16:36:16 |
| S 6020-MS1 | 4F19007-CAL2 | 4F19007_P-003 | 06/18/14 16:38:14 |
| S 6020-MS2 | 4F19007-CAL3 | 4F19007_P-004 | 06/18/14 16:40:11 |
| S 6020-MS3 | 4F19007-CAL4 | 4F19007_P-005 | 06/18/14 16:42:07 |
| S 6020-MS4 | 4F19007-CAL5 | 4F19007_P-006 | 06/18/14 16:44:04 |
| S 6020-MS5 | 4F19007-CAL6 | 4F19007_P-007 | 06/18/14 16:46:01 |
| LLICV | 4F19007-CRL1 | 4F19007_P-008 | 06/18/14 16:49:39 |
| ICV | 4F19007-ICV1 | 4F19007_P-009 | 06/18/14 16:51:37 |
| ICB | 4F19007-ICB1 | 4F19007_P-010 | 06/18/14 16:53:35 |
| ICSA | 4F19007-IFA1 | 4F19007_P-011 | 06/18/14 16:55:32 |
| ICSAB | 4F19007-IFB1 | 4F19007_P-012 | 06/18/14 16:57:29 |
| LLICV | 4F19007-CRL2 | 4F19007_P-013 | 06/18/14 16:59:27 |
| CCV | 4F19007-CCV1 | 4F19007_P-014 | 06/18/14 17:01:25 |
| CCB | 4F19007-CCB1 | 4F19007_P-015 | 06/18/14 17:03:22 |
| PBWCW | 4061640-BLK1 | 4F19007_P-016 | 06/18/14 17:32:13 |
| MLCSCW | 4061640-BS1 | 4F19007_P-017 | 06/18/14 17:34:10 |
| MLCSDCW | 4061640-BSD1 | 4F19007_P-018 | 06/18/14 17:36:07 |
| CCV | 4F19007-CCV2 | 4F19007_P-026 | 06/18/14 17:51:43 |
| CCB | 4F19007-CCB2 | 4F19007_P-027 | 06/18/14 17:53:40 |
| 16MWDUP1 | 1406086-01 | 4F19007_P-032 | 06/18/14 18:03:37 |
| 16MWDUP1L | 4F19007-SRD3 | 4F19007_P-033 | 06/18/14 18:05:34 |
| 16MWDUP1A | 4061640-PS3 | 4F19007_P-034 | 06/18/14 18:07:31 |
| 16WCDUP3 | 1406086-02 | 4F19007_P-035 | 06/18/14 18:09:27 |
| LLCCV | 4F19007-CRL3 | 4F19007_P-037 | 06/18/14 18:13:22 |
| CCV | 4F19007-CCV3 | 4F19007_P-038 | 06/18/14 18:15:20 |
| CCB | 4F19007-CCB3 | 4F19007_P-039 | 06/18/14 18:17:17 |

# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**16MWDUP1**

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Lab ID: 1406086-01 % Solid: Matrix: Water Sampled: 06/12/14 Received: 06/13/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-22-4 | Silver | | 0.200 | 1.00 | 1 | U | EPA 6020A | 4F19007 | 6/18/14 18:03 |

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# ANALYSIS DATA SHEET

**16WCDUP3**

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Lab ID: 1406086-02 % Solid: Matrix: Water Sampled: 06/12/14 Received: 06/13/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | 5.11 | 1.00 | 5.00 | 1 | | EPA 6020A | 4F19007 | 6/18/14 18:09 |

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# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Sequence: 4F19007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4F19007-CRL1 | Cobalt | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLICV | 4F19007-CRL1 | Silver | 1.000 | 1.04 | 104 | ug/L | | 70 - 130 |
| LLICV | 4F19007-CRL2 | Cobalt | 1.000 | 1.07 | 107 | ug/L | | 70 - 130 |
| LLICV | 4F19007-CRL2 | Silver | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4F19007-CRL3 | Cobalt | 1.000 | 1.04 | 104 | ug/L | | 70 - 130 |
| LLCCV | 4F19007-CRL3 | Silver | 1.000 | 1.06 | 106 | ug/L | | 70 - 130 |

# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1406086

Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Calibration: 4061906 Instrument: PEMS

Calibration Date: 6/18/2014 9:34:07

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Cobalt | CAL1 | S0 | 2.222 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 1594.572 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 3269.425 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 203916 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 382764.3 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 720399.7 | 500 |
| Silver | CAL1 | S0 | 6.481 | 0 |
| Silver | CAL2 | S 6020-MS1 | 1417.693 | 1 |
| Silver | CAL3 | S 6020-MS2 | 2690.178 | 2 |
| Silver | CAL4 | S 6020-MS3 | 167787.3 | 125 |
| Silver | CAL5 | S 6020-MS4 | 316388.2 | 250 |
| Silver | CAL6 | S 6020-MS5 | 595783.2 | 500 |

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# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1406086

Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Calibration: 4061906 Instrument: PEMS

Calibration Date: 6/18/2014 9:34:07

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Cobalt | 0.008953 | 0 | 0.9997 | 0.998 | |
| Silver | 0.003442 | 0 | 0.9998 | 0.998 | |

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# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Sequence: 4F19007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4F19007-ICV1 | Cobalt | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4F19007-ICV1 | Silver | 110.0 | 107 | 97 | ug/L | | +/-10 |
| CCV | 4F19007-CCV1 | Cobalt | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4F19007-CCV1 | Silver | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4F19007-CCV2 | Cobalt | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4F19007-CCV2 | Silver | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4F19007-CCV3 | Cobalt | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4F19007-CCV3 | Silver | 300.0 | 307 | 102 | ug/L | | +/-10 |

# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Sequence: 4F19007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4F19007-IFA1 | Cobalt | | 0.01 | 10 | ug/L |
| ICSA | 4F19007-IFA1 | Silver | | 0.00 | 2 | ug/L |
| ICSAB | 4F19007-IFB1 | Cobalt | 50.00 | 51.83 | 104 | ug/L |
| ICSAB | 4F19007-IFB1 | Silver | 12.50 | 12.97 | 104 | ug/L |

* The absence of an entry in the "True" column denotes the lack of a true value for that analyte. The entry in the "%R" column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1406086

Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Sequence: 4F19007 Date: 06/18/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 9.075 | 0.689 | 10 | 1.263 |
| Mg - 24 | 24.025 | 0.731 | 10 | 0.488 |
| Mg - 25 | 24.925 | 0.674 | 10 | 0.796 |
| Mg - 26 | 25.975 | 0.683 | 10 | 0.985 |
| Co - 59 | 58.975 | 0.698 | 10 | 1.268 |
| In - 113 | 112.925 | 0.708 | 10 | 1.545 |
| In - 115 | 114.975 | 0.650 | 10 | 1.246 |
| Pb - 206 | 205.975 | 0.703 | 10 | 0.589 |
| Pb - 207 | 206.975 | 0.673 | 10 | 0.657 |
| Pb - 208 | 208.025 | 0.660 | 10 | 0.484 |

Comments:

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1406086

Sequence: 4F19007

Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 6/18/14 16:36 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 6/18/14 16:38 | 97 | 99 | 98 | 98 | 98 |
| S 6020-MS2 | 6/18/14 16:40 | 97 | 97 | 97 | 97 | 96 |
| S 6020-MS3 | 6/18/14 16:42 | 96 | 97 | 95 | 96 | 96 |
| S 6020-MS4 | 6/18/14 16:44 | 93 | 93 | 92 | 95 | 93 |
| S 6020-MS5 | 6/18/14 16:46 | 92 | 92 | 90 | 93 | 91 |
| LLICV | 6/18/14 16:49 | 93 | 92 | 94 | 94 | 94 |
| ICV | 6/18/14 16:51 | 93 | 92 | 92 | 93 | 93 |
| ICB | 6/18/14 16:53 | 92 | 92 | 93 | 93 | 93 |
| ICSA | 6/18/14 16:55 | 92 | 92 | 92 | 93 | 91 |
| ICSAB | 6/18/14 16:57 | 94 | 94 | 93 | 94 | 92 |
| LLICV | 6/18/14 16:59 | 92 | 92 | 93 | 94 | 93 |
| CCV | 6/18/14 17:01 | 92 | 92 | 92 | 95 | 92 |
| CCB | 6/18/14 17:03 | 94 | 95 | 95 | 95 | 95 |
| PBWCW | 6/18/14 17:32 | 89 | 91 | 91 | 91 | 91 |
| MLCSCW | 6/18/14 17:34 | 91 | 94 | 92 | 93 | 92 |
| MLCSDCW | 6/18/14 17:36 | 92 | 92 | 93 | 93 | 92 |
| CCV | 6/18/14 17:51 | 88 | 85 | 86 | 90 | 87 |
| CCB | 6/18/14 17:53 | 92 | 88 | 89 | 93 | 91 |
| 16MWDUP1 | 6/18/14 18:03 | 88 | 87 | 86 | 88 | 85 |
| 16MWDUP1L | 6/18/14 18:05 | 89 | 85 | 87 | 89 | 88 |
| 16MWDUP1A | 6/18/14 18:07 | 88 | 87 | 84 | 88 | 84 |
| 16WCDUP3 | 6/18/14 18:09 | 87 | 86 | 83 | 86 | 77 |
| LLCCV | 6/18/14 18:13 | 91 | 87 | 89 | 91 | 91 |
| CCV | 6/18/14 18:15 | 90 | 88 | 87 | 92 | 89 |
| CCB | 6/18/14 18:17 | 92 | 88 | 90 | 92 | 92 |

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# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1406086 Project: RAAP UNIT 16 2014/Co & Ag VERF./B03204-12

Sequence: 4F19007 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4F19007-ICB1 | Cobalt | 0.00445 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| ICB | 4F19007-ICB1 | Silver | 0.00502 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4F19007-CCB1 | Cobalt | 0.0109 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4F19007-CCB1 | Silver | 0.00969 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| PBWCW | 4061640-BLK1 | Cobalt | | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| PBWCW | 4061640-BLK1 | Silver | | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4F19007-CCB2 | Cobalt | 0.0123 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4F19007-CCB2 | Silver | 0.00990 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4F19007-CCB3 | Cobalt | 0.00833 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4F19007-CCB3 | Silver | 0.00603 | 0.200 | 1.00 | ug/L | *U* | EPA 6020A |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

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Preparation Date: 6-17-14
Preparation Time: 1045
Batch Number: 4061640
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4061640-BLK1 | PBWCW | MB | 50 | 50 | | | CS/CL | CS/CL | N/A |
| 4061640-BS1 | MLCSCW | LCS | 50 | 50 | | | CS/CL | CS/CL | N/A |
| 4061640-BSD1 | MLCSDCW | LCSD | 50 | 50 | | | CS/CL | CS/CL | N/A |
| 4061640-DUP1 | MW-2D | DUP | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 4061640-MS1 | MW-2S | MS | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 4061640-MSD1 | MW-2SD | MSD | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 1406084-01 | MW-2 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 1406084-02 | DUP | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 1406085-01 | 16MW8 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 1406085-02 | 16WC1A | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 1406086-01 | 16MWDUP1 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 1406086-02 | 16WCDUP3 | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 22 |
| 1406095-01 | 061314-EB | SAMPLE | 50 | 50 | | | CS/CL | CS/CL | 22 |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached. Standard QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | |
|---|---|
| Hot Block Temp In: | 95 C |
| Hot Block Temp Out: | 94 C |
| Hot Block Identifier | HotBlock#1 |
| Time Hg in water bath: | |
| Time Hg out water bath: | |
| Water Bath Temp In: | C |
| Water Bath Temp Out: | C |
| Water Bath Identifier | |

**MS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18U11
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DU1014
HG: 1.0mL 100ppb Hg
Ref#

**LCS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 3I18U11
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DU1014
HG: 1.0 mL of ICCV-5
Ref#

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Bu
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** UB
***Date:*** 6/18/14

111611 JCF

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5/20/2014

Abridged data package.

Full deliverable available.

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1404171

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404171

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1404171

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404171-01 | 16WC1A | Water | 04/24/2014 11:45 | 04/25/2014 13:15 |
| 1404171-02 | 16C1 | Water | 04/24/2014 15:25 | 04/25/2014 13:15 |
| 1404171-03 | 16MW8 | Water | 04/24/2014 09:15 | 04/25/2014 13:15 |
| 1404171-04 | 16MW9 | Water | 04/24/2014 10:30 | 04/25/2014 13:15 |
| 1404171-05 | 16WDUP | Water | 04/24/2014 12:00 | 04/25/2014 13:15 |
| 1404171-06 | 16WC1B | Water | 04/24/2014 14:05 | 04/25/2014 13:15 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1404171

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16WC1A | 8081B | 1404171-01 |
| 16C1 | 8081B | 1404171-02 |
| 16MW8 | 8081B | 1404171-03 |
| 16MW9 | 8081B | 1404171-04 |
| 16WDUP | 8081B | 1404171-05 |
| 16WC1B | 8081B | 1404171-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Patricia A Murphy

Name: Pat Murphy

Date: 05/15/2014

Title: Senior Chemist

Environmental Testing Laboratories

CompuChem

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Liberty Analytical Corp.

**CompuChem**
**A division of Liberty Analytical Corporation**
**501 Madison Avenue**
**Cary, N.C. 27513**
**Tel: 919/379-4100 Fax: 919/379-4050**

# SDG NARRATIVE
# SDG # 1404171
# PROTOCOL: SW-846

**SAMPLE IDENTIFICATIONS: 10MW1 10D4 10DDH2R 10D3 10DUP 10D3D**

The 6 water samples listed above were received intact, refrigerated between 1.2°C and 3.1°C, with proper documentation, in sealed shipping containers, on April 25, 2014. The samples were scheduled for the requested analysis of the Pesticide fraction. SW-846, 3rd Edition, Update 3, Method 8081B was used to prepare and analyze the samples, with the exceptions and/or additions requested by the client. All pertinent Quality Assurance notices are included in the narrative section and all pertinent Laboratory notices are included in the sample data sections.

## Pesticide

Extraction and analysis holding time requirements were met for the samples. Per client's request, the samples in this SDG were further cleaned through the florisil cleanup process.

Target analytes did not confirm above the reporting limits in these samples. All non-detects are reported to the reporting limit (RL) with a "U" flag qualifier.

Manual integrations were performed on one or more of the process files associated with this SDG. Please see the detailed Manual Integration Summary report that is located in section P. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All surrogate recoveries were within the method specified limits.

The method blank associated with the samples met all quality control criteria.

Duplicate matrix spike samples were performed with sample 10MW1, and met recovery and precision criteria.

The Laboratory Control Sample (LCS) prepared and analyzed with the samples met recovery criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Patricia A. Murphy
Senior Scientist
May 16, 2014

# CHAIN OF CUSTODY RECORD

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

JK JVC 4/24/14

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | 0 | **Consultant:** | Draper Aden Associates | **Sample Site:** | RAAP, Radford, Virginia |
| **Attn:** | 0 | **Attn:** | Janet C. Frazier | **Location:** | HWMU16 |
| **Address:** | 0 | **Address:** | 2206 South Main Street | **Event:** | t Semiannual 2014 Groundwater Verification Monitoring Ev |
| | 0 | | Blacksburg, Virginia 24060 | **DAA JN:** | B03204-12 |
| **Phone:** | 0 | **Phone:** | (540) 552-0444 | **Lab JN:** | |
| **Fax:** | 0 | **Fax:** | (540) 552-0291 | | |
| **Fax:** | 0 | | | | |

**Project Specific (PS) or Batch (B) QC:**
~~Sample Collection for Project Complete?~~ YES
**Carrier:** DASH COURIER
**Tracking Number:** SERVICE

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on Ice: YES

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | G | G | G | G | G | TG | G | | | |
| **Box 3 - Filtered/Unfiltered** | | | | U | U | U | U | U | U | U | | | |
| **Required pH of Sample** | | | | <2 | <2 | | | >12 | <2 | | | | |
| **Box 2 - Preservative** | | | | B | B | H | H | E | B | H | | | |
| **Box 5 - Sample Container Type** | | | | 1-500 ml P | | 2-1LAG | 2-1L AG | 1-500-P | 1-500mL P | 2-1LAG | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **ICP/MS 6020A/3005A and 6010C/3010A (Metals-Total)** | **7470A (Mercury-Total)** | **8151A (Herbicides)** | **8270D/3510C (Semivolatiles)** | **9012B/9010C(Cyanide)** | **6020A - COBALT ONLY - (DISSOLVED)** | **8081B (Pesticides) W/CLEANUP** | | |
| 16C1 | 4/24 | 1525 | GW | 8 | X | X | X | X | X | | X | | |
| 16MW8 | 4/24 | 0915 | GW | 8 | X | X | X | X | X | | X | | |
| 16MW9 | 4/24 | 1030 | GW | 8 | X | X | X | X | X | | X | | |
| 16WC1A | 4/24 | 1145 | GW | 24 | X | X | X | X | X | | X | | |
| 16WDUP | 4/24 | 1200 | GW | 8 | X | X | X | X | X | | X | | |
| 16WC1B | 4/24 | 1405 | GW | 9 (4/25/14) | X | X | X | X | X | X | X | | |
| 16-1 | 4/23 | 0925 | GW | 3 | X | X | | X | | | | | |
| 16-2 | 4/23 | 1015 | GW | 3 | X | X | | X | | | | | |
| 16-3 | 4/23 | 1115 | GW | 3 | X | X | | X | | | | | |
| 16-5 | 4/23 | 1205 | GW | 3 | X | X | | X | | | | | |
| 16WC2B | 4/23 | 1330 | GW | 3 | X | X | | X | | | | | |
| 16SPRING | 4/23 | 1225 | GW | 3 | X | X | | X | | | | | |

**GENERAL NOTES:**
1. Report results to detection limit, with J flags, for italicized wells.
2. Report results at or greater than QL for non-italicized wells. 3. ERIS Deliverable required.
4. VELAP accreditation required.
5. Full deliverable.

DISS. Co

1404171-02
-03
-04
-01 USE FOR QC
-05
-06 * 1404173-01

1404172-01
-02
-03
-04
-05
-06

diss. Co in this cooler

**Clients Special Instructions:** Level 4 with edd. See attached target analyte list. 2.2°C, 1.7°C, 3.1°C, 2.3°C, 1.9°C, 1.2°C IR GUN: SN0010

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Ken Coddington | Date: 4/25/14 | #2 Relinquished by (Signature): | Date: 4/25/14 | Sample Storage Time Requested: |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: DAA | Time: 0930 | Company Name: Dash Courier | Time: 1315 | 30 DYS ORG/6 MTHS INORG |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: 4-25-14 | #2 Received by (Signature): | Date: 4/25/14 | |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: Dash Courier | Time: 0930 | Company Name: CompuChem | Time: 1315 | |

JVC 4/25/2014 1/0

# HOLDING TIME SUMMARY

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/29/14 | 5 | 7 | 05/01/14 | 2.2 | 40 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/29/14 | 5 | 7 | 05/01/14 | 2.2 | 40 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/29/14 | 5 | 7 | 05/01/14 | 2.2 | 40 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/29/14 | 5 | 7 | 05/01/14 | 2.2 | 40 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/29/14 | 5 | 7 | 05/01/14 | 2.2 | 40 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/29/14 | 5 | 7 | 05/01/14 | 2.3 | 40 | |

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# SURROGATE STANDARD RECOVERY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4E01012 Calibration: 4043001

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Blank (4042816-BLK1 ) ug/L** Lab File ID: 084o4042816-BLK1.d Analyzed: 05/01/14 17:39 | | | | |
| DCB (A) | 0.6000 | 69 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 68 | 43 - 144 | |
| TCX (A) | 0.3000 | 65 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 64 | 43 - 135 | |
| **LCS (4042816-BS1 ) ug/L** Lab File ID: 085o4042816-BS1.d Analyzed: 05/01/14 18:08 | | | | |
| DCB (A) | 0.6000 | 78 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 76 | 43 - 144 | |
| TCX (A) | 0.3000 | 75 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 76 | 43 - 135 | |
| **Matrix Spike (4042816-MS1 ) ug/L** Lab File ID: 086o4042816-MS1.d Analyzed: 05/01/14 18:37 | | | | |
| DCB (A) | 0.6000 | 59 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 57 | 43 - 144 | |
| TCX (A) | 0.3000 | 56 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 56 | 43 - 135 | |
| **Matrix Spike Dup (4042816-MSD1 ) ug/L** Lab File ID: 087o4042816-MSD1.d Analyzed: 05/01/14 19:06 | | | | |
| DCB (A) | 0.6000 | 91 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 89 | 43 - 144 | |
| TCX (A) | 0.3000 | 82 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 83 | 43 - 135 | |

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# SURROGATE STANDARD RECOVERY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4E01012 Calibration: 4043001

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16WC1A (1404171-01 ) ug/L** Lab File ID: 088o1404171-01.d Analyzed: 05/01/14 19:35 | | | | |
| DCB (A) | 0.6000 | 73 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 71 | 43 - 144 | |
| TCX (A) | 0.3000 | 66 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 67 | 43 - 135 | |
| **16C1 (1404171-02 ) ug/L** Lab File ID: 089o1404171-02.d Analyzed: 05/01/14 20:04 | | | | |
| DCB (A) | 0.6000 | 77 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 75 | 43 - 144 | |
| TCX (A) | 0.3000 | 65 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 78 | 43 - 135 | |
| **16MW8 (1404171-03 ) ug/L** Lab File ID: 090o1404171-03.d Analyzed: 05/01/14 20:33 | | | | |
| DCB (A) | 0.6000 | 73 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 72 | 43 - 144 | |
| TCX (A) | 0.3000 | 71 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 68 | 43 - 135 | |
| **16MW9 (1404171-04 ) ug/L** Lab File ID: 091o1404171-04.d Analyzed: 05/01/14 21:02 | | | | |
| DCB (A) | 0.6000 | 72 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 71 | 43 - 144 | |
| TCX (A) | 0.3000 | 65 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 66 | 43 - 135 | |

# SURROGATE STANDARD RECOVERY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4E01012 Calibration: 4043001

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16WDUP (1404171-05 ) ug/L** Lab File ID: 092o1404171-05.d Analyzed: 05/01/14 21:31 | | | | |
| DCB (A) | 0.6000 | 77 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 76 | 43 - 144 | |
| TCX (A) | 0.3000 | 69 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 70 | 43 - 135 | |
| **16WC1B (1404171-06 ) ug/L** Lab File ID: 093o1404171-06.d Analyzed: 05/01/14 22:00 | | | | |
| DCB (A) | 0.6000 | 72 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 71 | 43 - 144 | |
| TCX (A) | 0.3000 | 67 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 67 | 43 - 135 | |

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# RT SUMMARY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4D24001 Calibration: 4043001

| Surrogate Compound | RT | CCV RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|
| **Performance Mix (4D24001-PEM1 ) ng/uL** Lab File ID: 003o4D24001-PEM Analyzed: 04/24/14 12:13 | | | | | |
| DCB (A) | 20.16 | 20.162 | -0.0020 | +/-0.070 | |
| DCB (A) [2C] | 20.71 | 20.71 | 0.0000 | +/-0.070 | |
| TCX (A) | 7.585 | 7.585 | 0.0000 | +/-0.070 | |
| TCX (A) [2C] | 7.477 | 7.473 | 0.0040 | +/-0.070 | |
| **Aroclor Reference (4D24001-ARC1 ) ng/uL** Lab File ID: 009o4D24001-ARC Analyzed: 04/24/14 15:07 | | | | | |
| DCB (A) | 20.16 | 20.162 | -0.0020 | +/-0.070 | |
| DCB (A) [2C] | 20.708 | 20.71 | -0.0020 | +/-0.070 | |
| TCX (A) | 7.583 | 7.585 | -0.0020 | +/-0.070 | |
| TCX (A) [2C] | 7.475 | 7.473 | 0.0020 | +/-0.070 | |
| **Aroclor Reference (4D24001-ARC2 ) ng/uL** Lab File ID: 010o4D24001-ARC Analyzed: 04/24/14 15:36 | | | | | |
| DCB (A) | 20.16 | 20.162 | -0.0020 | +/-0.070 | |
| DCB (A) [2C] | 20.71 | 20.71 | 0.0000 | +/-0.070 | |
| TCX (A) | 7.58 | 7.585 | -0.0050 | +/-0.070 | |
| TCX (A) [2C] | 7.473 | 7.473 | 0.0000 | +/-0.070 | |

# RT SUMMARY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4E01012 Calibration: 4043001

| Surrogate Compound | RT | CCV RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|
| **Performance Mix (4E01012-PEM1 ) ng/uL** Lab File ID: 082o4E01012-PEM Analyzed: 05/01/14 16:42 | | | | | |
| DCB (A) | 20.153 | 20.153 | 0 | +/-0.070 | |
| DCB (A) [2C] | 20.702 | 20.702 | 0 | +/-0.070 | |
| TCX (A) | 7.58 | 7.58 | 0 | +/-0.070 | |
| TCX (A) [2C] | 7.472 | 7.472 | 0 | +/-0.070 | |
| **Initial Cal Check (4E01012-ICV1 ) ng/uL** Lab File ID: 083o4E01012-ICV1 Analyzed: 05/01/14 17:11 | | | | | |
| DCB (A) | 20.157 | 20.157 | 0 | +/-0.070 | |
| DCB (A) [2C] | 20.703 | 20.703 | 0 | +/-0.070 | |
| TCX (A) | 7.583 | 7.583 | 0 | +/-0.070 | |
| TCX (A) [2C] | 7.472 | 7.472 | 0 | +/-0.070 | |
| **Blank (4042816-BLK1 ) ug/L** Lab File ID: 084o4042816-BLK Analyzed: 05/01/14 17:39 | | | | | |
| DCB (A) | 20.157 | 20.157 | 0.0000 | +/-0.070 | |
| DCB (A) [2C] | 20.703 | 20.703 | 0.0000 | +/-0.070 | |
| TCX (A) | 7.58 | 7.583 | -0.0030 | +/-0.070 | |
| TCX (A) [2C] | 7.47 | 7.472 | -0.0020 | +/-0.070 | |
| **LCS (4042816-BS1 ) ug/L** Lab File ID: 085o4042816-BS1.( Analyzed: 05/01/14 18:08 | | | | | |
| DCB (A) | 20.155 | 20.157 | -0.0020 | +/-0.070 | |
| DCB (A) [2C] | 20.703 | 20.703 | 0.0000 | +/-0.070 | |
| TCX (A) | 7.575 | 7.583 | -0.0080 | +/-0.070 | |
| TCX (A) [2C] | 7.47 | 7.472 | -0.0020 | +/-0.070 | |

# RT SUMMARY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4E01012 Calibration: 4043001

| Surrogate Compound | RT | CCV RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|
| **Matrix Spike (4042816-MS1 ) ug/L** Lab File ID: 086o4042816-MS1. Analyzed: 05/01/14 18:37 | | | | | |
| DCB (A) | 20.155 | 20.157 | -0.0020 | +/-0.070 | |
| DCB (A) [2C] | 20.705 | 20.703 | 0.0020 | +/-0.070 | |
| TCX (A) | 7.58 | 7.583 | -0.0030 | +/-0.070 | |
| TCX (A) [2C] | 7.472 | 7.472 | 0.0000 | +/-0.070 | |
| **Matrix Spike Dup (4042816-MSD1 ) ug/L** Lab File ID: 087o4042816-MSD Analyzed: 05/01/14 19:06 | | | | | |
| DCB (A) | 20.157 | 20.157 | 0.0000 | +/-0.070 | |
| DCB (A) [2C] | 20.705 | 20.703 | 0.0020 | +/-0.070 | |
| TCX (A) | 7.582 | 7.583 | -0.0010 | +/-0.070 | |
| TCX (A) [2C] | 7.475 | 7.472 | 0.0030 | +/-0.070 | |
| **16WC1A (1404171-01 ) ug/L** Lab File ID: 088o1404171-01.d Analyzed: 05/01/14 19:35 | | | | | |
| DCB (A) | 20.155 | 20.157 | -0.0020 | +/-0.070 | |
| DCB (A) [2C] | 20.703 | 20.703 | 0.0000 | +/-0.070 | |
| TCX (A) | 7.582 | 7.583 | -0.0010 | +/-0.070 | |
| TCX (A) [2C] | 7.473 | 7.472 | 0.0010 | +/-0.070 | |
| **16C1 (1404171-02 ) ug/L** Lab File ID: 089o1404171-02.d Analyzed: 05/01/14 20:04 | | | | | |
| DCB (A) | 20.158 | 20.157 | 0.0010 | +/-0.070 | |
| DCB (A) [2C] | 20.707 | 20.703 | 0.0040 | +/-0.070 | |
| TCX (A) | 7.582 | 7.583 | -0.0010 | +/-0.070 | |
| TCX (A) [2C] | 7.477 | 7.472 | 0.0050 | +/-0.070 | |

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# RT SUMMARY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4E01012 Calibration: 4043001

| Surrogate Compound | RT | CCV RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|
| **16MW8 (1404171-03 ) ug/L** Lab File ID: 090o1404171-03.d Analyzed: 05/01/14 20:33 | | | | | |
| DCB (A) | 20.158 | 20.157 | 0.0010 | +/-0.070 | |
| DCB (A) [2C] | 20.707 | 20.703 | 0.0040 | +/-0.070 | |
| TCX (A) | 7.582 | 7.583 | -0.0010 | +/-0.070 | |
| TCX (A) [2C] | 7.473 | 7.472 | 0.0010 | +/-0.070 | |
| **16MW9 (1404171-04 ) ug/L** Lab File ID: 091o1404171-04.d Analyzed: 05/01/14 21:02 | | | | | |
| DCB (A) | 20.16 | 20.157 | 0.0030 | +/-0.070 | |
| DCB (A) [2C] | 20.707 | 20.703 | 0.0040 | +/-0.070 | |
| TCX (A) | 7.583 | 7.583 | 0.0000 | +/-0.070 | |
| TCX (A) [2C] | 7.475 | 7.472 | 0.0030 | +/-0.070 | |
| **16WDUP (1404171-05 ) ug/L** Lab File ID: 092o1404171-05.d Analyzed: 05/01/14 21:31 | | | | | |
| DCB (A) | 20.16 | 20.157 | 0.0030 | +/-0.070 | |
| DCB (A) [2C] | 20.708 | 20.703 | 0.0050 | +/-0.070 | |
| TCX (A) | 7.58 | 7.583 | -0.0030 | +/-0.070 | |
| TCX (A) [2C] | 7.477 | 7.472 | 0.0050 | +/-0.070 | |
| **16WC1B (1404171-06 ) ug/L** Lab File ID: 093o1404171-06.d Analyzed: 05/01/14 22:00 | | | | | |
| DCB (A) | 20.157 | 20.157 | 0.0000 | +/-0.070 | |
| DCB (A) [2C] | 20.705 | 20.703 | 0.0020 | +/-0.070 | |
| TCX (A) | 7.578 | 7.583 | -0.0050 | +/-0.070 | |
| TCX (A) [2C] | 7.473 | 7.472 | 0.0010 | +/-0.070 | |

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# RT SUMMARY

*8081B*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: tracegc84

Sequence: 4E01012 Calibration: 4043001

| Surrogate Compound | RT | CCV RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|
| **Performance Mix (4E01012-PEM2 ) ng/uL**<br>Lab File ID: 095o4E01012-PEM Analyzed: 05/01/14 22:58 | | | | | |
| DCB (A) | 20.155 | 20.16 | -0.0050 | +/-0.070 | |
| DCB (A) [2C] | 20.702 | 20.707 | -0.0050 | +/-0.070 | |
| TCX (A) | 7.58 | 7.582 | -0.0020 | +/-0.070 | |
| TCX (A) [2C] | 7.468 | 7.477 | -0.0090 | +/-0.070 | |

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# LCS / LCS DUPLICATE SUMMARY

*8081B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042816-BS1 Matrix: Water Client ID: PLCSPS Batch: 4042816

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| alpha-BHC | 0.3000 | 0.2702 B | 90 | | 50 - 150 |
| alpha-BHC [2C] | 0.3000 | 0.2732 | 91 | | 50 - 150 |
| gamma-BHC (Lindane) | 0.3000 | 0.2682 | 89 | | 50 - 150 |
| gamma-BHC (Lindane) [2C] | 0.3000 | 0.2683 | 89 | | 50 - 150 |
| Heptachlor | 0.3000 | 0.2547 | 85 | | 50 - 150 |
| Heptachlor [2C] | 0.3000 | 0.2542 | 85 | | 50 - 150 |
| Aldrin | 0.3000 | 0.2600 | 87 | | 50 - 150 |
| Aldrin [2C] | 0.3000 | 0.2594 | 86 | | 50 - 150 |
| beta-BHC | 0.3000 | 0.2533 B | 84 | | 50 - 150 |
| beta-BHC [2C] | 0.3000 | 0.2493 | 83 | | 50 - 150 |
| delta-BHC | 0.3000 | 0.2793 | 93 | | 50 - 150 |
| delta-BHC [2C] | 0.3000 | 0.2842 | 95 | | 50 - 150 |
| Heptachlor epoxide | 0.3000 | 0.2671 | 89 | | 50 - 150 |
| Heptachlor Epoxide [2C] | 0.3000 | 0.2662 B | 89 | | 50 - 150 |
| Endosulfan I | 0.3000 | 0.2045 B | 68 | | 50 - 150 |
| Endosulfan I [2C] | 0.3000 | 0.1936 | 65 | | 50 - 150 |
| 4,4'-DDE | 0.3000 | 0.2756 | 92 | | 50 - 150 |
| 4,4'-DDE [2C] | 0.3000 | 0.2653 | 88 | | 50 - 150 |
| Dieldrin | 0.3000 | 0.2845 | 95 | | 50 - 150 |
| Dieldrin [2C] | 0.3000 | 0.2809 | 94 | | 50 - 150 |
| Endrin | 0.3000 | 0.2885 | 96 | | 50 - 150 |
| Endrin [2C] | 0.3000 | 0.2818 | 94 | | 50 - 150 |
| 4,4'-DDD | 0.3000 | 0.2773 | 92 | | 50 - 150 |
| 4,4'-DDD [2C] | 0.3000 | 0.2726 | 91 | | 50 - 150 |
| Endosulfan II | 0.3000 | 0.2328 | 78 | | 50 - 150 |

# LCS / LCS DUPLICATE SUMMARY

*8081B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042816-BS1 Matrix: Water Client ID: PLCSPS Batch: 4042816

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Endosulfan II [2C] | 0.3000 | 0.2266 | 76 | | 50 - 150 |
| 4,4'-DDT | 0.3000 | 0.2722 B | 91 | | 50 - 150 |
| 4,4'-DDT [2C] | 0.3000 | 0.2684 B | 89 | | 50 - 150 |
| Endrin aldehyde | 0.3000 | 0.2550 | 85 | | 50 - 150 |
| Endrin Aldehyde [2C] | 0.3000 | 0.2536 | 85 | | 50 - 150 |
| Endosulfan sulfate | 0.3000 | 0.3023 | 101 | | 50 - 150 |
| Endosulfan Sulfate [2C] | 0.3000 | 0.2693 | 90 | | 50 - 150 |
| Methoxychlor | 0.3000 | 0.3174 B | 106 | | 50 - 150 |
| Methoxychlor [2C] | 0.3000 | 0.3178 B | 106 | | 50 - 150 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8081B*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042816-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| alpha-BHC | 0.3000 | 0.0250 U | 0.1945 B | 65 | | 50 - 150 |
| gamma-BHC (Lindane) | 0.3000 | 0.0250 U | 0.1923 | 64 | | 50 - 150 |
| Heptachlor | 0.3000 | 0.0250 U | 0.1857 | 62 | | 50 - 150 |
| Aldrin | 0.3000 | 0.0250 U | 0.1915 | 64 | | 50 - 150 |
| beta-BHC | 0.3000 | 0.0250 U | 0.1930 B | 64 | | 50 - 150 |
| delta-BHC | 0.3000 | 0.0250 U | 0.1995 | 67 | | 50 - 150 |
| Heptachlor epoxide | 0.3000 | 0.0250 U | 0.1972 | 66 | | 50 - 150 |
| Endosulfan I | 0.3000 | 0.0250 U | 0.1504 B | 50 | | 50 - 150 |
| 4,4'-DDE | 0.3000 | 0.0500 U | 0.1990 | 66 | | 50 - 150 |
| Dieldrin | 0.3000 | 0.0500 U | 0.2086 | 70 | | 50 - 150 |
| Endrin | 0.3000 | 0.0500 U | 0.2091 | 70 | | 50 - 150 |
| 4,4'-DDD | 0.3000 | 0.0500 U | 0.2007 | 67 | | 50 - 150 |
| Endosulfan II | 0.3000 | 0.0500 U | 0.1728 | 58 | | 50 - 150 |
| 4,4'-DDT | 0.3000 | 0.00655 JB | 0.2027 B | 65 | | 50 - 150 |
| Endrin aldehyde | 0.3000 | 0.0500 U | 0.1863 | 62 | | 50 - 150 |
| Endosulfan sulfate | 0.3000 | 0.0500 U | 0.2348 | 78 | | 50 - 150 |
| Methoxychlor | 0.3000 | 0.250 U | 0.2398 JB | 80 | | 50 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8081B*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042816-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| alpha-BHC | 0.3000 | 0.3146 B | 105 | 47 | * | 40 | 50 - 150 |
| gamma-BHC (Lindane) | 0.3000 | 0.3074 | 102 | 46 | * | 40 | 50 - 150 |
| Heptachlor | 0.3000 | 0.2899 | 97 | 44 | * | 40 | 50 - 150 |
| Aldrin | 0.3000 | 0.2993 P | 100 | 44 | * | 40 | 50 - 150 |
| beta-BHC | 0.3000 | 0.2980 B | 99 | 43 | * | 40 | 50 - 150 |
| delta-BHC | 0.3000 | 0.3314 | 110 | 50 | * | 40 | 50 - 150 |
| Heptachlor epoxide | 0.3000 | 0.3120 | 104 | 45 | * | 40 | 50 - 150 |
| Endosulfan I | 0.3000 | 0.2375 B | 79 | 45 | * | 40 | 50 - 150 |
| 4,4'-DDE | 0.3000 | 0.3246 | 108 | 48 | * | 40 | 50 - 150 |
| Dieldrin | 0.3000 | 0.3354 | 112 | 47 | * | 40 | 50 - 150 |
| Endrin | 0.3000 | 0.3370 | 112 | 47 | * | 40 | 50 - 150 |
| 4,4'-DDD | 0.3000 | 0.3239 | 108 | 47 | * | 40 | 50 - 150 |
| Endosulfan II | 0.3000 | 0.2745 | 92 | 46 | * | 40 | 50 - 150 |
| 4,4'-DDT | 0.3000 | 0.3164 B | 103 | 44 | * | 40 | 50 - 150 |
| Endrin aldehyde | 0.3000 | 0.2852 | 95 | 42 | * | 40 | 50 - 150 |
| Endosulfan sulfate | 0.3000 | 0.3459 | 115 | 38 | | 40 | 50 - 150 |
| Methoxychlor | 0.3000 | 0.3684 B | 123 | 42 | * | 40 | 50 - 150 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8081B*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042816-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| alpha-BHC [2C] | 0.3000 | 0.0250 U | 0.1918 | 64 | | 50 - 150 |
| gamma-BHC (Lindane) [2C] | 0.3000 | 0.0250 U | 0.1870 | 62 | | 50 - 150 |
| Heptachlor [2C] | 0.3000 | 0.0250 U | 0.1837 | 61 | | 50 - 150 |
| Aldrin [2C] | 0.3000 | 0.0250 U | 0.1867 | 62 | | 50 - 150 |
| beta-BHC [2C] | 0.3000 | 0.0250 U | 0.1792 | 60 | | 50 - 150 |
| delta-BHC [2C] | 0.3000 | 0.0250 U | 0.1945 | 65 | | 50 - 150 |
| Heptachlor Epoxide [2C] | 0.3000 | 0.00670 JB | 0.1958 B | 63 | | 50 - 150 |
| Endosulfan I [2C] | 0.3000 | 0.0250 U | 0.1417 | 47 | * | 50 - 150 |
| 4,4'-DDE [2C] | 0.3000 | 0.0500 U | 0.1894 | 63 | | 50 - 150 |
| Dieldrin [2C] | 0.3000 | 0.0500 U | 0.2020 | 67 | | 50 - 150 |
| Endrin [2C] | 0.3000 | 0.0500 U | 0.2061 | 69 | | 50 - 150 |
| 4,4'-DDD [2C] | 0.3000 | 0.0500 U | 0.1967 | 66 | | 50 - 150 |
| Endosulfan II [2C] | 0.3000 | 0.0500 U | 0.1678 | 56 | | 50 - 150 |
| 4,4'-DDT [2C] | 0.3000 | 0.00575 JB | 0.1985 B | 64 | | 50 - 150 |
| Endrin Aldehyde [2C] | 0.3000 | 0.0500 U | 0.1861 | 62 | | 50 - 150 |
| Endosulfan Sulfate [2C] | 0.3000 | 0.0500 U | 0.1998 | 67 | | 50 - 150 |
| Methoxychlor [2C] | 0.3000 | 0.250 U | 0.2491 JB | 83 | | 50 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8081B*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042816-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| alpha-BHC [2C] | 0.3000 | 0.3135 | 105 | 48 | * | 40 | 50 - 150 |
| gamma-BHC (Lindane) [2C] | 0.3000 | 0.3061 | 102 | 48 | * | 40 | 50 - 150 |
| Heptachlor [2C] | 0.3000 | 0.2951 | 98 | 47 | * | 40 | 50 - 150 |
| Aldrin [2C] | 0.3000 | 0.1598 P | 53 | 16 | | 40 | 50 - 150 |
| beta-BHC [2C] | 0.3000 | 0.2806 | 94 | 44 | * | 40 | 50 - 150 |
| delta-BHC [2C] | 0.3000 | 0.3351 | 112 | 53 | * | 40 | 50 - 150 |
| Heptachlor Epoxide [2C] | 0.3000 | 0.3199 B | 104 | 48 | * | 40 | 50 - 150 |
| Endosulfan I [2C] | 0.3000 | 0.2232 | 74 | 45 | * | 40 | 50 - 150 |
| 4,4'-DDE [2C] | 0.3000 | 0.3135 | 105 | 49 | * | 40 | 50 - 150 |
| Dieldrin [2C] | 0.3000 | 0.3315 | 111 | 49 | * | 40 | 50 - 150 |
| Endrin [2C] | 0.3000 | 0.3309 | 110 | 47 | * | 40 | 50 - 150 |
| 4,4'-DDD [2C] | 0.3000 | 0.3240 | 108 | 49 | * | 40 | 50 - 150 |
| Endosulfan II [2C] | 0.3000 | 0.2678 | 89 | 46 | * | 40 | 50 - 150 |
| 4,4'-DDT [2C] | 0.3000 | 0.3196 B | 105 | 47 | * | 40 | 50 - 150 |
| Endrin Aldehyde [2C] | 0.3000 | 0.2795 | 93 | 40 | | 40 | 50 - 150 |
| Endosulfan Sulfate [2C] | 0.3000 | 0.3113 | 104 | 44 | * | 40 | 50 - 150 |
| Methoxychlor [2C] | 0.3000 | 0.3768 B | 126 | 41 | * | 40 | 50 - 150 |

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# PREPARATION BATCH SUMMARY

*8081B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042816 Matrix: Water Preparation: EPA 3510C_GC

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/29/14 15:45 | 500 | 2500 |
| 16C1 | 1404171-02 | 04/29/14 15:45 | 1000 | 5000 |
| 16MW8 | 1404171-03 | 04/29/14 15:45 | 1000 | 5000 |
| 16MW9 | 1404171-04 | 04/29/14 15:45 | 1000 | 5000 |
| 16WDUP | 1404171-05 | 04/29/14 15:45 | 1000 | 5000 |
| 16WC1B | 1404171-06 | 04/29/14 15:45 | 1000 | 5000 |
| PBLKPS | 4042816-BLK1 | 04/29/14 15:45 | 1000 | 5000 |
| PLCSPS | 4042816-BS1 | 04/29/14 15:45 | 1000 | 5000 |
| 16WC1AMS | 4042816-MS1 | 04/29/14 15:45 | 500 | 2500 |
| 16WC1AMSD | 4042816-MSD1 | 04/29/14 15:45 | 500 | 2500 |

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# ANALYSIS SEQUENCE SUMMARY

*8081B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D24001 Calibration: 4043001 Instrument: tracegc84

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| PEMOA | 4D24001-PEM1 | 003o4D24001-PEM1.d | 04/24/14 12:13:00 |
| INDC1OA | 4D24001-CAL1 | 004o4D24001-CAL1.d | 04/24/14 12:42:00 |
| INDC2OA | 4D24001-CAL2 | 005o4D24001-CAL2.d | 04/24/14 13:11:00 |
| INDC3OA | 4D24001-CAL3 | 006o4D24001-CAL3.d | 04/24/14 13:40:00 |
| INDC4OA | 4D24001-CAL4 | 007o4D24001-CAL4.d | 04/24/14 14:09:00 |
| INDC5OA | 4D24001-CAL5 | 008o4D24001-CAL5.d | 04/24/14 14:38:00 |
| TOXAPH3OA | 4D24001-ARC1 | 009o4D24001-ARC1.d | 04/24/14 15:07:00 |
| CHLORO3OA | 4D24001-ARC2 | 010o4D24001-ARC2.d | 04/24/14 15:36:00 |
| PESTCHKOA | 4D24001-SCV1 | 012o4D24001-SCV1.d | 04/24/14 17:12:00 |

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# ANALYSIS SEQUENCE SUMMARY

*8081B*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E01012 Calibration: 4043001 Instrument: tracegc84

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| PEMOJ | 4E01012-PEM1 | 082o4E01012-PEM1.d | 05/01/14 16:42:00 |
| INDC3OJ | 4E01012-ICV1 | 083o4E01012-ICV1.d | 05/01/14 17:11:00 |
| PBLKPS | 4042816-BLK1 | 084o4042816-BLK1.d | 05/01/14 17:39:00 |
| PLCSPS | 4042816-BS1 | 085o4042816-BS1.d | 05/01/14 18:08:00 |
| 16WC1AMS | 4042816-MS1 | 086o4042816-MS1.d | 05/01/14 18:37:00 |
| 16WC1AMSD | 4042816-MSD1 | 087o4042816-MSD1.d | 05/01/14 19:06:00 |
| 16WC1A | 1404171-01 | 088o1404171-01.d | 05/01/14 19:35:00 |
| 16C1 | 1404171-02 | 089o1404171-02.d | 05/01/14 20:04:00 |
| 16MW8 | 1404171-03 | 090o1404171-03.d | 05/01/14 20:33:00 |
| 16MW9 | 1404171-04 | 091o1404171-04.d | 05/01/14 21:02:00 |
| 16WDUP | 1404171-05 | 092o1404171-05.d | 05/01/14 21:31:00 |
| 16WC1B | 1404171-06 | 093o1404171-06.d | 05/01/14 22:00:00 |
| INDC3OK | 4E01012-CCV1 | 094o4E01012-CCV1.d | 05/01/14 22:29:00 |
| PEMOK | 4E01012-PEM2 | 095o4E01012-PEM2.d | 05/01/14 22:58:00 |
| INDC3OL | 4E01012-CCV2 | 103o4E01012-CCV2.d | 05/02/14 02:49:00 |

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# I. Target Compound Results

## (ANALYSIS DATA SHEETS)

### Analysis Data Sheets (ADS) and Surrogate Recovery Results

Sample data shall be arranged in packets with the Analysis Data Sheet, followed by the raw data for the sample. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (ANALYSIS DATA SHEET)

Tabulated results (identification and quantitation) shall be included.

b. Copies of Chromatograms

Positively identified compounds shall be labeled with the names of compounds, either directly out from the peak on the chromatogram, or on a printout of retention times on the data system printout if retention times are printed over the peak on the chromatogram. Included for each sample or sample extract, dilutions and reanalyses. The chromatogram shall contain the following header information: Client Sample ID Number, volume injected (uL), date and time of injection, GC column ID, GC instrument ID, Lab file ID and analyst ID.

c. Copies of Chromatograms from the Second Column (where required)

d. Data System Printout

A printout of retention time and corresponding peak height or peak area shall accompany each chromatogram.

# ANALYSIS DATA SHEET

*8081B*

**16WC1A**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_GC | File ID: 088o1404171-01.d | Sampled: 04/24/14 11:45

Initial/Final: 500mL / 2500uL | Sulfur Cleanup: N | Lab ID: 1404171-01 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: Y | Prepared: 04/29/14 15:45

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 19:35

Batch: 4042816 | Sequence: 4E01012 | Calibration: 4043001 | Instrument: tracegc84

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC | | 0.00190 | 0.0250 | U |
| 58-89-9 | gamma-BHC (Lindane) | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC | | 0.00950 | 0.0250 | U |
| 319-86-8 | delta-BHC | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor epoxide | | 0.00280 | 0.0250 | U |
| 959-98-8 | Endosulfan I | | 0.00430 | 0.0250 | U |
| 72-55-9 | 4,4'-DDE | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD | | 0.00550 | 0.0500 | U |
| 33213-65-9 | Endosulfan II | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT | 0.00575 | 0.00510 | 0.0500 | JB |
| 7421-93-4 | Endrin aldehyde | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan sulfate | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor | | 0.0150 | 0.250 | U |
| 8001-35-2 | Toxaphene | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane | | 0.240 | 0.800 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) | 0.6000 | 0.4353 | 73 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 0.4242 | 71 | 43 - 144 | |
| TCX (A) | 0.3000 | 0.1988 | 66 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 0.2001 | 67 | 43 - 135 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8081B*

**16C1**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_GC | File ID: 089o1404171-02.d | Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 5000uL | Sulfur Cleanup: N | Lab ID: 1404171-02 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: Y | Prepared: 04/29/14 15:45

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 20:04

Batch: 4042816 | Sequence: 4E01012 | Calibration: 4043001 | Instrument: tracegc84

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC | | 0.00190 | 0.0250 | U |
| 58-89-9 | gamma-BHC (Lindane) | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC | | 0.00950 | 0.0250 | U |
| 319-86-8 | delta-BHC | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor epoxide | | 0.00280 | 0.0250 | U |
| 959-98-8 | Endosulfan I | | 0.00430 | 0.0250 | U |
| 72-55-9 | 4,4'-DDE | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD | | 0.00550 | 0.0500 | U |
| 33213-65-9 | Endosulfan II | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT | 0.00620 | 0.00510 | 0.0500 | JBP |
| 7421-93-4 | Endrin aldehyde | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan sulfate | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor | | 0.0150 | 0.250 | U |
| 8001-35-2 | Toxaphene | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane | | 0.240 | 0.800 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) | 0.6000 | 0.4593 | 77 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 0.4478 | 75 | 43 - 144 | |
| TCX (A) | 0.3000 | 0.1947 | 65 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 0.2334 | 78 | 43 - 135 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8081B*

**16MW8**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_GC | File ID: 090o1404171-03.d | Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 5000uL | Sulfur Cleanup: N | Lab ID: 1404171-03 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: Y | Prepared: 04/29/14 15:45

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 20:33

Batch: 4042816 | Sequence: 4E01012 | Calibration: 4043001 | Instrument: tracegc84

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC | | 0.00190 | 0.0250 | U |
| 58-89-9 | gamma-BHC (Lindane) | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC | | 0.00950 | 0.0250 | U |
| 319-86-8 | delta-BHC | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor epoxide | | 0.00280 | 0.0250 | U |
| 959-98-8 | Endosulfan I | | 0.00430 | 0.0250 | U |
| 72-55-9 | 4,4'-DDE | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD | | 0.00550 | 0.0500 | U |
| 33213-65-9 | Endosulfan II | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT | 0.0163 | 0.00510 | 0.0500 | JB |
| 7421-93-4 | Endrin aldehyde | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan sulfate | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor | | 0.0150 | 0.250 | U |
| 8001-35-2 | Toxaphene | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane | | 0.240 | 0.800 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) | 0.6000 | 0.4409 | 73 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 0.4328 | 72 | 43 - 144 | |
| TCX (A) | 0.3000 | 0.2131 | 71 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 0.2044 | 68 | 43 - 135 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8081B*

**16MW9**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_GC | File ID: 091o1404171-04.d | Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 5000uL | Sulfur Cleanup: N | Lab ID: 1404171-04 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: Y | Prepared: 04/29/14 15:45

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 21:02

Batch: 4042816 | Sequence: 4E01012 | Calibration: 4043001 | Instrument: tracegc84

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC | | 0.00190 | 0.0250 | U |
| 58-89-9 | gamma-BHC (Lindane) | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC | | 0.00950 | 0.0250 | U |
| 319-86-8 | delta-BHC | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor epoxide | | 0.00280 | 0.0250 | U |
| 959-98-8 | Endosulfan I | | 0.00430 | 0.0250 | U |
| 72-55-9 | 4,4'-DDE | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD | | 0.00550 | 0.0500 | U |
| 33213-65-9 | Endosulfan II | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT | 0.00535 | 0.00510 | 0.0500 | JB |
| 7421-93-4 | Endrin aldehyde | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan sulfate | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor | | 0.0150 | 0.250 | U |
| 8001-35-2 | Toxaphene | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane | | 0.240 | 0.800 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) | 0.6000 | 0.4347 | 72 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 0.4269 | 71 | 43 - 144 | |
| TCX (A) | 0.3000 | 0.1954 | 65 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 0.1988 | 66 | 43 - 135 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8081B*

**16WDUP**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_GC | File ID: 092o1404171-05.d | Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 5000uL | Sulfur Cleanup: N | Lab ID: 1404171-05 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: Y | Prepared: 04/29/14 15:45

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 21:31

Batch: 4042816 | Sequence: 4E01012 | Calibration: 4043001 | Instrument: tracegc84

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC | | 0.00190 | 0.0250 | U |
| 58-89-9 | gamma-BHC (Lindane) | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC | | 0.00950 | 0.0250 | U |
| 319-86-8 | delta-BHC | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor epoxide | | 0.00280 | 0.0250 | U |
| 959-98-8 | Endosulfan I | | 0.00430 | 0.0250 | U |
| 72-55-9 | 4,4'-DDE | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD | | 0.00550 | 0.0500 | U |
| 33213-65-9 | Endosulfan II | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT | | 0.00510 | 0.0500 | U |
| 7421-93-4 | Endrin aldehyde | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan sulfate | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor | | 0.0150 | 0.250 | U |
| 8001-35-2 | Toxaphene | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane | | 0.240 | 0.800 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) | 0.6000 | 0.4636 | 77 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 0.4539 | 76 | 43 - 144 | |
| TCX (A) | 0.3000 | 0.2068 | 69 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 0.2091 | 70 | 43 - 135 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8081B*

**16WC1B**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_GC | File ID: 093o1404171-06.d | Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 5000uL | Sulfur Cleanup: N | Lab ID: 1404171-06 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: Y | Prepared: 04/29/14 15:45

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 22:00

Batch: 4042816 | Sequence: 4E01012 | Calibration: 4043001 | Instrument: tracegc84

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC | | 0.00190 | 0.0250 | U |
| 58-89-9 | gamma-BHC (Lindane) | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC | | 0.00950 | 0.0250 | U |
| 319-86-8 | delta-BHC | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor epoxide | | 0.00280 | 0.0250 | U |
| 959-98-8 | Endosulfan I | | 0.00430 | 0.0250 | U |
| 72-55-9 | 4,4'-DDE | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD | 0.0142 | 0.00550 | 0.0500 | J |
| 33213-65-9 | Endosulfan II | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT | | 0.00510 | 0.0500 | U |
| 7421-93-4 | Endrin aldehyde | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan sulfate | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor | | 0.0150 | 0.250 | U |
| 8001-35-2 | Toxaphene | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane | | 0.240 | 0.800 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) | 0.6000 | 0.4325 | 72 | 43 - 144 | |
| DCB (A) [2C] | 0.6000 | 0.4232 | 71 | 43 - 144 | |
| TCX (A) | 0.3000 | 0.2012 | 67 | 43 - 135 | |
| TCX (A) [2C] | 0.3000 | 0.2023 | 67 | 43 - 135 | |

* Values outside of QC limits

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# INITIAL CALIBRATION DATA

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4043001 Instrument: tracegc84

Calibration Date: 4/24/2014 12:13:48PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| alpha-BHC | 0.005 | 2253000 | 0.01 | 2215500 | 0.02 | 2226950 | 0.04 | 2355800 | 0.08 | 2504050 | | |
| alpha-BHC [2C] | 0.005 | 2172000 | 0.01 | 2109100 | 0.02 | 2129300 | 0.04 | 2310150 | 0.08 | 2618050 | | |
| gamma-BHC (Lindane) | 0.005 | 2119800 | 0.01 | 2077700 | 0.02 | 2063900 | 0.04 | 2179175 | 0.08 | 2299850 | | |
| gamma-BHC (Lindane) [2C] | 0.005 | 2037200 | 0.01 | 1982000 | 0.02 | 1987550 | 0.04 | 2153775 | 0.08 | 2419800 | | |
| Heptachlor | 0.005 | 2147200 | 0.01 | 2081300 | 0.02 | 1985750 | 0.04 | 2038175 | 0.08 | 2073700 | | |
| Heptachlor [2C] | 0.005 | 2042400 | 0.01 | 1878400 | 0.02 | 1781300 | 0.04 | 1840900 | 0.08 | 1938700 | | |
| Aldrin | 0.005 | 1928400 | 0.01 | 1859400 | 0.02 | 1790650 | 0.04 | 1848375 | 0.08 | 1901125 | | |
| Aldrin [2C] | 0.005 | 1739200 | 0.01 | 1636300 | 0.02 | 1570600 | 0.04 | 1635775 | 0.08 | 1746438 | | |
| beta-BHC | 0.005 | 929400 | 0.01 | 877900 | 0.02 | 852350 | 0.04 | 857675 | 0.08 | 846412.5 | | |
| beta-BHC [2C] | 0.005 | 965600 | 0.01 | 907000 | 0.02 | 870450 | 0.04 | 875375 | 0.08 | 882350 | | |
| delta-BHC | 0.005 | 2016800 | 0.01 | 2000200 | 0.02 | 2000750 | 0.04 | 2142575 | 0.08 | 2288488 | | |
| delta-BHC [2C] | 0.005 | 1917000 | 0.01 | 1874100 | 0.02 | 1894750 | 0.04 | 2103975 | 0.08 | 2416725 | | |
| Heptachlor epoxide | 0.005 | 1764400 | 0.01 | 1672200 | 0.02 | 1585350 | 0.04 | 1593050 | 0.08 | 1585800 | | |
| Heptachlor Epoxide [2C] | 0.005 | 1593000 | 0.01 | 1501100 | 0.02 | 1418600 | 0.04 | 1445575 | 0.08 | 1472450 | | |
| Endosulfan I | 0.005 | 1575400 | 0.01 | 1503400 | 0.02 | 1410800 | 0.04 | 1522650 | 0.08 | 1493463 | | |
| Endosulfan I [2C] | 0.005 | 1501400 | 0.01 | 1401200 | 0.02 | 1309000 | 0.04 | 1315275 | 0.08 | 1323200 | | |
| 4,4'-DDE | 0.01 | 1542000 | 0.02 | 1495550 | 0.04 | 1452050 | 0.08 | 1611000 | 0.16 | 1753125 | | |
| 4,4'-DDE [2C] | 0.01 | 1425500 | 0.02 | 1372000 | 0.04 | 1341050 | 0.08 | 1481363 | 0.16 | 1733644 | | |
| Dieldrin | 0.01 | 1522500 | 0.02 | 1475250 | 0.04 | 1442500 | 0.08 | 1502400 | 0.16 | 1560894 | | |
| Dieldrin [2C] | 0.01 | 1381300 | 0.02 | 1319700 | 0.04 | 1278700 | 0.08 | 1367863 | 0.16 | 1499781 | | |
| Endrin | 0.01 | 1345000 | 0.02 | 1293000 | 0.04 | 1228000 | 0.08 | 1241988 | 0.16 | 1237881 | | |
| Endrin [2C] | 0.01 | 1218700 | 0.02 | 1154850 | 0.04 | 1089125 | 0.08 | 1116975 | 0.16 | 1157113 | | |
| 4,4'-DDD | 0.01 | 1144300 | 0.02 | 1131250 | 0.04 | 1102325 | 0.08 | 1174463 | 0.16 | 1234481 | | |
| 4,4'-DDD [2C] | 0.01 | 1039300 | 0.02 | 1006650 | 0.04 | 977450 | 0.08 | 1061175 | 0.16 | 1176156 | | |
| Endosulfan II | 0.01 | 1336500 | 0.02 | 1289350 | 0.04 | 1214525 | 0.08 | 1251375 | 0.16 | 1238800 | | |

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# INITIAL CALIBRATION DATA

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4043001 Instrument: tracegc84

Calibration Date: 4/24/2014 12:13:48PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| Endosulfan II [2C] | 0.01 | 1193800 | 0.02 | 1147800 | 0.04 | 1082900 | 0.08 | 1115375 | 0.16 | 1172400 | | |
| 4,4'-DDT | 0.01 | 1261400 | 0.02 | 1320800 | 0.04 | 1189875 | 0.08 | 1262313 | 0.16 | 1332813 | | |
| 4,4'-DDT [2C] | 0.01 | 1110600 | 0.02 | 1142800 | 0.04 | 1040625 | 0.08 | 1126050 | 0.16 | 1250956 | | |
| Endrin aldehyde | 0.01 | 973200 | 0.02 | 965300 | 0.04 | 908600 | 0.08 | 903812.5 | 0.16 | 874356.3 | | |
| Endrin Aldehyde [2C] | 0.01 | 880600 | 0.02 | 865000 | 0.04 | 792875 | 0.08 | 805362.5 | 0.16 | 812300 | | |
| Endosulfan sulfate | 0.01 | 1153300 | 0.02 | 1139100 | 0.04 | 1068175 | 0.08 | 1088475 | 0.16 | 1073288 | | |
| Endosulfan Sulfate [2C] | 0.01 | 1113000 | 0.02 | 1047650 | 0.04 | 974400 | 0.08 | 996462.5 | 0.16 | 1004694 | | |
| Methoxychlor | 0.05 | 545900 | 0.1 | 520640 | 0.2 | 478825 | 0.4 | 486942.5 | 0.8 | 474623.8 | | |
| Methoxychlor [2C] | 0.05 | 482740 | 0.1 | 437500 | 0.2 | 406285 | 0.4 | 424985 | 0.8 | 445416.3 | | |
| DCB (A) | 0.01 | 1152100 | 0.02 | 1054100 | 0.04 | 966025 | 0.08 | 968412.5 | 0.16 | 943056.3 | | |
| DCB (A) [2C] | 0.01 | 1050000 | 0.02 | 940850 | 0.04 | 847325 | 0.08 | 847637.5 | 0.16 | 835668.8 | | |
| TCX (A) | 0.005 | 1470000 | 0.01 | 1419100 | 0.02 | 1389900 | 0.04 | 1392175 | 0.08 | 1379375 | | |
| TCX (A) [2C] | 0.005 | 1653800 | 0.01 | 1574900 | 0.02 | 1526950 | 0.04 | 1539600 | 0.08 | 1551725 | | |

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# INITIAL CALIBRATION DATA (Continued)

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4043001 Instrument: tracegc84

Calibration Date: 4/24/2014 12:13:48PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| alpha-BHC | 2311060 | 5.247301 | 9.079 | 6.056271E-03 | | | CCC (20) | |
| alpha-BHC [2C] | 2267720 | 9.302674 | 9.1258 | 2.037735E-03 | | | CCC (20) | |
| gamma-BHC (Lindane) | 2148085 | 4.467667 | 9.8932 | 2.127272E-02 | | | CCC (20) | |
| gamma-BHC (Lindane) [2C] | 2116065 | 8.662004 | 10.0308 | 1.500419E-02 | | | CCC (20) | |
| Heptachlor | 2065225 | 2.874637 | 11.0736 | 1.630367E-02 | | | CCC (20) | |
| Heptachlor [2C] | 1896340 | 5.257309 | 11.0708 | 9.252029E-03 | | | CCC (20) | |
| Aldrin | 1865590 | 2.831111 | 11.7846 | 1.707286E-02 | | | CCC (20) | |
| Aldrin [2C] | 1665663 | 4.525135 | 11.8146 | 4.635998E-03 | | | CCC (20) | |
| beta-BHC | 872747.5 | 3.874125 | 10.1322 | 2.308914E-02 | | | CCC (20) | |
| beta-BHC [2C] | 900155 | 4.35367 | 10.2768 | 8.644398E-03 | | | CCC (20) | |
| delta-BHC | 2089763 | 6.031527 | 10.5572 | 1.478565E-02 | | | CCC (20) | |
| delta-BHC [2C] | 2041310 | 11.21805 | 10.9714 | 1.512835E-02 | | | CCC (20) | |
| Heptachlor epoxide | 1640160 | 4.785306 | 13.1916 | 1.706239E-02 | | | CCC (20) | |
| Heptachlor Epoxide [2C] | 1486145 | 4.518522 | 13.1382 | 1.848659E-02 | | | CCC (20) | |
| Endosulfan I | 1501143 | 3.969463 | 14.0664 | 2.14715E-03 | | | CCC (20) | |
| Endosulfan I [2C] | 1370015 | 6.013029 | 13.9926 | 1.677546E-02 | | | CCC (20) | |
| 4,4'-DDE | 1570745 | 7.495885 | 13.9704 | 4.320191E-03 | | | CCC (20) | |
| 4,4'-DDE [2C] | 1470711 | 10.63448 | 14.2832 | 0.004363 | | | CCC (20) | |
| Dieldrin | 1500709 | 3.005305 | 14.596 | 0.0190765 | | | CCC (20) | |
| Dieldrin [2C] | 1369469 | 6.091873 | 14.5928 | 1.534068E-02 | | | CCC (20) | |
| Endrin | 1269174 | 3.886202 | 15.1 | 1.072481E-02 | | | CCC (20) | |
| Endrin [2C] | 1147353 | 4.259829 | 15.2462 | 1.511864E-02 | | | CCC (20) | |
| 4,4'-DDD | 1157364 | 4.346291 | 15.2668 | 1.346674E-02 | | | CCC (20) | |
| 4,4'-DDD [2C] | 1052146 | 7.24993 | 15.5242 | 3.730263E-03 | | | CCC (20) | |
| Endosulfan II | 1266110 | 3.771098 | 15.585 | 7.115475E-03 | | | CCC (20) | |

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# INITIAL CALIBRATION DATA (Continued)

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4043001 Instrument: tracegc84

Calibration Date: 4/24/2014 12:13:48PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Endosulfan II [2C] | 1142455 | 3.875575 | 15.7088 | 1.572084E-02 | | | CCC (20) | |
| 4,4'-DDT | 1273440 | 4.480188 | 15.8684 | 1.263856E-02 | | | CCC (20) | |
| 4,4'-DDT [2C] | 1134206 | 6.698061 | 16.1824 | 2.354328E-02 | | | CCC (20) | |
| Endrin aldehyde | 925053.8 | 4.595909 | 16.49 | 2.363821E-02 | | | CCC (20) | |
| Endrin Aldehyde [2C] | 831227.5 | 4.68892 | 16.4362 | 2.434197E-02 | | | CCC (20) | |
| Endosulfan sulfate | 1104468 | 3.544182 | 17.4238 | 1.068992E-02 | | | CCC (20) | |
| Endosulfan Sulfate [2C] | 1027241 | 5.336196 | 17.0224 | 2.172384E-02 | | | CCC (20) | |
| Methoxychlor | 501386.3 | 6.136071 | 16.9078 | 1.894396E-02 | | | CCC (20) | |
| Methoxychlor [2C] | 439385.3 | 6.459883 | 17.646 | 1.118059E-02 | | | CCC (20) | |
| DCB (A) | 1016739 | 8.525474 | 20.1618 | 1.517575E-02 | | | CCC (20) | |
| DCB (A) [2C] | 904296.3 | 10.15492 | 20.711 | 8.404259E-03 | | | CCC (20) | |
| TCX (A) | 1410110 | 2.591698 | 7.5838 | 0.0183014 | | | CCC (20) | |
| TCX (A) [2C] | 1569395 | 3.210704 | 7.4748 | 2.449882E-02 | | | CCC (20) | |

INITIAL SINGLE POINT CALIBRATION

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Date(s) Analyzed: 04/24/2014 04/24/2014

GC Column: clpest ID: 0.32 (mm)

| COMPOUND | AMOUNT (ng) | PEAK[1] | RT | RT WINDOW | | CALIBRATION FACTOR |
|---|---|---|---|---|---|---|
| | | | | FROM | TO | |
| Technical Chlordane (1) | 0.400 | 1 | 11.07 | 11.00 | 11.14 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (2) | 0.400 | 1 | 12.12 | 12.05 | 12.19 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (3) | 0.400 | 1 | 13.47 | 13.40 | 13.54 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (4) | 0.400 | 1 | 13.76 | 13.69 | 13.83 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (5) | 0.400 | 1 | 15.44 | 15.37 | 15.51 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (1) | 2.000 | 1 | 15.84 | 15.77 | 15.91 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |

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INITIAL SINGLE POINT CALIBRATION

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Date(s) Analyzed: 04/24/2014 04/24/2014

GC Column: clpest ID: 0.32 (mm)

| COMPOUND | AMOUNT (ng) | PEAK[1] | RT | RT WINDOW | | CALIBRATION FACTOR |
|---|---|---|---|---|---|---|
| | | | | FROM | TO | |
| Toxaphene (2) | 2.000 | 1 | 16.25 | 16.18 | 16.32 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (3) | 2.000 | 1 | 16.45 | 16.38 | 16.52 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (4) | 2.000 | 1 | 16.79 | 16.72 | 16.86 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (5) | 2.000 | 1 | 17.32 | 17.25 | 17.39 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |

[1]At least three peaks for each column are required for identification of multicomponent analytes.

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INITIAL SINGLE POINT CALIBRATION

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Date(s) Analyzed: 04/24/2014 04/24/2014

GC Column: clpest2 ID: 0.32 (mm)

| COMPOUND | AMOUNT (ng) | PEAK[1] | RT | RT WINDOW | | CALIBRATION FACTOR |
|---|---|---|---|---|---|---|
| | | | | FROM | TO | |
| Technical Chlordane (1) [2C] | 0.400 | 1 | 11.07 | 11.00 | 11.14 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (2) [2C] | 0.400 | 1 | 12.20 | 12.13 | 12.27 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (3) [2C] | 0.400 | 1 | 13.56 | 13.49 | 13.63 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (4) [2C] | 0.400 | 1 | 13.88 | 13.81 | 13.95 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Technical Chlordane (5) [2C] | 0.400 | 1 | 15.80 | 15.73 | 15.87 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (1) [2C] | 2.000 | 1 | 15.88 | 15.81 | 15.95 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |

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INITIAL SINGLE POINT CALIBRATION

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Date(s) Analyzed: 04/24/2014 04/24/2014

GC Column: clpest2 ID: 0.32 (mm)

| COMPOUND | AMOUNT (ng) | PEAK[1] | RT | RT WINDOW | | CALIBRATION FACTOR |
|---|---|---|---|---|---|---|
| | | | | FROM | TO | |
| Toxaphene (2) [2C] | 2.000 | 1 | 16.44 | 16.37 | 16.51 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (3) [2C] | 2.000 | 1 | 16.99 | 16.92 | 17.06 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (4) [2C] | 2.000 | 1 | 17.52 | 17.45 | 17.59 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |
| Toxaphene (5) [2C] | 2.000 | 1 | 17.64 | 17.57 | 17.71 | |
| | | 2 | | | | |
| | | 3 | | | | |
| | | 4 | | | | |
| | | 5 | | | | |

[1]At least three peaks for each column are required for identification of multicomponent analytes.

# SECOND-SOURCE CALIBRATION VERIFICATION

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: tracegc84 Calibration: 4043001

Lab File ID: 012o4D24001-SCV1.d Standard ID: 4B26013

Sequence: 4D24001 Injection Date: 04/24/14

Lab Sample ID: 4D24001-SCV1 InjectionTime: 17:12

| ANALYTE | EXPECTED (ng/uL) | FOUND (ng/uL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| alpha-BHC | 0.04000 | 0.03750 | -6.2 | 20.00 |
| alpha-BHC [2C] | 0.04000 | 0.03722 | -6.9 | 20.00 |
| gamma-BHC (Lindane) | 0.04000 | 0.03706 | -7.4 | 20.00 |
| gamma-BHC (Lindane) [2C] | 0.04000 | 0.03688 | -7.8 | 20.00 |
| Heptachlor | 0.04000 | 0.03633 | -9.2 | 20.00 |
| Heptachlor [2C] | 0.04000 | 0.03448 | -13.8 | 20.00 |
| Aldrin | 0.04000 | 0.03687 | -7.8 | 20.00 |
| Aldrin [2C] | 0.04000 | 0.03638 | -9.0 | 20.00 |
| beta-BHC | 0.04000 | 0.03583 | -10.4 | 20.00 |
| beta-BHC [2C] | 0.04000 | 0.03552 | -11.2 | 20.00 |
| delta-BHC | 0.04000 | 0.03802 | -4.9 | 20.00 |
| delta-BHC [2C] | 0.04000 | 0.03696 | -7.6 | 20.00 |
| Heptachlor epoxide | 0.04000 | 0.03616 | -9.6 | 20.00 |
| Heptachlor Epoxide [2C] | 0.04000 | 0.03591 | -10.2 | 20.00 |
| Endosulfan I | 0.04000 | 0.03650 | -8.8 | 20.00 |
| Endosulfan I [2C] | 0.04000 | 0.03495 | -12.6 | 20.00 |
| 4,4'-DDE | 0.04000 | 0.03743 | -6.4 | 20.00 |
| 4,4'-DDE [2C] | 0.04000 | 0.03575 | -10.6 | 20.00 |
| Dieldrin | 0.04000 | 0.03791 | -5.2 | 20.00 |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: tracegc84 Calibration: 4043001

Lab File ID: 012o4D24001-SCV1.d Standard ID: 4B26013

Sequence: 4D24001 Injection Date: 04/24/14

Lab Sample ID: 4D24001-SCV1 InjectionTime: 17:12

| ANALYTE | EXPECTED (ng/uL) | FOUND (ng/uL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Dieldrin [2C] | 0.04000 | 0.03712 | -7.2 | 20.00 |
| Endrin | 0.04000 | 0.03802 | -4.9 | 20.00 |
| Endrin [2C] | 0.04000 | 0.03766 | -5.9 | 20.00 |
| 4,4'-DDD | 0.04000 | 0.03754 | -6.1 | 20.00 |
| 4,4'-DDD [2C] | 0.04000 | 0.03663 | -8.4 | 20.00 |
| Endosulfan II | 0.04000 | 0.03853 | -3.7 | 20.00 |
| Endosulfan II [2C] | 0.04000 | 0.03779 | -5.5 | 20.00 |
| 4,4'-DDT | 0.04000 | 0.03754 | -6.1 | 20.00 |
| 4,4'-DDT [2C] | 0.04000 | 0.03666 | -8.3 | 20.00 |
| Endrin aldehyde | 0.04000 | 0.03818 | -4.6 | 20.00 |
| Endrin Aldehyde [2C] | 0.04000 | 0.03797 | -5.1 | 20.00 |
| Endosulfan sulfate | 0.04000 | 0.03831 | -4.2 | 20.00 |
| Endosulfan Sulfate [2C] | 0.04000 | 0.03769 | -5.8 | 20.00 |
| Methoxychlor | 0.04000 | 0.04626 | 15.7 | 20.00 |
| Methoxychlor [2C] | 0.04000 | 0.04458 | 11.4 | 20.00 |

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Calibration: 4043001

Lab File ID: 083o4E01012-ICV1.d Calibration Date: 04/24/14 12:13

Sequence: 4E01012 Injection Date: 05/01/14

Lab Sample ID: 4E01012-ICV1 Injection Time: 17:11

| COMPOUND | TYPE | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| | | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| alpha-BHC | Avg | 0.02000 | 0.01810 | 2311060 | 2086050 | | -9.7 | 20 |
| alpha-BHC [2C] | Avg | 0.02000 | 0.01740 | 2267720 | 1978000 | | -12.8 | 20 |
| gamma-BHC (Lindane) | Avg | 0.02000 | 0.01850 | 2148085 | 1985650 | | -7.6 | 20 |
| gamma-BHC (Lindane) [2C] | Avg | 0.02000 | 0.01740 | 2116065 | 1840850 | | -13.0 | 20 |
| Heptachlor | Avg | 0.02000 | 0.01840 | 2065225 | 1897500 | | -8.1 | 20 |
| Heptachlor [2C] | Avg | 0.02000 | 0.01740 | 1896340 | 1645700 | | -13.2 | 20 |
| Aldrin | Avg | 0.02000 | 0.01850 | 1865590 | 1723050 | | -7.6 | 20 |
| Aldrin [2C] | Avg | 0.02000 | 0.01800 | 1665663 | 1502700 | | -9.8 | 20 |
| beta-BHC | Avg | 0.02000 | 0.01800 | 872747.5 | 785650 | | -10.0 | 20 |
| beta-BHC [2C] | Avg | 0.02000 | 0.01780 | 900155 | 803300 | | -10.8 | 20 |
| delta-BHC | Avg | 0.02000 | 0.01780 | 2089763 | 1861350 | | -10.9 | 20 |
| delta-BHC [2C] | Avg | 0.02000 | 0.01660 | 2041310 | 1693050 | | -17.1 | 20 |
| Heptachlor epoxide | Avg | 0.02000 | 0.01870 | 1640160 | 1536950 | | -6.3 | 20 |
| Heptachlor Epoxide [2C] | Avg | 0.02000 | 0.01830 | 1486145 | 1360750 | | -8.4 | 20 |
| Endosulfan I | Avg | 0.02000 | 0.01830 | 1501143 | 1372700 | | -8.6 | 20 |
| Endosulfan I [2C] | Avg | 0.02000 | 0.01860 | 1370015 | 1274300 | | -7.0 | 20 |
| 4,4'-DDE | Avg | 0.04000 | 0.03570 | 1570745 | 1402225 | | -10.7 | 20 |
| 4,4'-DDE [2C] | Avg | 0.04000 | 0.03510 | 1470711 | 1292200 | | -12.1 | 20 |
| Dieldrin | Avg | 0.04000 | 0.03700 | 1500709 | 1389275 | | -7.4 | 20 |
| Dieldrin [2C] | Avg | 0.04000 | 0.03630 | 1369469 | 1241800 | | -9.3 | 20 |
| Endrin | Avg | 0.04000 | 0.03850 | 1269174 | 1220600 | | -3.8 | 20 |
| Endrin [2C] | Avg | 0.04000 | 0.03770 | 1147353 | 1080475 | | -5.8 | 20 |

# CONTINUING CALIBRATION CHECK

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Calibration: 4043001

Lab File ID: 083o4E01012-ICV1.d Calibration Date: 04/24/14 12:13

Sequence: 4E01012 Injection Date: 05/01/14

Lab Sample ID: 4E01012-ICV1 Injection Time: 17:11

| | | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 4,4'-DDD | Avg | 0.04000 | 0.03700 | 1157364 | 1070650 | | -7.5 | 20 |
| 4,4'-DDD [2C] | Avg | 0.04000 | 0.03580 | 1052146 | 940675 | | -10.6 | 20 |
| Endosulfan II | Avg | 0.04000 | 0.03710 | 1266110 | 1175025 | | -7.2 | 20 |
| Endosulfan II [2C] | Avg | 0.04000 | 0.03630 | 1142455 | 1037925 | | -9.1 | 20 |
| 4,4'-DDT | Avg | 0.04000 | 0.03690 | 1273440 | 1176150 | | -7.6 | 20 |
| 4,4'-DDT [2C] | Avg | 0.04000 | 0.03570 | 1134206 | 1011600 | | -10.8 | 20 |
| Endrin aldehyde | Avg | 0.04000 | 0.03660 | 925053.8 | 846625 | | -8.5 | 20 |
| Endrin Aldehyde [2C] | Avg | 0.04000 | 0.03600 | 831227.5 | 747850 | | -10.0 | 20 |
| Endosulfan sulfate | Avg | 0.04000 | 0.03770 | 1104468 | 1040175 | | -5.8 | 20 |
| Endosulfan Sulfate [2C] | Avg | 0.04000 | 0.03640 | 1027241 | 934175 | | -9.1 | 20 |
| Methoxychlor | Avg | 0.2000 | 0.1850 | 501386.3 | 462980 | | -7.7 | 20 |
| Methoxychlor [2C] | Avg | 0.2000 | 0.1800 | 439385.3 | 396010 | | -9.9 | 20 |
| DCB (A) | Avg | 0.04000 | 0.03740 | 1016739 | 950775 | | -6.5 | 20 |
| DCB (A) [2C] | Avg | 0.04000 | 0.03620 | 904296.3 | 819100 | | -9.4 | 20 |
| TCX (A) | Avg | 0.02000 | 0.01820 | 1410110 | 1285250 | | -8.9 | 20 |
| TCX (A) [2C] | Avg | 0.02000 | 0.01790 | 1569395 | 1406650 | | -10.4 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Calibration: 4043001

Lab File ID: 094o4E01012-CCV1.d Calibration Date: 04/24/14 12:13

Sequence: 4E01012 Injection Date: 05/01/14

Lab Sample ID: 4E01012-CCV1 Injection Time: 22:29

| | | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| alpha-BHC | Avg | 0.02000 | 0.01800 | 2311060 | 2074950 | | -10.2 | 20 |
| alpha-BHC [2C] | Avg | 0.02000 | 0.01750 | 2267720 | 1989050 | | -12.3 | 20 |
| gamma-BHC (Lindane) | Avg | 0.02000 | 0.01800 | 2148085 | 1933700 | | -10.0 | 20 |
| gamma-BHC (Lindane) [2C] | Avg | 0.02000 | 0.01760 | 2116065 | 1860050 | | -12.1 | 20 |
| Heptachlor | Avg | 0.02000 | 0.01840 | 2065225 | 1898950 | | -8.1 | 20 |
| Heptachlor [2C] | Avg | 0.02000 | 0.01750 | 1896340 | 1659550 | | -12.5 | 20 |
| Aldrin | Avg | 0.02000 | 0.01840 | 1865590 | 1718150 | | -7.9 | 20 |
| Aldrin [2C] | Avg | 0.02000 | 0.01820 | 1665663 | 1511700 | | -9.2 | 20 |
| beta-BHC | Avg | 0.02000 | 0.01800 | 872747.5 | 787450 | | -9.8 | 20 |
| beta-BHC [2C] | Avg | 0.02000 | 0.01790 | 900155 | 806950 | | -10.4 | 20 |
| delta-BHC | Avg | 0.02000 | 0.01770 | 2089763 | 1853650 | | -11.3 | 20 |
| delta-BHC [2C] | Avg | 0.02000 | 0.01680 | 2041310 | 1716250 | | -15.9 | 20 |
| Heptachlor epoxide | Avg | 0.02000 | 0.01870 | 1640160 | 1530650 | | -6.7 | 20 |
| Heptachlor Epoxide [2C] | Avg | 0.02000 | 0.01850 | 1486145 | 1372850 | | -7.6 | 20 |
| Endosulfan I | Avg | 0.02000 | 0.01970 | 1501143 | 1474850 | | -1.8 | 20 |
| Endosulfan I [2C] | Avg | 0.02000 | 0.01870 | 1370015 | 1283700 | | -6.3 | 20 |
| 4,4'-DDE | Avg | 0.04000 | 0.03720 | 1570745 | 1460375 | | -7.0 | 20 |
| 4,4'-DDE [2C] | Avg | 0.04000 | 0.03550 | 1470711 | 1305325 | | -11.2 | 20 |
| Dieldrin | Avg | 0.04000 | 0.03790 | 1500709 | 1420450 | | -5.3 | 20 |
| Dieldrin [2C] | Avg | 0.04000 | 0.03670 | 1369469 | 1255475 | | -8.3 | 20 |
| Endrin | Avg | 0.04000 | 0.03900 | 1269174 | 1236125 | | -2.6 | 20 |
| Endrin [2C] | Avg | 0.04000 | 0.03790 | 1147353 | 1086775 | | -5.3 | 20 |

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# CONTINUING CALIBRATION CHECK

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Calibration: 4043001

Lab File ID: 094o4E01012-CCV1.d Calibration Date: 04/24/14 12:13

Sequence: 4E01012 Injection Date: 05/01/14

Lab Sample ID: 4E01012-CCV1 Injection Time: 22:29

| | | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 4,4'-DDD | Avg | 0.04000 | 0.03690 | 1157364 | 1069075 | | -7.6 | 20 |
| 4,4'-DDD [2C] | Avg | 0.04000 | 0.03610 | 1052146 | 949625 | | -9.7 | 20 |
| Endosulfan II | Avg | 0.04000 | 0.03720 | 1266110 | 1176350 | | -7.1 | 20 |
| Endosulfan II [2C] | Avg | 0.04000 | 0.03670 | 1142455 | 1047475 | | -8.3 | 20 |
| 4,4'-DDT | Avg | 0.04000 | 0.03670 | 1273440 | 1167600 | | -8.3 | 20 |
| 4,4'-DDT [2C] | Avg | 0.04000 | 0.03550 | 1134206 | 1005825 | | -11.3 | 20 |
| Endrin aldehyde | Avg | 0.04000 | 0.03710 | 925053.8 | 857575 | | -7.3 | 20 |
| Endrin Aldehyde [2C] | Avg | 0.04000 | 0.03750 | 831227.5 | 778275 | | -6.4 | 20 |
| Endosulfan sulfate | Avg | 0.04000 | 0.03780 | 1104468 | 1044300 | | -5.4 | 20 |
| Endosulfan Sulfate [2C] | Avg | 0.04000 | 0.03690 | 1027241 | 947275 | | -7.8 | 20 |
| Methoxychlor | Avg | 0.2000 | 0.1900 | 501386.3 | 475645 | | -5.1 | 20 |
| Methoxychlor [2C] | Avg | 0.2000 | 0.1850 | 439385.3 | 407080 | | -7.4 | 20 |
| DCB (A) | Avg | 0.04000 | 0.03930 | 1016739 | 999525 | | -1.7 | 20 |
| DCB (A) [2C] | Avg | 0.04000 | 0.03850 | 904296.3 | 870325 | | -3.8 | 20 |
| TCX (A) | Avg | 0.02000 | 0.01800 | 1410110 | 1268850 | | -10.0 | 20 |
| TCX (A) [2C] | Avg | 0.02000 | 0.01810 | 1569395 | 1422900 | | -9.3 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Calibration: 4043001

Lab File ID: 103o4E01012-CCV2.d Calibration Date: 04/24/14 12:13

Sequence: 4E01012 Injection Date: 05/02/14

Lab Sample ID: 4E01012-CCV2 Injection Time: 02:49

| | | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| alpha-BHC | Avg | 0.02000 | 0.01790 | 2311060 | 2064350 | | -10.7 | 20 |
| alpha-BHC [2C] | Avg | 0.02000 | 0.01750 | 2267720 | 1988400 | | -12.3 | 20 |
| gamma-BHC (Lindane) | Avg | 0.02000 | 0.01790 | 2148085 | 1917700 | | -10.7 | 20 |
| gamma-BHC (Lindane) [2C] | Avg | 0.02000 | 0.01750 | 2116065 | 1856100 | | -12.3 | 20 |
| Heptachlor | Avg | 0.02000 | 0.01830 | 2065225 | 1887500 | | -8.6 | 20 |
| Heptachlor [2C] | Avg | 0.02000 | 0.01750 | 1896340 | 1658100 | | -12.6 | 20 |
| Aldrin | Avg | 0.02000 | 0.01830 | 1865590 | 1709100 | | -8.4 | 20 |
| Aldrin [2C] | Avg | 0.02000 | 0.01810 | 1665663 | 1503900 | | -9.7 | 20 |
| beta-BHC | Avg | 0.02000 | 0.01780 | 872747.5 | 777500 | | -10.9 | 20 |
| beta-BHC [2C] | Avg | 0.02000 | 0.01800 | 900155 | 808600 | | -10.2 | 20 |
| delta-BHC | Avg | 0.02000 | 0.01760 | 2089763 | 1843550 | | -11.8 | 20 |
| delta-BHC [2C] | Avg | 0.02000 | 0.01680 | 2041310 | 1713650 | | -16.1 | 20 |
| Heptachlor epoxide | Avg | 0.02000 | 0.01850 | 1640160 | 1519450 | | -7.4 | 20 |
| Heptachlor Epoxide [2C] | Avg | 0.02000 | 0.01840 | 1486145 | 1368250 | | -7.9 | 20 |
| Endosulfan I | Avg | 0.02000 | 0.01820 | 1501143 | 1364500 | | -9.1 | 20 |
| Endosulfan I [2C] | Avg | 0.02000 | 0.01870 | 1370015 | 1279850 | | -6.6 | 20 |
| 4,4'-DDE | Avg | 0.04000 | 0.03580 | 1570745 | 1407025 | | -10.4 | 20 |
| 4,4'-DDE [2C] | Avg | 0.04000 | 0.03550 | 1470711 | 1305475 | | -11.2 | 20 |
| Dieldrin | Avg | 0.04000 | 0.03770 | 1500709 | 1416100 | | -5.6 | 20 |
| Dieldrin [2C] | Avg | 0.04000 | 0.03670 | 1369469 | 1257475 | | -8.2 | 20 |
| Endrin | Avg | 0.04000 | 0.03890 | 1269174 | 1232900 | | -2.9 | 20 |
| Endrin [2C] | Avg | 0.04000 | 0.03800 | 1147353 | 1089975 | | -5.0 | 20 |

# CONTINUING CALIBRATION CHECK

*8081B*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: tracegc84 Calibration: 4043001

Lab File ID: 103o4E01012-CCV2.d Calibration Date: 04/24/14 12:13

Sequence: 4E01012 Injection Date: 05/02/14

Lab Sample ID: 4E01012-CCV2 Injection Time: 02:49

| | | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 4,4'-DDD | Avg | 0.04000 | 0.03660 | 1157364 | 1058925 | | -8.5 | 20 |
| 4,4'-DDD [2C] | Avg | 0.04000 | 0.03600 | 1052146 | 947525 | | -9.9 | 20 |
| Endosulfan II | Avg | 0.04000 | 0.03710 | 1266110 | 1173600 | | -7.3 | 20 |
| Endosulfan II [2C] | Avg | 0.04000 | 0.03650 | 1142455 | 1043075 | | -8.7 | 20 |
| 4,4'-DDT | Avg | 0.04000 | 0.03610 | 1273440 | 1149700 | | -9.7 | 20 |
| 4,4'-DDT [2C] | Avg | 0.04000 | 0.03550 | 1134206 | 1006450 | | -11.3 | 20 |
| Endrin aldehyde | Avg | 0.04000 | 0.03680 | 925053.8 | 851450 | | -8.0 | 20 |
| Endrin Aldehyde [2C] | Avg | 0.04000 | 0.03620 | 831227.5 | 752225 | | -9.5 | 20 |
| Endosulfan sulfate | Avg | 0.04000 | 0.03700 | 1104468 | 1021875 | | -7.5 | 20 |
| Endosulfan Sulfate [2C] | Avg | 0.04000 | 0.03650 | 1027241 | 937500 | | -8.7 | 20 |
| Methoxychlor | Avg | 0.2000 | 0.1890 | 501386.3 | 472960 | | -5.7 | 20 |
| Methoxychlor [2C] | Avg | 0.2000 | 0.1840 | 439385.3 | 404840 | | -7.9 | 20 |
| DCB (A) | Avg | 0.04000 | 0.03850 | 1016739 | 977325 | | -3.9 | 20 |
| DCB (A) [2C] | Avg | 0.04000 | 0.03800 | 904296.3 | 859550 | | -4.9 | 20 |
| TCX (A) | Avg | 0.02000 | 0.01800 | 1410110 | 1270350 | | -9.9 | 20 |
| TCX (A) [2C] | Avg | 0.02000 | 0.01810 | 1569395 | 1422600 | | -9.4 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# BREAKDOWN REPORT

**Lab Sample ID:** 4D24001-PEM1 **Analyzed:** 04/24/2014

**Column Number:** 1

| Analyte | % Breakdown |
|---|---|
| Endrin | 1.18 |
| 4.4-DDT | 0.64 |

**Column Number:** 2

| Analyte | % Breakdown |
|---|---|
| Endrin | 1.57 |
| 4.4-DDT | 1.39 |

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# BREAKDOWN REPORT

**Lab Sample ID:** 4E01012-PEM1 **Analyzed:** 05/01/2014

**Column Number:** 1

| Analyte | % Breakdown |
|---|---|
| Endrin | 2.27 |
| 4.4-DDT | 8.59 |

**Column Number:** 2

| Analyte | % Breakdown |
|---|---|
| Endrin | 2.37 |
| 4.4-DDT | 2.47 |

# BREAKDOWN REPORT

**Lab Sample ID:** 4E01012-PEM2 **Analyzed:** 05/01/2014

**Column Number:** 1

| Analyte | % Breakdown |
|---|---|
| Endrin | 1.17 |
| 4.4-DDT | 8.21 |

**Column Number:** 2

| Analyte | % Breakdown |
|---|---|
| Endrin | 1.42 |
| 4.4-DDT | 1.71 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16WC1A**

Lab Sample ID: 1404171-01

Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84

Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm)

GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDT | 1 | 15.86 | 15.80 | 15.94 | 0.00655 | |
| | 2 | 16.19 | 16.11 | 16.25 | 0.00575 | 13.0 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16C1**

Lab Sample ID: 1404171-02

Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84

Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm)

GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDT | 1 | 15.86 | 15.80 | 15.94 | 0.00805 | |
| | 2 | 16.19 | 16.11 | 16.25 | 0.00620 | 26.0 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16MW8**

Lab Sample ID: 1404171-03

Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84

Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm)

GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDT | 1 | 15.86 | 15.80 | 15.94 | 0.0165 | |
| | 2 | 16.19 | 16.11 | 16.25 | 0.0163 | 1.2 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16MW9**

Lab Sample ID: 1404171-04

Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84

Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm)

GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDT | 1 | 15.86 | 15.80 | 15.94 | 0.00635 | |
| | 2 | 16.19 | 16.11 | 16.25 | 0.00535 | 17.1 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16WC1B**

Lab Sample ID: 1404171-06

Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84

Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm)

GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDD | 1 | 15.29 | 15.20 | 15.34 | 0.0142 | |
| | 2 | 15.50 | 15.45 | 15.59 | 0.0160 | 12.3 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**PBLKPS**

Lab Sample ID: 4042816-BLK1 Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84 Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDT | 1 | 15.85 | 15.80 | 15.94 | 0.0287 | |
| | 2 | 16.19 | 16.11 | 16.25 | 0.0267 | 7 |
| Methoxychlor | 1 | 16.90 | 16.84 | 16.98 | 0.0171 | |
| | 2 | 17.64 | 17.58 | 17.72 | 0.0154 | 11 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**PLCSPS**

Lab Sample ID: 4042816-BS1 Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84 Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDD | 1 | 15.26 | 15.20 | 15.34 | 0.2773 | |
| | 2 | 15.52 | 15.45 | 15.59 | 0.2726 | 2 |
| 4,4'-DDE | 1 | 13.96 | 13.90 | 14.04 | 0.2756 | |
| | 2 | 14.28 | 14.21 | 14.35 | 0.2653 | 4 |
| 4,4'-DDT | 1 | 15.86 | 15.80 | 15.94 | 0.2722 | |
| | 2 | 16.18 | 16.11 | 16.25 | 0.2684 | 1 |
| Aldrin | 1 | 11.78 | 11.71 | 11.85 | 0.2600 | |
| | 2 | 11.81 | 11.74 | 11.88 | 0.2594 | 0 |
| alpha-BHC | 1 | 9.07 | 9.01 | 9.15 | 0.2702 | |
| | 2 | 9.12 | 9.06 | 9.20 | 0.2732 | 1 |
| beta-BHC | 1 | 10.13 | 10.06 | 10.20 | 0.2533 | |
| | 2 | 10.27 | 10.21 | 10.35 | 0.2493 | 2 |
| delta-BHC | 1 | 10.55 | 10.49 | 10.63 | 0.2793 | |
| | 2 | 10.97 | 10.90 | 11.04 | 0.2842 | 2 |
| Dieldrin | 1 | 14.59 | 14.53 | 14.67 | 0.2845 | |
| | 2 | 14.59 | 14.52 | 14.66 | 0.2809 | 1 |
| Endosulfan I | 1 | 14.06 | 14.00 | 14.14 | 0.2045 | |
| | 2 | 13.99 | 13.92 | 14.06 | 0.1936 | 5 |
| Endosulfan II | 1 | 15.58 | 15.52 | 15.66 | 0.2328 | |
| | 2 | 15.70 | 15.64 | 15.78 | 0.2266 | 3 |
| Endosulfan sulfate | 1 | 17.42 | 17.35 | 17.49 | 0.3023 | |
| | 2 | 17.02 | 16.95 | 17.09 | 0.2693 | 12 |
| Endrin | 1 | 15.09 | 15.03 | 15.17 | 0.2885 | |
| | 2 | 15.24 | 15.18 | 15.32 | 0.2818 | 2 |
| Endrin aldehyde | 1 | 16.48 | 16.42 | 16.56 | 0.2550 | |
| | 2 | 16.43 | 16.37 | 16.51 | 0.2536 | 1 |
| gamma-BHC (Lindane) | 1 | 9.89 | 9.82 | 9.96 | 0.2682 | |
| | 2 | 10.03 | 9.96 | 10.10 | 0.2683 | 0 |
| Heptachlor | 1 | 11.07 | 11.00 | 11.14 | 0.2547 | |
| | 2 | 11.07 | 11.00 | 11.14 | 0.2542 | 0 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**PLCSPS**

Lab Sample ID: 4042816-BS1 Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84 Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| Heptachlor epoxide | 1 | 13.19 | 13.12 | 13.26 | 0.2671 | |
| | 2 | 13.13 | 13.07 | 13.21 | 0.2662 | 0 |
| Methoxychlor | 1 | 16.90 | 16.84 | 16.98 | 0.3174 | |
| | 2 | 17.64 | 17.58 | 17.72 | 0.3178 | 0 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16WC1AMS**

Lab Sample ID: 4042816-MS1 Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84 Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDD | 1 | 15.26 | 15.20 | 15.34 | 0.2007 | |
| | 2 | 15.52 | 15.45 | 15.59 | 0.1967 | 2 |
| 4,4'-DDE | 1 | 13.96 | 13.90 | 14.04 | 0.1990 | |
| | 2 | 14.28 | 14.21 | 14.35 | 0.1894 | 5 |
| 4,4'-DDT | 1 | 15.86 | 15.80 | 15.94 | 0.2027 | |
| | 2 | 16.18 | 16.11 | 16.25 | 0.1985 | 2 |
| Aldrin | 1 | 11.78 | 11.71 | 11.85 | 0.1915 | |
| | 2 | 11.81 | 11.74 | 11.88 | 0.1867 | 3 |
| alpha-BHC | 1 | 9.08 | 9.01 | 9.15 | 0.1945 | |
| | 2 | 9.12 | 9.06 | 9.20 | 0.1918 | 1 |
| beta-BHC | 1 | 10.13 | 10.06 | 10.20 | 0.1930 | |
| | 2 | 10.27 | 10.21 | 10.35 | 0.1792 | 7 |
| delta-BHC | 1 | 10.55 | 10.49 | 10.63 | 0.1995 | |
| | 2 | 10.97 | 10.90 | 11.04 | 0.1945 | 3 |
| Dieldrin | 1 | 14.59 | 14.53 | 14.67 | 0.2086 | |
| | 2 | 14.59 | 14.52 | 14.66 | 0.2020 | 3 |
| Endosulfan I | 1 | 14.06 | 14.00 | 14.14 | 0.1504 | |
| | 2 | 13.99 | 13.92 | 14.06 | 0.1417 | 6 |
| Endosulfan II | 1 | 15.58 | 15.52 | 15.66 | 0.1728 | |
| | 2 | 15.70 | 15.64 | 15.78 | 0.1678 | 3 |
| Endosulfan sulfate | 1 | 17.42 | 17.35 | 17.49 | 0.2348 | |
| | 2 | 17.02 | 16.95 | 17.09 | 0.1998 | 16 |
| Endrin | 1 | 15.09 | 15.03 | 15.17 | 0.2091 | |
| | 2 | 15.24 | 15.18 | 15.32 | 0.2061 | 1 |
| Endrin aldehyde | 1 | 16.48 | 16.42 | 16.56 | 0.1863 | |
| | 2 | 16.43 | 16.37 | 16.51 | 0.1861 | 0 |
| gamma-BHC (Lindane) | 1 | 9.89 | 9.82 | 9.96 | 0.1923 | |
| | 2 | 10.03 | 9.96 | 10.10 | 0.1870 | 3 |
| Heptachlor | 1 | 11.07 | 11.00 | 11.14 | 0.1857 | |
| | 2 | 11.07 | 11.00 | 11.14 | 0.1837 | 1 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16WC1AMS**

Lab Sample ID: 4042816-MS1 Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84 Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| Heptachlor epoxide | 1 | 13.19 | 13.12 | 13.26 | 0.1972 | |
| | 2 | 13.13 | 13.07 | 13.21 | 0.1958 | 1 |
| Methoxychlor | 1 | 16.90 | 16.84 | 16.98 | 0.2398 | |
| | 2 | 17.64 | 17.58 | 17.72 | 0.2491 | 4 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16WC1AMSD**

Lab Sample ID: 4042816-MSD1 Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84 Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 4,4'-DDD | 1 | 15.26 | 15.20 | 15.34 | 0.3239 | |
| | 2 | 15.52 | 15.45 | 15.59 | 0.3240 | 0 |
| 4,4'-DDE | 1 | 13.97 | 13.90 | 14.04 | 0.3246 | |
| | 2 | 14.28 | 14.21 | 14.35 | 0.3135 | 3 |
| 4,4'-DDT | 1 | 15.86 | 15.80 | 15.94 | 0.3164 | |
| | 2 | 16.18 | 16.11 | 16.25 | 0.3196 | 1 |
| Aldrin | 1 | 11.78 | 11.71 | 11.85 | 0.2993 | |
| | 2 | 11.81 | 11.74 | 11.88 | 0.1598 | 61 |
| alpha-BHC | 1 | 9.08 | 9.01 | 9.15 | 0.3146 | |
| | 2 | 9.12 | 9.06 | 9.20 | 0.3135 | 0 |
| beta-BHC | 1 | 10.13 | 10.06 | 10.20 | 0.2980 | |
| | 2 | 10.27 | 10.21 | 10.35 | 0.2806 | 6 |
| delta-BHC | 1 | 10.55 | 10.49 | 10.63 | 0.3314 | |
| | 2 | 10.97 | 10.90 | 11.04 | 0.3351 | 1 |
| Dieldrin | 1 | 14.59 | 14.53 | 14.67 | 0.3354 | |
| | 2 | 14.59 | 14.52 | 14.66 | 0.3315 | 1 |
| Endosulfan I | 1 | 14.06 | 14.00 | 14.14 | 0.2375 | |
| | 2 | 13.99 | 13.92 | 14.06 | 0.2232 | 6 |
| Endosulfan II | 1 | 15.58 | 15.52 | 15.66 | 0.2745 | |
| | 2 | 15.70 | 15.64 | 15.78 | 0.2678 | 2 |
| Endosulfan sulfate | 1 | 17.42 | 17.35 | 17.49 | 0.3459 | |
| | 2 | 17.02 | 16.95 | 17.09 | 0.3113 | 11 |
| Endrin | 1 | 15.09 | 15.03 | 15.17 | 0.3370 | |
| | 2 | 15.24 | 15.18 | 15.32 | 0.3309 | 2 |
| Endrin aldehyde | 1 | 16.48 | 16.42 | 16.56 | 0.2852 | |
| | 2 | 16.43 | 16.37 | 16.51 | 0.2795 | 2 |
| gamma-BHC (Lindane) | 1 | 9.89 | 9.82 | 9.96 | 0.3074 | |
| | 2 | 10.03 | 9.96 | 10.10 | 0.3061 | 0 |
| Heptachlor | 1 | 11.07 | 11.00 | 11.14 | 0.2899 | |
| | 2 | 11.07 | 11.00 | 11.14 | 0.2951 | 2 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8081B*

**16WC1AMSD**

Lab Sample ID: 4042816-MSD1 Date(s) Analyzed: 05/01/2014 05/01/2014

Instrument ID (1): tracegc84 Instrument ID (2): tracegc84

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| Heptachlor epoxide | 1 | 13.19 | 13.12 | 13.26 | 0.3120 | |
| | 2 | 13.13 | 13.07 | 13.21 | 0.3199 | 3 |
| Methoxychlor | 1 | 16.90 | 16.84 | 16.98 | 0.3684 | |
| | 2 | 17.64 | 17.58 | 17.72 | 0.3768 | 2 |

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# ANALYSIS DATA SHEET

*8081B*

**PBLKPS**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_GC | File ID: 084o4042816-BLK1.d | QC Type: Blank

Initial/Final: 1000mL / 5000uL | Sulfur Cleanup: N | Lab ID: 4042816-BLK1 | Column ID: clpest

Dilution: 1 | pH: | Florisil Cleanup: Y | Prepared: 04/29/14 15:45

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 17:39

Batch: 4042816 | Sequence: 4E01012 | Calibration: 4043001 | Instrument: tracegc84

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC | 0.00338 | 0.00190 | 0.0250 | J |
| 58-89-9 | gamma-BHC (Lindane) | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC | 0.0217 | 0.00950 | 0.0250 | J |
| 319-86-8 | delta-BHC | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor epoxide | | 0.00280 | 0.0250 | U |
| 959-98-8 | Endosulfan I | 0.00550 | 0.00430 | 0.0250 | J |
| 72-55-9 | 4,4'-DDE | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD | | 0.00550 | 0.0500 | U |
| 33213-65-9 | Endosulfan II | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT | 0.0287 | 0.00510 | 0.0500 | J |
| 7421-93-4 | Endrin aldehyde | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan sulfate | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor | 0.0171 | 0.0150 | 0.250 | J |
| 8001-35-2 | Toxaphene | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane | | 0.240 | 0.800 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) | 0.6000 | 0.4170 | 69 | 43 - 144 | |
| TCX (A) | 0.3000 | 0.1935 | 65 | 43 - 135 | |

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

# ANALYSIS DATA SHEET

*8081B*

**PBLKPS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_GC File ID: 084o4042816-BLK1.d QC Type: Blank

Initial/Final: 1000mL / 5000uL Sulfur Cleanup: N Lab ID: 4042816-BLK1 Column ID: clpest2

Dilution: 1 pH: Florisil Cleanup: Y Prepared: 04/29/14 15:45

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 17:39

Batch: 4042816 Sequence: 4E01012 Calibration: 4043001 Instrument: tracegc84

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 319-84-6 | alpha-BHC [2C] | | 0.00190 | 0.0250 | U |
| 58-89-9 | gamma-BHC (Lindane) [2C] | | 0.00190 | 0.0250 | U |
| 76-44-8 | Heptachlor [2C] | | 0.00240 | 0.0250 | U |
| 309-00-2 | Aldrin [2C] | | 0.00270 | 0.0250 | U |
| 319-85-7 | beta-BHC [2C] | | 0.00950 | 0.0250 | U |
| 319-86-8 | delta-BHC [2C] | | 0.00320 | 0.0250 | U |
| 1024-57-3 | Heptachlor Epoxide [2C] | 0.00580 | 0.00280 | 0.0250 | J |
| 959-98-8 | Endosulfan I [2C] | | 0.00430 | 0.0250 | U |
| 72-55-9 | 4,4'-DDE [2C] | | 0.00390 | 0.0500 | U |
| 60-57-1 | Dieldrin [2C] | | 0.00510 | 0.0500 | U |
| 72-20-8 | Endrin [2C] | | 0.00690 | 0.0500 | U |
| 72-54-8 | 4,4'-DDD [2C] | | 0.00550 | 0.0500 | U |
| 33213-65-9 | Endosulfan II [2C] | | 0.00550 | 0.0500 | U |
| 50-29-3 | 4,4'-DDT [2C] | 0.0267 | 0.00510 | 0.0500 | J |
| 7421-93-4 | Endrin Aldehyde [2C] | | 0.0120 | 0.0500 | U |
| 1031-07-8 | Endosulfan Sulfate [2C] | | 0.00680 | 0.0500 | U |
| 72-43-5 | Methoxychlor [2C] | 0.0154 | 0.0150 | 0.250 | J |
| 8001-35-2 | Toxaphene [2C] | | 0.480 | 2.50 | U |
| 57-74-9 | Technical Chlordane [2C] | | 0.240 | 0.800 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCB (A) [2C] | 0.6000 | 0.4071 | 68 | 43 - 144 | |
| TCX (A) [2C] | 0.3000 | 0.1924 | 64 | 43 - 135 | |

Environmental Testing Laboratories

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Liberty Analytical Corp.

RAAP HWMU 16

extra 8081 temp

Abridged data package.

Full deliverable available.

# LABORATORY ANALYSIS RESULTS

RECEIVED
MAY 16 2014
BY:

## ORGANOCHLORINE PESTICIDES METHOD 8081A

VALIDATED
6/23/14

Project: RAAP, Radford, Virginia

Date(s) of Sample Collection: 04/24/14

1st Semiannual 2014 Groundwater Monitoring Event

DAA JN: **B03204-12**
Summit WO: 14042427

Prepared for:

Ms. Janet C. Frazier
Draper Aden & Associates
2206 South Main Street
Blacksburg, Virginia 24060

By:

Summit Environmental Technologies
3310 Win Street
Cuyahoga Falls, Ohio 44223
NELAC Accreditation#E87688
VELAP Accreditation#1581

The test results herein meet current NELAC standards, unless otherwise noted. The information contained in this analytical report is the sole property of Summit Environmental Technologies, Inc. and that of Draper Aden & Associates. It cannot be reproduced in any form without the consent of Summit Environmental Technologies and Draper Aden & Associates. The results contained in this report are only representative of the samples received. Conditions can vary at different times and at different sampling conditions. Summit Environmental Technologies, Inc. is not responsible for use or interpretation of the data included herein.

This report contains 143 total pages including this cover.

# NARRATIVE

**ORGANOCHLORINE PESTICIDES**
**METHOD 8081A**

Project: RAAP, Radford, Virginia

Date(s) of Sample Collection: 04/24/14

1st Semiannual 2014 Groundwater Monitoring Event

DAA JN: **B03204-12**
Summit WO: 14042427

One (1) water sample was received Apr 25, 2014 intact and on ice. Analysis for pesticides by Method 8081A was requested as well as confirmation for any detects above MDL level by Selected Ion monitoring (SIM) GC/MS

The extraction was conducted within method holding time constraints without incident. No electron capture detections were observed negating the need for GC/MS confirmation.

All precision and accuracy control criteria were met for a set of laboratory control samples analyzed with the field sample.

Method compliance, report completeness and accuracy attested to by:

John Troost/DB
John Troost
Technical Director

5/14/14
Date

# CHAIN OF CUSTODY RECORD

**Laboratory:** Summit Environmental Technologies, Inc., 3310 Win St., Cuyahoga Falls, Ohio 44223 - John Troost 330-253-8211

dcsv

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU16 TDJ 4/24/14<br>**Event:** st Semiannual 2014 Groundwater ~~Verification~~ Monitoring Eve<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>**Carrier:** UPS<br>**Tracking Number:** 1Z 237 301 01 9920 9721 | | |

| Box 1: Matrix | | Box 2: Preservative | | Box 3: Filtered/Unfiltered | Box 4: Sample Type | Invoice |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER _____ |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | Preserved and shipped on Ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA<br>AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 4 - Sample Type | | | | | G | | | | | | | |
| Box 3 - Filtered/Unfiltered | | | | | U | | | | | | | |
| Required pH of Sample | | | | | | | | | | | | |
| Box 2 - Preservative | | | | | H | | | | | | | |
| Box 5 - Sample Container Type | | | | | 2-1L AG | | | | | | | |
| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | 8081A Pesticides | | | | | | | |
| 16WC1B | 4/24 | 1405 | GW | 2 | X | | | | | | | |

**GENERAL NOTES:**

1. Report results to detection limit, with J flags.
2. Full deliverable with pdf & edd
3. VELAP ✓ JMC 4/14/2014

1404427-001

**Clients Special Instructions:** Level 4 with edd.

Received by lab in Good Condition ____ Yes ____ No Custody Seal Intact ____ Yes ____ No Temperature upon arrival ____ Received on Ice ____ Yes ____ No

Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Tiffany Jebson | Date: 4/24/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: Draper Aden Assoc. | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: ✓ | #2 Received by (Signature): | Date: 4/25/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: | Time: | Company Name: Jackie Rasile | Time: 0930 | |

1/1 JMC 4/14/2014

Rev. 12
Date: 07/27/13

# Summit Environmental Technologies, Inc.
## Cooler Receipt Form

Client: Ryder Aden

Initials of person inspecting cooler and samples: JK

Date Received: 4-25-14 Time Received: 0950 Order Number:

Date cooler(s) opened and samples inspected: 4-25-14

Number of Coolers/Boxes: 1 N/A

Shipper: FED EX UPS DHL Airborne US Postal Walk-in Pickup Other:

Packaging: Peanuts Bubble Wrap Paper Foam None Other:

| | | | |
|---|---|---|---|
| Tape on cooler/box: | | N | N/A |
| Custody Seals intact | Y | N | N/A |
| C-O-C in plastic | | N | N/A |
| Ice ____ Blue ice ____ | present / absent / melted | | N/A |
| Sample Temperature IR Gun #16020459 CF 0.1 °C | 1.8 °C | | N/A |
| Radiological Testing Instrument serial #35127 (see page 2 for scan results) | Y | N | N/A |

**Use 1 sheet per sample for Radiological Testing. If sample is HOT, the Radiological Safety Officer must be notified immediately.

| | | | |
|---|---|---|---|
| C-O-C filled out properly | | N | N/A |
| Samples in separate bags | | N | N/A |
| Sample containers intact* | | N | N/A |

*If no, list broken sample(s):

| | | | |
|---|---|---|---|
| Sample label(s) complete (ID, date, etc.) | | N | N/A |
| Label(s) agree with C-O-C | | N | N/A |
| Correct containers used | | N | N/A |
| Sufficient sample received | | N | N/A |
| Bubbles absent from 40 mL vials** | Y | N | N/A |

** Samples with bubbles <6mm are acceptable. Indicate bubble size if >6mm.

| | | |
|---|---|---|
| Was client contacted about samples | Y | N |
| Will client send new samples | Y | N |

Client contact:

Date/Time:

Logged in by:

Comments:

3

# LABORATORY REPORT

## 8081B METHOD DETECTION LIMIT (MDL) NOMINAL CUT-OFF VALUES

| PESTICIDE | EXTRACT ug/L | 1000mL SAMPLE ug/L |
|---|---|---|
| | MDL Cut-Offs | |
| Surrogate (tcmx) | 5.00 | 0.005 |
| A-BHC | 10.00 | 0.010 |
| G-BHC (tclp) | 10.00 | 0.010 |
| Heptachlor (tclp) | 15.00 | 0.015 |
| Aldrin | 10.00 | 0.010 |
| B-BHC | 10.00 | 0.010 |
| Delta BHC | 15.00 | 0.015 |
| Heptachlor Epoxide (tclp) | 10.00 | 0.010 |
| Endosulfan I | 15.00 | 0.015 |
| gamma-Chlordane | 10.00 | 0.010 |
| alpha-Chlordane | 10.00 | 0.010 |
| 4,4 DDE | 10.00 | 0.010 |
| Dieldrin | 10.00 | 0.010 |
| Endrin (tclp) | 10.00 | 0.010 |
| Endosulfan II | 25.00 | 0.025 |
| 4,4 DDD | 10.00 | 0.010 |
| 4,4 DDT | 25.00 | 0.025 |
| Endrin Aldehyde | 25.00 | 0.025 |
| Endosulfan Sulfate | 25.00 | 0.025 |
| Methoxychlor (tclp) | 15.00 | 0.015 |
| Endrin Ketone | 15.00 | 0.015 |

# Response Factor Report SVOA GC7

Method : C:\HPCHEM\3\METHODS\7TOX1126.M (Chemstation Integrator)
Title : TOX_ICALDate112613_Method508,608,8081_GC7_Rtx1701
Last Update : Wed Nov 27 11:39:36 2013

Calibration Files
9999 =7PST010.D 2000 =7PST011.D 1000 =7PST012.D
500 =7PST013.D 200 =7PST014.D 100 =7PST015.D

| | | Compound | 9999 | 2000 | 1000 | 500 | 200 | 100 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | T | TOX-1 | 1.038 | 1.068 | 1.024 | 1.133 | 1.205 | 1.401 | 1.145 E3 | 12.44 |
| 2) | T | TOX-2 | 1.701 | 2.024 | 2.039 | 2.353 | 2.420 | 2.528 | 2.178 E3 | 14.26 |
| 3) | T | TOX-3 | 1.757 | 2.245 | 2.276 | 2.217 | 2.288 | 2.739 | 2.254 E3 | 13.83 |
| 4) | T | TOX-4 | 2.065 | 1.942 | 2.056 | 1.930 | 2.039 | 2.146 | 2.030 E3 | 4.02 |
| 5) | T | TOX-5 | 2.778 | 2.663 | 2.604 | 2.645 | 2.780 | 3.098 | 2.761 E3 | 6.51 |
| 6) | T | TOX-6 | 1.235 | 1.114 | 0.956 | 0.973 | 1.054 | 1.082 | 1.069 E3 | 9.54 |
| 7) | H | SUM | 4.842 | 5.574 | 5.830 | 6.148 | 6.897 | 6.846 | 6.023 E4 | 13.05 |

✓

20.

(#) = Out of Range

Compound List Report SVOA GC7

Method : C:\HPCHEM\3\METHODS\7TOX1126.M (Chemstation Integrator)
Title : TOX_ICALDate112613_Method508,608,8081_GC7_Rtx1701
Last Update : Wed Nov 27 11:39:36 2013
Response via : Initial Calibration
Total Cpnds : 7

| PK# | Type | Compound Name | Exp_RT | Rel_RT | Cal | A/H | ID |
|---|---|---|---|---|---|---|---|
| 1 | T | TOX-1 | 12.52 | 1.000 | A | A | R |
| 2 | T | TOX-2 | 13.95 | 1.000 | A | A | R |
| 3 | T | TOX-3 | 15.60 | 1.000 | A | A | R |
| 4 | T | TOX-4 | 16.26 | 1.000 | A | A | R |
| 5 | T | TOX-5 | 17.64 | 1.000 | A | A | R |
| 6 | T | TOX-6 | 18.23 | 1.000 | A | A | R |
| 7 | H | SUM | 16.53 | 1.000 | A | A | R |

✓

Cal A = Average L = Linear LO = Linear w/origin Q = Quad QO = Quad w/origin
A/H = Area or Height
ID R = R.T. B = R.T. & Q Q = Qvalue L = Largest A = All

7TOX1126.M Wed Nov 27 12:03:06 2013

# Response Factor Report SVOA GC7

Method : C:\HPCHEM\3\METHODS\7TCL0313.M (Chemstation Integrator)
Title : TCL_IcalDate031314_Method508,608,8081 GC7 Rtx1701
Last Update : Thu Mar 13 12:27:05 2014

Calibration Files
5000 =7PST010.D 1000 =7PST011.D 500 =7PST012.D
250 =7PST013.D 100 =7PST014.D 50 =7PST015.D

| | | Compound | 5000 | 1000 | 500 | 250 | 100 | 50 | Avg | | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | S | TMCX (SURR | 4.931 | 5.255 | 5.527 | 6.154 | 6.463 | 7.867 | 6.033 | E4 | 17.60 |
| 2) | | CHLOR-1 | 3.009 | 3.501 | 3.462 | 3.557 | 3.457 | 3.690 | 3.446 | E3 | 6.70 |
| 3) | | CHLOR-2 | 3.882 | 4.495 | 4.468 | 4.624 | 4.575 | 4.943 | 4.498 | E3 | 7.70 |
| 4) | | CHLOR-3 | 1.626 | 1.936 | 2.056 | 2.294 | 2.581 | 2.830 | 2.221 | E3 | 19.81 |
| 5) | | CHLOR-4 | 0.812 | 0.975 | 0.976 | 1.010 | 1.054 | 1.139 | 0.994 | E4 | 10.87 |
| 6) | | CHLOR-5 | 0.719 | 0.872 | 0.885 | 0.942 | 0.994 | 1.097 | 0.918 | E4 | 13.89 |
| 7) | | CHLOR-6 | 3.769 | 4.445 | 4.375 | 4.606 | 4.722 | 5.223 | 4.523 | E3 | 10.53 |
| 8) | | CHLOR-7 | 1.921 | 2.057 | 1.813 | 1.826 | 1.673 | 1.875 | 1.861 | E3 | 6.85 |
| 9) | | CHLOR-8 | 1.209 | 1.261 | 1.154 | 1.162 | 1.160 | 1.295 | 1.207 | E3 | 4.92 |

(#) = Out of Range

Compound List Report SVOA GC7

Method : C:\HPCHEM\3\METHODS\7TCL0313.M (Chemstation Integrator)
Title : TCL_IcalDate031314_Method508,608,8081 GC7 Rtx1701
Last Update : Thu Mar 13 12:27:05 2014
Response via : Initial Calibration
Total Cpnds : 9

| PK# | Type | Compound Name | Exp_RT | Rel_RT | Cal | A/H | ID |
|---|---|---|---|---|---|---|---|
| 1 | S | TMCX (SURR | 2.26 | 1.000 | L | A | B |
| 2 | | CHLOR-1 | 5.01 | 1.000 | A | A | R |
| 3 | | CHLOR-2 | 5.45 | 1.000 | A | A | R |
| 4 | | CHLOR-3 | 7.09 | 1.000 | Q | A | R |
| 5 | | CHLOR-4 | 9.79 | 1.000 | A | A | R |
| 6 | | CHLOR-5 | 10.00 | 1.000 | A | A | R |
| 7 | | CHLOR-6 | 10.13 | 1.000 | A | A | R |
| 8 | | CHLOR-7 | 10.84 | 1.000 | A | A | R |
| 9 | | CHLOR-8 | 13.76 | 1.000 | A | A | R |

✓

Cal A = Average L = Linear LO = Linear w/origin Q = Quad QO = Quad w/origin
A/H = Area or Height
ID R = R.T. B = R.T. & Q Q = Qvalue L = Largest A = All

7TCL0313.M Thu Mar 13 12:27:51 2014

# Response Factor Report SVOA GC7

Method : C:\HPCHEM\3\METHODS\508N0313.M (RTE Integrator)
Title : PEST_ICALDate031314_Mthod508,608,8081_GC7_Rtx1701
Last Update : Thu Mar 13 12:53:53 2014

Calibration Files
1000 =7PST018.D 500 =7PST019.D 250 =7PST020.D
50 =7PST021.D 25 =7PST022.D 5 =7PST023.D

| | | Compound | 1000 | 500 | 250 | 50 | 25 | 5 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | S | Tetrachloro-m-xylen | 4.604 | 5.099 | 5.545 | 6.644 | 7.271 | 7.809 | 6.162 E3 | 20.67 |
| 2) | m | alpha-BHC | 0.838 | 0.915 | 0.963 | 1.144 | 1.188 | 1.221 | 1.045 E4 | 15.30 |
| 3) | m | gamma-BHC | 0.754 | 0.831 | 0.878 | 1.052 | 1.101 | 1.192 | 0.968 E4 | 17.74 |
| 4) | m | Heptachlor | 6.039 | 6.667 | 7.068 | 8.409 | 8.687 | 9.207 | 7.679 E3 | 16.44 |
| 5) | m | Aldrin | 0.662 | 0.750 | 0.812 | 1.000 | 1.043 | 1.073 | 0.890 E4 | 19.27 |
| 6) | m | beta-BHC | 3.232 | 3.385 | 3.887 | 4.826 | 5.315 | 6.906 | 4.592 E3 | 30.39 |
| 7) | m | delta-BHC | 0.739 | 0.819 | 0.862 | 1.002 | 1.077 | 1.356 | 0.976 E4 | 22.85 |
| 8) | m | Heptachlor epoxide | 5.757 | 6.453 | 6.961 | 8.731 | 9.218 | 9.906 | 7.838 E3 | 21.35 |
| 9) | m | Endosulfan I | 5.626 | 6.317 | 6.839 | 8.644 | 9.070 | 9.717 | 7.702 E3 | 21.56 |
| 10) | m | gamma-Chlordane | 0.655 | 0.739 | 0.788 | 0.940 | 0.971 | 1.006 | 0.850 E4 | 16.74 |
| 11) | m | alpha-Chlordane | 0.654 | 0.733 | 0.784 | 0.955 | 1.000 | 1.087 | 0.869 E4 | 19.54 |
| 12) | m | 4,4'-DDE | 0.649 | 0.728 | 0.780 | 0.952 | 0.980 | 1.009 | 0.850 E4 | 17.68 |
| 13) | m | Dieldrin | 0.625 | 0.699 | 0.759 | 0.938 | 0.977 | 1.008 | 0.834 E4 | 19.23 |
| 14) | m | Endrin | 5.806 | 6.459 | 6.933 | 8.619 | 9.039 | 9.546 | 7.734 E3 | 19.82 |
| 15) | m | Endosulfan II | 5.416 | 6.029 | 6.444 | 7.911 | 8.380 | 9.461 | 7.273 E3 | 21.39 |
| 16) | m | 4,4'-DDD | 5.042 | 5.663 | 6.093 | 7.409 | 7.657 | 8.132 | 6.666 E3 | 18.56 |
| 17) | m | 4,4'-DDT | 4.839 | 5.198 | 5.295 | 5.689 | 5.639 | 5.875 | 5.422 E3 | 7.05 |
| 18) | m | Endrin aldehyde | 4.554 | 5.098 | 5.327 | 6.201 | 6.635 | 8.548 | 6.060 E3 | 23.65 |
| 19) | m | Endosulfan sulfate | 5.014 | 5.609 | 5.967 | 7.230 | 7.579 | 9.471 | 6.812 E3 | 23.88 |
| 20) | m | Methoxychlor | 2.208 | 2.377 | 2.480 | 3.016 | 3.202 | 3.778 | 2.844 E3 | 21.02 |
| 21) | m | Endrin ketone | 0.585 | 0.649 | 0.692 | 0.866 | 0.937 | 1.140 | 0.812 E4 | 25.75 |
| 22) | S | Decachlorobiphenyl | 5.854 | 6.470 | 6.933 | 8.290 | 8.945 | 9.905 | 7.733 E3 | 20.25 |

53

(#) = Out of Range

Compound List Report SVOA GC7

Method : C:\HPCHEM\3\METHODS\508N0313.M (RTE Integrator)
Title : PEST_ICALDate031314_Mthod508,608,8081_GC7_Rtx1701
Last Update : Thu Mar 13 12:53:53 2014
Response via : Initial Calibration
Total Cpnds : 22

| PK# | Type | Compound Name | Exp_RT | Rel_RT | Cal | A/H | ID |
|---|---|---|---|---|---|---|---|
| 1 | S | Tetrachloro-m-xylene | 2.25 | 1.000 | A | A | B |
| 2 | m | alpha-BHC | 3.95 | 1.000 | L | A | R |
| 3 | m | gamma-BHC | 4.95 | 1.000 | L | A | R |
| 4 | m | Heptachlor | 5.43 | 1.000 | L | A | R |
| 5 | m | Aldrin | 6.17 | 1.000 | L | A | R |
| 6 | m | beta-BHC | 7.62 | 1.000 | L | A | R |
| 7 | m | delta-BHC | 8.25 | 1.000 | L | A | R |
| 8 | m | Heptachlor epoxide | 8.52 | 1.000 | L | A | R |
| 9 | m | Endosulfan I | 9.35 | 1.000 | L | A | R |
| 10 | m | gamma-Chlordane | 9.78 | 1.000 | L | A | B |
| 11 | m | alpha-Chlordane | 9.99 | 1.000 | L | A | B |
| 12 | m | 4,4'-DDE | 10.62 | 1.000 | L | A | R |
| 13 | m | Dieldrin | 10.79 | 1.000 | L | A | R |
| 14 | m | Endrin | 11.47 | 1.000 | L | A | R |
| 15 | m | Endosulfan II | 13.60 | 1.000 | L | A | R |
| 16 | m | 4,4'-DDD | 13.88 | 1.000 | L | A | B |
| 17 | m | 4,4'-DDT | 14.46 | 1.000 | A | A | R |
| 18 | m | Endrin aldehyde | 15.29 | 1.000 | L | A | R |
| 19 | m | Endosulfan sulfate | 16.64 | 1.000 | L | A | R |
| 20 | m | Methoxychlor | 17.39 | 1.000 | L | A | R |
| 21 | m | Endrin ketone | 18.02 | 1.000 | L | A | B |
| 22 | S | Decachlorobiphenyl | 21.77 | 1.000 | L | A | B |

✓

Cal A = Average L = Linear LO = Linear w/origin Q = Quad QO = Quad w/origin
A/H = Area or Height
ID R = R.T. B = R.T. & Q Q = Qvalue L = Largest A = All



SG

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\3\DATA\031214\7PST024.D Vial: 19
Acq On : 12 Mar 2014 9:49 pm Operator: JBN
Sample : 508PestICV600 600ppb Inst : SVOA GC7
Misc : S0005-PICV600-64 ✓ Multiplr: 1.00
IntFile : rteint.p
Quant Time: Mar 13 13:01 2014 Quant Results File: 508N0313.RES

Quant Method : C:\HPCHEM\3\METHODS\508N0313.M (RTE Integrator)
Title : PEST_ICALDate031314_Mthod508,608,8081_GC7_Rtx1701
Last Update : Thu Mar 13 12:53:53 2014
Response via : Initial Calibration
DataAcq Meth : 508.M

Volume Inj. :
Signal Phase :
Signal Info :

| Compound | R.T. | Response | Conc Units |
|---|---|---|---|
| **System Monitoring Compounds** | | | |
| 1) S Tetrachloro-m-xylene | 2.25 | 4608838 | 747.947 ug/L |
| Spiked Amount 1000.000 Range 70 - 130 | | Recovery = 74.79% | |
| 22) S Decachlorobiphenyl | 21.77 | 5747463 | 925.119 ug/L |
| Spiked Amount 1000.000 Range 70 - 130 | | Recovery = 92.51% | |
| **Target Compounds** | | | |
| 2) m alpha-BHC | 3.95 | 5399252 | 610.735 ug/L |
| 3) m gamma-BHC | 4.95 | 4879082 | 610.100 ug/L |
| 4) m Heptachlor | 5.44 | 3916521 | 610.777 ug/L |
| 5) m Aldrin | 6.18 | 4351620 | 608.515 ug/L |
| 6) m beta-BHC | 7.62 | 2102747 | 618.659 ug/L |
| 7) m delta-BHC | 8.25 | 4776384 | 609.130 ug/L |
| 8) m Heptachlor epoxide | 8.52 | 3811660 | 615.968 ug/L |
| 9) m Endosulfan I | 9.36 | 3718987 | 613.909 ug/L |
| 10) m gamma-Chlordane | 9.78 | 4346455 | 617.853 ug/L |
| 11) m alpha-Chlordane | 9.99 | 4182205 | 596.617 ug/L |
| 12) m 4,4'-DDE | 10.62 | 4280154 | 614.771 ug/L |
| 13) m Dieldrin | 10.79 | 4119842 | 613.194 ug/L |
| 14) m Endrin | 11.47 | 3699480 | 595.460 ug/L |
| 15) m Endosulfan II | 13.60 | 3553714 | 614.176 ug/L |
| 16) m 4,4'-DDD | 13.88 | 3296822 | 608.690 ug/L |
| 17) m 4,4'-DDT | 14.46 | 3094350 | 570.665 ug/L |
| 18) m Endrin aldehyde | 15.29 | 2859775 | 589.919 ug/L |
| 19) m Endosulfan sulfate | 16.65 | 3342289 | 623.863 ug/L |
| 20) m Methoxychlor | 17.39 | 1406212 | 608.492 ug/L |
| 21) m Endrin ketone | 18.03 | 3523440 | 563.812 ug/L |

✓

420 - 780

SG

(f)=RT Delta > 1/2 Window (m)=manual int.

# Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST009.D  Vial: 3
Acq On : 2 May 2014 8:44 pm  Operator: JBN
Sample : 508CCV500 S0003-126  Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066  Multiplr: 1.00
IntFile : rteint.p

Method : C:\HPCHEM\3\METHODS\508N0313.M (RTE Integrator)
Title : PEST_ICALDate031314_Mthod508,608,8081_GC7_Rtx1701
Last Update : Thu Mar 13 12:53:53 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | S | Tetrachloro-m-xylene | 500.000 | 443.854 | 11.2 | 107 | 0.03 |
| 2 | m | alpha-BHC | 500.000 | 561.514 | -12.3 | 109 | 0.04 |
| 3 | m | gamma-BHC | 500.000 | 563.638 | -12.7 | 109 | 0.04 |
| 4 | m | Heptachlor | 500.000 | 555.227 | -11.0 | 107 | 0.05 |
| 5 | m | Aldrin | 500.000 | 575.942 | -15.2 | 110 | 0.05 |
| 6 | m | beta-BHC | 500.000 | 569.854 | -14.0 | 115 | 0.05 |
| 7 | m | delta-BHC | 500.000 | 562.039 | -12.4 | 108 | 0.06 |
| 8 | m | Heptachlor epoxide | 500.000 | 585.652 | -17.1 | 112 | 0.05 |
| 9 | m | Endosulfan I | 500.000 | 586.582 | -17.3 | 113 | 0.06 |
| 10 | m | gamma-Chlordane | 500.000 | 522.570 | -4.5 | 100 | 0.05 |
| 11 | m | alpha-Chlordane | 500.000 | 561.852 | -12.4 | 108 | 0.06 |
| 12 | m | 4,4'-DDE | 500.000 | 562.443 | -12.5 | 108 | 0.06 |
| 13 | m | Dieldrin | 500.000 | 586.314 | -17.3 | 113 | 0.06 |
| 14 | m | Endrin | 500.000 | 589.636 | -17.9 | 113 | 0.06 |
| 15 | m | Endosulfan II | 500.000 | 550.667 | -10.1 | 106 | 0.06 |
| 16 | m | 4,4'-DDD | 500.000 | 563.177 | -12.6 | 108 | 0.06 |
| 17 | m | 4,4'-DDT | 500.000 | 495.140 | 1.0 | 103 | 0.06 |
| 18 | m | Endrin aldehyde | 500.000 | 581.161 | -16.2 | 111 | 0.06 |
| 19 | m | Endosulfan sulfate | 500.000 | 582.770 | -16.6 | 111 | 0.06 |
| 20 | m | Methoxychlor | 500.000 | 531.901 | -6.4 | 104 | 0.06 |
| 21 | m | Endrin ketone | 500.000 | 572.445 | -14.5 | 110 | 0.07 |
| 22 | S | Decachlorobiphenyl | 500.000 | 542.821 | -8.6 | 105 | 0.07 |

✓

91.

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

# Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST010.D  Vial: 4
Acq On : 2 May 2014 9:20 pm  Operator: JBN
Sample : 508TCLCCV S0005-65  Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066  Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\3\METHODS\7TCL0313.M (Chemstation Integrator)
Title : TCL_IcalDate031314_Method508,608,8081 GC7 Rtx1701
Last Update : Thu Mar 13 12:27:05 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | S | TMCX (SURR | 250.000 | 291.887 | -16.8 | 111 | 0.03 |
| 2 | | CHLOR-1 | 500.000 | 525.993 | -5.2 | 105 | 0.04 |
| 3 | | CHLOR-2 | 500.000 | 443.627 | 11.3 | 89 | 0.04 |
| 4 | | CHLOR-3 | 500.000 | 592.067 | -18.4 | 117 | 0.05 |
| 5 | | CHLOR-4 | 500.000 | 352.192 | 29.6 | 72 | 0.05 |
| 6 | | CHLOR-5 | 500.000 | 438.796 | 12.2 | 91 | 0.05 |
| 7 | | CHLOR-6 | 500.000 | 506.925 | -1.4 | 105 | 0.05 |
| 8 | | CHLOR-7 | 500.000 | 592.070 | -18.4 | 122 | 0.04 |
| 9 | | CHLOR-8 | 500.000 | 517.833 | -3.6 | 108 | 0.05 |

✓

9/

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST011.D Vial: 5
Acq On : 2 May 2014 9:55 pm Operator: JBN
Sample : 508TOXCCV S0004-66 Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066 Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\3\METHODS\7TOX1126.M (Chemstation Integrator)
Title : TOX_ICALDate112613_Method508,608,8081_GC7_Rtx1701
Last Update : Tue Feb 04 13:03:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | T | TOX-1 | 1000.000 | 1216.793 | -21.7 | 136 | 0.09 |
| 2 | T | TOX-2 | 1000.000 | 910.774 | 8.9 | 97 | 0.09 |
| 3 | T | TOX-3 | 1000.000 | 992.470 | 0.8 | 98 | 0.10 |
| 4 | T | TOX-4 | 1000.000 | 1169.523 | -17.0 | 115 | 0.09 |
| 5 | T | TOX-5 | 1000.000 | 1165.452 | -16.5 | 124 | 0.10 |
| 6 | T | TOX-6 | 1000.000 | 1201.525 | -20.2 | 134 | 0.09 |
| 7 | H | SUM | 1000.000 | 2269.278 | -126.9# | 234 | 0.00 |

97

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

# Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST016.D  Vial: 3
Acq On : 3 May 2014 12:54 am  Operator: JBN
Sample : 508CCV500 S0003-126  Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066  Multiplr: 1.00
IntFile : rteint.p

Method : C:\HPCHEM\3\METHODS\508N0313.M (RTE Integrator)
Title : PEST_ICALDate031314_Mthod508,608,8081_GC7_Rtx1701
Last Update : Thu Mar 13 12:53:53 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | S | Tetrachloro-m-xylene | 500.000 | 441.453 | 11.7 | 107 | 0.04 |
| 2 | m | alpha-BHC | 500.000 | 565.621 | -13.1 | 109 | 0.05 |
| 3 | m | gamma-BHC | 500.000 | 568.403 | -13.7 | 109 | 0.05 |
| 4 | m | Heptachlor | 500.000 | 579.771 | -16.0 | 112 | 0.06 |
| 5 | m | Aldrin | 500.000 | 568.945 | -13.8 | 109 | 0.06 |
| 6 | m | beta-BHC | 500.000 | 572.519 | -14.5 | 115 | 0.07 |
| 7 | m | delta-BHC | 500.000 | 568.773 | -13.8 | 109 | 0.07 |
| 8 | m | Heptachlor epoxide | 500.000 | 576.838 | -15.4 | 111 | 0.07 |
| 9 | m | Endosulfan I | 500.000 | 573.883 | -14.8 | 110 | 0.07 |
| 10 | m | gamma-Chlordane | 500.000 | 514.157 | -2.8 | 98 | 0.07 |
| 11 | m | alpha-Chlordane | 500.000 | 559.502 | -11.9 | 107 | 0.07 |
| 12 | m | 4,4'-DDE | 500.000 | 558.358 | -11.7 | 107 | 0.07 |
| 13 | m | Dieldrin | 500.000 | 578.433 | -15.7 | 111 | 0.07 |
| 14 | m | Endrin | 500.000 | 586.309 | -17.3 | 113 | 0.07 |
| 15 | m | Endosulfan II | 500.000 | 541.788 | -8.4 | 104 | 0.08 |
| 16 | m | 4,4'-DDD | 500.000 | 563.589 | -12.7 | 108 | 0.08 |
| 17 | m | 4,4'-DDT | 500.000 | 527.812 | -5.6 | 110 | 0.08 |
| 18 | m | Endrin aldehyde | 500.000 | 575.848 | -15.2 | 110 | 0.07 |
| 19 | m | Endosulfan sulfate | 500.000 | 573.007 | -14.6 | 110 | 0.08 |
| 20 | m | Methoxychlor | 500.000 | 581.043 | -16.2 | 113 | 0.07 |
| 21 | m | Endrin ketone | 500.000 | 572.049 | -14.4 | 110 | 0.08 |
| 22 | S | Decachlorobiphenyl | 500.000 | 534.661 | -6.9 | 103 | 0.08 |

✓

/20.

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

# Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST017.D  Vial: 4
Acq On : 3 May 2014 1:29 am  Operator: JBN
Sample : 508TCLCCV S0005-65  Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066  Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\3\METHODS\7TCL0313.M (Chemstation Integrator)
Title : TCL_IcalDate031314_Method508,608,8081 GC7 Rtx1701
Last Update : Thu Mar 13 12:27:05 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | S | TMCX (SURR | 250.000 | 293.032 | -17.2 | 111 | 0.03 |
| 2 | | CHLOR-1 | 500.000 | 531.843 | -6.4 | 106 | 0.05 |
| 3 | | CHLOR-2 | 500.000 | 478.366 | 4.3 | 96 | 0.05 |
| 4 | | CHLOR-3 | 500.000 | 644.068 | -28.8 | 127 | 0.06 |
| 5 | | CHLOR-4 | 500.000 | 349.739 | 30.1# | 71 | 0.06 |
| 6 | | CHLOR-5 | 500.000 | 436.747 | 12.7 | 91 | 0.06 |
| 7 | | CHLOR-6 | 500.000 | 498.703 | 0.3 | 103 | 0.06 |
| 8 | | CHLOR-7 | 500.000 | 571.247 | -14.2 | 117 | 0.06 |
| 9 | | CHLOR-8 | 500.000 | 444.132 | 11.2 | 93 | 0.07 |

✓

103.

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

# Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST018.D  Vial: 5
Acq On : 3 May 2014 2:05 am  Operator: JBN
Sample : 508TOXCCV S0004-66  Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066  Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\3\METHODS\7TOX1126.M (Chemstation Integrator)
Title : TOX_ICALDate112613_Method508,608,8081_GC7_Rtx1701
Last Update : Tue Feb 04 13:03:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | T | TOX-1 | 1000.000 | 1260.083 | -26.0 | 141 | 0.11 |
| 2 | T | TOX-2 | 1000.000 | 794.336 | 20.6 | 85 | 0.11 |
| 3 | T | TOX-3 | 1000.000 | 1470.442 | -47.0# | 146 | 0.11 |
| 4 | T | TOX-4 | 1000.000 | 1133.924 | -13.4 | 112 | 0.11 |
| 5 | T | TOX-5 | 1000.000 | 1206.350 | -20.6 | 128 | 0.12 |
| 6 | T | TOX-6 | 1000.000 | 1218.066 | -21.8 | 136 | 0.10 |
| 7 | H | SUM | 1000.000 | 2455.358 | -145.5# | 254 | 0.00 |

✓

106

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

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST037.D Vial: 4
Acq On : 3 May 2014 1:24 pm Operator: JBN
Sample : 508TCLCCV S0005-65 Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066 Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\3\METHODS\7TCL0313.M (Chemstation Integrator)
Title : TCL_IcalDate031314_Method508,608,8081 GC7 Rtx1701
Last Update : Thu Mar 13 12:27:05 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | S | TMCX (SURR | 250.000 | 305.532 | -22.2 | 116 | 0.03 |
| 2 | | CHLOR-1 | 500.000 | 551.558 | -10.3 | 110 | 0.04 |
| 3 | | CHLOR-2 | 500.000 | 527.635 | -5.5 | 106 | 0.04 |
| 4 | | CHLOR-3 | 500.000 | 649.947 | -30.0 | 128 | 0.06 |
| 5 | | CHLOR-4 | 500.000 | 359.606 | 28.1 | 73 | 0.05 |
| 6 | | CHLOR-5 | 500.000 | 454.021 | 9.2 | 94 | 0.05 |
| 7 | | CHLOR-6 | 500.000 | 529.487 | -5.9 | 109 | 0.05 |
| 8 | | CHLOR-7 | 500.000 | 480.630 | 3.9 | 99 | 0.05 |
| 9 | | CHLOR-8 | 500.000 | 441.519 | 11.7 | 92 | 0.06 |

✓

109

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\050214\7PST038.D Vial: 5
Acq On : 3 May 2014 1:59 pm Operator: JBN
Sample : 508TOXCCV S0004-66 Inst : SVOA GC7
Misc : ,CCV,SVOC_DW(508.1),1, 033114_0_4066 Multiplr: 1.00
IntFile : events.e

Method : C:\HPCHEM\3\METHODS\7TOX1126.M (Chemstation Integrator)
Title : TOX_ICALDate112613_Method508,608,8081_GC7_Rtx1701
Last Update : Tue Feb 04 13:03:59 2014
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 100%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | T | TOX-1 | 1000.000 | 1267.196 | -26.7 | 142 | 0.10 |
| 2 | T | TOX-2 | 1000.000 | 1123.154 | -12.3 | 120 | 0.09 |
| 3 | T | TOX-3 | 1000.000 | 1075.739 | -7.6 | 107 | 0.09 |
| 4 | T | TOX-4 | 1000.000 | 1293.337 | -29.3 | 128 | 0.09 |
| 5 | T | TOX-5 | 1000.000 | 1252.979 | -25.3 | 133 | 0.10 |
| 6 | T | TOX-6 | 1000.000 | 1260.449 | -26.0 | 141 | 0.07 |
| 7 | H | SUM | 1000.000 | 3236.844 | -223.7# | 334 | 0.00 |

✓

112

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

# SAMPLE DATA

**ORGANOCHLORINE PESTICIDES**
**METHOD 8081A**

Project: RAAP, Radford, Virginia

Date(s) of Sample Collection: 04/24/14

1st Semiannual 2014 Groundwater Monitoring Event

DAA JN: **B03204-12**
Summit WO: 14042427

Certificate of Analysis

SUMMIT
ENVIRONMENTAL TECHNOLOGIES, INC.
Analytical Laboratories

3310 Win St., Cuyahoga Falls, Ohio 44223
330-253-8211 www.settek.com

| | | | |
|---|---|---|---|
| COMPANY NAME: | **DRAPER ADEN** | DATE SAMPLED: | 04/24/14 |
| SUMMIT ID: | 14042427-001 | DATE RECEIVED: | 04/25/14 |
| PROJECT: | RAAP, RADFORD, VIRGINIA | DATE EXTRACTED: | 04/29/14 |
| SAMPLE ID: | **16WC1B** | ANALYST: | JBN |
| SAMPLE MATRIX: | Water | INSTRUMENT ID: | GC7 |
| VOLUME EXTR (mL): | 940 | ANALYSIS DATE/TIME: | 5/3/14 0:18 |
| FINAL VOLUME (mL): | 1.0 | DATEFILE ID: | 7PST015.D |
| QC Batch ID: | P-042914 | DATE REPORTED: | 05/11/14 |

## ORGANOCHLORINE PESTICIDES

**METHOD REFERENCE: SW846-3510C/8081A, USEPA Methodology**

REPORTING LIMIT, SPIKE LEVEL AND RESULT PRESENTED IN µg/L (PARTS PER BILLION - ppb)

| PESTICIDES | CAS # | CONFIRMED BY SIM/GCMS? (Y/N) | REPORTING LIMIT | RESULT | Q |
|---|---|---|---|---|---|
| 4,4'-DDD | 72-54-8 | | 0.05 | < 0.05 | |
| 4,4'-DDE | 72-55-9 | | 0.05 | < 0.05 | |
| 4,4'-DDT | 50-29-3 | | 0.05 | < 0.05 | |
| Aldrin | 309-00-2 | | 0.05 | < 0.05 | |
| alpha-BHC | 319-84-6 | | 0.05 | < 0.05 | |
| beta-BHC | 319-85-7 | | 0.05 | < 0.05 | |
| delta-BHC | 319-86-8 | | 0.05 | < 0.05 | |
| Dieldrin | 60-57-1 | | 0.05 | < 0.05 | |
| Endosulfan I | 959-98-8 | | 0.05 | < 0.05 | |
| Endosulfan II | 33213-65-9 | | 0.05 | < 0.05 | |
| Endosulfan Sulfate | 1031-07-8 | | 0.05 | < 0.05 | |
| Endrin | 72-20-8 | | 0.05 | < 0.05 | |
| Endrin Aldehyde | 7421-93-4 | | 0.05 | < 0.05 | |
| gamma-BHC (Lindane) | 58-89-9 | | 0.05 | < 0.05 | |
| Haptachlor Epoxide | 1024-57-3 | | 0.05 | < 0.05 | |
| Heptachlor | 76-44-8 | | 0.05 | < 0.05 | |
| Methoxychlor | 72-43-5 | | 0.05 | < 0.05 | |
| tech. Chlordane | 57-74-9 | | 0.5 | < 0.5 | |
| Toxaphene | 8001-35-2 | | 0.5 | < 0.5 | |

| SURROGATES | SPIKE LEVEL | QC RANGE(1) (%) | RESULT (%) |
|---|---|---|---|
| Tetrachloro-m-xylene | 1.1 | 30 -150 | 50.4 |

B = Analyte detected in blank as well as sample
J = Estimated value (detected above MDL, below Reporting Limit)
ND = Not detected above MDL
Q = Qualifier
DO = Diluted out
CI = Coeluting interference
* = Surrogate recovery outside QC control range
> = exceeds 7 day hold time
** = Result obtained from a secondary dilution
(1) = CLP SOW OLM04.2

Comment:

RTSummary

## ANALYTICAL SEQUENCE RETENTION TIME WINDOWS

| Analyst(s): | JBN | Analysis Date(s) | 05/02/14<br>05/03/14 | Instrument: | GC 7 |
|---|---|---|---|---|---|

| GC Data File Name: | 7PST009.D | 7PST016.D | 7PST036.D | | | RT Windows (minutes) | | |
|---|---|---|---|---|---|---|---|---|
| Compound Name | RT Run 1 minutes | RT Run 2 minutes | RT Run 3 minutes | avg | st dev | Calculated +/- 3*s.d. | Used +/- | 0.03 |
| Alpha-BHC | 3.99 | 4.00 | 3.99 | 3.99 | 0.006 | 3.98 - 4.01 | 3.96 - | 4.02 |
| Gamma-BHC | 4.99 | 5.00 | 4.99 | 4.99 | 0.006 | 4.98 - 5.01 | 4.96 - 5.02 | |
| Heptachlor | 5.48 | 5.49 | 5.48 | 5.48 | 0.006 | 5.47 - 5.50 | 5.45 - 5.51 | |
| Aldrin | 6.22 | 6.23 | 6.23 | 6.23 | 0.006 | 6.21 - 6.24 | 6.20 - 6.26 | |
| Beta-BHC | 7.67 | 7.69 | 7.68 | 7.68 | 0.010 | 7.65 - 7.71 | 7.65 - 7.71 | |
| Delta-BHC | 8.30 | 8.32 | 8.31 | 8.31 | 0.010 | 8.28 - 8.34 | 8.28 - 8.34 | |
| Heptachlor Epoxide | 8.57 | 8.58 | 8.58 | 8.58 | 0.006 | 8.56 - 8.59 | 8.55 - 8.61 | |
| Endosulfan I | 9.41 | 9.42 | 9.42 | 9.42 | 0.006 | 9.40 - 9.43 | 9.39 - 9.45 | |
| 4,4-DDE | 10.68 | 10.69 | 10.69 | 10.69 | 0.006 | 10.67 - 10.70 | 10.66 - 10.72 | |
| Dieldrin | 10.85 | 10.86 | 10.85 | 10.85 | 0.006 | 10.84 - 10.87 | 10.82 - 10.88 | |
| Endrin | 11.53 | 11.54 | 11.54 | 11.54 | 0.006 | 11.52 - 11.55 | 11.51 - 11.57 | |
| Endosulfan II | 13.66 | 13.68 | 13.67 | 13.67 | 0.010 | 13.64 - 13.70 | 13.64 - 13.70 | |
| 4,4-DDD | 13.94 | 13.96 | 13.95 | 13.95 | 0.010 | 13.92 - 13.98 | 13.92 - 13.98 | |
| 4,4-DDT | 14.52 | 14.54 | 14.53 | 14.53 | 0.010 | 14.50 - 14.56 | 14.50 - 14.56 | |
| Endrin Aldehyde | 15.34 | 15.36 | 15.35 | 15.35 | 0.010 | 15.32 - 15.38 | 15.32 - 15.38 | |
| Endosulfan Sulfate | 16.70 | 16.72 | 16.71 | 16.71 | 0.010 | 16.68 - 16.74 | 16.68 - 16.74 | |
| Methoxychlor | 17.45 | 17.46 | 17.45 | 17.45 | 0.006 | 17.44 - 17.47 | 17.42 - 17.48 | |
| GC Data File Name: | 7PST010.D | 7PST017.D | 7PST037.D | | | RT Windows | | |
| T. Chlordane Peak 1 | 5.05 | 5.06 | 5.05 | 5.05 | 0.006 | 5.04 - 5.07 | 5.02 - 5.08 | |
| T. Chlordane Peak 2 | 5.48 | 5.49 | 5.49 | 5.49 | 0.006 | 5.47 - 5.50 | 5.46 - 5.52 | |
| T. Chlordane Peak 3 | 7.14 | 7.15 | 7.15 | 7.15 | 0.006 | 7.13 - 7.16 | 7.12 - 7.18 | |
| T. Chlordane Peak 4 | 9.83 | 9.85 | 9.84 | 9.84 | 0.010 | 9.81 - 9.87 | 9.81 - 9.87 | |
| T. Chlordane Peak 5 | 10.05 | 10.07 | 10.06 | 10.06 | 0.010 | 10.03 - 10.09 | 10.03 - 10.09 | |
| GC Data File Name: | 7PST011.D | 7PST018.D | 7PST038.D | | | RT Windows | | |
| Toxaphene Peak 1 | 12.02 | 12.03 | 12.02 | 12.02 | 0.006 | 12.01 - 12.04 | 11.99 - 12.05 | |
| Toxaphene Peak 2 | 13.50 | 13.52 | 13.50 | 13.51 | 0.012 | 13.47 - 13.54 | 13.48 - 13.54 | |
| Toxaphene Peak 3 | 15.07 | 15.08 | 15.06 | 15.07 | 0.010 | 15.04 - 15.10 | 15.04 - 15.10 | |
| Toxaphene Peak 4 | 15.70 | 15.72 | 15.70 | 15.71 | 0.012 | 15.67 - 15.74 | 15.68 - 15.74 | |
| Toxaphene Peak 5 | 17.09 | 17.10 | 17.08 | 17.09 | 0.010 | 17.06 - 17.12 | 17.06 - 17.12 | |

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*Analytical Laboratories*

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## ORGANOCHLORINE PESTICIDES

**METHOD REFERENCE: SW846-3510C/8081B, USEPA Methodology**

CHROMATOGRAPHIC PERFORMANCE EVALUATION

## DDT/ENDRIN BREAKDOWN CALCULATION

ANALYST: JBN
INSTRUMENT ID: GC7
ANALYSIS DATE/TIME: 5/7/14 8:54
DATEFILE ID: 7PST003.D

| COMPONENT | RT | PEAK AREA | BREAKDOWN | CONTROL LIMIT[1] |
|---|---|---|---|---|
| DDT | 14,51 | 5277209 | 2.6% | 15% |
| DDE | 10.68 | 61892 | ✓ | |
| DDD | 13.95 | 79920 | | |
| | | | | |
| ENDRIN | 11.52 | 6668283 | 3.1% | 15% |
| ENDRIN ALDEHYDE | 15.34 | 79120 | | |
| ENDRIN KETONE | 18.08 | 135440 | ✓ | |

RT = Chromatographic Retention Time
(1) SW846 Method 8081B

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| | | | |
|---|---|---|---|
| COMPANY NAME: | **DRAPER ADEN** | DATE SAMPLED: | NA |
| SUMMIT ID: | BLK042714 | DATE RECEIVED: | NA |
| PROJECT: | RAAP, RADFORD, VIRGINIA | DATE EXTRACTED: | 04/29/14 |
| SAMPLE ID: | **Method Blank** | ANALYST: | JBN |
| SAMPLE MATRIX: | Water | INSTRUMENT ID: | GC7 |
| VOLUME EXTR (mL): | 1000 | ANALYSIS DATE/TIME: | 5/2/14 22:31 |
| FINAL VOLUME(mL): | 1.0 | DATEFILE ID: | 7PST012.D |
| QC Batch ID: | P-042914 | DATE REPORTED: | 05/11/14 |

## ORGANOCHLORINE PESTICIDES

**METHOD REFERENCE: SW846-3510C/8081A, USEPA Methodology**
REPORTING LIMIT, SPIKE LEVEL AND RESULT PRESENTED IN µg/L (PARTS PER BILLION - ppb)

| PESTICIDES | CAS # | CONFIRMED BY SIM/GCMS? (Y/N) | REPORTING LIMIT | RESULT | Q |
|---|---|---|---|---|---|
| 4,4'-DDD | 72-54-8 | | 0.05 | < 0.05 | |
| 4,4'-DDE | 72-55-9 | | 0.05 | < 0.05 | |
| 4,4'-DDT | 50-29-3 | | 0.05 | < 0.05 | |
| Aldrin | 309-00-2 | | 0.05 | < 0.05 | |
| alpha-BHC | 319-84-6 | | 0.05 | < 0.05 | |
| beta-BHC | 319-85-7 | | 0.05 | < 0.05 | |
| delta-BHC | 319-86-8 | | 0.05 | < 0.05 | |
| Dieldrin | 60-57-1 | | 0.05 | < 0.05 | |
| Endosulfan I | 959-98-8 | | 0.05 | < 0.05 | |
| Endosulfan II | 33213-65-9 | | 0.05 | < 0.05 | |
| Endosulfan Sulfate | 1031-07-8 | | 0.05 | < 0.05 | |
| Endrin | 72-20-8 | | 0.05 | < 0.05 | |
| Endrin Aldehyde | 7421-93-4 | | 0.05 | < 0.05 | |
| gamma-BHC (Lindane) | 58-89-9 | | 0.05 | < 0.05 | |
| Haptachlor Epoxide | 1024-57-3 | | 0.05 | < 0.05 | |
| Heptachlor | 76-44-8 | | 0.05 | < 0.05 | |
| Methoxychlor | 72-43-5 | | 0.05 | < 0.05 | |
| tech. Chlordane | 57-74-9 | | 0.5 | < 0.5 | |
| Toxaphene | 8001-35-2 | | 0.5 | < 0.5 | |

| SURROGATES | SPIKE LEVEL | QC RANGE(1) (%) | RESULT (%) |
|---|---|---|---|
| Tetrachloro-m-xylene | 1.0 | 30 -150 | 49.6 |

B = Analyte detected in blank as well as sample
J = Estimated value (detected above MDL, below Reporting Limit)
ND = Not detected above MDL
Q = Qualifier
DO = Diluted out

CI = Coeluting interference ✓
* = Surrogate recovery outside QC control range
> = exceeds 7 day hold time
** = Result obtained from a secondary dilution
(1) = CLP SOW OLM04.2

Comment:

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| | | | |
|---|---|---|---|
| COMPANY NAME: | **DRAPER ADEN** | DATE SAMPLED: | NA |
| SUMMIT ID: | LCS042714 | DATE RECEIVED: | NA |
| PROJECT: | RAAP, RADFORD, VIRGINIA | DATE EXTRACTED: | 04/29/14 |
| SAMPLE ID: | **Laboratory Control Sample (LCS)** | ANALYST: | JBN |
| SAMPLE MATRIX: | Water | INSTRUMENT ID: | GC7 |
| VOLUME EXTR (mL): | 1000 | ANALYSIS DATE/TIME: | 5/2/14 23:07 |
| FINAL VOLUME (mL): | 1.0 | DATEFILE ID: | 7PST013.D |
| QC Batch ID: | P-042914 | DATE REPORTED: | 05/11/14 |

## ORGANOCHLORINE PESTICIDES

**METHOD REFERENCE: SW846-3510C/8081A, USEPA Methodology**
REPORTING LIMIT, SPIKE LEVEL AND RESULT PRESENTED IN µg/L (PARTS PER BILLION - ppb)

| PESTICIDES | CAS # | REPORTING LIMIT | RESULT | Q |
|---|---|---|---|---|
| 4,4'-DDD | 72-54-8 | 0.05 | 0.417 | |
| 4,4'-DDE | 72-55-9 | 0.05 | 0.407 | |
| 4,4'DDT | 50-29-3 | 0.05 | 0.372 | |
| Aldrin | 309-00-2 | 0.05 | 0.408 | |
| alpha-BHC | 319-84-6 | 0.05 | 0.378 | |
| beta-BHC | 319-85-7 | 0.05 | 0.399 | |
| delta-BHC | 319-86-8 | 0.05 | 0.398 | |
| Dieldrin | 60-57-1 | 0.05 | 0.436 | |
| Endosulfan I | 959-98-8 | 0.05 | 0.436 | |
| Endosulfan II | 33213-65-9 | 0.05 | 0.429 | |
| Endosulfan Sulfate | 1031-07-8 | 0.05 | 0.448 | |
| Endrin | 72-20-8 | 0.05 | 0.435 | |
| Endrin Aldehyde | 7421-93-4 | 0.05 | 0.411 | |
| gamma-BHC (Lindane) | 58-89-9 | 0.05 | 0.394 | |
| Haptachlor Epoxide | 1024-57-3 | 0.05 | 0.442 | |
| Heptachlor | 76-44-8 | 0.05 | 0.389 | |
| Methoxychlor | 72-43-5 | 0.05 | 0.424 | |
| tech. Chlordane | 57-74-9 | 0.5 | < 0.5 | |
| Toxaphene | 8001-35-2 | 0.5 | < 0.5 | |

| SURROGATES | SPIKE LEVEL | QC RANGE[1] (%) | RESULT (%) |
|---|---|---|---|
| Tetrachloro-m-xylene | 1.0 | 30 -150 | 52.6 |

B = Analyte detected in blank as well as sample
J = Estimated value (detected above MDL)
ND = Not detected above MDL
Q = Qualifier

CI = Coeluting interference
**Result obtained from a secondary dilution
* = Surrogate recovery outside QC control range
(1) = CLP SOW OLM04.2

DO = Diluted out
> = exceeds 7 day hold time

Comment: Highlighted components fortfied at the 0.500 µg/L level.

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| | | | |
|---|---|---|---|
| COMPANY NAME: | **DRAPER ADEN** | DATE SAMPLED: | NA |
| SUMMIT ID: | LCSD042714 | DATE RECEIVED: | NA |
| PROJECT: | RAAP, RADFORD, VIRGINIA | DATE EXTRACTED: | 04/29/14 |
| SAMPLE ID: | **Laboratory Control Sample Duplicate (LCSD)** | ANALYST: | JBN |
| SAMPLE MATRIX: | Water | INSTRUMENT ID: | GC7 |
| VOLUME EXTR (mL): | 1000 | ANALYSIS DATE/TIME: | 5/2/14 23:42 |
| FINAL VOLUME (mL): | 1.0 | DATEFILE ID: | 7PST014.D |
| QC Batch ID: | P-042914 | DATE REPORTED: | 05/11/14 |

## ORGANOCHLORINE PESTICIDES

**METHOD REFERENCE: SW846-3510C/8081A, USEPA Methodology**

REPORTING LIMIT, SPIKE LEVEL AND RESULT PRESENTED IN µg/L (PARTS PER BILLION - ppb)

| PESTICIDES | CAS # | REPORTING LIMIT | RESULT | Q |
|---|---|---|---|---|
| 4,4'-DDD | 72-54-8 | 0.05 | 0.407 | |
| 4,4'-DDE | 72-55-9 | 0.05 | 0.396 | |
| 4,4'DDT | 50-29-3 | 0.05 | 0.368 | |
| Aldrin | 309-00-2 | 0.05 | 0.400 | |
| alpha-BHC | 319-84-6 | 0.05 | 0.361 | |
| beta-BHC | 319-85-7 | 0.05 | 0.382 | |
| delta-BHC | 319-86-8 | 0.05 | 0.386 | |
| Dieldrin | 60-57-1 | 0.05 | 0.426 | |
| Endosulfan I | 959-98-8 | 0.05 | 0.426 | |
| Endosulfan II | 33213-65-9 | 0.05 | 0.419 | |
| Endosulfan Sulfate | 1031-07-8 | 0.05 | 0.435 | |
| Endrin | 72-20-8 | 0.05 | 0.430 | |
| Endrin Aldehyde | 7421-93-4 | 0.05 | 0.406 | |
| gamma-BHC (Lindane) | 58-89-9 | 0.05 | 0.376 | |
| Haptachlor Epoxide | 1024-57-3 | 0.05 | 0.430 | |
| Heptachlor | 76-44-8 | 0.05 | 0.394 | |
| Methoxychlor | 72-43-5 | 0.05 | 0.425 | |
| tech. Chlordane | 57-74-9 | 0.5 | < 0.5 | |
| Toxaphene | 8001-35-2 | 0.5 | < 0.5 | |

| SURROGATES | SPIKE LEVEL | QC RANGE[1] (%) | RESULT (%) |
|---|---|---|---|
| Tetrachloro-m-xylene | 1.0 | 30 -150 | 51.0 |

B = Analyte detected in blank as well as sample
J = Estimated value (detected above MDL)
ND = Not detected above MDL
Q = Qualifier

CI = Coeluting interference
**Result obtained from a secondary dilution
* = Surrogate recovery outside QC control range
(1) = CLP SOW OLM04.2

DO = Diluted out
> = exceeds 7 day hold time

Comment: Highlighted components fortfied at the 0.500 µg/L level.

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| | | | |
|---|---|---|---|
| COMPANY NAME: | **DRAPER ADEN** | DATE SAMPLED: | NA |
| SUMMIT IDs: | LCS042714 LCSD042714 | DATE RECEIVED: | NA |
| PROJECT: | RAAP, RADFORD, VIRGINIA | DATE EXTRACTED: | 04/29/14 |
| SAMPLE ID: | **Laboratory Control Samples** | ANALYST: | JBN |
| SAMPLE MATRIX: | Water | INSTRUMENT ID: | GC7 |
| VOLUME EXTRACTED (mL): | 1000 | DATE ANALYZED: | 05/02/14 |
| FINAL VOLUME (mL): | 1.0 | DATEFILE ID: | 7PST013.D 7PST014.D |
| QC Batch ID: | P-042914 | DATE REPORTED: | 05/11/14 |

## ORGANOCHLORINE PESTICIDES

**METHOD REFERENCE: SW846 3510C/8081A, USEPA Methodology**
CONCENTRATION (CONC) PRESENTED IN µg/L (PARTS PER BILLION - ppb)

### LABORATORY CONTROL SAMPLE SET SUMMARY

| | BLANK | LCS | | LCSD | | (%) | QC LIMITS(1) | | |
|---|---|---|---|---|---|---|---|---|---|
| SEMIVOLATILES | CONC | CONC | % REC | CONC | % REC | RPD | RPD | % REC | # |
| 4,4'-DDD | 0.000 | 0.417 | 83.4 | 0.407 | 81.4 | 2.3 | 42 | 31 -141 | |
| 4,4'-DDE | 0.000 | 0.407 | 81.4 | 0.396 | 79.2 | 2.7 | 40 | 30 -145 | |
| 4,4'-DDT | 0.000 | 0.372 | 74.5 | 0.368 | 73.6 | 1.2 | 27 | 38 -127 | |
| Aldrin | 0.000 | 0.408 | 81.6 | 0.400 | 80.0 | 2.0 | 22 | 40 -120 | |
| alpha-BHC | 0.000 | 0.378 | 75.7 | 0.361 | 72.2 | 4.7 | 28 | 37 -134 | |
| beta-BHC | 0.000 | 0.399 | 79.8 | 0.382 | 76.4 | 4.4 | 42 | 17 -147 | |
| delta-BHC | 0.000 | 0.398 | 79.6 | 0.386 | 77.2 | 3.1 | 31 | 32 -137 | |
| Dieldrin | 0.000 | 0.436 | 87.2 | 0.426 | 85.3 | 2.2 | 18 | 52 -128 | |
| Endosulfan I | 0.000 | 0.436 | 87.2 | 0.426 | 85.2 | 2.3 | 38 | 24 -96 | |
| Endosulfan II | 0.000 | 0.429 | 85.8 | 0.419 | 83.9 | 2.3 | 50 | 1 -202 | |
| Endosulfan Sulfate | 0.000 | 0.448 | 89.7 | 0.435 | 87.1 | 3.0 | 31 | 26 -144 | |
| Endrin | 0.000 | 0.435 | 87.1 | 0.430 | 86.1 | 1.2 | 21 | 56 -121 | |
| Endrin Aldehyde | 0.000 | 0.411 | 82.2 | 0.406 | 81.3 | 1.2 | 50 | 0 -200 | |
| gamma-BHC (Lindane) | 0.000 | 0.394 | 78.7 | 0.376 | 75.3 | 4.5 | 15 | 56 -123 | |
| Haptachlor Epoxide | 0.000 | 0.442 | 88.4 | 0.430 | 86.1 | 2.6 | 50 | 37 -142 | |
| Heptatchlor | 0.000 | 0.389 | 77.7 | 0.394 | 78.8 | 1.3 | 20 | 40 -131 | |
| Methoxychlor | 0.000 | 0.424 | 84.8 | 0.425 | 85.0 | 0.3 | 50 | 0 -200 | |

(1)Sources: 40CFR Part 136, Method 608, Table 3 & CLP SOW OLM04.2 ✓ ✓ ✓
0 of 17 RPD (precision) excursions
0 of 34 Recovery (accuracy) excursions
# Asterisk in this column indicates precision and/or accuracy excursion(s).
Comments:

SIM/GC-MS CONFIRMATION
NOT
REQUIRED

✓

1/3

CompuChem
A Division Of
Liberty Analytical Corp.

5/20/2014

Abridged data package.

Full deliverable available.

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1404171

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404171

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1404171

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404171-01 | 16WC1A | Water | 04/24/2014 11:45 | 04/25/2014 13:15 |
| 1404171-02 | 16C1 | Water | 04/24/2014 15:25 | 04/25/2014 13:15 |
| 1404171-03 | 16MW8 | Water | 04/24/2014 09:15 | 04/25/2014 13:15 |
| 1404171-04 | 16MW9 | Water | 04/24/2014 10:30 | 04/25/2014 13:15 |
| 1404171-05 | 16WDUP | Water | 04/24/2014 12:00 | 04/25/2014 13:15 |
| 1404171-06 | 16WC1B | Water | 04/24/2014 14:05 | 04/25/2014 13:15 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1404171

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16WC1A | 8151A | 1404171-01 |
| 16C1 | 8151A | 1404171-02 |
| 16MW8 | 8151A | 1404171-03 |
| 16MW9 | 8151A | 1404171-04 |
| 16WDUP | 8151A | 1404171-05 |
| 16WC1B | 8151A | 1404171-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Patricia A Murphy

Name: Pat Murphy

Date: 05/16/2014

Title: Senior Chemist

Environmental Testing Laboratories

CompuChem

A Division Of

Liberty Analytical Corp.

# CompuChem

**A division of Liberty Analytical Corporation**
**501 Madison Avenue**
**Cary, N.C. 27513**
**Tel: 919/379-4100 Fax: 919/379-4050**


## SDG NARRATIVE
## SDG # 1404171
## PROTOCOL: SW-846

**SAMPLEIDENTIFICATIONS: 16WC1A 16C1 16MW8 16MW9 16WDUP 16WC1B**

The 6 aqueous samples listed above were received intact, at temperature between 1.2°C to 3.1°C, with proper documentation, in sealed shipping container, on April 25, 2014. The samples listed above were scheduled for the requested analysis of the Herbicide fraction. SW-846, 3rd Edition, Update 4, Method 8151A was used to prepare and analyze the samples, with the exceptions and/or additions requested by the client. All pertinent Quality Assurance notices are included in the narrative section and all pertinent Laboratory notices are included in the sample data sections.

**Herbicide**

Extraction and analysis holding time requirements were met for the samples.

No target analytes confirmed above the reporting limits in the samples. All non-detects are reported to the reporting limit (RL) with a "U" flag qualifier.

No Manual integrations were performed on the process files associated with this SDG. Please see the detailed Manual Integration Summary report that is located in section 7. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All QC criteria were met for the initial and continuing calibration standards associated to this SDG.

The associated method blank met all quality control criteria.

All of the surrogate recoveries were within the method.

The Laboratory Control Sample (LCS) met recovery criteria.

16WC1A was used as the original to prepare the duplicate matrix spikes as requested. The associated duplicate matrix spikes met most of the advisory accuracy criteria.

I certify that this Sample Data Package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy Sample Data Package and in the electronic data deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Patricia A. Murphy
Senior Scientist
May 16, 2014

# CHAIN OF CUSTODY RECORD

JK JLe 4/24/14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | 0 | **Consultant:** | Draper Aden Associates | **Sample Site:** | RAAP, Radford, Virginia |
| **Attn:** | 0 | **Attn:** | Janet C. Frazier | **Location:** | HWMU16 |
| **Address:** | 0 | **Address:** | 2206 South Main Street, Blacksburg, Virginia 24060 | **Event:** | t Semiannual 2014 Groundwater Verification Monitoring Ev |
| | 0 | | | **DAA JN:** | B03204-12 |
| **Phone:** | 0 | **Phone:** | (540) 552-0444 | **Lab JN:** | |
| **Fax:** | 0 | **Fax:** | (540) 552-0291 | | |
| **Fax:** | 0 | | | | |

**Project Specific (PS) or Batch (B) QC:**
**Sample Collection for Project Complete?** YES
**Carrier:** DASH COURIER
**Tracking Number:** SERVICE

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on Ice: YES

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | G | G | G | G | TG | G | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | U | U | U | U | T | U | | | |
| **Required pH of Sample** | | | | | <2 | <2 | | | >12 | <2 | | | | |
| **Box 2 - Preservative** | | | | | B | B | H | H | E | B | H | | | |
| **Box 5 - Sample Container Type** | | | | | 1-500 ml P | | 2-1LAG | 2-1L AG | 1-500-P | 1-500mL P | 2-1LAG | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **ICP/MS 6020A/3005A and 6010C/3010A (Metals-Total)** | **7470A (Mercury-Total)** | **8151A (Herbicides)** | **8270D/3510C (Semivolatiles)** | **9012B/9010C(Cyanide)** | **6020A - COBALT ONLY - (DISSOLVED)** | **8081B (Pesticides) W/CLEANUP** | | | |
| 16C1 | 4/24 | 1525 | GW | 8 | X | X | X | X | X | | X | | | |
| 16MW8 | 4/24 | 0915 | GW | 8 | X | X | X | X | X | | X | | | |
| 16MW9 | 4/24 | 1030 | GW | 8 | X | X | X | X | X | | X | | | |
| 16WC1A | 4/24 | 1145 | GW | 24 | X | X | X | X | X | | X | | | |
| 16WDUP | 4/24 | 1200 | GW | 8 | X | X | X | X | X | | X | | | |
| 16WC1B | 4/24 | 1405 | GW | 9 (4/25/14) | X | X | X | X | X | X | X | | | |
| 16-1 | 4/23 | 0925 | GW | 3 | X | X | | X | | | | | | |
| 16-2 | 4/23 | 1015 | GW | 3 | X | X | | X | | | | | | |
| 16-3 | 4/23 | 1115 | GW | 3 | X | X | | X | | | | | | |
| 16-5 | 4/23 | 1205 | GW | 3 | X | X | | X | | | | | | |
| 16WC2B | 4/23 | 1330 | GW | 3 | X | X | | X | | | | | | |
| 16SPRING | 4/23 | 1225 | GW | 3 | X | X | | X | | | | | | |

**GENERAL NOTES:**
1. Report results to detection limit, with J flags, for italicized wells.
2. Report results at or greater than QL for non-italicized wells. 3. ERIS Deliverable required.
4. VELAP accreditation required.
5. Full deliverable.

DISS. Co

1404171-02
-03
-04
-01 USE FOR QC
-05
-06 * 1404173-01

1404172-01
-02
-03
-04
-05
-06

diss. Co in this cooler

**Clients Special Instructions:** Level 4 with edd. See attached target analyte list. 2.2°C, 1.7°C, 3.1°C, 2.3°C, 1.9°C, 1.2°C IR GUN: SN0010

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No

Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Ken Coddington | Date: 4/25/14 | #2 Relinquished by (Signature): | Date: 4/25/14 | Sample Storage Time Requested: |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: DAA | Time: 0930 | Company Name: Dash Courier | Time: 1315 | 30 DYS ORG/6 MTHS INORG |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: 4-25-14 | #2 Received by (Signature): | Date: 4/25/14 | |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: Dash Courier | Time: 0930 | Company Name: CompuChem | Time: 1315 | |

JJK 4/25/2014 1/0

# HOLDING TIME SUMMARY

*8151A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/05/14 | 5.0 | 40 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/05/14 | 5.0 | 40 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/05/14 | 5.1 | 40 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/05/14 | 5.1 | 40 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/05/14 | 5.1 | 40 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/05/14 | 5.1 | 40 | |

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# SURROGATE STANDARD RECOVERY

*8151A*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: agilent92

Sequence: 4E05003 Calibration: 4040101

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Blank (4042815-BLK1 ) ug/L** Lab File ID: 121m4042815-BLK1.d Analyzed: 05/05/14 13:49 | | | | |
| DCAA | 50.00 | 84 | 50 - 148 | |
| DCAA [2C] | 50.00 | 101 | 50 - 148 | |
| **LCS (4042815-BS1 ) ug/L** Lab File ID: 122m4042815-BS1.d Analyzed: 05/05/14 14:18 | | | | |
| DCAA | 50.00 | 79 | 50 - 148 | |
| DCAA [2C] | 50.00 | 94 | 50 - 148 | |
| **Matrix Spike (4042815-MS1 ) ug/L** Lab File ID: 123m4042815-MS1.d Analyzed: 05/05/14 14:48 | | | | |
| DCAA | 50.00 | 83 | 50 - 148 | |
| DCAA [2C] | 50.00 | 61 | 50 - 148 | |
| **Matrix Spike Dup (4042815-MSD1 ) ug/L** Lab File ID: 124m4042815-MSD1.d Analyzed: 05/05/14 15:17 | | | | |
| DCAA | 50.00 | 79 | 50 - 148 | |
| DCAA [2C] | 50.00 | 60 | 50 - 148 | |
| **16WC1A (1404171-01 ) ug/L** Lab File ID: 125m1404171-01.d Analyzed: 05/05/14 15:47 | | | | |
| DCAA | 50.00 | 84 | 50 - 148 | |
| DCAA [2C] | 50.00 | 87 | 50 - 148 | |
| **16C1 (1404171-02 ) ug/L** Lab File ID: 126m1404171-02.d Analyzed: 05/05/14 16:16 | | | | |
| DCAA | 50.00 | 82 | 50 - 148 | |
| DCAA [2C] | 50.00 | 90 | 50 - 148 | |
| **16MW8 (1404171-03 ) ug/L** Lab File ID: 127m1404171-03.d Analyzed: 05/05/14 16:46 | | | | |
| DCAA | 50.00 | 78 | 50 - 148 | |
| DCAA [2C] | 50.00 | 85 | 50 - 148 | |

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# SURROGATE STANDARD RECOVERY

*8151A*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: agilent92

Sequence: 4E05003 Calibration: 4040101

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16MW9 (1404171-04 ) ug/L** Lab File ID: 128m1404171-04.d Analyzed: 05/05/14 17:15 | | | | |
| DCAA | 50.00 | 85 | 50 - 148 | |
| DCAA [2C] | 50.00 | 95 | 50 - 148 | |
| **16WDUP (1404171-05 ) ug/L** Lab File ID: 129m1404171-05.d Analyzed: 05/05/14 17:45 | | | | |
| DCAA | 50.00 | 83 | 50 - 148 | |
| DCAA [2C] | 50.00 | 90 | 50 - 148 | |
| **16WC1B (1404171-06 ) ug/L** Lab File ID: 130m1404171-06.d Analyzed: 05/05/14 18:14 | | | | |
| DCAA | 50.00 | 82 | 50 - 148 | |
| DCAA [2C] | 50.00 | 88 | 50 - 148 | |

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# RT SUMMARY

*8151A*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: agilent92

Sequence: 4E05003 Calibration: 4040101

| Surrogate Compound | RT | CCV RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|
| **Initial Cal Check (4E05003-ICV1 ) ng/uL** Lab File ID: 120m4E05003-ICV Analyzed: 05/05/14 13:19 | | | | | |
| DCAA | 11.25 | 11.25 | 0 | +/-0.030 | |
| DCAA [2C] | 11.25 | 11.25 | 0 | +/-0.030 | |
| **Blank (4042815-BLK1 ) ug/L** Lab File ID: 121m4042815-BLK Analyzed: 05/05/14 13:49 | | | | | |
| DCAA | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| DCAA [2C] | 11.25 | 11.25 | 0.0000 | +/-0.030 | |
| **LCS (4042815-BS1 ) ug/L** Lab File ID: 122m4042815-BS1 Analyzed: 05/05/14 14:18 | | | | | |
| DCAA | 11.25 | 11.25 | 0.0000 | +/-0.030 | |
| DCAA [2C] | 11.248 | 11.25 | -0.0020 | +/-0.030 | |
| **Matrix Spike (4042815-MS1 ) ug/L** Lab File ID: 123m4042815-MS1 Analyzed: 05/05/14 14:48 | | | | | |
| DCAA | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| DCAA [2C] | 11.25 | 11.25 | 0.0000 | +/-0.030 | |
| **Matrix Spike Dup (4042815-MSD1 ) ug/L** Lab File ID: 124m4042815-MSI Analyzed: 05/05/14 15:17 | | | | | |
| DCAA | 11.253 | 11.25 | 0.0030 | +/-0.030 | |
| DCAA [2C] | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| **16WC1A (1404171-01 ) ug/L** Lab File ID: 125m1404171-01.d Analyzed: 05/05/14 15:47 | | | | | |
| DCAA | 11.253 | 11.25 | 0.0030 | +/-0.030 | |
| DCAA [2C] | 11.253 | 11.25 | 0.0030 | +/-0.030 | |

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# RT SUMMARY

*8151A*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: agilent92

Sequence: 4E05003 Calibration: 4040101

| Surrogate Compound | RT | CCV RT | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|
| **16C1 (1404171-02 ) ug/L** Lab File ID: 126m1404171-02.d Analyzed: 05/05/14 16:16 | | | | | |
| DCAA | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| DCAA [2C] | 11.25 | 11.25 | 0.0000 | +/-0.030 | |
| **16MW8 (1404171-03 ) ug/L** Lab File ID: 127m1404171-03.d Analyzed: 05/05/14 16:46 | | | | | |
| DCAA | 11.25 | 11.25 | 0.0000 | +/-0.030 | |
| DCAA [2C] | 11.25 | 11.25 | 0.0000 | +/-0.030 | |
| **16MW9 (1404171-04 ) ug/L** Lab File ID: 128m1404171-04.d Analyzed: 05/05/14 17:15 | | | | | |
| DCAA | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| DCAA [2C] | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| **16WDUP (1404171-05 ) ug/L** Lab File ID: 129m1404171-05.d Analyzed: 05/05/14 17:45 | | | | | |
| DCAA | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| DCAA [2C] | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| **16WC1B (1404171-06 ) ug/L** Lab File ID: 130m1404171-06.d Analyzed: 05/05/14 18:14 | | | | | |
| DCAA | 11.252 | 11.25 | 0.0020 | +/-0.030 | |
| DCAA [2C] | 11.25 | 11.25 | 0.0000 | +/-0.030 | |

# LCS / LCS DUPLICATE SUMMARY

*8151A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042815-BS1 Matrix: Water Client ID: PLCSPR Batch: 4042815

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| 2,4-D | 25.00 | 19.71 | 79 | | 50 - 150 |
| 2,4-D [2C] | 25.00 | 22.86 | 91 | | 50 - 150 |
| 2,4,5-TP (Silvex) | 5.000 | 4.152 | 83 | | 50 - 150 |
| 2,4,5-TP (Silvex) [2C] | 5.000 | 4.789 | 96 | | 50 - 150 |
| 2,4,5-T | 5.000 | 4.244 | 85 | | 50 - 150 |
| 2,4,5-T [2C] | 5.000 | 4.862 | 97 | | 50 - 150 |
| Dinoseb | 12.50 | 7.422 | 59 | | 50 - 150 |
| Dinoseb [2C] | 12.50 | 8.597 | 69 | | 50 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8151A*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042815-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 2,4-D | 25.00 | 5.0 U | 19.75 P | 79 | | 50 - 150 |
| 2,4,5-TP (Silvex) | 5.000 | 2.5 U | 4.099 P | 82 | | 50 - 150 |
| 2,4,5-T | 5.000 | 2.5 U | 4.280 | 86 | | 50 - 150 |
| Dinoseb | 12.50 | 2.5 U | 5.407 P | 43 | * | 50 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8151A*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042815-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 2,4-D | 25.00 | 17.75 P | 71 | 11 | | 40 | 50 - 150 |
| 2,4,5-TP (Silvex) | 5.000 | 3.892 P | 78 | 5 | | 40 | 50 - 150 |
| 2,4,5-T | 5.000 | 4.037 | 81 | 6 | | 40 | 50 - 150 |
| Dinoseb | 12.50 | 4.765 | 38 | 13 | * | 40 | 50 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8151A*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042815-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 2,4-D [2C] | 25.00 | 5.0 U | 14.37 P | 57 | | 50 - 150 |
| 2,4,5-TP (Silvex) [2C] | 5.000 | 2.5 U | 2.982 P | 60 | | 50 - 150 |
| 2,4,5-T [2C] | 5.000 | 2.5 U | 3.521 | 70 | | 50 - 150 |
| Dinoseb [2C] | 12.50 | 2.5 U | 4.103 P | 33 | * | 50 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*8151A*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042815-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 2,4-D [2C] | 25.00 | 13.52 P | 54 | 6 | | 40 | 50 - 150 |
| 2,4,5-TP (Silvex) [2C] | 5.000 | 3.044 P | 61 | 2 | | 40 | 50 - 150 |
| 2,4,5-T [2C] | 5.000 | 3.633 | 73 | 3 | | 40 | 50 - 150 |
| Dinoseb [2C] | 12.50 | 3.877 | 31 | 6 | * | 40 | 50 - 150 |

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# PREPARATION BATCH SUMMARY

*8151A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042815 Matrix: Water Preparation: EPA 8151A_GC

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/30/14 15:10 | 500 | 5000 |
| 16C1 | 1404171-02 | 04/30/14 15:10 | 1000 | 10000 |
| 16MW8 | 1404171-03 | 04/30/14 15:10 | 1000 | 10000 |
| 16MW9 | 1404171-04 | 04/30/14 15:10 | 1000 | 10000 |
| 16WDUP | 1404171-05 | 04/30/14 15:10 | 1000 | 10000 |
| 16WC1B | 1404171-06 | 04/30/14 15:10 | 1000 | 10000 |
| PBLKPR | 4042815-BLK1 | 04/30/14 15:10 | 1000 | 10000 |
| PLCSPR | 4042815-BS1 | 04/30/14 15:10 | 1000 | 10000 |
| 16WC1AMS | 4042815-MS1 | 04/30/14 15:10 | 500 | 5000 |
| 16WC1AMSD | 4042815-MSD1 | 04/30/14 15:10 | 500 | 5000 |

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# ANALYSIS SEQUENCE SUMMARY

*8151A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4C28002 Calibration: 4040101 Instrument: agilent92

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| 81511MA | 4C28002-CAL1 | 003m4C28002-CAL1.d | 03/28/14 10:38:00 |
| 81512MA | 4C28002-CAL2 | 004m4C28002-CAL2.d | 03/28/14 11:08:00 |
| 81513MA | 4C28002-CAL3 | 005m4C28002-CAL3.d | 03/28/14 11:37:00 |
| 81514MA | 4C28002-CAL4 | 006m4C28002-CAL4.d | 03/28/14 12:07:00 |
| 81515MA | 4C28002-CAL5 | 007m4C28002-CAL5.d | 03/28/14 12:36:00 |
| SCV8151MA | 4C28002-SCV1 | 008m4C28002-SCV1.d | 03/28/14 13:06:00 |

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# ANALYSIS SEQUENCE SUMMARY

*8151A*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E05003 Calibration: 4040101 Instrument: agilent92

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| 81513MT | 4E05003-ICV1 | 120m4E05003-ICV1.d | 05/05/14 13:19:00 |
| PBLKPR | 4042815-BLK1 | 121m4042815-BLK1.d | 05/05/14 13:49:00 |
| PLCSPR | 4042815-BS1 | 122m4042815-BS1.d | 05/05/14 14:18:00 |
| 16WC1AMS | 4042815-MS1 | 123m4042815-MS1.d | 05/05/14 14:48:00 |
| 16WC1AMSD | 4042815-MSD1 | 124m4042815-MSD1.d | 05/05/14 15:17:00 |
| 16WC1A | 1404171-01 | 125m1404171-01.d | 05/05/14 15:47:00 |
| 16C1 | 1404171-02 | 126m1404171-02.d | 05/05/14 16:16:00 |
| 16MW8 | 1404171-03 | 127m1404171-03.d | 05/05/14 16:46:00 |
| 16MW9 | 1404171-04 | 128m1404171-04.d | 05/05/14 17:15:00 |
| 16WDUP | 1404171-05 | 129m1404171-05.d | 05/05/14 17:45:00 |
| 16WC1B | 1404171-06 | 130m1404171-06.d | 05/05/14 18:14:00 |
| 81513MU | 4E05003-CCV1 | 131m4E05003-CCV1.d | 05/05/14 18:44:00 |

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# I. Target Compound Results

## (ANALYSIS DATA SHEETS)

### Analysis Data Sheets (ADS) and Surrogate Recovery Results

Sample data shall be arranged in packets with the Analysis Data Sheet, followed by the raw data for the sample. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (ANALYSIS DATA SHEET)

Tabulated results (identification and quantitation) shall be included.

b. Copies of Chromatograms

Positively identified compounds shall be labeled with the names of compounds, either directly out from the peak on the chromatogram, or on a printout of retention times on the data system printout if retention times are printed over the peak on the chromatogram. Included for each sample or sample extract, dilutions and reanalyses. The chromatogram shall contain the following header information: Client Sample ID Number, volume injected (uL), date and time of injection, GC column ID, GC instrument ID, Lab file ID and analyst ID.

c. Copies of Chromatograms from the Second Column (where required)

d. Data System Printout

A printout of retention time and corresponding peak height or peak area shall accompany each chromatogram.

# ANALYSIS DATA SHEET

*8151A*

**16WC1A**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 8151A_GC | File ID: 125m1404171-01.d | Sampled: 04/24/14 11:45

Initial/Final: 500mL / 5000uL | Sulfur Cleanup: N | Lab ID: 1404171-01 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 15:10

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/05/14 15:47

Batch: 4042815 | Sequence: 4E05003 | Calibration: 4040101 | Instrument: agilent92

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb | | 0.93 | 2.5 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA | 50.00 | 42.15 | 84 | 50 - 148 | |
| DCAA [2C] | 50.00 | 43.32 | 87 | 50 - 148 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8151A*

**16C1**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 8151A_GC | File ID: 126m1404171-02.d | Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 10000uL | Sulfur Cleanup: N | Lab ID: 1404171-02 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 15:10

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/05/14 16:16

Batch: 4042815 | Sequence: 4E05003 | Calibration: 4040101 | Instrument: agilent92

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb | | 0.93 | 2.5 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA | 50.00 | 40.89 | 82 | 50 - 148 | |
| DCAA [2C] | 50.00 | 44.79 | 90 | 50 - 148 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8151A*

**16MW8**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 8151A_GC | File ID: 127m1404171-03.d | Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 10000uL | Sulfur Cleanup: N | Lab ID: 1404171-03 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 15:10

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/05/14 16:46

Batch: 4042815 | Sequence: 4E05003 | Calibration: 4040101 | Instrument: agilent92

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb | | 0.93 | 2.5 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA | 50.00 | 38.79 | 78 | 50 - 148 | |
| DCAA [2C] | 50.00 | 42.62 | 85 | 50 - 148 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8151A*

**16MW9**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 8151A_GC File ID: 128m1404171-04.d Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 10000uL Sulfur Cleanup: N Lab ID: 1404171-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 15:10

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/05/14 17:15

Batch: 4042815 Sequence: 4E05003 Calibration: 4040101 Instrument: agilent92

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb | | 0.93 | 2.5 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA | 50.00 | 42.72 | 85 | 50 - 148 | |
| DCAA [2C] | 50.00 | 47.68 | 95 | 50 - 148 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8151A*

**16WDUP**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 8151A_GC File ID: 129m1404171-05.d Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 10000uL Sulfur Cleanup: N Lab ID: 1404171-05 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 15:10

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/05/14 17:45

Batch: 4042815 Sequence: 4E05003 Calibration: 4040101 Instrument: agilent92

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb | | 0.93 | 2.5 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA | 50.00 | 41.32 | 83 | 50 - 148 | |
| DCAA [2C] | 50.00 | 44.84 | 90 | 50 - 148 | |

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*8151A*

**16WC1B**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 8151A_GC File ID: 130m1404171-06.d Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 10000uL Sulfur Cleanup: N Lab ID: 1404171-06 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 15:10

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/05/14 18:14

Batch: 4042815 Sequence: 4E05003 Calibration: 4040101 Instrument: agilent92

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb | | 0.93 | 2.5 | U |

| SYSTEM MONITORING COMPOUND | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA | 50.00 | 40.89 | 82 | 50 - 148 | |
| DCAA [2C] | 50.00 | 44.19 | 88 | 50 - 148 | |

* Values outside of QC limits

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# INITIAL CALIBRATION DATA

*8151A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4040101 Instrument: agilent92

Calibration Date: 3/28/2014 12:00:01AM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| 2,4-D | 0.47 | 89300 | 0.94 | 83288.3 | 1.88 | 87787.23 | 2.82 | 92944.68 | 3.76 | 104081.4 | | |
| 2,4-D [2C] | 0.47 | 49948.94 | 0.94 | 46610.64 | 1.88 | 49154.25 | 2.82 | 51496.81 | 3.76 | 56514.1 | | |
| 2,4,5-TP (Silvex) | 0.0951 | 514931.7 | 0.1902 | 481530 | 0.3804 | 489453.2 | 0.5706 | 504090.4 | 0.7608 | 542041.3 | | |
| 2,4,5-TP (Silvex) [2C] | 0.0951 | 294931.7 | 0.1902 | 275515.3 | 0.3804 | 278622.5 | 0.5706 | 282387 | 0.7608 | 298401.7 | | |
| 2,4,5-T | 0.0948 | 418459.9 | 0.1896 | 390469.4 | 0.3792 | 400543.3 | 0.5688 | 412294.3 | 0.7584 | 445047.5 | | |
| 2,4,5-T [2C] | 0.0948 | 240791.1 | 0.1896 | 224472.6 | 0.3792 | 229185.1 | 0.5688 | 233198 | 0.7584 | 248121 | | |
| Dinoseb | 0.2362 | 345135.5 | 0.4725 | 330696.3 | 0.945 | 360895.3 | 1.418 | 381564.2 | 1.89 | 432711.6 | | |
| Dinoseb [2C] | 0.2362 | 194589.3 | 0.4725 | 186012.7 | 0.945 | 200090 | 1.418 | 207844.9 | 1.89 | 227298.9 | | |
| DCAA | 0.936 | 69098.29 | 1.872 | 66839.74 | 3.744 | 72782.32 | 5.616 | 79438.57 | 7.488 | 90529.65 | | |
| DCAA [2C] | 0.936 | 39231.84 | 1.872 | 37942.84 | 3.744 | 40780.71 | 5.616 | 43200.68 | 7.488 | 47524.84 | | |

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# INITIAL CALIBRATION DATA (Continued)

*8151A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4040101 Instrument: agilent92

Calibration Date: 3/28/2014 12:00:01AM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| 2,4-D | 91480.32 | 8.580089 | 13.107 | 4.855658E-03 | | | CCC (20) | |
| 2,4-D [2C] | 50744.95 | 7.247615 | 13.1364 | 1.560193E-02 | | | CCC (20) | |
| 2,4,5-TP (Silvex) | 506409.3 | 4.687684 | 14.35 | 1.614022E-02 | | | CCC (20) | |
| 2,4,5-TP (Silvex) [2C] | 285971.6 | 3.544536 | 14.2986 | 1.075925E-02 | | | CCC (20) | |
| 2,4,5-T | 413362.9 | 5.015776 | 14.7418 | 7.36629E-03 | | | CCC (20) | |
| 2,4,5-T [2C] | 235153.6 | 3.997546 | 14.8368 | 1.134375E-02 | | | CCC (20) | |
| Dinoseb | 370200.6 | 10.73058 | 16.9494 | 1.642688E-02 | | | CCC (20) | |
| Dinoseb [2C] | 203167.2 | 7.710314 | 15.9336 | 6.415378E-03 | | | CCC (20) | |
| DCAA | 75737.71 | 12.60374 | 11.262 | 2.190029E-02 | | | CCC (20) | |
| DCAA [2C] | 41736.18 | 9.062735 | 11.2516 | 1.377593E-02 | | | CCC (20) | |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*8151A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: agilent92 Calibration: 4040101

Lab File ID: 008m4C28002-SCV1.d Standard ID: 3L09062

Sequence: 4C28002 Injection Date: 03/28/14

Lab Sample ID: 4C28002-SCV1 InjectionTime: 13:06

| ANALYTE | EXPECTED (ng/uL) | FOUND (ng/uL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2,4-D | 2.500 | 2.446 | -2.2 | 20.00 |
| 2,4-D [2C] | 2.500 | 2.440 | -2.4 | 20.00 |
| 2,4,5-TP (Silvex) | 0.5000 | 0.4363 | -12.7 | 20.00 |
| 2,4,5-TP (Silvex) [2C] | 0.5000 | 0.4332 | -13.4 | 20.00 |
| 2,4,5-T | 0.5000 | 0.5436 | 8.7 | 20.00 |
| 2,4,5-T [2C] | 0.5000 | 0.5387 | 7.7 | 20.00 |
| Dinoseb | 1.250 | 1.121 | -10.3 | 20.00 |
| Dinoseb [2C] | 1.250 | 1.117 | -10.7 | 20.00 |

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*8151A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: agilent92 Calibration: 4040101

Lab File ID: 120m4E05003-ICV1.d Calibration Date: 03/28/14 00:00

Sequence: 4E05003 Injection Date: 05/05/14

Lab Sample ID: 4E05003-ICV1 Injection Time: 13:19

| | | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,4-D | Avg | 1.880 | 1.600 | 91480.32 | 78920.74 | | -13.7 | 20 |
| 2,4-D [2C] | Avg | 1.880 | 2.000 | 50744.95 | 55359.57 | | 9.1 | 20 |
| 2,4,5-TP (Silvex) | Avg | 0.3804 | 0.3400 | 506409.3 | 449353.3 | | -11.3 | 20 |
| 2,4,5-TP (Silvex) [2C] | Avg | 0.3804 | 0.4300 | 285971.6 | 323546.3 | | 13.1 | 20 |
| 2,4,5-T | Avg | 0.3792 | 0.3300 | 413362.9 | 359132.4 | | -13.1 | 20 |
| 2,4,5-T [2C] | Avg | 0.3792 | 0.4200 | 235153.6 | 258048.5 | | 9.7 | 20 |
| Dinoseb | Avg | 0.9450 | 0.8500 | 370200.6 | 332396.8 | | -10.2 | 20 |
| Dinoseb [2C] | Avg | 0.9450 | 1.100 | 203167.2 | 232364 | | 14.4 | 20 |
| DCAA | Avg | 3.744 | 3.200 | 75737.71 | 65722.49 | | -13.2 | 20 |
| DCAA [2C] | Avg | 3.744 | 4.200 | 41736.18 | 47268.16 | | 13.3 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*8151A*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: agilent92 Calibration: 4040101

Lab File ID: 131m4E05003-CCV1.d Calibration Date: 03/28/14 00:00

Sequence: 4E05003 Injection Date: 05/05/14

Lab Sample ID: 4E05003-CCV1 Injection Time: 18:44

| | | CONC. (ng/uL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,4-D | Avg | 1.880 | 1.700 | 91480.32 | 82001.6 | | -10.4 | 20 |
| 2,4-D [2C] | Avg | 1.880 | 2.000 | 50744.95 | 54487.77 | | 7.4 | 20 |
| 2,4,5-TP (Silvex) | Avg | 0.3804 | 0.3400 | 506409.3 | 459968.5 | | -9.2 | 20 |
| 2,4,5-TP (Silvex) [2C] | Avg | 0.3804 | 0.4100 | 285971.6 | 311125.1 | | 8.8 | 20 |
| 2,4,5-T | Avg | 0.3792 | 0.3400 | 413362.9 | 370656.6 | | -10.3 | 20 |
| 2,4,5-T [2C] | Avg | 0.3792 | 0.4000 | 235153.6 | 250253.2 | | 6.4 | 20 |
| Dinoseb | Avg | 0.9450 | 0.8700 | 370200.6 | 339264.6 | | -8.4 | 20 |
| Dinoseb [2C] | Avg | 0.9450 | 1.000 | 203167.2 | 221612.7 | | 9.1 | 20 |
| DCAA | Avg | 3.744 | 3.300 | 75737.71 | 67335.2 | | -11.1 | 20 |
| DCAA [2C] | Avg | 3.744 | 4.100 | 41736.18 | 45710.74 | | 9.5 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8151A*

**PLCSPR**

Lab Sample ID: 4042815-BS1 Date(s) Analyzed: 05/05/2014 05/05/2014

Instrument ID (1): agilent92 Instrument ID (2): agilent92

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 2,4,5-T | 1 | 14.73 | 14.71 | 14.77 | 4.244 | |
| | 2 | 14.83 | 14.81 | 14.87 | 4.862 | 14 |
| 2,4,5-TP (Silvex) | 1 | 14.34 | 14.32 | 14.38 | 4.152 | |
| | 2 | 14.30 | 14.27 | 14.33 | 4.789 | 14 |
| 2,4-D | 1 | 13.10 | 13.08 | 13.14 | 19.71 | |
| | 2 | 13.13 | 13.11 | 13.17 | 22.86 | 15 |
| Dinoseb | 1 | 16.94 | 16.92 | 16.98 | 7.422 | |
| | 2 | 15.93 | 15.90 | 15.96 | 8.597 | 15 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8151A*

**16WC1AMS**

Lab Sample ID: 4042815-MS1 Date(s) Analyzed: 05/05/2014 05/05/2014

Instrument ID (1): agilent92 Instrument ID (2): agilent92

GC Column (1): clpest ID: 0.32 (mm) GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 2,4,5-T | 1 | 14.73 | 14.71 | 14.77 | 4.280 | |
| | 2 | 14.84 | 14.81 | 14.87 | 3.521 | 20 |
| 2,4,5-TP (Silvex) | 1 | 14.34 | 14.32 | 14.38 | 4.099 | |
| | 2 | 14.30 | 14.27 | 14.33 | 2.982 | 32 |
| 2,4-D | 1 | 13.10 | 13.08 | 13.14 | 19.75 | |
| | 2 | 13.14 | 13.11 | 13.17 | 14.37 | 32 |
| Dinoseb | 1 | 16.94 | 16.92 | 16.98 | 5.407 | |
| | 2 | 15.93 | 15.90 | 15.96 | 4.103 | 27 |

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# IDENTIFICATION SUMMARY FOR ANALYTES

*8151A*

**16WC1AMSD**

Lab Sample ID: 4042815-MSD1

Date(s) Analyzed: 05/05/2014 05/05/2014

Instrument ID (1): agilent92

Instrument ID (2): agilent92

GC Column (1): clpest ID: 0.32 (mm)

GC Column (2): clpest2 ID: 0.32 (mm)

| ANALYTE | COL | RT | RT WINDOW | | CONCENTRATION | %RPD |
|---|---|---|---|---|---|---|
| | | | FROM | TO | | |
| 2,4,5-T | 1 | 14.73 | 14.71 | 14.77 | 4.037 | |
| | 2 | 14.84 | 14.81 | 14.87 | 3.633 | 11 |
| 2,4,5-TP (Silvex) | 1 | 14.34 | 14.32 | 14.38 | 3.892 | |
| | 2 | 14.30 | 14.27 | 14.33 | 3.044 | 25 |
| 2,4-D | 1 | 13.10 | 13.08 | 13.14 | 17.75 | |
| | 2 | 13.14 | 13.11 | 13.17 | 13.52 | 27 |
| Dinoseb | 1 | 16.94 | 16.92 | 16.98 | 4.765 | |
| | 2 | 15.93 | 15.90 | 15.96 | 3.877 | 21 |

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# ANALYSIS DATA SHEET

*8151A*

**PBLKPR**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 8151A_GC File ID: 121m4042815-BLK1.d QC Type: Blank

Initial/Final: 1000mL / 10000uL Sulfur Cleanup: N Lab ID: 4042815-BLK1 Column ID: clpest

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 15:10

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/05/14 13:49

Batch: 4042815 Sequence: 4E05003 Calibration: 4040101 Instrument: agilent92

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb | | 0.93 | 2.5 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA | 50.00 | 42.18 | 84 | 50 - 148 | |

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# ANALYSIS DATA SHEET

*8151A*

**PBLKPR**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 8151A_GC File ID: 121m4042815-BLK1.d QC Type: Blank

Initial/Final: 1000mL / 10000uL Sulfur Cleanup: N Lab ID: 4042815-BLK1 Column ID: clpest2

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 15:10

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/05/14 13:49

Batch: 4042815 Sequence: 4E05003 Calibration: 4040101 Instrument: agilent92

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 94-75-7 | 2,4-D [2C] | | 3.4 | 5.0 | U |
| 93-72-1 | 2,4,5-TP (Silvex) [2C] | | 0.59 | 2.5 | U |
| 93-76-5 | 2,4,5-T [2C] | | 0.74 | 2.5 | U |
| 88-85-7 | Dinoseb [2C] | | 0.93 | 2.5 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| DCAA [2C] | 50.00 | 50.47 | 101 | 50 - 148 | |

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NSB
Assigned To

1167
Employee ID Number

Matrix: Water

# PREPARATION BENCH SHEET

H: 5/1
D: 5/15

4042815

## GC-8151A-HERBICIDE

Prepared using: GC - EPA 8151A_GC

Date/Time Extracted: 4/30/14 15-10 +3Hr



| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH BASE | Adjusted pH ACID | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1404171-01 | 16WC1A | Sample | 500 | 5000 | 13 | 0.3 | QC | 250 | Extract sample 1, MS, MSD @ 500ml |
| 1404171-02 | 16C1 | Sample | 1000 | 10000 | 13 | 0.3 | NA | 500 | |
| 1404171-03 | 16MW8 | Sample | 1000 | 10000 | 13 | 0.3 | | 500 | |
| 1404171-04 | 16MW9 | Sample | 1000 | 10000 | 13 | 0.3 | | 500 | |
| 1404171-05 | 16WDUP | Sample | 900 | 10000 | 13 | 0.3 | | 500 | |
| 1404171-06 | 16WC1B | Sample | 1000 | 10000 | 13 | 0.3 | | 500 | |
| 4042815-BLK1 | PBLKPR | Blank | 1000 | 10000 | 13 | 0.3 | | 500 | |
| 4042815-BS1 | PLCSPR | LCS | 1000 | 10000 | 13 | 0.3 | | 500 | |
| 4042815-MS1 | 16WC1AMS | Matrix Spike | ~~1000~~ 500 | 5000 | 13 | 0.3 | | 250 | |
| 4042815-MSD1 | 16WC1AMSD | Matrix Spike Dup | ~~1000~~ 500 | 5000 | 13 | 0.3 | NA | 250 | |

MS/MSD

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI Custom Herbicide Surrogate (Q-4 | 250 | | 4D10001 |
| SURROGATE | NSI Custom Herbicide Surrogate (Q-4 | 500 | | 4D10001 |
| SPIKE | NSI Custom Herbicide Spike (Free Ac | 1000 | LCS/LCSD | 3L05041 |
| SPIKE | NSI Custom Herbicide Spike (Free Ac | 500 | MS/MSD | 3L05041 |

Surrogate & Spike Added By: NS 4/30/14
Initials / Date

Spiking Witnessed By: SAB 4-30-14
Initials / Date

Final Vol Verified:

Reviewed By:

Analysts Initials: Extracted: BJ/SAB KD: CH N2: BFP Bottled up: BFP

Derivatization By: BFP Derivatization Date: 5-2-14

$C_8H_{18}$-3J15013, $CH_3OH$-3D17006, $CH(2)N(2)$-4E01015, $C_6H_{14}$-4D23049

Manuf. and lot # of reagents/solvents used: 6N NaOH: 4C26001 NaCl: 4D14043 12N $H_2SO_4$: 4C13006 Chloral: 4C14004 Ethyl Ether: 4C23050
~~$H_2SO_4$/NaCl~~ Acid. $MgSO_4$: 4C27049

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 · 717-656-2300 · Fax: 717-656-2681 · www.LancasterLabs.com

# Type I Data Package

**Prepared for:**

**Draper Aden Associates, Inc.**
2206 South Main Street
Blacksburg VA 24060

Abridged data package.

Full deliverable available.

Project: RAAP - Radford, VA - HWMU16
Groundwater and Water Samples
Collected on 04/23/14-04/24/14

## SDG# RAE17

| GROUP | SAMPLE NUMBERS |
|---|---|
| 1470108 | 7444256-7444271 |

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

**Authorized by:** Dana M Kauffman **Date: 05/16/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

2425 New Holland Pike, Lancaster, PA 17601 · 717-656-2300 · Fax: 717-656-2681 · www.LancasterLabs.com

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## Sample Reference List for SDG Number RAE17
## with a Data Package Type of I

**11200 - Draper Aden Associates, Inc.**

Project: RAAP - Radford, VA - HWMU16

| Lab Sample Number | Lab Sample Code | Client Sample Description |
|---|---|---|
| 7444256 | 16C1- | 16C1 Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444257 | 16MW8 | 16MW8 Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444258 | 16MW9 | 16MW9 Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444259 | 16C1A | 16WC1A Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444260 | 16C1A | 16WC1A MS Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444261 | 16C1A | 16WC1A MSD Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444262 | 16DUP | 16WDUP Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444263 | 16C1B | 16WC1B Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444264 | 16-1- | 16-1 Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444265 | 16-2- | 16-2 Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444266 | 16--3 | 16-3 Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444267 | 16-5- | 16-5 Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444268 | 16C2B | 16WC2B Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444269 | 16SPR | 16SPRING Grab Groundwater 1st Semiannual 2014 Groundwater Verification Event |
| 7444270 | 16TB1 | Trip Blank_1 Water 1st Semiannual 2014 Groundwater Verification Event |
| 7444271 | 16TB2 | Trip Blank_2 Water 1st Semiannual 2014 Groundwater Verification Event |

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# Sample pH Log

**SDG: RAE17**

| LLI Sample Number | Bottle Code | Actual pH | Exp. pH | pH Check Code | Adj. pH | Adjusted Date | Adjusted Time | Preservative Added | Preservative Lot # | LLI Supplied Bottle? | Sulfide Present? | Corrective Substance | CS Lot # | Res. Cl. Present? | Corrective Substance | CS Lot # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7444256 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444256 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444256 | 038C | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444256 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444256 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444257 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444257 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444257 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444257 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444258 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444258 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444258 | 038C | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444258 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444258 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444259 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444259 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444259 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444259 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444260 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444260 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444260 | 038C | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444260 | 038D | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444260 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444260 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444261 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444261 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444261 | 038C | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444261 | 038D | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444261 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444261 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444262 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444262 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444262 | 038C | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444262 | 038D | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444262 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444262 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444263 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |

| LLI Sample Number | Bottle Code | Actual pH | Exp. pH | pH Check Code | Adj. pH | Adjusted Date | Adjusted Time | Preservative Added | Preservative Lot # | LLI Supplied Bottle? | Sulfide Present? | Corrective Substance | CS Lot # | Res. Cl. Present? | Corrective Substance | CS Lot # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7444263 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444263 | 151A | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444263 | 151B | <2 | <2 | PK | NA | NA | NA | NA | NA | Y | NA | NA | NA | N | NA | NA |
| 7444264 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444265 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444266 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444267 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444268 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444269 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444270 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7444271 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |

| Check Code Key |
|---|
| **PK** = Original container checked - pH is within the correct range. (No preservative was added) |
| **PA** = Original container checked - pH adjusted to correct range. (Preservative was added) |
| **PV** = Volatile container checked |
| **PC** = pH checked (unpreserved container) |
| **SPK** = Subsampled from an original container. Original container checked - pH is within correct range |
| **SPA** = Subsampled from an original container. Subsample container checked - pH adjusted to correct range. |
| **SPC** = Subsampled from an original container. pH checked (unpreserved container). |
| **SUP** = Subsampled from original container. Unable to be preserved due to the matrix of the sample. |
| **UP** = Unable to preserve due to matrix of the sample. |
| **NA** = Not applicable |

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**01163 GC/MS VOA Water Prep**

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030C, May 2003.

---

**11997 8260C Water Master**
**11996 8260C Water(25ml) Master**

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

---

**02393 Phenols (water)**

This method is based on automated distillation of phenol and the subsequent reaction with 4-aminoantipyrine in basic buffer to produce a red-colored complex. The result is colorimetrically determined.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9066, September 1986.

---

**08123 Phenol Distillation (SW-846)**

The sample is acidified and the phenols distilled from nonvolatile impurities.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 9065, September 1986.

# Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

May 08, 2014

Project: RAAP - Radford, VA - HWMU16

Submittal Date: 04/26/2014
Group Number: 1470108
SDG: RAE17
State of Sample Origin: VA

| Client Sample Description | Lancaster Labs (LL) # |
|---|---|
| 16C1 Grab Groundwater | 7444256 |
| 16MW8 Grab Groundwater | 7444257 |
| 16MW9 Grab Groundwater | 7444258 |
| 16WC1A Grab Groundwater | 7444259 |
| 16WC1A MS Grab Groundwater | 7444260 |
| 16WC1A MSD Grab Groundwater | 7444261 |
| 16WDUP Grab Groundwater | 7444262 |
| 16WC1B Grab Groundwater | 7444263 |
| 16-1 Grab Groundwater | 7444264 |
| 16-2 Grab Groundwater | 7444265 |
| 16-3 Grab Groundwater | 7444266 |
| 16-5 Grab Groundwater | 7444267 |
| 16WC2B Grab Groundwater | 7444268 |
| 16SPRING Grab Groundwater | 7444269 |
| Trip Blank_1 Water | 7444270 |
| Trip Blank_2 Water | 7444271 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU16
LLI Group #: 1470108

**General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

**Analysis Specific Comments:**

SW-846 8260C, GC/MS Volatiles

Sample #s: 7444256, 7444257, 7444259, 7444262, 7444263, 7444270, 7444271

A targeted library search was performed yielding the following results: Ethylene Oxide and 1-Propanol are non-detect.

Sample #s: 7444258

A targeted library search was performed yielding the following results: Ethylene Oxide and 1-Propanol are non-detect.
The concentration reported for ethyl ether is estimated since it exceeds the calibration range of the instrument in the initial determination, but is less than the quantitation limit in the further dilution. The result reported is from the further diluted determination.

Batch #: I141211AA (Sample number(s): 7444256-7444263, 7444270-7444271 UNSPK: 7444259)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: 2-Chloroethyl vinyl ether

**Sample Description: 16C1 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444256**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 15:25 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1- SDG#: RAE17-01

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | 0.3 | J | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 4.8 | | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 8.0 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 0.3 | J | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 9.4 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16C1 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444256**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 15:25 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1- SDG#: RAE17-01

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | N.D. | | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | N.D. | | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 38 | J | 11 | 130 | 10 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 3.9 | | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | N.D. | | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | 0.4 | J | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | 15 | J | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | 0.4 | J | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 0.3 | J | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |
| | A targeted library search was performed yielding the following results: Ethylene Oxide and 1-Propanol are non-detect. | | | | | | |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | N.D. | | 0.015 | 0.040 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16C1 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444256**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 15:25 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1- SDG#: RAE17-01

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 18:07 | Angela D Sneeringer | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 15:57 | Kerri E Legerlotz | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 19:50 | Kerri E Legerlotz | 10 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | L141192AA | 04/29/2014 18:07 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | I141211AA | 05/01/2014 15:57 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 3 | I141211AA | 05/01/2014 19:50 | Kerri E Legerlotz | 10 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:16 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16MW8 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444257**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 09:15 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW8 SDG#: RAE17-02

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 0.3 | J | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 0.3 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16MW8 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444257**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 09:15 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW8 SDG#: RAE17-02

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | N.D. | | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | N.D. | | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 7.4 | J | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | N.D. | | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | N.D. | | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |
| | A targeted library search was performed yielding the following results: Ethylene Oxide and 1-Propanol are non-detect. | | | | | | |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | N.D. | | 0.015 | 0.040 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16MW8 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444257**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 09:15 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW8 SDG#: RAE17-02

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 18:30 | Angela D Sneeringer | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 16:18 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | L141192AA | 04/29/2014 18:30 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | I141211AA | 05/01/2014 16:18 | Kerri E Legerlotz | 1 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:17 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16MW9 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444258**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 10:30 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW9 SDG#: RAE17-03

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | 0.3 | J | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 2.9 | | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 9.5 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 0.3 | J | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 0.9 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16MW9 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444258**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 10:30 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW9 SDG#: RAE17-03

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | N.D. | | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | N.D. | | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 52 | J | 11 | 130 | 10 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | N.D. | | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | N.D. | | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |

A targeted library search was performed yielding the following results:
Ethylene Oxide and 1-Propanol are non-detect.

The concentration reported for ethyl ether is estimated since it exceeds the calibration range of the instrument in the initial determination, but is less than the quantitation limit in the further dilution. The result reported is from the further diluted

*=This limit was used in the evaluation of the final result

**Sample Description: 16MW9 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444258**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 10:30 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW9 SDG#: RAE17-03

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| | determination. | | | | | |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | N.D. | 0.015 | 0.040 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 18:53 | Angela D Sneeringer | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 16:40 | Kerri E Legerlotz | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 20:12 | Kerri E Legerlotz | 10 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | L141192AA | 04/29/2014 18:53 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | I141211AA | 05/01/2014 16:40 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 3 | I141211AA | 05/01/2014 20:12 | Kerri E Legerlotz | 10 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:18 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** 16WC1A Grab Groundwater
1st Semiannual 2014 Groundwater Verification Event
RAAP - Radford, VA - HWMU16

**LL Sample # WW 7444259**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04BKG

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | 0.1 | J | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 1 | J | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 2.9 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 0.9 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444259**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04BKG

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | N.D. | | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | N.D. | | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 13 | | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | N.D. | | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | 0.1 | J | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | N.D. | | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |
| | A targeted library search was performed yielding the following results: Ethylene Oxide and 1-Propanol are non-detect. | | | | | | |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | N.D. | | 0.015 | 0.040 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444259**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04BKG

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 19:16 | Angela D Sneeringer | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 14:11 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | L141192AA | 04/29/2014 19:16 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | I141211AA | 05/01/2014 14:11 | Kerri E Legerlotz | 1 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:19 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A MS Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444260**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04MS

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | 40 | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | 42 | J | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | 36 | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | 28 | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | 5.2 | J | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | 5.5 | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | 5.3 | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | 300 | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | 42 | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | 66 | J | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | 5.1 | J | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | 5.8 | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | 5.2 | J | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 6.0 | | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | 5.2 | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | 5.0 | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | 6.0 | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | 6.0 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | 30 | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | 6.4 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 8.2 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 5.5 | | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | 5.4 | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | 5.6 | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | 5.9 | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 5.6 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A MS Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444260**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04MS

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | 160 | J | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | 350 | | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | 20 | | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 19 | | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | 5.6 | J | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | 5.3 | | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | 5.8 | | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | 4.7 | J | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | 28 | | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | 150 | J | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | 5.2 | J | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | 43 | J | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | 5.3 | J | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | 5.7 | J | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | 5.1 | J | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | 28 | | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 5.2 | | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | 5.5 | J | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | 130 | | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | 42 | J | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | 5.8 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | 6.0 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | 5.4 | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | 5.8 | | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | 29 | | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.7 | | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | 5.7 | | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | 5.6 | | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | 5.5 | | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | 5.4 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | 14 | | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | 5.6 | | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | 17 | | 0.2 | 3.0 | 1 |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | 0.19 | | 0.015 | 0.040 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A MS Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444260**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04MS

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 19:38 | Angela D Sneeringer | 1 |
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 20:24 | Angela D Sneeringer | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 14:32 | Kerri E Legerlotz | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 15:14 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | L141192AA | 04/29/2014 19:38 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | L141192AA | 04/29/2014 20:24 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 3 | I141211AA | 05/01/2014 14:32 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 4 | I141211AA | 05/01/2014 15:14 | Kerri E Legerlotz | 1 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:21 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A MSD Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444261**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04MSD

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | 36 | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | 43 | J | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | 37 | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | 27 | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | 5.6 | J | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | 6.0 | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | 5.3 | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | 310 | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | 40 | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | 60 | J | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | 5.3 | J | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | 5.9 | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | 5.3 | J | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 6.0 | | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | 5.2 | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | 5.1 | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | 6.5 | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | 5.9 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | 30 | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | 6.2 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 8.3 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | 5.1 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 5.7 | | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | 5.5 | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | 5.2 | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | 5.6 | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | 5.8 | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 5.6 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** 16WC1A MSD Grab Groundwater
1st Semiannual 2014 Groundwater Verification Event
RAAP - Radford, VA - HWMU16

**LL Sample # WW 7444261**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04MSD

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | 150 | J | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | 390 | | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | 19 | | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 19 | | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | 5.5 | J | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | 5.4 | | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | 5.8 | | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | 5.0 | J | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | 30 | | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | 150 | J | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | 5.1 | J | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | 42 | J | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | 5.5 | J | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | 6.1 | J | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | 5.1 | J | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | 30 | | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 5.3 | | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | 5.8 | | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | 6.6 | J | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | 140 | | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | 38 | J | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | 5.4 | | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | 5.9 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | 5.4 | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | 30 | | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | 5.3 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | 5.7 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | 5.6 | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | 5.5 | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.7 | | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | 6.0 | | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | 5.7 | | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | 5.5 | | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | 5.5 | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | 14 | | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | 5.6 | | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | 16 | | 0.2 | 3.0 | 1 |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | 0.18 | | 0.015 | 0.040 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1A MSD Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444261**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 11:45 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE17-04MSD

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 20:01 | Angela D Sneeringer | 1 |
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141192AA | 04/29/2014 20:47 | Angela D Sneeringer | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 14:53 | Kerri E Legerlotz | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 15:36 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | L141192AA | 04/29/2014 20:01 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | L141192AA | 04/29/2014 20:47 | Angela D Sneeringer | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 3 | I141211AA | 05/01/2014 14:53 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 4 | I141211AA | 05/01/2014 15:36 | Kerri E Legerlotz | 1 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:22 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WDUP Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444262**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 12:00 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16DUP SDG#: RAE17-05FD

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | 0.1 | J | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 1.0 | | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 3.0 | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 0.9 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** 16WDUP Grab Groundwater
1st Semiannual 2014 Groundwater Verification Event
RAAP - Radford, VA - HWMU16

**LL Sample # WW 7444262**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 12:00 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16DUP SDG#: RAE17-05FD

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | N.D. | | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | N.D. | | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 14 | | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | N.D. | | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | 0.1 | J | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | N.D. | | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.2 | 3.0 | 1 |
| | A targeted library search was performed yielding the following results: Ethylene Oxide and 1-Propanol are non-detect. | | | | | | |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | N.D. | | 0.015 | 0.040 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WDUP Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444262**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 12:00 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16DUP SDG#: RAE17-05FD

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141262AA | 05/06/2014 15:34 | Linda C Pape | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 17:01 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211AA | 05/01/2014 17:01 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | L141262AA | 05/06/2014 15:34 | Linda C Pape | 1 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:25 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1B Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444263**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 14:05 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1B SDG#: RAE17-06

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | 0.2 | J | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1B Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444263**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 14:05 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1B SDG#: RAE17-06

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | 45 | 200 | 1 |
| 11997 | Ethanol | 64-17-5 | N.D. | 52 | 250 | 1 |
| 11997 | Ethyl Acetate | 141-78-6 | N.D. | 1 | 10 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | 0.8 | 10 | 1 |
| 11997 | 2-Propanol | 67-63-0 | N.D. | 50 | 100 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | N.D. | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.2 | 3.0 | 1 |
| | A targeted library search was performed yielding the following results: Ethylene Oxide and 1-Propanol are non-detect. | | | | | |
| **Wet Chemistry** | **SW-846 9066** | | **mg/l** | **mg/l** | **mg/l** | |
| 02393 | Phenols (water) | n.a. | N.D. | 0.015 | 0.040 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16WC1B Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444263**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/24/2014 14:05 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1B SDG#: RAE17-06

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11997 | 2-Propanol/EtOH/EtAc | SW-846 8260C | 1 | L141262AA | 05/06/2014 16:42 | Linda C Pape | 1 |
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 17:22 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211AA | 05/01/2014 17:22 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | L141262AA | 05/06/2014 16:42 | Linda C Pape | 1 |
| 02393 | Phenols (water) | SW-846 9066 | 1 | 14121120101A | 05/02/2014 10:26 | K Robert Caulfeild-James | 1 |
| 08123 | Phenol Distillation (SW-846) | SW-846 9065 | 1 | 14121120101A | 05/01/2014 10:40 | Nancy J Shoop | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16-1 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444264**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014 09:25 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16-1- SDG#: RAE17-07

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | Benzene | 71-43-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | 0.2 | 0.5 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | 0.1 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 0.1 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.1 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | I141211BA | 05/01/2014 17:44 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211BA | 05/01/2014 17:44 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16-2 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444265**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014 10:15 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16-2- SDG#: RAE17-08

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Benzene | 71-43-2 | N.D. | | 0.1 | 0.5 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 0.5 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 0.1 | J | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.1 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | I141211BA | 05/01/2014 18:05 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211BA | 05/01/2014 18:05 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16-3 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444266**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014 11:15 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16--3 SDG#: RAE17-09

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Benzene | 71-43-2 | N.D. | | 0.1 | 0.5 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 0.5 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | 0.3 | J | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.1 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | I141211BA | 05/01/2014 18:26 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211BA | 05/01/2014 18:26 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 16-5 Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444267**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014 12:05 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16-5- SDG#: RAE17-10

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | Benzene | 71-43-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | 0.2 | 0.5 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | 0.1 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 0.1 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.1 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | I141211BA | 05/01/2014 18:47 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211BA | 05/01/2014 18:47 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** **16WC2B Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444268**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014 13:30 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C2B SDG#: RAE17-11

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Benzene | 71-43-2 | N.D. | | 0.1 | 0.5 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 0.5 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | 0.2 | J | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.1 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | I141211BA | 05/01/2014 19:08 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211BA | 05/01/2014 19:08 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** **16SPRING Grab Groundwater**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444269**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014 12:25 by KC

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16SPR SDG#: RAE17-12

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | Benzene | 71-43-2 | N.D. | | 0.1 | 0.5 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | | 1.0 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | | 0.2 | 0.5 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 0.4 | J | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | | 0.1 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | | 0.1 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | | 0.1 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | I141211BA | 05/01/2014 19:29 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211BA | 05/01/2014 19:29 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** Trip Blank_1 Water
1st Semiannual 2014 Groundwater Verification Event
RAAP - Radford, VA - HWMU16

**LL Sample # WW 7444270**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16TB1 SDG#: RAE17-13TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** Trip Blank_1 Water
1st Semiannual 2014 Groundwater Verification Event
RAAP - Radford, VA - HWMU16

**LL Sample # WW 7444270**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16TB1 SDG#: RAE17-13TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | 45 | 200 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | 0.8 | 10 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | N.D. | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.2 | 3.0 | 1 |

A targeted library search was performed yielding the following results:
Ethylene Oxide and 1-Propanol are non-detect.

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

**Sample Description: Trip Blank_1 Water**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444270**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16TB1 SDG#: RAE17-13TB

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 13:28 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211AA | 05/01/2014 13:28 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** Trip Blank_2 Water
1st Semiannual 2014 Groundwater Verification Event
RAAP - Radford, VA - HWMU16

**LL Sample # WW 7444271**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16TB2 SDG#: RAE17-14TB*

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | Acetone | 67-64-1 | N.D. | 3.0 | 10 | 1 |
| 11996 | Acetonitrile | 75-05-8 | N.D. | 32 | 100 | 1 |
| 11996 | Acrolein | 107-02-8 | N.D. | 5.0 | 25 | 1 |
| 11996 | Acrylonitrile | 107-13-1 | N.D. | 1.0 | 10 | 1 |
| 11996 | Allyl Chloride | 107-05-1 | N.D. | 0.8 | 10 | 1 |
| 11996 | Benzene | 71-43-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromobenzene | 108-86-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromochloromethane | 74-97-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Bromodichloromethane | 75-27-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromoform | 75-25-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Bromomethane | 74-83-9 | N.D. | 0.5 | 1.0 | 1 |
| 11996 | n-Butanol | 71-36-3 | N.D. | 20 | 50 | 1 |
| 11996 | 2-Butanone | 78-93-3 | N.D. | 1.0 | 10 | 1 |
| 11996 | t-Butyl Alcohol | 75-65-0 | N.D. | 50 | 200 | 1 |
| 11996 | n-Butylbenzene | 104-51-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | sec-Butylbenzene | 135-98-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | tert-Butylbenzene | 98-06-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Carbon Disulfide | 75-15-0 | N.D. | 0.4 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 2-Chloro-1,3-Butadiene | 126-99-8 | N.D. | 0.5 | 10 | 1 |
| 11996 | Chlorobenzene | 108-90-7 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 2-Chloroethyl vinyl ether | 110-75-8 | N.D. | 0.5 | 20 | 1 |
| | 2-Chloroethyl vinyl ether may not be recovered if acid was used to preserve this sample. | | | | | |
| 11996 | Chloroform | 67-66-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 2-Chlorotoluene | 95-49-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 4-Chlorotoluene | 106-43-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Cyclohexane | 110-82-7 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dibromo-3-chloropropane | 96-12-8 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Dibromochloromethane | 124-48-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dibromoethane | 106-93-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dibromomethane | 74-95-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,4-Dichloro-2-butene | 110-57-6 | N.D. | 1.0 | 10 | 1 |
| 11996 | 1,2-Dichlorobenzene | 95-50-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichlorobenzene | 541-73-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,4-Dichlorobenzene | 106-46-7 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2-Dichloroethane | 107-06-2 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,2-Dichloropropane | 78-87-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,3-Dichloropropane | 142-28-9 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 2,2-Dichloropropane | 594-20-7 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloropropene | 563-58-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | cis-1,3-Dichloropropene | 10061-01-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | trans-1,3-Dichloropropene | 10061-02-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | N.D. | 0.1 | 13 | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description:** Trip Blank_2 Water
1st Semiannual 2014 Groundwater Verification Event
RAAP - Radford, VA - HWMU16

**LL Sample # WW 7444271**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16TB2 SDG#: RAE17-14TB*

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,4-Dioxane | 123-91-1 | N.D. | 45 | 200 | 1 |
| 11996 | Ethyl ether | 60-29-7 | N.D. | 1.1 | 13 | 1 |
| 11996 | Ethyl Methacrylate | 97-63-2 | N.D. | 0.8 | 10 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Hexachlorobutadiene | 87-68-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Hexachloroethane | 67-72-1 | N.D. | 0.1 | 10 | 1 |
| 11996 | 2-Hexanone | 591-78-6 | N.D. | 1.0 | 10 | 1 |
| 11996 | Isobutyl Alcohol | 78-83-1 | N.D. | 10 | 200 | 1 |
| 11996 | di-Isopropyl Ether | 108-20-3 | N.D. | 0.6 | 10 | 1 |
| 11996 | Isopropylbenzene | 98-82-8 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | p-Isopropyltoluene | 99-87-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Methacrylonitrile | 126-98-7 | N.D. | 9.8 | 100 | 1 |
| 11996 | Methyl Iodide | 74-88-4 | N.D. | 0.6 | 10 | 1 |
| 11996 | Methyl Methacrylate | 80-62-6 | N.D. | 3.6 | 10 | 1 |
| 11996 | Methyl Tertiary Butyl Ether | 1634-04-4 | N.D. | 0.4 | 10 | 1 |
| 11996 | 4-Methyl-2-Pentanone | 108-10-1 | N.D. | 1.0 | 10 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Naphthalene | 91-20-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Pentachloroethane | 76-01-7 | N.D. | 0.8 | 10 | 1 |
| 11996 | Propionitrile | 107-12-0 | N.D. | 10 | 100 | 1 |
| 11996 | n-Propylbenzene | 103-65-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Styrene | 100-42-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1,2-Tetrachloroethane | 630-20-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2,2-Tetrachloroethane | 79-34-5 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Tetrahydrofuran | 109-99-9 | N.D. | 2.0 | 25 | 1 |
| 11996 | Toluene | 108-88-3 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2,3-Trichlorobenzene | 87-61-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,2,4-Trichlorobenzene | 120-82-1 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | 1,1,2-Trichloroethane | 79-00-5 | N.D. | 0.1 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,2,3-Trichloropropane | 96-18-4 | N.D. | 0.3 | 1.0 | 1 |
| 11996 | 1,2,4-Trimethylbenzene | 95-63-6 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | 1,3,5-Trimethylbenzene | 108-67-8 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Vinyl Acetate | 108-05-4 | N.D. | 3.3 | 10 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.2 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | N.D. | 0.2 | 3.0 | 1 |

A targeted library search was performed yielding the following results:
Ethylene Oxide and 1-Propanol are non-detect.

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

*=This limit was used in the evaluation of the final result

**Sample Description: Trip Blank_2 Water**
**1st Semiannual 2014 Groundwater Verification Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7444271**
**LL Group # 1470108**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 04/23/2014

Submitted: 04/26/2014 10:45
Reported: 05/08/2014 15:47

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16TB2 SDG#: RAE17-14TB*

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 88 RAAP compounds | SW-846 8260C | 1 | I141211AA | 05/01/2014 13:49 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | I141211AA | 05/01/2014 13:49 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1470108
Reported: 05/08/14 at 03:47 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank MDL** | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: I141211AA | Sample number(s): 7444256-7444263,7444270-7444271 | | | | | | | | |
| Acetone | N.D. | 3.0 | 10 | ug/l | 99 | | 60-139 | | |
| Acetonitrile | N.D. | 32. | 100 | ug/l | 105 | | 50-145 | | |
| Acrolein | N.D. | 5.0 | 25 | ug/l | 96 | | 36-137 | | |
| Acrylonitrile | N.D. | 1.0 | 10 | ug/l | 107 | | 64-141 | | |
| Allyl Chloride | N.D. | 0.8 | 10 | ug/l | 101 | | 57-120 | | |
| Benzene | N.D. | 0.1 | 1.0 | ug/l | 98 | | 80-120 | | |
| Bromobenzene | N.D. | 0.1 | 1.0 | ug/l | 101 | | 80-120 | | |
| Bromochloromethane | N.D. | 0.2 | 1.0 | ug/l | 108 | | 80-125 | | |
| Bromodichloromethane | N.D. | 0.1 | 1.0 | ug/l | 103 | | 80-120 | | |
| Bromoform | N.D. | 0.1 | 1.0 | ug/l | 99 | | 72-138 | | |
| Bromomethane | N.D. | 0.5 | 1.0 | ug/l | 101 | | 62-126 | | |
| n-Butanol | N.D. | 20. | 50 | ug/l | 110 | | 65-128 | | |
| 2-Butanone | N.D. | 1.0 | 10 | ug/l | 106 | | 63-137 | | |
| t-Butyl Alcohol | N.D. | 50. | 200 | ug/l | 108 | | 63-139 | | |
| n-Butylbenzene | N.D. | 0.1 | 1.0 | ug/l | 99 | | 80-120 | | |
| sec-Butylbenzene | N.D. | 0.1 | 1.0 | ug/l | 101 | | 80-120 | | |
| tert-Butylbenzene | N.D. | 0.1 | 1.0 | ug/l | 102 | | 80-120 | | |
| Carbon Disulfide | N.D. | 0.4 | 10 | ug/l | 98 | | 80-120 | | |
| Carbon Tetrachloride | N.D. | 0.2 | 1.0 | ug/l | 110 | | 80-135 | | |
| 2-Chloro-1,3-Butadiene | N.D. | 0.5 | 10 | ug/l | 99 | | 76-120 | | |
| Chlorobenzene | N.D. | 0.1 | 1.0 | ug/l | 101 | | 80-120 | | |
| Chloroethane | N.D. | 0.1 | 1.0 | ug/l | 95 | | 68-120 | | |
| 2-Chloroethyl vinyl ether | N.D. | 0.5 | 20 | ug/l | 107 | | 49-130 | | |
| Chloroform | N.D. | 0.1 | 1.0 | ug/l | 101 | | 80-120 | | |
| Chloromethane | N.D. | 0.2 | 1.0 | ug/l | 100 | | 55-120 | | |
| 2-Chlorotoluene | N.D. | 0.1 | 1.0 | ug/l | 99 | | 80-120 | | |
| 4-Chlorotoluene | N.D. | 0.1 | 1.0 | ug/l | 99 | | 80-120 | | |
| Cyclohexane | N.D. | 0.2 | 1.0 | ug/l | 95 | | 69-120 | | |
| 1,2-Dibromo-3-chloropropane | N.D. | 0.2 | 1.0 | ug/l | 116 | | 64-141 | | |
| Dibromochloromethane | N.D. | 0.1 | 1.0 | ug/l | 110 | | 80-126 | | |
| 1,2-Dibromoethane | N.D. | 0.1 | 1.0 | ug/l | 105 | | 80-120 | | |
| Dibromomethane | N.D. | 0.1 | 1.0 | ug/l | 101 | | 80-120 | | |
| trans-1,4-Dichloro-2-butene | N.D. | 1.0 | 10 | ug/l | 125 | | 14-166 | | |
| 1,2-Dichlorobenzene | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| 1,3-Dichlorobenzene | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| 1,4-Dichlorobenzene | N.D. | 0.1 | 1.0 | ug/l | 101 | | 80-120 | | |
| Dichlorodifluoromethane | N.D. | 0.1 | 1.0 | ug/l | 118 | | 27-141 | | |
| 1,1-Dichloroethane | N.D. | 0.1 | 1.0 | ug/l | 98 | | 80-120 | | |
| 1,2-Dichloroethane | N.D. | 0.1 | 1.0 | ug/l | 98 | | 80-127 | | |
| 1,1-Dichloroethene | N.D. | 0.2 | 1.0 | ug/l | 102 | | 80-123 | | |
| trans-1,2-Dichloroethene | N.D. | 0.2 | 1.0 | ug/l | 104 | | 80-120 | | |
| 1,2-Dichloropropane | N.D. | 0.1 | 1.0 | ug/l | 99 | | 80-120 | | |
| 1,3-Dichloropropane | N.D. | 0.1 | 1.0 | ug/l | 98 | | 80-120 | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1470108
Reported: 05/08/14 at 03:47 PM

| Analysis Name | Blank Result | Blank MDL** | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| 2,2-Dichloropropane | N.D. | 0.3 | 1.0 | ug/l | 107 | | 75-122 | | |
| 1,1-Dichloropropene | N.D. | 0.1 | 1.0 | ug/l | 105 | | 80-120 | | |
| cis-1,3-Dichloropropene | N.D. | 0.1 | 1.0 | ug/l | 106 | | 80-120 | | |
| trans-1,3-Dichloropropene | N.D. | 0.1 | 1.0 | ug/l | 109 | | 80-120 | | |
| Dimethyl ether | N.D. | 0.1 | 13 | ug/l | 90 | | 71-120 | | |
| 1,4-Dioxane | N.D. | 45. | 200 | ug/l | 123 | | 63-171 | | |
| Ethyl ether | N.D. | 1.1 | 13 | ug/l | 95 | | 61-122 | | |
| Ethyl Methacrylate | N.D. | 0.8 | 10 | ug/l | 101 | | 70-120 | | |
| Ethylbenzene | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| Freon 113 | N.D. | 0.2 | 1.0 | ug/l | 100 | | 80-120 | | |
| Hexachlorobutadiene | N.D. | 0.1 | 1.0 | ug/l | 104 | | 73-120 | | |
| Hexachloroethane | N.D. | 0.1 | 10 | ug/l | 91 | | 80-120 | | |
| 2-Hexanone | N.D. | 1.0 | 10 | ug/l | 112 | | 62-128 | | |
| Isobutyl Alcohol | N.D. | 10. | 200 | ug/l | 106 | | 69-137 | | |
| di-Isopropyl Ether | N.D. | 0.6 | 10 | ug/l | 98 | | 68-121 | | |
| Isopropylbenzene | N.D. | 0.1 | 1.0 | ug/l | 103 | | 80-120 | | |
| p-Isopropyltoluene | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| Methacrylonitrile | N.D. | 9.8 | 100 | ug/l | 112 | | 59-150 | | |
| Methyl Iodide | N.D. | 0.6 | 10 | ug/l | 104 | | 80-129 | | |
| Methyl Methacrylate | N.D. | 3.6 | 10 | ug/l | 117 | | 56-137 | | |
| Methyl Tertiary Butyl Ether | N.D. | 0.4 | 10 | ug/l | 99 | | 80-120 | | |
| 4-Methyl-2-Pentanone | N.D. | 1.0 | 10 | ug/l | 108 | | 65-125 | | |
| Methylene Chloride | N.D. | 0.2 | 1.0 | ug/l | 101 | | 80-120 | | |
| Naphthalene | N.D. | 0.1 | 1.0 | ug/l | 103 | | 65-120 | | |
| Pentachloroethane | N.D. | 0.8 | 10 | ug/l | 108 | | 75-126 | | |
| Propionitrile | N.D. | 10. | 100 | ug/l | 108 | | 67-143 | | |
| n-Propylbenzene | N.D. | 0.1 | 1.0 | ug/l | 99 | | 80-120 | | |
| Styrene | N.D. | 0.1 | 1.0 | ug/l | 105 | | 80-120 | | |
| 1,1,1,2-Tetrachloroethane | N.D. | 0.1 | 1.0 | ug/l | 107 | | 80-120 | | |
| 1,1,2,2-Tetrachloroethane | N.D. | 0.2 | 1.0 | ug/l | 96 | | 80-120 | | |
| Tetrachloroethene | N.D. | 0.1 | 1.0 | ug/l | 105 | | 80-120 | | |
| Tetrahydrofuran | N.D. | 2.0 | 25 | ug/l | 105 | | 62-140 | | |
| Toluene | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| 1,2,3-Trichlorobenzene | N.D. | 0.1 | 1.0 | ug/l | 101 | | 69-120 | | |
| 1,2,4-Trichlorobenzene | N.D. | 0.1 | 1.0 | ug/l | 104 | | 74-120 | | |
| 1,1,1-Trichloroethane | N.D. | 0.1 | 1.0 | ug/l | 104 | | 80-120 | | |
| 1,1,2-Trichloroethane | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| Trichloroethene | N.D. | 0.2 | 1.0 | ug/l | 103 | | 80-120 | | |
| Trichlorofluoromethane | N.D. | 0.2 | 1.0 | ug/l | 112 | | 77-132 | | |
| 1,2,3-Trichloropropane | N.D. | 0.3 | 1.0 | ug/l | 101 | | 80-120 | | |
| 1,2,4-Trimethylbenzene | N.D. | 0.2 | 1.0 | ug/l | 100 | | 80-120 | | |
| 1,3,5-Trimethylbenzene | N.D. | 0.2 | 1.0 | ug/l | 100 | | 80-120 | | |
| Vinyl Acetate | N.D. | 3.3 | 10 | ug/l | 102 | | 38-145 | | |
| Vinyl Chloride | N.D. | 0.2 | 1.0 | ug/l | 104 | | 59-124 | | |
| Xylene (Total) | N.D. | 0.2 | 3.0 | ug/l | 101 | | 80-120 | | |
| Batch number: I141211BA | Sample number(s): 7444264-7444269 | | | | | | | | |
| Benzene | N.D. | 0.1 | 0.5 | ug/l | 98 | | 80-120 | | |
| 2-Butanone | N.D. | 1.0 | 10 | ug/l | 105 | | 63-137 | | |
| Carbon Tetrachloride | N.D. | 0.1 | 1.0 | ug/l | 110 | | 80-135 | | |
| Chloroethane | N.D. | 0.1 | 1.0 | ug/l | 95 | | 68-120 | | |
| Chloromethane | N.D. | 0.2 | 0.5 | ug/l | 100 | | 55-120 | | |
| Dichlorodifluoromethane | N.D. | 0.1 | 1.0 | ug/l | 118 | | 27-141 | | |
| 1,1-Dichloroethane | N.D. | 0.1 | 1.0 | ug/l | 99 | | 80-120 | | |
| Dimethyl ether | N.D. | 0.1 | 13 | ug/l | 91 | | 71-120 | | |
| Ethyl ether | N.D. | 0.1 | 13 | ug/l | 95 | | 61-122 | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1470108
Reported: 05/08/14 at 03:47 PM

| Analysis Name | Blank Result | Blank MDL** | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Ethylbenzene | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| Freon 113 | N.D. | 0.2 | 1.0 | ug/l | 101 | | 80-120 | | |
| Methylene Chloride | N.D. | 0.2 | 1.0 | ug/l | 101 | | 80-120 | | |
| Tetrachloroethene | N.D. | 0.1 | 1.0 | ug/l | 105 | | 80-120 | | |
| Toluene | N.D. | 0.1 | 1.0 | ug/l | 100 | | 80-120 | | |
| 1,1,1-Trichloroethane | N.D. | 0.1 | 1.0 | ug/l | 104 | | 80-120 | | |
| Trichloroethene | N.D. | 0.1 | 1.0 | ug/l | 103 | | 80-120 | | |
| Trichlorofluoromethane | N.D. | 0.1 | 1.0 | ug/l | 112 | | 77-132 | | |
| Xylene (Total) | N.D. | 0.1 | 3.0 | ug/l | 101 | | 80-120 | | |
| Batch number: L141192AA | Sample number(s): 7444256-7444261 | | | | | | | | |
| Ethanol | N.D. | 52. | 250 | ug/l | 85 | | 54-149 | | |
| Ethyl Acetate | N.D. | 1. | 10 | ug/l | 100 | | 65-120 | | |
| 2-Propanol | N.D. | 50. | 100 | ug/l | 91 | | 61-142 | | |
| Batch number: L141262AA | Sample number(s): 7444262-7444263 | | | | | | | | |
| Ethanol | N.D. | 52. | 250 | ug/l | 106 | 107 | 54-149 | 1 | 30 |
| Ethyl Acetate | N.D. | 1. | 10 | ug/l | 94 | 97 | 65-120 | 3 | 30 |
| 2-Propanol | N.D. | 50. | 100 | ug/l | 93 | | 61-142 | | |
| Batch number: 14121120101A | Sample number(s): 7444256-7444263 | | | | | | | | |
| Phenols (water) | N.D. | 0.015 | 0.040 | mg/l | 101 | | 82-109 | | |

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: I141211AA | Sample number(s): 7444256-7444263,7444270-7444271 UNSPK: 7444259 | | | | | | | | |
| Acetone | 106 | 96 | 57-163 | 10 | 30 | | | | |
| Acetonitrile | 113 | 116 | 77-129 | 3 | 30 | | | | |
| Acrolein | 96 | 98 | 29-149 | 2 | 30 | | | | |
| Acrylonitrile | 114 | 108 | 56-161 | 5 | 30 | | | | |
| Allyl Chloride | 104 | 112 | 61-120 | 7 | 30 | | | | |
| Benzene | 103 | 104 | 87-126 | 1 | 30 | | | | |
| Bromobenzene | 110 | 111 | 80-123 | 1 | 30 | | | | |
| Bromochloromethane | 109 | 121 | 82-125 | 10 | 30 | | | | |
| Bromodichloromethane | 112 | 110 | 82-133 | 1 | 30 | | | | |
| Bromoform | 108 | 106 | 60-138 | 2 | 30 | | | | |
| Bromomethane | 107 | 105 | 66-130 | 2 | 30 | | | | |
| n-Butanol | 120 | 122 | 55-144 | 2 | 30 | | | | |
| 2-Butanone | 111 | 106 | 56-160 | 4 | 30 | | | | |
| t-Butyl Alcohol | 133 | 119 | 55-154 | 11 | 30 | | | | |
| n-Butylbenzene | 108 | 109 | 83-131 | 1 | 30 | | | | |
| sec-Butylbenzene | 111 | 112 | 84-128 | 1 | 30 | | | | |
| tert-Butylbenzene | 111 | 112 | 84-135 | 1 | 30 | | | | |
| Carbon Disulfide | 102 | 106 | 84-141 | 4 | 30 | | | | |
| Carbon Tetrachloride | 117 | 118 | 81-148 | 1 | 30 | | | | |
| 2-Chloro-1,3-Butadiene | 104 | 106 | 78-128 | 2 | 30 | | | | |
| Chlorobenzene | 111 | 110 | 78-133 | 1 | 30 | | | | |
| Chloroethane | 101 | 99 | 70-139 | 1 | 30 | | | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1470108
Reported: 05/08/14 at 03:47 PM

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| 2-Chloroethyl vinyl ether | 0* | 0* | 70-130 | 0 | 30 | | | | |
| Chloroform | 109 | 108 | 86-136 | 1 | 30 | | | | |
| Chloromethane | 104 | 104 | 49-135 | 0 | 30 | | | | |
| 2-Chlorotoluene | 109 | 111 | 84-122 | 2 | 30 | | | | |
| 4-Chlorotoluene | 109 | 110 | 76-134 | 1 | 30 | | | | |
| Cyclohexane | 100 | 102 | 75-122 | 2 | 30 | | | | |
| 1,2-Dibromo-3-chloropropane | 120 | 129 | 53-163 | 7 | 30 | | | | |
| Dibromochloromethane | 120 | 118 | 79-125 | 1 | 30 | | | | |
| 1,2-Dibromoethane | 114 | 114 | 84-127 | 0 | 30 | | | | |
| Dibromomethane | 109 | 106 | 83-126 | 2 | 30 | | | | |
| trans-1,4-Dichloro-2-butene | 120 | 121 | 11-172 | 1 | 30 | | | | |
| 1,2-Dichlorobenzene | 110 | 110 | 83-117 | 0 | 30 | | | | |
| 1,3-Dichlorobenzene | 110 | 110 | 79-132 | 0 | 30 | | | | |
| 1,4-Dichlorobenzene | 111 | 111 | 79-120 | 0 | 30 | | | | |
| Dichlorodifluoromethane | 128 | 124 | 28-136 | 4 | 30 | | | | |
| 1,1-Dichloroethane | 107 | 109 | 81-126 | 1 | 30 | | | | |
| 1,2-Dichloroethane | 106 | 103 | 82-135 | 3 | 30 | | | | |
| 1,1-Dichloroethene | 110 | 114 | 86-132 | 3 | 30 | | | | |
| trans-1,2-Dichloroethene | 108 | 111 | 88-127 | 3 | 30 | | | | |
| 1,2-Dichloropropane | 106 | 104 | 91-126 | 2 | 30 | | | | |
| 1,3-Dichloropropane | 107 | 105 | 80-127 | 1 | 30 | | | | |
| 2,2-Dichloropropane | 112 | 113 | 80-134 | 1 | 30 | | | | |
| 1,1-Dichloropropene | 111 | 113 | 86-139 | 2 | 30 | | | | |
| cis-1,3-Dichloropropene | 113 | 113 | 74-132 | 1 | 30 | | | | |
| trans-1,3-Dichloropropene | 117 | 117 | 71-128 | 1 | 30 | | | | |
| Dimethyl ether | 95 | 94 | 70-130 | 1 | 30 | | | | |
| 1,4-Dioxane | 124 | 123 | 61-168 | 1 | 30 | | | | |
| Ethyl ether | 103 | 116 | 57-139 | 4 | 30 | | | | |
| Ethyl Methacrylate | 112 | 110 | 73-134 | 1 | 30 | | | | |
| Ethylbenzene | 110 | 108 | 80-140 | 2 | 30 | | | | |
| Freon 113 | 106 | 108 | 84-136 | 2 | 30 | | | | |
| Hexachlorobutadiene | 116 | 116 | 65-128 | 0 | 30 | | | | |
| Hexachloroethane | 94 | 100 | 70-130 | 6 | 30 | | | | |
| 2-Hexanone | 113 | 121 | 51-149 | 7 | 30 | | | | |
| Isobutyl Alcohol | 117 | 119 | 65-146 | 2 | 30 | | | | |
| di-Isopropyl Ether | 104 | 102 | 69-122 | 1 | 30 | | | | |
| Isopropylbenzene | 114 | 112 | 81-133 | 2 | 30 | | | | |
| p-Isopropyltoluene | 110 | 111 | 84-124 | 1 | 30 | | | | |
| Methacrylonitrile | 114 | 113 | 58-155 | 1 | 30 | | | | |
| Methyl Iodide | 106 | 110 | 71-137 | 4 | 30 | | | | |
| Methyl Methacrylate | 115 | 123 | 48-152 | 7 | 30 | | | | |
| Methyl Tertiary Butyl Ether | 103 | 101 | 71-119 | 2 | 30 | | | | |
| 4-Methyl-2-Pentanone | 110 | 119 | 69-149 | 8 | 30 | | | | |
| Methylene Chloride | 104 | 106 | 77-135 | 2 | 30 | | | | |
| Naphthalene | 114 | 117 | 56-132 | 2 | 30 | | | | |
| Pentachloroethane | 110 | 132 | 68-145 | 18 | 30 | | | | |
| Propionitrile | 113 | 102 | 63-147 | 10 | 30 | | | | |
| n-Propylbenzene | 108 | 109 | 79-131 | 1 | 30 | | | | |
| Styrene | 116 | 115 | 71-138 | 1 | 30 | | | | |
| 1,1,1,2-Tetrachloroethane | 119 | 118 | 87-126 | 1 | 30 | | | | |
| 1,1,2,2-Tetrachloroethane | 108 | 109 | 75-131 | 1 | 30 | | | | |
| Tetrachloroethene | 113 | 112 | 75-129 | 1 | 30 | | | | |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1470108
Reported: 05/08/14 at 03:47 PM

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Tetrahydrofuran | 115 | 119 | 56-154 | 3 | 30 | | | | |
| Toluene | 107 | 107 | 83-127 | 1 | 30 | | | | |
| 1,2,3-Trichlorobenzene | 111 | 112 | 73-125 | 1 | 30 | | | | |
| 1,2,4-Trichlorobenzene | 113 | 113 | 77-120 | 0 | 30 | | | | |
| 1,1,1-Trichloroethane | 110 | 111 | 85-140 | 1 | 30 | | | | |
| 1,1,2-Trichloroethane | 110 | 109 | 85-129 | 1 | 30 | | | | |
| Trichloroethene | 113 | 113 | 85-131 | 0 | 30 | | | | |
| Trichlorofluoromethane | 115 | 121 | 73-139 | 5 | 30 | | | | |
| 1,2,3-Trichloropropane | 111 | 114 | 76-120 | 2 | 30 | | | | |
| 1,2,4-Trimethylbenzene | 110 | 110 | 87-126 | 0 | 30 | | | | |
| 1,3,5-Trimethylbenzene | 109 | 110 | 89-129 | 1 | 30 | | | | |
| Vinyl Acetate | 110 | 111 | 27-162 | 1 | 30 | | | | |
| Vinyl Chloride | 112 | 112 | 62-135 | 0 | 30 | | | | |
| Xylene (Total) | 112 | 110 | 81-137 | 2 | 30 | | | | |
| Batch number: I141211BA | Sample number(s): 7444264-7444269 UNSPK: P444259 | | | | | | | | |
| Benzene | 103 | 104 | 87-126 | 1 | 30 | | | | |
| 2-Butanone | 111 | 106 | 56-160 | 4 | 30 | | | | |
| Carbon Tetrachloride | 117 | 118 | 81-148 | 1 | 30 | | | | |
| Chloroethane | 101 | 99 | 70-139 | 1 | 30 | | | | |
| Chloromethane | 104 | 104 | 49-135 | 0 | 30 | | | | |
| Dichlorodifluoromethane | 126 | 122 | 28-136 | 4 | 30 | | | | |
| 1,1-Dichloroethane | 107 | 109 | 81-126 | 1 | 30 | | | | |
| Dimethyl ether | 94 | 94 | 70-130 | 0 | 30 | | | | |
| Ethyl ether | 103 | 116 | 57-139 | 4 | 30 | | | | |
| Ethylbenzene | 110 | 108 | 80-140 | 2 | 30 | | | | |
| Freon 113 | 106 | 108 | 84-136 | 2 | 30 | | | | |
| Methylene Chloride | 104 | 106 | 77-135 | 2 | 30 | | | | |
| Tetrachloroethene | 113 | 112 | 75-129 | 1 | 30 | | | | |
| Toluene | 107 | 107 | 83-127 | 1 | 30 | | | | |
| 1,1,1-Trichloroethane | 110 | 111 | 85-140 | 1 | 30 | | | | |
| Trichloroethene | 113 | 113 | 85-131 | 0 | 30 | | | | |
| Trichlorofluoromethane | 115 | 121 | 73-139 | 5 | 30 | | | | |
| Xylene (Total) | 112 | 110 | 81-137 | 2 | 30 | | | | |
| Batch number: L141192AA | Sample number(s): 7444256-7444261 UNSPK: 7444259 | | | | | | | | |
| Ethanol | 70 | 78 | 53-146 | 11 | 30 | | | | |
| Ethyl Acetate | 99 | 93 | 41-137 | 6 | 30 | | | | |
| 2-Propanol | 90 | 95 | 53-142 | 6 | 30 | | | | |
| Batch number: L141262AA | Sample number(s): 7444262-7444263 UNSPK: 7444262 | | | | | | | | |
| 2-Propanol | 89 | 88 | 53-142 | 1 | 30 | | | | |
| Batch number: 14121120101A | Sample number(s): 7444256-7444263 UNSPK: 7444259 | | | | | | | | |
| Phenols (water) | 97 | 92 | 50-133 | 5 | 8 | | | | |

## Surrogate Quality Control

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1470108
Reported: 05/08/14 at 03:47 PM

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C (25 ml)
Batch number: I141211AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7444256 | 102 | 102 | 99 | 99 |
| 7444257 | 100 | 100 | 99 | 99 |
| 7444258 | 102 | 105 | 98 | 99 |
| 7444259 | 102 | 103 | 98 | 99 |
| 7444260 | 104 | 106 | 99 | 100 |
| 7444261 | 102 | 100 | 98 | 97 |
| 7444262 | 101 | 103 | 98 | 99 |
| 7444263 | 102 | 103 | 99 | 99 |
| 7444270 | 100 | 100 | 99 | 98 |
| 7444271 | 101 | 102 | 98 | 98 |
| Blank | 100 | 103 | 99 | 100 |
| LCS | 102 | 103 | 98 | 99 |
| MS | 104 | 106 | 99 | 100 |
| MSD | 102 | 100 | 98 | 97 |
| Limits: | 77-114 | 74-113 | 77-110 | 78-110 |

Analysis Name: 8260C (25 ml)
Batch number: I141211BA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7444264 | 101 | 103 | 98 | 99 |
| 7444265 | 102 | 103 | 98 | 99 |
| 7444266 | 101 | 104 | 98 | 98 |
| 7444267 | 101 | 100 | 99 | 98 |
| 7444268 | 101 | 101 | 98 | 98 |
| 7444269 | 101 | 101 | 99 | 98 |
| Blank | 100 | 103 | 99 | 100 |
| LCS | 102 | 103 | 98 | 99 |
| MS | 104 | 106 | 99 | 100 |
| MSD | 102 | 100 | 98 | 97 |
| Limits: | 77-114 | 74-113 | 77-110 | 78-110 |

Analysis Name: 8260C VOCs
Batch number: L141192AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7444256 | 106 | 103 | 96 | 94 |
| 7444257 | 106 | 103 | 97 | 94 |
| 7444258 | 106 | 103 | 96 | 94 |
| 7444259 | 106 | 104 | 96 | 94 |
| 7444260 | 106 | 101 | 98 | 97 |
| 7444261 | 103 | 100 | 98 | 97 |
| Blank | 102 | 101 | 97 | 96 |
| LCS | 102 | 101 | 98 | 97 |
| MS | 106 | 101 | 98 | 97 |
| MSD | 103 | 100 | 98 | 97 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1470108
Reported: 05/08/14 at 03:47 PM

## Surrogate Quality Control

| | | | | |
|---|---|---|---|---|
| Limits: | 80-116 | 77-113 | 80-113 | 78-113 |

Analysis Name: 8260C VOCs
Batch number: L141262AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7444262 | 101 | 102 | 97 | 94 |
| 7444263 | 100 | 99 | 97 | 94 |
| Blank | 100 | 103 | 97 | 95 |
| LCS | 100 | 100 | 99 | 97 |
| LCSD | 98 | 102 | 98 | 95 |
| MS | 100 | 102 | 98 | 96 |
| MSD | 101 | 101 | 99 | 97 |
| Limits: | 80-116 | 77-113 | 80-113 | 78-113 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

acct# 11200 Grp# 1470108 sample# 7444256-71

# CHAIN OF CUSTODY RECORD

**Laboratory:** Eurofins Lancaster Laboratories, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300 x1576

| | | | |
|---|---|---|---|
| **Client:** 0<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU16<br>**Event:** 1st Semiannual 2014 Groundwater Verification Monitoring Ever<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>UPS 1Z 75Y 02X Y0 4039 5152<br>**Carrier:** UPS<br>**Tracking Number:** 1Z-75Y-02X-Y0-4039-5152 |

| | | | |
|---|---|---|---|
| **Box 1: Matrix**<br>SW Surface Water<br>GW Groundwater<br>L Leachate<br>S Soil<br>T Trip Blank<br>E Equipment Blank<br>P Product<br>O Other | **Box 2: Preservative**<br>A HCL<br>B $HNO_3$<br>C $H_2SO_4$<br>D $Na_2S_2O_3$<br>E NaOH<br>F ZnAc<br>G Other (Specify)<br>H None | **Box 3: Filtered/Unfiltered**<br>F Filtered<br>U Unfiltered<br>**Box 5: Sample Container Type**<br>P Plastic<br>AG Amber Glass<br>V VOA<br>CG Clear Glass | **Box 4: Sample Type**<br>G Grab<br>C Composite | **Invoice**<br>**Copy to Consultant:** YES<br>**Bill:** CLIENT OTHER _____<br>**Preserved and shipped on Ice:** YES |

| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | 8260C/5030B 25 ml purge volume | 8260C/5030B 5 ml purge volume for ethanol, 2-propanol and ethyl acetate ONLY | 9066 (Phenolics - Total) | 6020A - COBALT ONLY (TOTAL) | 6020A - COBALT ONLY (DISSOLVED) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 4 - Sample Type | | | | | G | G | G | G | G | | | | |
| Box 3 - Filtered/Unfiltered | | | | | U | U | U | U | U | | | | |
| Required pH of Sample | | | | | <2 | <2 | <2 | <2 | <2 | | | | |
| Box 2 - Preservative | | | | | A | A | C | B | B | | | | |
| Box 5 - Sample Container Type | | | | | 3-40ml V | 3-40ml V | 2-250 ML g | 1-250mlP | 1-250mlP | | | | |
| **16C1** | 4/24 | 1525 | GW | 8 | X | X | X | | | | | | |
| **16MW8** | 4/24 | 0915 | GW | 8 | X | X | X | | | | | | |
| **16MW9** | 4/24 | 1030 | GW | 8 | X | X | X | | | | | | |
| **16WC1A** | 4/24 | 1145 | GW | 24 | X | X | X | | | | | | USE FOR QC |
| **16WDUP** | 4/24 | 1200 | GW | 8 | X | X | X | | | | | | |
| **16WC1B** | 4/24 | 1405 | GW | 10 | X | X | X | X | X | | | | |
| **16-1** | 4/23 | 0925 | GW | 3 | X | | | | | | | | |
| **16-2** | 4/23 | 1015 | GW | 3 | X | | | | | | | | |
| **16-3** | 4/23 | 1115 | GW | 3 | X | | | | | | | | |
| **16-5** | 4/23 | 1205 | GW | 3 | X | | | | | | | | |
| **16WC2B** | 4/23 | 1330 | GW | 3 | X | | | | | | | | |
| **16SPRING** | 4/23 | 1225 | GW | 3 | X | | | | | | | | |
| **Trip Blank 1** | 4/23 | — | T | 2 | X | | | | | | | | one trip blnnk required per day |
| **Trip Blank 2** | 4/23 | — | T | 2 | X | | | | | | | | |
| **Trip Blank 3** | | | T | 2 | X | | | | | | | | Delete if not required |

**GENERAL NOTES:**

1. **Report results to detection limit, with J flags, for italicized wells.**
2. **Report results at or greater than QL for non-italicized wells.**

3. Permit QLs / DLs same as 2013. JJK 4/14/2014

4. ~~6020A COBALT ONLY - HOLD: DO NOT ANALYZE UNTIL AUTHORIZED BY DAA.~~

JJK 4/23/2014 ~~4-23-14~~

**Clients Special Instructions: level 1 with edd. See attached target analyte list.**

Received by lab in Good Condition X Yes ____ No Custody Seal Intact X Yes ____ No Temperature upon arrival 2.0 °C Received on Ice X Yes ____ No

Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): RYN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): | Date: 4/25/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 4/26/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: | Time: | Company Name: ELLE | Time: 1045 | |



1/4 JK 4/21/14

acct# 11200
Cap# 1470108
Sample# 7444256-71

B03204-12 JJK 4-21-14

HWMU16

Radford Army Ammunition Plant
Annual Monitoring Event
~~DAA JN: B03204-05~~

JJK 4/9/2013

B03204-11 JJK 4/9/2013

ANALYTICAL METHOD: 8260B/C
TYPE METHOD: GCMS
CLASS: VOLATILE

## THIS APPLIES TO WELLS 16-1, 16-2, 16-3, 16-5, 16WC2B, 16SPRING

| No. | PARAMETER | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1 | Carbon tetrachloride | 56-23-5 | 1 |
| 2 | chloromethane ; (Methyl chloride) | 74-87-3 | 1 |
| 3 | 2-butanone (methyl ethyl ketone - MEK) | 78-93-3 | 10 |
| 4 | 1,1-dichloroethane | 75-34-3 | 1 |
| 5 | Dichlorodifluoromethane | 75-71-8 | 1 |
| 6 | Ethylbenzene | 100-41-4 | 1 |
| 7 | Tetrachloroethene | 127-18-4 | 1 |
| 8 | Toluene (methyl benzene) | 108-88-3 | 1 |
| 9 | 1,1,1-trichloroethane (methyl chloroform) | 71-55-6 | 1 |
| 10 | Trichloroethene | 79-01-6 | 1 |
| 11 | Trichlorofluoromethane (CFC-11) | 75-69-4 | 1 |
| 12 | Xylenes (total) | 1330-20-7 | 3 |
| 13 | Chloroethane | 75-00-3 | 1 |
| 14 | Diethyl ether | 60-29-7 | 12.5 |
| 15 | Dimethyl ether | 115-10-6 | 12.5 |
| 16 | methylene chloride | 75-09-2 | 1 |
| 17 | 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 1 |
| 18 | Benzene 9/16/2012 | | 1 |

JJK 4/12/2012

13-16 added 10/03. JCF
Revised 10/31/03 JCF
Revised 07/04

JJK 4/11/2013

VERIFIED 6/9/2014

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JJK 4/15/2013

Acct# 11200
Cap# 1470108
Sample# 7444256-71

B03204-12

HWMU16
Radford Army Ammunition Plant
Annual Monitoring Event
DAA JN: B03204-05

ANALYTICAL METHOD: 8260B/ GCMS/ Volatile (1 of 2 pages)
THIS APPLIES TO WELLS 16C1, 16MW8, 16MW9, 16WC1A, ~~16WC1ACC1A~~, 16WC1B & QC

| | Analyte | CAS# | Method | SecondaryName | TertiaryName |
|---|---|---|---|---|---|
| 1. | Acetone | 67-64-1 | 8260B | | |
| 2. | Acetonitrile | 75-05-8 | 8260B | | |
| 3. | Acrolein | 107-02-8 | 8260B | | |
| 4. | Acrylonitrile | 107-13-1 | 8260B | | |
| 5. | Allyl chloride | 107-05-1 | 8260B | | |
| 6. | Benzene | 71-43-2 | 8260B | | |
| 7. | Bromobenzene | 108-86-1 | 8260B | | |
| 8. | Bromochloromethane | 74-97-5 | 8260B | | |
| 9. | Bromodichloromethane | 75-27-4 | 8260B | | |
| 10. | Bromoform | 75-25-2 | 8260B | Tribromomethane | |
| 11. | n-Butyl alcohol | 71-36-3 | 8260B | | |
| 12. | tert-Butyl alcohol | 75-65-0 | 8260B | 2-Methyl-2-propanol | |
| 13. | n-Butylbenzene | 104-51-8 | 8260B | | |
| 14. | sec-Butylbenzene | 135-98-8 | 8260B | | |
| 15. | tert-Butylbenzene | 98-06-6 | 8260B | | |
| 16. | Carbon disulfide | 75-15-0 | 8260B | | |
| 17. | Carbon tetrachloride | 56-23-5 | 8260B | | |
| 18. | Chlorobenzene | 108-90-7 | 8260B | | |
| 19. | Chloroethane | 75-00-3 | 8260B | Ethyl chloride | |
| 20. | Chloroform | 67-66-3 | 8260B | Trichloromethane | |
| 21. | 2-Chloroethyl vinyl ether | 110-75-8 | 8260B | | |
| 22. | Chloroprene | 126-99-8 | 8260B | | |
| 23. | 2-Chlorotoluene | 95-49-8 | 8260B | | |
| 24. | 4-Chlorotoluene | 106-43-4 | 8260B | | |
| 25. | Cyclohexane | 110-82-7 | 8260B | | |
| 26. | Dibromochloromethane | 124-48-1 | 8260B | | |
| 27. | 1,2-Dibromo-3-chloropropane | 96-12-8 | 8260B | DBCP | |
| 28. | 1,2-Dibromoethane | 106-93-4 | 8260B | EDB | Ethylene dibromide |
| 29. | 1,2-Dichlorobenzene | 95-50-1 | 8260B | o-Dichlorobenzene | |
| 30. | 1,3-Dichlorobenzene | 541-73-1 | 8260B | m-Dichlorobenzene | |
| 31. | 1,4-Dichlorobenzene | 106-46-7 | 8260B | p-Dichlorobenzene | |
| 32. | trans-1,4-Dichloro-2-butene | 110-57-6 | 8260B | | |
| 33. | Dichlorodifluoromethane | 75-71-8 | 8260B | | |
| 34. | 1,1-Dichloroethane | 75-34-3 | 8260B | | |
| 35. | 1,2-Dichloroethane | 107-06-2 | 8260B | | |
| 36. | 1,1-Dichloroethene | 75-35-4 | 8260B | | |
| 37. | ~~cis-1,2-Dichloroethene~~ not required | 156-59-2 | 8260B | | |
| 38. | trans-1,2-Dichloroethene | 156-60-5 | 8260B | | |
| 39. | 1,2-Dichloropropane | 78-87-5 | 8260B | | |
| 40. | 1,3-Dichloropropane | 142-28-9 | 8260B | | |
| 41. | 2,2-Dichloropropane | 594-20-7 | 8260B | | |
| 42. | 1,1-Dichloropropene | 563-58-6 | 8260B | | |
| 43. | cis-1,3-Dichloropropene | 10061-01-5 | 8260B | | |
| 44. | trans-1,3-Dichloropropene | 10061-02-6 | 8260B | | |
| 45. | Diethyl ether | 60-29-7 | 8260B | | |
| 46. | Dimethyl ether | 115-10-6 | 8260B | | |
| 47. | 1,4-Dioxane | 123-91-1 | 8260B | | |
| 48. | Ethyl acetate | 141-78-6 | 8260B | | |
| 49. | Ethanol | 64-17-5 | 8260B | | |

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acct#11200 Gp#1470108
sample#7444256-71

B03204-12

reported as TIC

# HWMU16
## Radford Army Ammunition Plant
## Annual Monitoring Event
## DAA JN: B03204-05

| | | | | | |
|---|---|---|---|---|---|
| 50. | Ethylbenzene | 100-41-4 | 8260B | | |
| 51. | Ethyl methacrylate | 97-63-2 | 8260B | | |
| 52. | Ethylene oxide | 75-21-8 | 8260B | | |
| 53. | Hexachlorobutadiene | 87-68-3 | 8260B | | |
| 54. | Hexachloroethane | 67-72-1 | 8260B | | |
| 55. | 2-Hexanone | 591-78-6 | 8260B | Methyl butyl ketone | MBK |
| 56. | Isobutyl alcohol | 78-83-1 | 8260B | | |
| 57. | Isopropylbenzene | 98-82-8 | 8260B | | |
| 58. | Isopropylether | 108-20-3 | 8260B | | |
| 59. | 4-Isopropyltoluene | 99-87-6 | 8260B | | |
| 60. | Methacrylonitrile | 126-98-7 | 8260B | | |
| 61. | Bromomethane | 74-83-9 | 8260B | Methyl bromide | |
| 62. | Chloromethane | 74-87-3 | 8260B | Methyl chloride | |
| 63. | 2-Butanone | 78-93-3 | 8260B | Methyl ethyl ketone | MEK |
| 64. | Iodomethane | 74-88-4 | 8260B | methyl iodide | |
| 65. | Methyl methacrylate | 80-62-6 | 8260B | | |
| 66. | 4-Methyl-2-pentanone | 108-10-1 | 8260B | Methyl Isobutyl | |
| 67. | Methyl tert-butyl ether | 1634-04-4 | 8260B | | |
| 68. | Dibromomethane | 74-95-3 | 8260B | Methylene bromide | |
| 69. | Methylene chloride | 75-09-2 | 8260B | | |
| 70. | Naphthalene | 91-20-3 | 8260B | | |
| 71. | Pentachloroethane | 76-01-7 | 8260B | | |
| 72. | 1-Propanol | 71-23-8 | 8260B | | |
| 73. | 2-Propanol | 67-63-0 | 8260B | Isopropanol | |
| 74. | Propionitrile | 107-12-0 | 8260B | | |
| 75. | n-Propylbenzene | 103-65-1 | 8260B | | |
| 76. | Styrene | 100-42-5 | 8260B | | |
| 77. | 1,1,1,2-Tetrachloroethane | 630-20-6 | 8260B | | |
| 78. | 1,1,2,2-Tetrachloroethane | 79-34-5 | 8260B | | |
| 79. | Tetrachloroethene | 127-18-4 | 8260B | Tetrachloroethylene | |
| 80. | Tetrahydrofuran | 109-99-9 | 8260B | | |
| 81. | Toluene | 108-88-3 | 8260B | | |
| 82. | 1,2,3-Trichlorobenzene | 87-61-6 | 8260B | | |
| 83. | 1,2,4-Trichlorobenzene | 120-82-1 | 8260B | | |
| 84. | 1,1,1-Trichloroethane | 71-55-6 | 8260B | Methylchloroform | |
| 85. | 1,1,2-Trichloroethane | 79-00-5 | 8260B | | |
| 86. | Trichloroethene | 79-01-6 | 8260B | Trichloroethene | |
| 87. | Trichlorofluoromethane | 75-69-4 | 8260B | | |
| 88. | 1,2,3-Trichloropropane | 96-18-4 | 8260B | | |
| 89. | 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 8260B | Freon-13 | |
| 90. | 1,2,4-Trimethylbenzene | 95-63-6 | 8260B | | |
| 91. | 1,3,5-Trimethylbenzene | 108-67-8 | 8260B | | |
| 92. | Vinyl acetate | 108-05-4 | 8260B | | |
| 93. | Vinyl chloride | 75-01-4 | 8260B | | |
| 94. | Xylenes (Total) | 1330-20-7 | 8260B | | |

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# Sample Administration Receipt Documentation Log

Doc Log ID: 12866

Group Number(s): 1470108

Client: Draper Aden

## Delivery and Receipt Information

| | | | |
|---|---|---|---|
| Delivery Method: | UPS | Arrival Timestamp: | 04/26/2014 10:45 |
| Number of Packages: | 2 | Number of Projects: | 1 |
| State/Province of Origin: | VA | | |

## Arrival Condition Summary

| | | | |
|---|---|---|---|
| Shipping Container Sealed: | Yes | Total Trip Blank Qty: | 4 |
| Custody Seal Present: | Yes | Trip Blank Type: | HCl |
| Custody Seal Intact: | Yes | Air Quality Samples Present: | No |
| Samples Chilled: | Yes | Air Quality Flow Controllers Present: | N/A |
| Paperwork Enclosed: | Yes | Flow Controller Quantity: | 0 |
| Samples Intact: | Yes | Air Quality Returns: | N/A |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |
| Sample IDs on COC match Containers: | Yes | | |
| Sample Date/Times match COC: | Yes | | |
| VOA Vial Headspace ≥ 6mm: | No | | |
| VOA IDs ( ≥ 6mm): | N/A | | |

Unpacked by Wesley Miller (2308) at 12:42 on 04/26/2014

## Samples Chilled Details

*Thermometer Types:* *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

| Cooler # | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Samples Collected Same Day as Receipt? | Elevated Temp? |
|---|---|---|---|---|---|---|---|---|
| 1 | DT121 | 0.8 | DT | Wet | Y | Bagged | N | N |
| 2 | DT121 | 0.2 | DT | Wet | Y | Bagged | N | N |

General Comments:



2425 New Holland Pike
Lancaster, PA 17601-2435
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **RL** | Reporting Limit | **BMQL** | Below Minimum Quantitation Level |
| **N.D.** | none detected | **MPN** | Most Probable Number |
| **TNTC** | Too Numerous To Count | **CP Units** | cobalt-chloroplatinate units |
| **IU** | International Units | **NTU** | nephelometric turbidity units |
| **umhos/cm** | micromhos/cm | **ng** | nanogram(s) |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **meq** | milliequivalents | **lb.** | pound(s) |
| **g** | gram(s) | **kg** | kilogram(s) |
| **µg** | microgram(s) | **mg** | milligram(s) |
| **mL** | milliliter(s) | **L** | liter(s) |
| **m3** | cubic meter(s) | **µL** | microliter(s) |
| | | **pg/L** | picogram/liter |

**<** less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*Data Qualifiers:*

**C –** result confirmed by reanalysis.

**J -** estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

*U.S. EPA CLP Data Qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quantitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike sample not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

**Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

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# Type I Data Package

Abridged data package.

Full deliverable available.

**Prepared for:**

**Draper Aden Associates, Inc.**
2206 South Main Street
Blacksburg VA 24060

Project: RAAP - Radford, VA - HWMU16
Groundwater and Water Samples
Collected on 06/12/14

## SDG# RAE23

| GROUP | SAMPLE NUMBERS |
|---|---|
| 1481779 | 7498386, 7498388-7498389 |

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

**Authorized by:** Dana M Kauffman **Date:** **06/27/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

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## Sample Reference List for SDG Number RAE23
## with a Data Package Type of I

**11200 - Draper Aden Associates, Inc.**

Project: RAAP - Radford, VA - HWMU16

| Lab Sample Number | Lab Sample Code | Client Sample Description |
|---|---|---|
| 7498386 | MW916 | 16MW9 Grab Groundwater 1st Semiannual 2014 GW Verification Monitoring |
| 7498388 | RADT1 | Trip Blank 1 Water 1st Semiannual 2014 GW Verification Monitoring |
| 7498389 | MW16D | 16MWDUP2 Grab Groundwater 1st Semiannual 2014 GW Verification Monitoring |

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# Sample pH Log

**SDG: RAE23**

| LLI Sample Number | Bottle Code | Actual pH | Exp. pH | pH Check Code | Adj. pH | Adjusted Date | Adjusted Time | Preservative Added | Preservative Lot # | LLI Supplied Bottle? | Sulfide Present? | Corrective Substance | CS Lot # | Res. Cl. Present? | Corrective Substance | CS Lot # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7498386 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7498388 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7498389 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |

| Check Code Key |
|---|
| **PK** = Original container checked - pH is within the correct range. (No preservative was added) |
| **PA** = Original container checked - pH adjusted to correct range. (Preservative was added) |
| **PV** = Volatile container checked |
| **PC** = pH checked (unpreserved container) |
| **SPK** = Subsampled from an original container. Original container checked - pH is within correct range |
| **SPA** = Subsampled from an original container. Subsample container checked - pH adjusted to correct range. |
| **SPC** = Subsampled from an original container. pH checked (unpreserved container). |
| **SUP** = Subsampled from original container. Unable to be preserved due to the matrix of the sample. |
| **UP** = Unable to preserve due to matrix of the sample. |
| **NA** = Not applicable |

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 · 717-656-2300 Fax: 717-656-2681 · www.lancasterlabs.com

### 01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030C, May 2003.

---

### 11996 8260C Water(25ml) Master

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

# Analysis Reports / Field Chain of Custody

REVISED

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

June 26, 2014

Project: RAAP - Radford, VA - HWMU16

Submittal Date: 06/13/2014
Group Number: 1481779
SDG: RAE23
State of Sample Origin: VA

| Client Sample Description | Lancaster Labs (LL) # |
|---|---|
| 16MW9 Grab Groundwater | 7498386 |
| Trip Blank 1 Water | 7498388 |
| 16MWDUP2 Grab Groundwater | 7498389 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU16
LL Group #: 1481779

**General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

**Analysis Specific Comments:**

No additional comments are necessary.

REVISED

**Sample Description: 16MW9 Grab Groundwater**
**1st Semiannual 2014 GW Verification Monitoring**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7498386**
**LL Group # 1481779**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 06/12/2014 11:30 by KC

Submitted: 06/13/2014 09:45
Reported: 06/26/2014 12:59

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

MW916 SDG#: RAE23-01

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 0.3 | J | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 8260C (25 ml) | SW-846 8260C | 1 | H141671AA | 06/16/2014 20:29 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141671AA | 06/16/2014 20:29 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

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# Analysis Report

REVISED

**Sample Description: Trip Blank 1 Water**
**1st Semiannual 2014 GW Verification Monitoring**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7498388**
**LL Group # 1481779**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 06/12/2014

Submitted: 06/13/2014 09:45
Reported: 06/26/2014 12:59

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

RADT1 SDG#: RAE23-02TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 8260C (25 ml) | SW-846 8260C | 1 | H141671AA | 06/16/2014 20:07 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141671AA | 06/16/2014 20:07 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

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# Analysis Report

REVISED

**Sample Description: 16MWDUP2 Grab Groundwater**
**1st Semiannual 2014 GW Verification Monitoring**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7498389**
**LL Group # 1481779**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 06/12/2014 11:35 by KC

Submitted: 06/13/2014 09:45
Reported: 06/26/2014 12:59

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

MW16D SDG#: RAE23-03FD*

| CAT No. | Analysis Name | CAS Number | As Received Result | | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 0.3 | J | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 8260C (25 ml) | SW-846 8260C | 1 | H141671AA | 06/16/2014 20:51 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H141671AA | 06/16/2014 20:51 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1481779
Reported: 06/26/14 at 12:59 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank MDL** | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: H141671AA | Sample number(s): 7498386,7498388-7498389 | | | | | | | | |
| 1,1-Dichloroethene | N.D. | 0.1 | 0.5 | ug/l | 106 | | 80-123 | | |

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: H141671AA | Sample number(s): 7498386,7498388-7498389 UNSPK: P488555 | | | | | | | | |
| 1,1-Dichloroethene | 98 | 119 | 86-132 | 19 | 30 | | | | |

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C (25 ml)
Batch number: H141671AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7498386 | 108 | 102 | 97 | 96 |
| 7498388 | 108 | 105 | 97 | 95 |
| 7498389 | 108 | 104 | 97 | 96 |
| Blank | 106 | 103 | 97 | 97 |
| LCS | 106 | 107 | 98 | 100 |
| MS | 108 | 103 | 97 | 99 |
| MSD | 107 | 104 | 98 | 100 |
| Limits: | 77-114 | 74-113 | 77-110 | 78-110 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

11200 | 1481779 | 7498385-89

# CHAIN OF CUSTODY RECORD

6-6-14

**Laboratory:** Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300 x1576

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU16<br>1st Semiannual 2014 Groundwater Verification Monitoring Event<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>HPS ~~12-754-03X-Y6-4766-5035-6-12-14~~<br>**Carrier:**<br>**Tracking Number:** 12-754-03X-Y6-4142-2950 | | |

| Box 1: Matrix | | Box 2: Preservative | | Box 3: Filtered/Unfiltered | Box 4: Sample Type | Invoice |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | Preserved and shipped on ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA<br>AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | G | G | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | U | U | | | | | | |
| **Required pH of Sample** | | | | | <2 | <2 | <2 | | | | | | |
| **Box 2 - Preservative** | | | | | A | B | B | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 3-40ml V | 1-250mL P | 1-250mL P | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **8260C/5030B - 25 ml purge volume (analyze for 1,1-Dichloroethene ONLY)** | **ICP/MS 6020A/3005A (Metals-Silver ONLY)** | **ICP/MS 6020A/3005A (Metals-Cobalt ONLY)** | | | | | | |
| *16MW8* | 6/12 | 1030 | GW | 1 | | X | | | | | | | |
| *16MW9* | 6/12 | 1130 | GW | 3 | X | | | | | | | | |
| *16WC1A* | 6/12 | 0920 | GW | 1 | | | X | | | | | | |
| Trip Blank 1 | 6/12 | — | T | 2 | X | | | | | | | | |

GENERAL NOTES:

1. Report results to detection limit, with J flags.

Report to permit RL/MDL

- 1,1-DCE : 1/0.2 ug/L
- Silver : 1/0.2 ug/L
- Cobalt 5/1 ug/L.

JWS 5/19/2014

**Clients Special Instructions:**

Received by lab in Good Condition X Yes ____ No Custody Seal Intact X Yes ____ No Temperature upon arrival 0.6 °C Received on Ice X Yes ____ No

Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 6/12/14 | #1 Relinquished by (Signature): Ken Coddington | Date: 6/12/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tyler Emery | Date: 6/12/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 6/13/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tyler Emery | Time: 0700 | Company Name: | Time: | Company Name: ELLE | Time: 945 | |



6-6-14 1/1

11200/1481779/7498385-89 **CHAIN OF CUSTODY RECORD**

6-6-14

**Laboratory:** Eurofins Lancaster Laboratories Environmental, LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager/ (717) 656-2300 x1576

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU16<br>1st Semiannual 2014 Groundwater Verification Monitoring Event<br>**Event:**<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>UPS:<br>**Carrier:** 12-75Y-02X-Y0-<br>**Tracking Number:** | | |

| **Box 1: Matrix** | | **Box 2: Preservative** | | **Box 3: Filtered/Unfiltered** | **Box 4: Sample Type** | **Invoice** |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | Preserved and shipped on ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA<br>AG Amber Glass CG Clear Glass | | |

| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | 8260C/5030B - 25 ml purge volume (analyze for 1,1-Dichloroethene ONLY) | ICP/MS 6020A/3005A (Metals-Silver ONLY) | ICP/MS 6020A/3005A (Metals-Cobalt ONLY) |
|---|---|---|---|---|---|---|---|
| Box 4 - Sample Type | | | | | G | G | G |
| Box 3 - Filtered/Unfiltered | | | | | U | U | U |
| Required pH of Sample | | | | | <2 | <2 | <2 |
| Box 2 - Preservative | | | | | A | B | B |
| Box 5 - Sample Container Type | | | | | 3-40ml V | 1-250mL P | 1-250mL P |
| 16MWDUP1 | 6/12 | 1035 | GW | 1 | | X | |
| 16MWDUP2 | 6/12 | 1135 | GW | 3 | X | | |
| 16WCDUP3 | 6/12 | 0925 | GW | 1 | | | X |

**GENERAL NOTES:**

1. Report results to detection limit, with J flags

Report to permit RL/MDL

- 1,1-DCE 1/0.2 µg/L
- Silver 1/0.2 µg/L
- Cobalt 5/1 µg/L

**Clients Special Instructions:**

Received by lab in Good Condition X Yes ____ No Custody Seal Intact X Yes ____ No Temperature upon arrival 0.6 Received on Ice X Yes ____ No

Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 6/12/14 | #1 Relinquished by (Signature): | Date: 6/12/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tyler Emery | Date: 6/12/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 6/13/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0700 | Company Name: | Time: | Company Name: ELLE | Time: 945 | |

6-6-14 1/1

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# Sample Administration Receipt Documentation Log

Doc Log ID: 17330

Group Number(s): 1481779

Client: Draper Aden

## Delivery and Receipt Information

| | | | |
|---|---|---|---|
| Delivery Method: | UPS | Arrival Timestamp: | 06/13/2014 9:45 |
| Number of Packages: | 1 | Number of Projects: | 1 |
| State/Province of Origin: | VA | | |

## Arrival Condition Summary

| | | | |
|---|---|---|---|
| Shipping Container Sealed: | Yes | Total Trip Blank Qty: | 2 |
| Custody Seal Present: | Yes | Trip Blank Type: | HCl |
| Custody Seal Intact: | Yes | Air Quality Samples Present: | No |
| Samples Chilled: | Yes | Air Quality Flow Controllers Present: | N/A |
| Paperwork Enclosed: | Yes | Flow Controller Quantity: | 0 |
| Samples Intact: | Yes | Air Quality Returns: | N/A |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |
| Sample IDs on COC match Containers: | No | | |
| Sample Date/Times match COC: | Yes | | |
| VOA Vial Headspace ≥ 6mm: | No | | |
| VOA IDs ( ≥ 6mm): | N/A | | |

Unpacked by Wesley Miller (2308) at 12:50 on 06/13/2014

## Samples Chilled Details

*Thermometer Types:* *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

| Cooler # | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Samples Collected Same Day as Receipt? | Elevated Temp? |
|---|---|---|---|---|---|---|---|---|
| 1 | DT121 | 0.6 | DT | Wet | Y | Bagged | N | N |

## Sample ID Discrepancy Details

| Sample ID on COC | Sample ID on Label | Comments |
|---|---|---|
| 16WCDUP3 | 16MWDUP3 | |



2425 New Holland Pike
Lancaster, PA 17601-5428
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F | 717-656-2681
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# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **RL** | Reporting Limit | **BMQL** | Below Minimum Quantitation Level |
| **N.D.** | none detected | **MPN** | Most Probable Number |
| **TNTC** | Too Numerous To Count | **CP Units** | cobalt-chloroplatinate units |
| **IU** | International Units | **NTU** | nephelometric turbidity units |
| **umhos/cm** | micromhos/cm | **ng** | nanogram(s) |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **meq** | milliequivalents | **lb.** | pound(s) |
| **g** | gram(s) | **kg** | kilogram(s) |
| **µg** | microgram(s) | **mg** | milligram(s) |
| **mL** | milliliter(s) | **L** | liter(s) |
| **m3** | cubic meter(s) | **µL** | microliter(s) |
| | | **pg/L** | picogram/liter |

**<** less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*Data Qualifiers:*

**C –** result confirmed by reanalysis.

**J -** estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

*U.S. EPA CLP Data Qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quantitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike sample not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

**Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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CompuChem
A Division Of
Liberty Analytical Corp.

5/20/2014

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Abridged data package.

Full deliverable available.

Subject:

Report of Data - Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1404171

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404171

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1404171

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404171-01 | 16WC1A | Water | 04/24/2014 11:45 | 04/25/2014 13:15 |
| 1404171-02 | 16C1 | Water | 04/24/2014 15:25 | 04/25/2014 13:15 |
| 1404171-03 | 16MW8 | Water | 04/24/2014 09:15 | 04/25/2014 13:15 |
| 1404171-04 | 16MW9 | Water | 04/24/2014 10:30 | 04/25/2014 13:15 |
| 1404171-05 | 16WDUP | Water | 04/24/2014 12:00 | 04/25/2014 13:15 |
| 1404171-06 | 16WC1B | Water | 04/24/2014 14:05 | 04/25/2014 13:15 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1404171

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16WC1A | SW8270D APPIX | 1404171-01 |
| 16WC1A | SW8270D ADD | 1404171-01 |
| 16WC1A | SW8270D ADD | 1404171-01 |
| 16WC1A | SW8270D ADD | 1404171-01 |
| 16WC1A | SW8270D | 1404171-01 |
| 16C1 | SW8270D | 1404171-02 |
| 16C1 | SW8270D APPIX | 1404171-02 |
| 16C1 | SW8270D ADD | 1404171-02 |
| 16C1 | SW8270D ADD | 1404171-02 |
| 16C1 | SW8270D ADD | 1404171-02 |
| 16MW8 | SW8270D | 1404171-03 |
| 16MW8 | SW8270D APPIX | 1404171-03 |
| 16MW8 | SW8270D ADD | 1404171-03 |
| 16MW8 | SW8270D ADD | 1404171-03 |
| 16MW8 | SW8270D ADD | 1404171-03 |
| 16MW9 | SW8270D | 1404171-04 |
| 16MW9 | SW8270D APPIX | 1404171-04 |
| 16MW9 | SW8270D ADD | 1404171-04 |
| 16MW9 | SW8270D ADD | 1404171-04 |
| 16MW9 | SW8270D ADD | 1404171-04 |
| 16WDUP | SW8270D ADD | 1404171-05 |
| 16WDUP | SW8270D ADD | 1404171-05 |
| 16WDUP | SW8270D ADD | 1404171-05 |
| 16WDUP | SW8270D | 1404171-05 |
| 16WDUP | SW8270D APPIX | 1404171-05 |
| 16WC1B | SW8270D APPIX | 1404171-06 |
| 16WC1B | SW8270D ADD | 1404171-06 |
| 16WC1B | SW8270D ADD | 1404171-06 |
| 16WC1B | SW8270D ADD | 1404171-06 |
| 16WC1B | SW8270D | 1404171-06 |

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I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature:

Name: Steve Pruskin

Date: 05/19/2014

Title: Technical Director

Environmental Testing Laboratories

CompuChem

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# CompuChem

**A division of Liberty Analytical Corporation**
**501 Madison Avenue**
**Cary, N.C. 27513**
**Tel: 919/379-4100 Fax: 919/379-4050**


## SDG NARRATIVE
## SDG # 1404171
## PROTOCOL: SW-846

**SAMPLE IDENTIFICATIONS:** 16WC1A 16C1 16MW8 16MW9 16WDUP 16WC1B

The 6 aqueous samples listed above were received intact, at temperatures between 1.2°C and 3.1°C, with proper documentation, in sealed shipping containers, on April 25, 2013. These samples were scheduled for the requested analyses of the semivolatile fraction. SW-846, 3rd Edition, Update 4, Separatory Funnel extraction (Method 3510C), and Method 8270D were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the narrative deals with the semivolatile fraction only.

**Semivolatile**

Extraction and analysis holding time requirements were met for these samples.
There were no semivolatile project analytes identified above the Quantitation Limit (QL) in these samples.

Manual integrations were performed on one or more of the process files associated with this SDG. Please see the detailed Manual Integration Summary report that is located in section S. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Tailing factor criteria were met for pentachlorophenol and benzidine. The breakdown criterion was met for DDT. These three compounds have been added to the DFTPP solution and analyzed together.
All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of these samples with the following exception. The surrogates are reported from the full scan analysis only.
All of the internal standards met response and retention time criteria in the analyses of these samples.
The associated method blanks met all quality control criteria.

Laboratory Control Samples (LCS) prepared and analyzed along with these samples met quality control criteria, with the following exception.
4042921-BS1 and 4042921-BSD1 were bias low for p-Phenylenediamine.
16WC1A was used as the original to prepare the duplicate matrix spikes as requested. The associated duplicate matrix spikes met most of the advisory accuracy and precision criteria.
Due to limited sample duplicate matrix spikes were not done for p-phenylenediamine, hexachlorophene and kepone.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Patricia A. Murphy
Senior Scientist
May 16, 2014

# CHAIN OF CUSTODY RECORD



**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

OK JLC 4/29/14

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU16<br>**Event:** t Semiannual 2014 Groundwater Verification Monitoring Ev<br>**DAA JN:** B03204-12<br>**Lab JN:** | (Project Specific (PS) or Batch (B) QC:<br>~~Sample Collection for Project Complete?~~ YES<br>**Carrier:** DASH COURIER<br>**Tracking Number:** SERVICE | | |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on Ice: YES

| Box 4 - Sample Type | | | | | G | G | G | G | G | TG | G | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 3 - Filtered/Unfiltered | | | | | U | U | U | U | U | U | U | | |
| Required pH of Sample | | | | | <2 | <2 | | | >12 | <2 | | | |
| Box 2 - Preservative | | | | | B | B | H | H | E | B | H | | |
| Box 5 - Sample Container Type | | | | | 1-500 ml P | | 2-1LAG | 2-1L AG | 1-500-P | 1-500mL P | 2-1LAG | | |

| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | ICP/MS 6020A/3005A and 6010C/3010A (Metals-Total) | 7470A (Mercury-Total) | 8151A (Herbicides) | 8270D/3510C (Semivolatiles) | 9012B/9010C(Cyanide) | 6020A - COBALT ONLY - (DISSOLVED) | 8081B (Pesticides) W/CLEANUP | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16C1 | 4/24 | 1525 | GW | 8 | X | X | X | X | X | | X | | | 1404171-02 DISS. Co |
| 16MW8 | 4/24 | 0915 | GW | 8 | X | X | X | X | X | | X | | | -03 |
| 16MW9 | 4/24 | 1030 | GW | 8 | X | X | X | X | X | | X | | | -04 |
| 16WG1A | 4/24 | 1145 | GW | 24 | X | X | X | X | X | | X | | | -01 USE FOR QC |
| 16WDUP | 4/24 | 1200 | GW | 8 | X | X | X | X | X | | X | | | -05 |
| 16WC1B | 4/24 | 1405 | GW | 9 (4/25/14) | X | X | X | X | X | X | X | | | -06 ← 1404173-01 |
| 16-1 | 4/23 | 0925 | GW | 3 | X | X | | X | | | | | | 1404172-01 |
| 16-2 | 4/23 | 1015 | GW | 3 | X | X | | X | | | | | | -02 |
| 16-3 | 4/23 | 1115 | GW | 3 | X | X | | X | | | | | | -03 |
| 16-5 | 4/23 | 1205 | GW | 3 | X | X | | X | | | | | | -04 |
| 16WC2B | 4/23 | 1330 | GW | 3 | X | X | | X | | | | | | -05 |
| 16SPRING | 4/23 | 1225 | GW | 3 | X | X | | X | | | | | | -06 |
| | | | | | | | | | | | | | | diss. Co in this cooler |
| | | | | | | | | | | | | | | |

**GENERAL NOTES:**
1. Report results to detection limit, with J flags, for italicized wells.
2. Report results at or greater than QL for non-italicized wells. 3. ERIS Deliverable required.
4. VELAP accreditation required.
5. Full deliverable.

**Clients Special Instructions:** Level 4 with edd. See attached target analyte list. 2.2°C, 1.7°C, 3.1°C, 2.3°C, 1.9°C, 1.2°C IR GUN: SN0010

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Ken Coddington | Date: 4/25/14 | #2 Relinquished by (Signature): | Date: 4/25/14 | Sample Storage Time Requested: 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: DAA | Time: 0930 | Company Name: Dash Courier | Time: 1315 | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: 4-25-14 | #2 Received by (Signature): | Date: 4/25/14 | |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: Dash Courier | Time: 0930 | Company Name: CompuChem | Time: 1315 | |

JLC 4/25/2014 1/10

# HOLDING TIME SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/01/14 | 1.2 | 40 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/01/14 | 1.3 | 40 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/01/14 | 1.3 | 40 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/01/14 | 1.3 | 40 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/01/14 | 1.3 | 40 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/01/14 | 1.4 | 40 | |

# HOLDING TIME SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.2 | 40 | |
| 16WC1A | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.0 | 40 | |
| 16WC1A | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/15/14 | 15.0 | 40 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/15/14 | 15.1 | 40 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.3 | 40 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.0 | 40 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/15/14 | 15.1 | 40 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.3 | 40 | |

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# HOLDING TIME SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16MW8 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.1 | 40 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/15/14 | 15.1 | 40 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.3 | 40 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.1 | 40 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.1 | 40 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/15/14 | 15.1 | 40 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.4 | 40 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/15/14 | 15.2 | 40 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.4 | 40 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/14/14 | 14.2 | 40 | |

# HOLDING TIME SUMMARY

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16WC1A | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/09/14 | 9.2 | 40 | |
| 16C1 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/09/14 | 9.3 | 40 | |
| 16MW8 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/09/14 | 9.3 | 40 | |
| 16MW9 | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/09/14 | 9.3 | 40 | |
| 16WDUP | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/09/14 | 9.3 | 40 | |
| 16WC1B | 04/24/14 | 04/25/14 | 04/30/14 | 6 | 7 | 05/13/14 | 13.2 | 40 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: 5972hp66

Sequence: 4E01009 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Blank (4042917-BLK1 ) ug/L** Lab File ID: 4042917-BLK166.d Analyzed: 05/01/14 14:31 | | | | |
| 2-Fluorophenol | 100.0 | 69 | 33 - 110 | |
| Phenol-d5 | 100.0 | 40 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 95 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 88 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 92 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 103 | 59 - 110 | |
| **LCS (4042917-BS1 ) ug/L** Lab File ID: 4042917-BS1J66.d Analyzed: 05/01/14 15:41 | | | | |
| 2-Fluorophenol | 100.0 | 70 | 33 - 110 | |
| Phenol-d5 | 100.0 | 43 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 97 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 86 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 110 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 93 | 59 - 110 | |
| **16WC1A (1404171-01 ) ug/L** Lab File ID: 1404171-0166.d Analyzed: 05/01/14 16:21 | | | | |
| 2-Fluorophenol | 100.0 | 68 | 33 - 110 | |
| Phenol-d5 | 100.0 | 37 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 98 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 87 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 100 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 98 | 59 - 110 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: 5972hp66

Sequence: 4E01009 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Matrix Spike (4042917-MS1 ) ug/L** Lab File ID: 4042917-MS166.d Analyzed: 05/01/14 17:00 | | | | |
| 2-Fluorophenol | 100.0 | 89 | 33 - 110 | |
| Phenol-d5 | 100.0 | 61 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 98 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 85 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 115 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 95 | 59 - 110 | |
| **Matrix Spike Dup (4042917-MSD1 ) ug/L** Lab File ID: 4042917-MSD166.d Analyzed: 05/01/14 17:39 | | | | |
| 2-Fluorophenol | 100.0 | 74 | 33 - 110 | |
| Phenol-d5 | 100.0 | 52 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 83 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 77 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 101 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 80 | 59 - 110 | |
| **16C1 (1404171-02 ) ug/L** Lab File ID: 1404171-0266.d Analyzed: 05/01/14 18:19 | | | | |
| 2-Fluorophenol | 100.0 | 64 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 96 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 85 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 102 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 97 | 59 - 110 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: 5972hp66

Sequence: 4E01009 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16MW8 (1404171-03 ) ug/L** Lab File ID: 1404171-0366.d Analyzed: 05/01/14 18:58 | | | | |
| 2-Fluorophenol | 100.0 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 99 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 88 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 100 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 104 | 59 - 110 | |
| **16MW9 (1404171-04 ) ug/L** Lab File ID: 1404171-0466.d Analyzed: 05/01/14 19:38 | | | | |
| 2-Fluorophenol | 100.0 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 92 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 82 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 94 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 97 | 59 - 110 | |
| **16WDUP (1404171-05 ) ug/L** Lab File ID: 1404171-0566.d Analyzed: 05/01/14 20:17 | | | | |
| 2-Fluorophenol | 100.0 | 53 | 33 - 110 | |
| Phenol-d5 | 100.0 | 30 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 71 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 63 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 72 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 86 | 59 - 110 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

SDG: 1404171 Instrument: 5972hp66

Sequence: 4E01009 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16WC1B (1404171-06 ) ug/L** Lab File ID: 1404171-0666.d Analyzed: 05/01/14 20:56 | | | | |
| 2-Fluorophenol | 100.0 | 55 | 33 - 110 | |
| Phenol-d5 | 100.0 | 29 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 86 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 100 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 96 | 59 - 110 | |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-BS1 Matrix: Water Client ID: SLCSQA Batch: 4042917

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| N-Nitrosodimethylamine | 40.00 | 25.22 | 63 | | 20 - 100 |
| Pyridine | 40.00 | 22.75 | 57 | | 20 - 100 |
| Phenol | 40.00 | 17.30 | 43 | | 21 - 100 |
| Bis(2-chloroethyl)ether | 40.00 | 35.56 | 89 | | 53 - 102 |
| 2-Chlorophenol | 40.00 | 34.31 | 86 | | 58 - 100 |
| 2-Methylphenol | 40.00 | 31.55 | 79 | | 56 - 100 |
| 2,2'-oxybis(1-Chloropropane) | 40.00 | 36.65 | 92 | | 44 - 115 |
| 3 & 4-Methylphenol | 40.00 | 30.56 | 76 | | 52 - 100 |
| N-Nitroso-di-N-propylamine | 40.00 | 35.37 | 88 | | 58 - 107 |
| Acetophenone | 40.00 | 32.26 | 81 | | 39 - 100 |
| Hexachloroethane | 40.00 | 27.63 | 69 | | 32 - 100 |
| Nitrobenzene | 40.00 | 36.39 | 91 | | 59 - 100 |
| Isophorone | 40.00 | 34.18 | 85 | | 60 - 100 |
| 2-Nitrophenol | 40.00 | 35.42 | 89 | | 62 - 110 |
| 2,4-Dimethylphenol | 40.00 | 23.19 | 58 | | 20 - 120 |
| Bis(2-chloroethoxy)methane | 40.00 | 36.25 | 91 | | 63 - 104 |
| 2,4-Dichlorophenol | 40.00 | 36.19 | 90 | | 62 - 106 |
| 4-Chloroaniline | 40.00 | 34.40 | 86 | | 61 - 100 |
| 4-Chloro-3-methylphenol | 40.00 | 37.45 | 94 | | 66 - 107 |
| 2-Methylnaphthalene | 40.00 | 33.67 | 84 | | 49 - 102 |
| Hexachlorocyclopentadiene | 40.00 | 23.01 | 58 | | 31 - 100 |
| 1,2,4,5-Tetrachlorobenzene | 40.00 | 32.04 | 80 | | 20 - 150 |
| 2,4,6-Trichlorophenol | 40.00 | 37.60 | 94 | | 62 - 113 |
| 2,4,5-Trichlorophenol | 40.00 | 39.18 | 98 | | 58 - 120 |
| 2-Chloronaphthalene | 40.00 | 33.24 | 83 | | 56 - 103 |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-BS1 Matrix: Water Client ID: SLCSQA Batch: 4042917

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| 2-Nitroaniline | 40.00 | 38.79 | 97 | | 67 - 110 |
| Dimethylphthalate | 40.00 | 35.65 | 89 | | 64 - 109 |
| 2,6-Dinitrotoluene | 40.00 | 38.67 | 97 | | 66 - 117 |
| Acenaphthylene | 40.00 | 35.49 | 89 | | 65 - 110 |
| 3-Nitroaniline | 40.00 | 37.35 | 93 | | 68 - 113 |
| Acenaphthene | 40.00 | 34.97 | 87 | | 61 - 106 |
| 2,4-Dinitrophenol | 40.00 | 33.23 | 83 | | 37 - 140 |
| 4-Nitrophenol | 40.00 | 15.06 | 38 | | 20 - 100 |
| 2,4-Dinitrotoluene | 40.00 | 39.16 | 98 | | 58 - 123 |
| Dibenzofuran | 40.00 | 36.24 | 91 | | 64 - 107 |
| 2,3,4,6-Tetrachlorophenol | 40.00 | 36.65 | 92 | | 20 - 150 |
| Diethylphthalate | 40.00 | 35.38 | 88 | | 64 - 114 |
| 4-Chlorophenyl-phenylether | 40.00 | 35.02 | 88 | | 63 - 109 |
| Fluorene | 40.00 | 35.53 | 89 | | 64 - 110 |
| 4-Nitroaniline | 40.00 | 38.55 | 96 | | 78 - 124 |
| 4,6-Dinitro-2-methylphenol | 40.00 | 42.29 | 106 | | 65 - 131 |
| N-Nitrosodiphenylamine (1) | 40.00 | 36.65 | 92 | | 67 - 107 |
| 4-Bromophenyl-phenylether | 40.00 | 37.10 | 93 | | 65 - 112 |
| Hexachlorobenzene | 40.00 | 37.02 | 93 | | 58 - 118 |
| Pentachlorophenol | 40.00 | 37.57 | 94 | | 53 - 150 |
| Phenanthrene | 40.00 | 37.73 | 94 | | 72 - 107 |
| Anthracene | 40.00 | 36.35 | 91 | | 70 - 107 |
| Di-n-butylphthalate | 40.00 | 37.38 | 93 | | 65 - 109 |
| Fluoranthene | 40.00 | 37.69 | 94 | | 67 - 113 |
| Pyrene | 40.00 | 37.34 | 93 | | 73 - 111 |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-BS1 Matrix: Water Client ID: SLCSQA Batch: 4042917

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Butylbenzylphthalate | 40.00 | 40.68 | 102 | | 73 - 116 |
| 3,3'-Dichlorobenzidine | 40.00 | 34.34 | 86 | | 41 - 111 |
| bis(2-ethylhexyl)Phthalate | 40.00 | 40.13 | 100 | | 75 - 114 |
| Benzo (a) anthracene | 40.00 | 38.74 | 97 | | 71 - 112 |
| Chrysene | 40.00 | 39.43 | 99 | | 75 - 112 |
| Di-n-octylphthalate | 40.00 | 35.69 | 89 | | 68 - 123 |
| Benzo (b) fluoranthene | 40.00 | 39.45 | 99 | | 70 - 118 |
| Benzo(k)fluoranthene | 40.00 | 35.63 | 89 | | 65 - 116 |
| Benzo (a) pyrene | 40.00 | 36.77 | 92 | | 70 - 109 |
| Indeno(1,2,3-cd)pyrene | 40.00 | 37.23 | 93 | | 71 - 119 |
| Dibenzo(a,h)anthracene | 40.00 | 37.80 | 95 | | 57 - 121 |
| Benzo (g,h,i) perylene | 40.00 | 37.15 | 93 | | 66 - 117 |
| 1,3-Dinitrobenzene | 40.00 | 34.45 | 86 | | 20 - 150 |
| Aniline | 40.00 | 31.43 | 79 | | 20 - 150 |
| Benzyl alcohol | 40.00 | 32.95 | 82 | | 29 - 100 |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D APPIX*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042918-BS1 Matrix: Water Client ID: SLCSQB Batch: 4042918

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| 2-Picoline | 40.00 | 35.18 | 88 | | 20 - 150 |
| N-Nitrosomethylethylamine | 40.00 | 37.85 | 95 | | 20 - 150 |
| Methyl Methanesulfonate | 40.00 | 31.36 | 78 | | 20 - 150 |
| N-Nitrosodiethylamine | 40.00 | 39.02 | 98 | | 20 - 150 |
| Ethyl Methanesulfonate | 40.00 | 37.19 | 93 | | 20 - 150 |
| N-Nitrosopyrrolidine | 40.00 | 39.82 | 100 | | 20 - 150 |
| N-Nitrosomorpholine | 40.00 | 39.64 | 99 | | 20 - 150 |
| o-Toluidine | 40.00 | 38.17 | 95 | | 20 - 150 |
| N-Nitrosopiperidine | 40.00 | 39.91 | 100 | | 20 - 150 |
| o,o,o-Triethyl phosphorothioate | 40.00 | 38.07 | 95 | | 20 - 150 |
| 2,6-Dichlorophenol | 40.00 | 38.33 | 96 | | 20 - 150 |
| Hexachloropropene | 40.00 | 32.38 | 81 | | 20 - 150 |
| N-Nitroso-di-n-butylamine | 40.00 | 38.19 | 95 | | 20 - 150 |
| Safrole | 40.00 | 34.84 | 87 | | 20 - 150 |
| Isosafrole | 40.00 | 36.45 | 91 | | 20 - 150 |
| 1,4-Naphthoquinone | 40.00 | 40.74 | 102 | | 20 - 150 |
| Pentachlorobenzene | 40.00 | 36.90 | 92 | | 20 - 150 |
| 1-Naphthylamine | 40.00 | 36.65 | 92 | | 20 - 150 |
| 2-Naphthylamine | 40.00 | 40.53 | 101 | | 20 - 150 |
| Zinophos | 40.00 | 37.70 | 94 | | 20 - 150 |
| 5-Nitro-o-toluidine | 40.00 | 43.85 | 110 | | 20 - 150 |
| Sulfotep | 40.00 | 41.59 | 104 | | 20 - 150 |
| 1,3,5-Trinitrobenzene | 40.00 | 48.78 | 122 | | 20 - 150 |
| Phorate | 40.00 | 40.71 | 102 | | 20 - 150 |
| Phenacetin | 40.00 | 43.05 | 108 | | 20 - 150 |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D APPIX*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042918-BS1 Matrix: Water Client ID: SLCSQB Batch: 4042918

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Dimethoate | 40.00 | 41.82 | 105 | | 20 - 150 |
| 4-Aminobiphenyl | 40.00 | 36.64 | 92 | | 20 - 150 |
| Pentachloronitrobenzene | 40.00 | 45.66 | 114 | | 20 - 150 |
| Pronamide | 40.00 | 42.90 | 107 | | 20 - 150 |
| Disulfoton | 40.00 | 39.18 | 98 | | 20 - 150 |
| Methyl Parathion | 40.00 | 43.62 | 109 | | 20 - 150 |
| Parathion | 40.00 | 42.03 | 105 | | 20 - 150 |
| 4-Nitroquinoline-1-oxide | 40.00 | 46.06 | 115 | | 20 - 150 |
| Methapyrilene | 40.00 | 22.16 | 55 | | 20 - 150 |
| Isodrin | 40.00 | 40.89 | 102 | | 20 - 150 |
| p-Dimethylaminoazobenzene | 40.00 | 44.89 | 112 | | 20 - 150 |
| Chlorobenzilate | 40.00 | 44.95 | 112 | | 20 - 150 |
| 3,3'-Dimethylbenzidine | 40.00 | 37.96 | 95 | | 20 - 150 |
| 2-Acetylaminofluorene | 40.00 | 39.94 | 100 | | 20 - 150 |
| 7,12-Dimethylbenz(a)anthracene | 40.00 | 43.44 | 109 | | 20 - 150 |
| 3-Methylcholanthrene | 40.00 | 43.77 | 109 | | 20 - 150 |
| Diallate | 40.00 | 47.27 | 118 | | 20 - 150 |
| a,a-Dimethylphenethylamine | 40.00 | 23.74 | 59 | | 20 - 150 |
| Aramite | 40.00 | 34.54 | 86 | | 20 - 150 |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042919-BS1 Matrix: Water Client ID: SLCSQC Batch: 4042919

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Famphur | 40.00 | 39.86 | 100 | | 20 - 150 |
| Kepone | 40.00 | 33.99 | 85 | | 20 - 150 |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042919-BSD1 Matrix: Water Client ID: SLCSDQC Batch: 4042919

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Famphur | 40.00 | 36.18 | 90 | 10 | 30 | | 20 - 150 |
| Kepone | 40.00 | 30.48 | 76 | 11 | 30 | | 20 - 150 |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042920-BS1 Matrix: Water Client ID: SLCSQD Batch: 4042920

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Hexachlorophene | 1000 | 283.4 | 28 | | 20 - 150 |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042920-BSD1 Matrix: Water Client ID: SLCSDQD Batch: 4042920

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Hexachlorophene | 1000 | 290.2 | 29 | 2 | 30 | | 20 - 150 |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042921-BS1 Matrix: Water Client ID: SLCSQE Batch: 4042921

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| **p-Phenylenediamine** | **1000** | **59.45** | **6** | * | **20 - 150** |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042921-BSD1 Matrix: Water Client ID: SLCSDQE Batch: 4042921

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | | % RPD # | QC LIMITS RPD | Q | REC. |
|---|---|---|---|---|---|---|---|---|
| **p-Phenylenediamine** | **1000** | **44.74** | **4** | * | 28 | **30** | * | **20 - 150** |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | 40.00 | 5.0 U | 33.33 | 83 | | 20 - 100 |
| Pyridine | 40.00 | 5.0 U | 28.11 | 70 | | 20 - 100 |
| Phenol | 40.00 | 10 U | 25.49 | 64 | | 21 - 100 |
| Bis(2-chloroethyl)ether | 40.00 | 5.0 U | 37.60 | 94 | | 53 - 102 |
| 2-Chlorophenol | 40.00 | 10 U | 37.45 | 94 | | 58 - 100 |
| 2-Methylphenol | 40.00 | 10 U | 35.53 | 89 | | 56 - 100 |
| 2,2'-oxybis(1-Chloropropane) | 40.00 | 5.0 U | 38.82 | 97 | | 44 - 115 |
| 3 & 4-Methylphenol | 40.00 | 10 U | 35.61 | 89 | | 52 - 100 |
| N-Nitroso-di-N-propylamine | 40.00 | 5.0 U | 38.83 | 97 | | 58 - 107 |
| Acetophenone | 40.00 | 5.0 U | 34.32 | 86 | | 39 - 100 |
| Hexachloroethane | 40.00 | 5.0 U | 30.91 | 77 | | 32 - 100 |
| Nitrobenzene | 40.00 | 5.0 U | 34.67 | 87 | | 59 - 100 |
| Isophorone | 40.00 | 5.0 U | 36.88 | 92 | | 60 - 100 |
| 2-Nitrophenol | 40.00 | 10 U | 38.21 | 96 | | 62 - 110 |
| 2,4-Dimethylphenol | 40.00 | 10 U | 15.34 | 38 | | 20 - 120 |
| Bis(2-chloroethoxy)methane | 40.00 | 5.0 U | 37.98 | 95 | | 63 - 104 |
| 2,4-Dichlorophenol | 40.00 | 10 U | 38.79 | 97 | | 62 - 106 |
| 4-Chloroaniline | 40.00 | 10 U | 30.42 | 76 | | 61 - 100 |
| 4-Chloro-3-methylphenol | 40.00 | 10 U | 39.70 | 99 | | 66 - 107 |
| 2-Methylnaphthalene | 40.00 | 5.0 U | 35.51 | 89 | | 49 - 102 |
| Hexachlorocyclopentadiene | 40.00 | 5.0 U | 23.34 | 58 | | 31 - 100 |
| 1,2,4,5-Tetrachlorobenzene | 40.00 | 5.0 U | 31.63 | 79 | | 20 - 150 |
| 2,4,6-Trichlorophenol | 40.00 | 10 U | 38.32 | 96 | | 62 - 113 |
| 2,4,5-Trichlorophenol | 40.00 | 10 U | 39.30 | 98 | | 58 - 120 |
| 2-Chloronaphthalene | 40.00 | 5.0 U | 32.82 | 82 | | 56 - 103 |
| 2-Nitroaniline | 40.00 | 10 U | 38.33 | 96 | | 67 - 110 |
| Dimethylphthalate | 40.00 | 5.0 U | 36.40 | 91 | | 64 - 109 |
| 2,6-Dinitrotoluene | 40.00 | 5.0 U | 40.92 | 102 | | 66 - 117 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Acenaphthylene | 40.00 | 5.0 U | 36.16 | 90 | | 65 - 110 |
| 3-Nitroaniline | 40.00 | 10 U | 38.08 | 95 | | 68 - 113 |
| Acenaphthene | 40.00 | 5.0 U | 35.72 | 89 | | 61 - 106 |
| 2,4-Dinitrophenol | 40.00 | 10 U | 36.13 | 90 | | 37 - 140 |
| 4-Nitrophenol | 40.00 | 10 U | 23.89 | 60 | | 20 - 100 |
| 2,4-Dinitrotoluene | 40.00 | 5.0 U | 41.37 | 103 | | 58 - 123 |
| Dibenzofuran | 40.00 | 5.0 U | 36.07 | 90 | | 64 - 107 |
| 2,3,4,6-Tetrachlorophenol | 40.00 | 10 U | 37.30 | 93 | | 20 - 150 |
| Diethylphthalate | 40.00 | 5.0 U | 36.79 | 92 | | 64 - 114 |
| 4-Chlorophenyl-phenylether | 40.00 | 5.0 U | 35.13 | 88 | | 63 - 109 |
| Fluorene | 40.00 | 5.0 U | 36.28 | 91 | | 64 - 110 |
| 4-Nitroaniline | 40.00 | 10 U | 38.58 | 96 | | 78 - 124 |
| 4,6-Dinitro-2-methylphenol | 40.00 | 10 U | 43.51 | 109 | | 65 - 131 |
| N-Nitrosodiphenylamine (1) | 40.00 | 5.0 U | 38.15 | 95 | | 67 - 107 |
| 4-Bromophenyl-phenylether | 40.00 | 5.0 U | 38.85 | 97 | | 65 - 112 |
| Hexachlorobenzene | 40.00 | 5.0 U | 39.26 | 98 | | 58 - 118 |
| Pentachlorophenol | 40.00 | 10 U | 41.54 | 104 | | 53 - 150 |
| Phenanthrene | 40.00 | 5.0 U | 39.02 | 98 | | 72 - 107 |
| Anthracene | 40.00 | 5.0 U | 37.93 | 95 | | 70 - 107 |
| Di-n-butylphthalate | 40.00 | 5.0 U | 39.38 | 98 | | 65 - 109 |
| Fluoranthene | 40.00 | 5.0 U | 41.06 | 103 | | 67 - 113 |
| Pyrene | 40.00 | 5.0 U | 37.30 | 93 | | 73 - 111 |
| Butylbenzylphthalate | 40.00 | 5.0 U | 43.30 | 108 | | 73 - 116 |
| 3,3'-Dichlorobenzidine | 40.00 | 5.0 U | 34.93 | 87 | | 41 - 111 |
| bis(2-ethylhexyl)Phthalate | 40.00 | 5.0 U | 41.88 | 105 | | 75 - 114 |
| Benzo (a) anthracene | 40.00 | 5.0 U | 40.47 | 101 | | 71 - 112 |
| Chrysene | 40.00 | 5.0 U | 40.39 | 101 | | 75 - 112 |
| Di-n-octylphthalate | 40.00 | 5.0 U | 38.87 | 97 | | 68 - 123 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Benzo (b) fluoranthene | 40.00 | 5.0 U | 38.67 | 97 | | 70 - 118 |
| Benzo(k)fluoranthene | 40.00 | 5.0 U | 39.43 | 99 | | 65 - 116 |
| Benzo (a) pyrene | 40.00 | 5.0 U | 38.32 | 96 | | 70 - 109 |
| Indeno(1,2,3-cd)pyrene | 40.00 | 5.0 U | 40.93 | 102 | | 71 - 119 |
| Dibenzo(a,h)anthracene | 40.00 | 5.0 U | 39.48 | 99 | | 57 - 121 |
| Benzo (g,h,i) perylene | 40.00 | 5.0 U | 39.77 | 99 | | 66 - 117 |
| 1,3-Dinitrobenzene | 40.00 | 5.0 U | 34.59 | 86 | | 20 - 150 |
| Aniline | 40.00 | 5.0 U | 30.34 | 76 | | 20 - 150 |
| Benzyl alcohol | 40.00 | 5.0 U | 38.26 | 96 | | 29 - 100 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | 40.00 | 28.38 | 71 | 16 | | 30 | 20 - 100 |
| Pyridine | 40.00 | 22.74 | 57 | 21 | | 30 | 20 - 100 |
| Phenol | 40.00 | 21.48 | 54 | 17 | | 30 | 21 - 100 |
| Bis(2-chloroethyl)ether | 40.00 | 32.86 | 82 | 13 | | 30 | 53 - 102 |
| 2-Chlorophenol | 40.00 | 30.98 | 77 | 19 | | 30 | 58 - 100 |
| 2-Methylphenol | 40.00 | 30.09 | 75 | 17 | | 30 | 56 - 100 |
| 2,2'-oxybis(1-Chloropropane) | 40.00 | 33.42 | 84 | 15 | | 30 | 44 - 115 |
| 3 & 4-Methylphenol | 40.00 | 30.38 | 76 | 16 | | 30 | 52 - 100 |
| N-Nitroso-di-N-propylamine | 40.00 | 33.34 | 83 | 15 | | 30 | 58 - 107 |
| Acetophenone | 40.00 | 29.86 | 75 | 14 | | 30 | 39 - 100 |
| Hexachloroethane | 40.00 | 24.91 | 62 | 21 | | 30 | 32 - 100 |
| Nitrobenzene | 40.00 | 31.62 | 79 | 9 | | 30 | 59 - 100 |
| Isophorone | 40.00 | 31.57 | 79 | 16 | | 30 | 60 - 100 |
| 2-Nitrophenol | 40.00 | 32.34 | 81 | 17 | | 30 | 62 - 110 |
| 2,4-Dimethylphenol | 40.00 | 16.36 | 41 | 6 | | 30 | 20 - 120 |
| Bis(2-chloroethoxy)methane | 40.00 | 34.07 | 85 | 11 | | 30 | 63 - 104 |
| 2,4-Dichlorophenol | 40.00 | 33.62 | 84 | 14 | | 30 | 62 - 106 |
| 4-Chloroaniline | 40.00 | 28.20 | 71 | 8 | | 30 | 61 - 100 |
| 4-Chloro-3-methylphenol | 40.00 | 36.24 | 91 | 9 | | 30 | 66 - 107 |
| 2-Methylnaphthalene | 40.00 | 30.41 | 76 | 15 | | 30 | 49 - 102 |
| Hexachlorocyclopentadiene | 40.00 | 21.31 | 53 | 9 | | 30 | 31 - 100 |
| 1,2,4,5-Tetrachlorobenzene | 40.00 | 29.04 | 73 | 9 | | 30 | 20 - 150 |
| 2,4,6-Trichlorophenol | 40.00 | 34.55 | 86 | 10 | | 30 | 62 - 113 |
| 2,4,5-Trichlorophenol | 40.00 | 36.75 | 92 | 7 | | 30 | 58 - 120 |
| 2-Chloronaphthalene | 40.00 | 29.97 | 75 | 9 | | 30 | 56 - 103 |
| 2-Nitroaniline | 40.00 | 35.15 | 88 | 9 | | 30 | 67 - 110 |
| Dimethylphthalate | 40.00 | 33.13 | 83 | 9 | | 30 | 64 - 109 |
| 2,6-Dinitrotoluene | 40.00 | 36.40 | 91 | 12 | | 30 | 66 - 117 |
| Acenaphthylene | 40.00 | 32.29 | 81 | 11 | | 30 | 65 - 110 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 3-Nitroaniline | 40.00 | 33.92 | 85 | 12 | | 30 | 68 - 113 |
| Acenaphthene | 40.00 | 31.63 | 79 | 12 | | 30 | 61 - 106 |
| 2,4-Dinitrophenol | 40.00 | 31.62 | 79 | 13 | | 30 | 37 - 140 |
| 4-Nitrophenol | 40.00 | 20.16 | 50 | 17 | | 30 | 20 - 100 |
| 2,4-Dinitrotoluene | 40.00 | 35.89 | 90 | 14 | | 30 | 58 - 123 |
| Dibenzofuran | 40.00 | 33.54 | 84 | 7 | | 30 | 64 - 107 |
| 2,3,4,6-Tetrachlorophenol | 40.00 | 34.08 | 85 | 9 | | 30 | 20 - 150 |
| Diethylphthalate | 40.00 | 32.73 | 82 | 12 | | 30 | 64 - 114 |
| 4-Chlorophenyl-phenylether | 40.00 | 32.48 | 81 | 8 | | 30 | 63 - 109 |
| Fluorene | 40.00 | 33.18 | 83 | 9 | | 30 | 64 - 110 |
| 4-Nitroaniline | 40.00 | 37.95 | 95 | 2 | | 30 | 78 - 124 |
| 4,6-Dinitro-2-methylphenol | 40.00 | 37.89 | 95 | 14 | | 30 | 65 - 131 |
| N-Nitrosodiphenylamine (1) | 40.00 | 32.50 | 81 | 16 | | 30 | 67 - 107 |
| 4-Bromophenyl-phenylether | 40.00 | 33.10 | 83 | 16 | | 30 | 65 - 112 |
| Hexachlorobenzene | 40.00 | 33.76 | 84 | 15 | | 30 | 58 - 118 |
| Pentachlorophenol | 40.00 | 35.84 | 90 | 15 | | 30 | 53 - 150 |
| Phenanthrene | 40.00 | 34.35 | 86 | 13 | | 30 | 72 - 107 |
| Anthracene | 40.00 | 32.38 | 81 | 16 | | 30 | 70 - 107 |
| Di-n-butylphthalate | 40.00 | 33.77 | 84 | 15 | | 30 | 65 - 109 |
| Fluoranthene | 40.00 | 34.80 | 87 | 17 | | 30 | 67 - 113 |
| Pyrene | 40.00 | 32.00 | 80 | 15 | | 30 | 73 - 111 |
| Butylbenzylphthalate | 40.00 | 35.94 | 90 | 19 | | 30 | 73 - 116 |
| 3,3'-Dichlorobenzidine | 40.00 | 29.63 | 74 | 16 | | 30 | 41 - 111 |
| bis(2-ethylhexyl)Phthalate | 40.00 | 35.40 | 88 | 17 | | 30 | 75 - 114 |
| Benzo (a) anthracene | 40.00 | 34.00 | 85 | 17 | | 30 | 71 - 112 |
| Chrysene | 40.00 | 35.02 | 88 | 14 | | 30 | 75 - 112 |
| Di-n-octylphthalate | 40.00 | 32.73 | 82 | 17 | | 30 | 68 - 123 |
| Benzo (b) fluoranthene | 40.00 | 34.63 | 87 | 11 | | 30 | 70 - 118 |
| Benzo(k)fluoranthene | 40.00 | 32.44 | 81 | 19 | | 30 | 65 - 116 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042917-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Benzo (a) pyrene | 40.00 | 32.61 | 82 | 16 | | 30 | 70 - 109 |
| Indeno(1,2,3-cd)pyrene | 40.00 | 33.22 | 83 | 21 | | 30 | 71 - 119 |
| Dibenzo(a,h)anthracene | 40.00 | 33.91 | 85 | 15 | | 30 | 57 - 121 |
| Benzo (g,h,i) perylene | 40.00 | 33.41 | 84 | 17 | | 30 | 66 - 117 |
| 1,3-Dinitrobenzene | 40.00 | 31.45 | 79 | 10 | | 30 | 20 - 150 |
| Aniline | 40.00 | 27.66 | 69 | 9 | | 30 | 20 - 150 |
| Benzyl alcohol | 40.00 | 34.85 | 87 | 9 | | 30 | 29 - 100 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D APPIX*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042918-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 2-Picoline | 40.00 | 5.0 U | 28.97 | 72 | | 20 - 150 |
| N-Nitrosomethylethylamine | 40.00 | 5.0 U | 30.67 | 77 | | 20 - 150 |
| Methyl Methanesulfonate | 40.00 | 5.0 U | 28.05 | 70 | | 20 - 150 |
| N-Nitrosodiethylamine | 40.00 | 5.0 U | 31.98 | 80 | | 20 - 150 |
| Ethyl Methanesulfonate | 40.00 | 5.0 U | 29.09 | 73 | | 20 - 150 |
| N-Nitrosopyrrolidine | 40.00 | 5.0 U | 33.26 | 83 | | 20 - 150 |
| N-Nitrosomorpholine | 40.00 | 5.0 U | 31.78 | 79 | | 20 - 150 |
| o-Toluidine | 40.00 | 5.0 U | 29.98 | 75 | | 20 - 150 |
| N-Nitrosopiperidine | 40.00 | 5.0 U | 31.13 | 78 | | 20 - 150 |
| o,o,o-Triethyl phosphorothioate | 40.00 | 5.0 U | 28.09 | 70 | | 20 - 150 |
| 2,6-Dichlorophenol | 40.00 | 10 U | 29.28 | 73 | | 20 - 150 |
| Hexachloropropene | 40.00 | 5.0 U | 21.25 | 53 | | 20 - 150 |
| N-Nitroso-di-n-butylamine | 40.00 | 5.0 U | 29.11 | 73 | | 20 - 150 |
| Safrole | 40.00 | 5.0 U | 27.85 | 70 | | 20 - 150 |
| Isosafrole | 40.00 | 5.0 U | 28.61 | 72 | | 20 - 150 |
| 1,4-Naphthoquinone | 40.00 | 5.0 U | 34.85 | 87 | | 20 - 150 |
| Pentachlorobenzene | 40.00 | 5.0 U | 29.13 | 73 | | 20 - 150 |
| 1-Naphthylamine | 40.00 | 5.0 U | 12.48 | 31 | | 20 - 150 |
| 2-Naphthylamine | 40.00 | 5.0 U | 22.95 | 57 | | 20 - 150 |
| Zinophos | 40.00 | 5.0 U | 31.98 | 80 | | 20 - 150 |
| 5-Nitro-o-toluidine | 40.00 | 5.0 U | 37.50 | 94 | | 20 - 150 |
| Sulfotep | 40.00 | 5.0 U | 32.54 | 81 | | 20 - 150 |
| 1,3,5-Trinitrobenzene | 40.00 | 5.0 U | 45.14 | 113 | | 20 - 150 |
| Phorate | 40.00 | 5.0 U | 32.59 | 81 | | 20 - 150 |
| Phenacetin | 40.00 | 5.0 U | 36.61 | 92 | | 20 - 150 |
| Dimethoate | 40.00 | 5.0 U | 37.68 | 94 | | 20 - 150 |
| 4-Aminobiphenyl | 40.00 | 5.0 U | 25.78 | 64 | | 20 - 150 |
| Pentachloronitrobenzene | 40.00 | 5.0 U | 37.26 | 93 | | 20 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D APPIX*

**16WC1AMS**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042918-MS1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Pronamide | 40.00 | 5.0 U | 36.74 | 92 | | 20 - 150 |
| Disulfoton | 40.00 | 5.0 U | 32.77 | 82 | | 20 - 150 |
| Methyl Parathion | 40.00 | 5.0 U | 41.05 | 103 | | 20 - 150 |
| Parathion | 40.00 | 5.0 U | 36.93 | 92 | | 20 - 150 |
| 4-Nitroquinoline-1-oxide | 40.00 | 5.0 U | 42.50 | 106 | | 20 - 150 |
| Methapyrilene | 40.00 | 5.0 U | 16.97 | 42 | | 20 - 150 |
| Isodrin | 40.00 | 5.0 U | 34.35 | 86 | | 20 - 150 |
| p-Dimethylaminoazobenzene | 40.00 | 5.0 U | 37.30 | 93 | | 20 - 150 |
| Chlorobenzilate | 40.00 | 5.0 U | 38.08 | 95 | | 20 - 150 |
| 3,3'-Dimethylbenzidine | 40.00 | 5.0 U | 5.0 U | 0 | * | 20 - 150 |
| 2-Acetylaminofluorene | 40.00 | 5.0 U | 34.85 | 87 | | 20 - 150 |
| 7,12-Dimethylbenz(a)anthracene | 40.00 | 5.0 U | 34.14 | 85 | | 20 - 150 |
| 3-Methylcholanthrene | 40.00 | 5.0 U | 31.44 | 79 | | 20 - 150 |
| Diallate | 40.00 | 10 U | 37.47 | 94 | | 20 - 150 |
| a,a-Dimethylphenethylamine | 40.00 | 15 U | 16.82 | 42 | | 20 - 150 |
| Aramite | 40.00 | 5.0 U | 39.79 | 99 | | 20 - 150 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D APPIX*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042918-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 2-Picoline | 40.00 | 29.06 | 73 | 0.3 | | 30 | 20 - 150 |
| N-Nitrosomethylethylamine | 40.00 | 31.44 | 79 | 2 | | 30 | 20 - 150 |
| Methyl Methanesulfonate | 40.00 | 28.37 | 71 | 1 | | 30 | 20 - 150 |
| N-Nitrosodiethylamine | 40.00 | 31.13 | 78 | 3 | | 30 | 20 - 150 |
| Ethyl Methanesulfonate | 40.00 | 31.12 | 78 | 7 | | 30 | 20 - 150 |
| N-Nitrosopyrrolidine | 40.00 | 33.07 | 83 | 0.6 | | 30 | 20 - 150 |
| N-Nitrosomorpholine | 40.00 | 31.92 | 80 | 0.4 | | 30 | 20 - 150 |
| o-Toluidine | 40.00 | 30.92 | 77 | 3 | | 30 | 20 - 150 |
| N-Nitrosopiperidine | 40.00 | 32.81 | 82 | 5 | | 30 | 20 - 150 |
| o,o,o-Triethyl phosphorothioate | 40.00 | 29.51 | 74 | 5 | | 30 | 20 - 150 |
| 2,6-Dichlorophenol | 40.00 | 28.61 | 72 | 2 | | 30 | 20 - 150 |
| Hexachloropropene | 40.00 | 20.13 | 50 | 5 | | 30 | 20 - 150 |
| N-Nitroso-di-n-butylamine | 40.00 | 30.30 | 76 | 4 | | 30 | 20 - 150 |
| Safrole | 40.00 | 27.32 | 68 | 2 | | 30 | 20 - 150 |
| Isosafrole | 40.00 | 29.63 | 74 | 3 | | 30 | 20 - 150 |
| 1,4-Naphthoquinone | 40.00 | 37.56 | 94 | 7 | | 30 | 20 - 150 |
| Pentachlorobenzene | 40.00 | 30.65 | 77 | 5 | | 30 | 20 - 150 |
| 1-Naphthylamine | 40.00 | 12.21 | 31 | 2 | | 30 | 20 - 150 |
| 2-Naphthylamine | 40.00 | 24.07 | 60 | 5 | | 30 | 20 - 150 |
| Zinophos | 40.00 | 34.02 | 85 | 6 | | 30 | 20 - 150 |
| 5-Nitro-o-toluidine | 40.00 | 40.34 | 101 | 7 | | 30 | 20 - 150 |
| Sulfotep | 40.00 | 33.20 | 83 | 2 | | 30 | 20 - 150 |
| 1,3,5-Trinitrobenzene | 40.00 | 46.57 | 116 | 3 | | 30 | 20 - 150 |
| Phorate | 40.00 | 35.14 | 88 | 8 | | 30 | 20 - 150 |
| Phenacetin | 40.00 | 37.80 | 94 | 3 | | 30 | 20 - 150 |
| Dimethoate | 40.00 | 37.94 | 95 | 0.7 | | 30 | 20 - 150 |
| 4-Aminobiphenyl | 40.00 | 25.30 | 63 | 2 | | 30 | 20 - 150 |
| Pentachloronitrobenzene | 40.00 | 40.01 | 100 | 7 | | 30 | 20 - 150 |
| Pronamide | 40.00 | 37.16 | 93 | 1 | | 30 | 20 - 150 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D APPIX*

**16WC1AMSD**

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042918-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1404171-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Disulfoton | 40.00 | 33.49 | 84 | 2 | | 30 | 20 - 150 |
| Methyl Parathion | 40.00 | 40.26 | 101 | 2 | | 30 | 20 - 150 |
| Parathion | 40.00 | 36.05 | 90 | 2 | | 30 | 20 - 150 |
| 4-Nitroquinoline-1-oxide | 40.00 | 40.65 | 102 | 4 | | 30 | 20 - 150 |
| Methapyrilene | 40.00 | 18.74 | 47 | 10 | | 30 | 20 - 150 |
| Isodrin | 40.00 | 34.44 | 86 | 0.2 | | 30 | 20 - 150 |
| p-Dimethylaminoazobenzene | 40.00 | 40.24 | 101 | 8 | | 30 | 20 - 150 |
| Chlorobenzilate | 40.00 | 40.84 | 102 | 7 | | 30 | 20 - 150 |
| 3,3'-Dimethylbenzidine | 40.00 | 5.0 U | 0 | | * | 30 | 20 - 150 |
| 2-Acetylaminofluorene | 40.00 | 36.17 | 90 | 4 | | 30 | 20 - 150 |
| 7,12-Dimethylbenz(a)anthracene | 40.00 | 35.86 | 90 | 5 | | 30 | 20 - 150 |
| 3-Methylcholanthrene | 40.00 | 35.54 | 89 | 12 | | 30 | 20 - 150 |
| Diallate | 40.00 | 39.82 | 100 | 6 | | 30 | 20 - 150 |
| a,a-Dimethylphenethylamine | 40.00 | 18.65 | 47 | 10 | | 30 | 20 - 150 |
| Aramite | 40.00 | 39.08 | 98 | 2 | | 30 | 20 - 150 |

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# PREPARATION BATCH SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042917 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/30/14 11:58 | 1000 | 1000 |
| 16C1 | 1404171-02 | 04/30/14 11:58 | 1000 | 1000 |
| 16MW8 | 1404171-03 | 04/30/14 11:58 | 1000 | 1000 |
| 16MW9 | 1404171-04 | 04/30/14 11:58 | 1000 | 1000 |
| 16WDUP | 1404171-05 | 04/30/14 11:58 | 1000 | 1000 |
| 16WC1B | 1404171-06 | 04/30/14 11:58 | 1000 | 1000 |
| SBLKQA | 4042917-BLK1 | 04/30/14 11:58 | 1000 | 1000 |
| SLCSQA | 4042917-BS1 | 04/30/14 11:58 | 1000 | 1000 |
| 16WC1AMS | 4042917-MS1 | 04/30/14 11:58 | 500 | 500 |
| 16WC1AMSD | 4042917-MSD1 | 04/30/14 11:58 | 500 | 500 |

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# PREPARATION BATCH SUMMARY

*SW8270D APPIX*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042918 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/30/14 11:59 | 1000 | 1000 |
| 16C1 | 1404171-02 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW8 | 1404171-03 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW9 | 1404171-04 | 04/30/14 11:59 | 1000 | 1000 |
| 16WDUP | 1404171-05 | 04/30/14 11:59 | 1000 | 1000 |
| 16WC1B | 1404171-06 | 04/30/14 11:59 | 1000 | 1000 |
| SBLKQB | 4042918-BLK1 | 04/30/14 11:59 | 1000 | 1000 |
| SBLKBQ | 4042918-BLK2 | 04/30/14 11:59 | 1000 | 1000 |
| SLCSQB | 4042918-BS1 | 04/30/14 11:59 | 1000 | 1000 |
| 16WC1AMS | 4042918-MS1 | 04/30/14 11:59 | 500 | 500 |
| 16WC1AMSD | 4042918-MSD1 | 04/30/14 11:59 | 500 | 500 |

# PREPARATION BATCH SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042919 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/30/14 11:59 | 1000 | 1000 |
| 16C1 | 1404171-02 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW8 | 1404171-03 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW9 | 1404171-04 | 04/30/14 11:59 | 1000 | 1000 |
| 16WDUP | 1404171-05 | 04/30/14 11:59 | 1000 | 1000 |
| 16WC1B | 1404171-06 | 04/30/14 11:59 | 1000 | 1000 |
| SBLKQC | 4042919-BLK1 | 04/30/14 11:59 | 1000 | 1000 |
| SLCSQC | 4042919-BS1 | 04/30/14 11:59 | 1000 | 1000 |
| SLCSDQC | 4042919-BSD1 | 04/30/14 11:59 | 1000 | 1000 |

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# PREPARATION BATCH SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042920 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/30/14 11:59 | 1000 | 1000 |
| 16C1 | 1404171-02 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW8 | 1404171-03 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW9 | 1404171-04 | 04/30/14 11:59 | 1000 | 1000 |
| 16WDUP | 1404171-05 | 04/30/14 11:59 | 1000 | 1000 |
| 16WC1B | 1404171-06 | 04/30/14 11:59 | 1000 | 1000 |
| SBLKQD | 4042920-BLK1 | 04/30/14 11:59 | 1000 | 1000 |
| SLCSQD | 4042920-BS1 | 04/30/14 11:59 | 1000 | 1000 |
| SLCSDQD | 4042920-BSD1 | 04/30/14 11:59 | 1000 | 1000 |

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# PREPARATION BATCH SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Batch: 4042921 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1404171-01 | 04/30/14 11:59 | 1000 | 1000 |
| 16C1 | 1404171-02 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW8 | 1404171-03 | 04/30/14 11:59 | 1000 | 1000 |
| 16MW9 | 1404171-04 | 04/30/14 11:59 | 1000 | 1000 |
| 16WDUP | 1404171-05 | 04/30/14 11:59 | 1000 | 1000 |
| 16WC1B | 1404171-06 | 04/30/14 11:59 | 1000 | 1000 |
| SBLKQE | 4042921-BLK1 | 04/30/14 11:59 | 1000 | 1000 |
| SLCSQE | 4042921-BS1 | 04/30/14 11:59 | 1000 | 1000 |
| SLCSDQE | 4042921-BSD1 | 04/30/14 11:59 | 1000 | 1000 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D22009 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCJ | 4D22009-TUN1 | 4D22009-TUN166.d | 04/22/14 12:18:00 |
| SSTD060CJ | 4D22009-CAL6 | 4D22009-CAL666.d | 04/22/14 12:46:00 |
| SSTD050CJ | 4D22009-CAL5 | 4D22009-CAL566.d | 04/22/14 13:26:00 |
| SSTD040CJ | 4D22009-CAL4 | 4D22009-CAL466.d | 04/22/14 14:06:00 |
| SSTD025CJ | 4D22009-CAL3 | 4D22009-CAL366.d | 04/22/14 14:46:00 |
| SSTD010CJ | 4D22009-CAL2 | 4D22009-CAL266.d | 04/22/14 15:26:00 |
| SSTD005CJ | 4D22009-CAL1 | 4D22009-CAL166.d | 04/22/14 16:06:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4D23005 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCK | 4D23005-TUN1 | 4D23005-TUN166.d | 04/23/14 09:18:00 |
| SSTD025CK | 4D23005-ICV1 | 4D23005-ICV1R66.d | 04/23/14 10:23:00 |
| SCV025VAL1CK | 4D23005-SCV1 | 4D23005-SCV166.d | 04/23/14 11:03:00 |
| SSTD025CL | 4D23005-CCV1 | 4D23005-CCV166.d | 04/23/14 20:56:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCB | 4E01009-TUN1 | 4E01009-TUN166.d | 05/01/14 13:18:00 |
| SSTD025CB | 4E01009-ICV1 | 4E01009-ICV166.d | 05/01/14 13:39:00 |
| SBLKQA | 4042917-BLK1 | 4042917-BLK166.d | 05/01/14 14:31:00 |
| SLCSQA | 4042917-BS1 | 4042917-BS1J66.d | 05/01/14 15:41:00 |
| 16WC1A | 1404171-01 | 1404171-0166.d | 05/01/14 16:21:00 |
| 16WC1AMS | 4042917-MS1 | 4042917-MS166.d | 05/01/14 17:00:00 |
| 16WC1AMSD | 4042917-MSD1 | 4042917-MSD166.d | 05/01/14 17:39:00 |
| 16C1 | 1404171-02 | 1404171-0266.d | 05/01/14 18:19:00 |
| 16MW8 | 1404171-03 | 1404171-0366.d | 05/01/14 18:58:00 |
| 16MW9 | 1404171-04 | 1404171-0466.d | 05/01/14 19:38:00 |
| 16WDUP | 1404171-05 | 1404171-0566.d | 05/01/14 20:17:00 |
| 16WC1B | 1404171-06 | 1404171-0666.d | 05/01/14 20:56:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D APPIX*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPDJ | 4E09001-TUN1 | 4E09001-TUN170.d | 05/09/14 08:43:00 |
| SSTD060DJ | 4E09001-CAL6 | 4E09001-CAL6R70.d | 05/09/14 09:48:00 |
| SSTD050DJ | 4E09001-CAL5 | 4E09001-CAL570.d | 05/09/14 10:32:00 |
| SSTD040DJ | 4E09001-CAL4 | 4E09001-CAL470.d | 05/09/14 11:14:00 |
| SSTD025DJ | 4E09001-CAL3 | 4E09001-CAL370.d | 05/09/14 11:55:00 |
| SSTD010DJ | 4E09001-CAL2 | 4E09001-CAL270.d | 05/09/14 12:36:00 |
| SSTD005DJ | 4E09001-CAL1 | 4E09001-CAL170.d | 05/09/14 13:17:00 |
| SSTD025VAL1DJ | 4E09001-SCV1 | 4E09001-SCV170.d | 05/09/14 13:58:00 |
| SBLKQB | 4042918-BLK1 | 4042918-BLK170.d | 05/09/14 14:39:00 |
| SLCSQB | 4042918-BS1 | 4042918-BS170.d | 05/09/14 15:20:00 |
| 16WC1A | 1404171-01 | 1404171-01A70.d | 05/09/14 16:01:00 |
| 16WC1AMS | 4042918-MS1 | 4042918-MS170.d | 05/09/14 16:42:00 |
| 16WC1AMSD | 4042918-MSD1 | 4042918-MSD170.d | 05/09/14 17:23:00 |
| 16C1 | 1404171-02 | 1404171-02A70.d | 05/09/14 18:04:00 |
| 16MW8 | 1404171-03 | 1404171-03A70.d | 05/09/14 18:45:00 |
| 16MW9 | 1404171-04 | 1404171-04A70.d | 05/09/14 19:26:00 |
| 16WDUP | 1404171-05 | 1404171-05A70.d | 05/09/14 20:07:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D APPIX*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E13002 Calibration: 4051502 Instrument: 5972hp60

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPAY | 4E13002-TUN1 | 4E13002-TUN160.d | 05/13/14 10:46:00 |
| SSTD060AY | 4E13002-CAL6 | 4E13002-CAL6R60.d | 05/13/14 12:04:00 |
| SSTD050AY | 4E13002-CAL5 | 4E13002-CAL560.d | 05/13/14 12:45:00 |
| SSTD040AY | 4E13002-CAL4 | 4E13002-CAL460.d | 05/13/14 13:26:00 |
| SSTD025AY | 4E13002-CAL3 | 4E13002-CAL360.d | 05/13/14 14:07:00 |
| SSTD010AY | 4E13002-CAL2 | 4E13002-CAL260.d | 05/13/14 14:48:00 |
| SSTD005AY | 4E13002-CAL1 | 4E13002-CAL160.d | 05/13/14 15:28:00 |
| SSTD025VAL1AY | 4E13002-SCV1 | 4E13002-SCV160.d | 05/13/14 16:24:00 |
| SBLKBQ | 4042918-BLK2 | 4042918-BLK260.d | 05/13/14 17:05:00 |
| 16WC1B | 1404171-06 | 1404171-06AJ60.d | 05/13/14 17:46:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E13014 Calibration: 4051506 Instrument: 5972hp60

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPAA | 4E13014-TUN1 | 4E13014-TUN160.d | 05/13/14 19:00:00 |
| SSTD080AA | 4E13014-CAL6 | 4E13014-CAL660.d | 05/14/14 00:16:00 |
| SSTD060AA | 4E13014-CAL5 | 4E13014-CAL560.d | 05/14/14 00:58:00 |
| SSTD040AA | 4E13014-CAL4 | 4E13014-CAL460.d | 05/14/14 01:40:00 |
| SSTD025AA | 4E13014-CAL3 | 4E13014-CAL360.d | 05/14/14 02:22:00 |
| SSTD010AA | 4E13014-CAL2 | 4E13014-CAL260.d | 05/14/14 03:03:00 |
| SSTD005AA | 4E13014-CAL1 | 4E13014-CAL160.d | 05/14/14 03:45:00 |
| SCV025VAL1AA | 4E13014-SCV1 | 4E13014-SCV160.d | 05/14/14 04:26:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E13015 Calibration: 4051401 Instrument: 5972hp70

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPDK | 4E13015-TUN1 | 4E13015-TUN170.d | 05/13/14 17:07:00 |
| SSTD080DK | 4E13015-CAL6 | 4E13015-CAL670.d | 05/13/14 17:31:00 |
| SSTD060DK | 4E13015-CAL5 | 4E13015-CAL570.d | 05/13/14 18:11:00 |
| SSTD040DK | 4E13015-CAL4 | 4E13015-CAL470.d | 05/13/14 18:52:00 |
| SSTD025DK | 4E13015-CAL3 | 4E13015-CAL370.d | 05/13/14 19:33:00 |
| SSTD010DK | 4E13015-CAL2 | 4E13015-CAL270.d | 05/13/14 20:14:00 |
| SSTD005DK | 4E13015-CAL1 | 4E13015-CAL170.d | 05/13/14 20:55:00 |
| SSTD025VAL1DK | 4E13015-SCV1 | 4E13015-SCV170.d | 05/13/14 21:36:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E14002 Calibration: 4051507 Instrument: 5972hp60

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPAB | 4E14002-TUN1 | 4E14002-TUN160.d | 05/14/14 09:54:00 |
| SSTD350AB | 4E14002-CAL6 | 4E14002-CAL660.d | 05/14/14 10:18:00 |
| SSTD300AB | 4E14002-CAL5 | 4E14002-CAL560.d | 05/14/14 10:59:00 |
| SSTD200AB | 4E14002-CAL3 | 4E14002-CAL360.d | 05/14/14 12:21:00 |
| SSTD150AB | 4E14002-CAL2 | 4E14002-CAL260.d | 05/14/14 13:02:00 |
| SSTD100AB | 4E14002-CAL1 | 4E14002-CAL160.d | 05/14/14 13:43:00 |
| SSTD250AB | 4E14002-CAL4 | 4E14002-CAL4R60.d | 05/14/14 14:24:00 |
| SCV250AB | 4E14002-SCV1 | 4E14002-SCV160.d | 05/14/14 15:06:00 |
| SBLKQD | 4042920-BLK1 | 4042920-BLK160.d | 05/14/14 15:46:00 |
| SLCSQD | 4042920-BS1 | 4042920-BS160.d | 05/14/14 16:27:00 |
| SLCSDQD | 4042920-BSD1 | 4042920-BSD160.d | 05/14/14 17:08:00 |
| 16WC1A | 1404171-01 | 1404171-01H60.d | 05/14/14 17:49:00 |
| 16C1 | 1404171-02 | 1404171-02H60.d | 05/14/14 18:30:00 |
| 16MW8 | 1404171-03 | 1404171-03H60.d | 05/14/14 19:11:00 |
| 16MW9 | 1404171-04 | 1404171-04H60.d | 05/14/14 19:53:00 |
| 16WDUP | 1404171-05 | 1404171-05H60.d | 05/14/14 20:34:00 |
| 16WC1B | 1404171-06 | 1404171-06H60.d | 05/14/14 21:16:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E14004 Calibration: 4051401 Instrument: 5972hp70

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPDL | 4E14004-TUN1 | 4E14004-TUN170.d | 05/14/14 09:09:00 |
| SSTD025DL | 4E14004-ICV1 | 4E14004-ICV170.d | 05/14/14 09:32:00 |
| SBLKQE | 4042921-BLK1 | 4042921-BLK170.d | 05/14/14 10:19:00 |
| SLCSQE | 4042921-BS1 | 4042921-BS170.d | 05/14/14 10:59:00 |
| SLCSDQE | 4042921-BSD1 | 4042921-BSD170.d | 05/14/14 11:40:00 |
| 16WC1A | 1404171-01 | 1404171-01P70.d | 05/14/14 12:21:00 |
| 16C1 | 1404171-02 | 1404171-02P70.d | 05/14/14 13:02:00 |
| 16MW8 | 1404171-03 | 1404171-03P70.d | 05/14/14 13:43:00 |
| 16MW9 | 1404171-04 | 1404171-04P70.d | 05/14/14 14:24:00 |
| 16WDUP | 1404171-05 | 1404171-05P70.d | 05/14/14 15:04:00 |
| 16WC1B | 1404171-06 | 1404171-06P70.d | 05/14/14 15:45:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D ADD*

Client: DRAPER SDG: 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Sequence: 4E15004 Calibration: 4051506 Instrument: 5972hp60

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPAC | 4E15004-TUN1 | 4E15004-TUN160.d | 05/15/14 09:25:00 |
| SSTD025AC | 4E15004-ICV1 | 4E15004-ICV160.d | 05/15/14 09:56:00 |
| SBLKQC | 4042919-BLK1 | 4042919-BLK160.d | 05/15/14 10:37:00 |
| SLCSQC | 4042919-BS1 | 4042919-BS160.d | 05/15/14 11:18:00 |
| SLCSDQC | 4042919-BSD1 | 4042919-BSD160.d | 05/15/14 11:58:00 |
| 16WC1A | 1404171-01 | 1404171-01F60.d | 05/15/14 12:39:00 |
| 16C1 | 1404171-02 | 1404171-02F60.d | 05/15/14 13:20:00 |
| 16MW8 | 1404171-03 | 1404171-03F60.d | 05/15/14 14:00:00 |
| 16MW9 | 1404171-04 | 1404171-04F60.d | 05/15/14 14:41:00 |
| 16WDUP | 1404171-05 | 1404171-05F60.d | 05/15/14 15:22:00 |
| 16WC1B | 1404171-06 | 1404171-06F60.d | 05/15/14 16:03:00 |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4D22009-TUN166.d | Injection Date: | 04/22/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 12:18 |
| Sequence: | 4D22009 | Lab Sample ID: | 4D22009-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 55.7 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 68.1 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 53.9 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.58 | PASS |
| 275 | 10 - 60% of 198 | 20.2 | PASS |
| 365 | Greater than 1% of 198 | 2.32 | PASS |
| 441 | Less than 100% of 443 | 79 | PASS |
| 442 | 50 - 100% of 198 | 60.4 | PASS |
| 443 | 15 - 24% of 442 | 19.5 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4D23005-TUN166.d | Injection Date: | 04/23/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 09:18 |
| Sequence: | 4D23005 | Lab Sample ID: | 4D23005-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 50.6 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 63.8 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 51.5 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 7.39 | PASS |
| 275 | 10 - 60% of 198 | 21.6 | PASS |
| 365 | Greater than 1% of 198 | 2.71 | PASS |
| 441 | Less than 100% of 443 | 84.7 | PASS |
| 442 | 50 - 100% of 198 | 70.8 | PASS |
| 443 | 15 - 24% of 442 | 18.4 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E01009-TUN166.d | Injection Date: | 05/01/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 13:18 |
| Sequence: | 4E01009 | Lab Sample ID: | 4E01009-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 50.7 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 62.8 | PASS |
| 70 | Less than 2% of 69 | 0.492 | PASS |
| 127 | 10 - 80% of 198 | 49.1 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.23 | PASS |
| 275 | 10 - 60% of 198 | 21.4 | PASS |
| 365 | Greater than 1% of 198 | 2.88 | PASS |
| 441 | Less than 100% of 443 | 78 | PASS |
| 442 | 50 - 100% of 198 | 71.7 | PASS |
| 443 | 15 - 24% of 442 | 19.1 | PASS |

# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D APPIX

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E09001-TUN170.d | Injection Date: | 05/09/14 |
| Instrument ID: | 5972hp70 | Injection Time: | 08:43 |
| Sequence: | 4E09001 | Lab Sample ID: | 4E09001-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 59.9 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 75.2 | PASS |
| 70 | Less than 2% of 69 | 0.188 | PASS |
| 127 | 10 - 80% of 198 | 51.2 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.53 | PASS |
| 275 | 10 - 60% of 198 | 19.4 | PASS |
| 365 | Greater than 1% of 198 | 2.01 | PASS |
| 441 | Less than 100% of 443 | 87.7 | PASS |
| 442 | 50 - 100% of 198 | 58.6 | PASS |
| 443 | 15 - 24% of 442 | 19.4 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D APPIX

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E13002-TUN160.d | Injection Date: | 05/13/14 |
| Instrument ID: | 5972hp60 | Injection Time: | 10:46 |
| Sequence: | 4E13002 | Lab Sample ID: | 4E13002-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 53.6 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 67.3 | PASS |
| 70 | Less than 2% of 69 | 0.223 | PASS |
| 127 | 10 - 80% of 198 | 47.8 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.53 | PASS |
| 275 | 10 - 60% of 198 | 18.7 | PASS |
| 365 | Greater than 1% of 198 | 2.06 | PASS |
| 441 | Less than 100% of 443 | 78.9 | PASS |
| 442 | 50 - 100% of 198 | 52.9 | PASS |
| 443 | 15 - 24% of 442 | 19.7 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E13014-TUN160.d | Injection Date: | 05/13/14 |
| Instrument ID: | 5972hp60 | Injection Time: | 19:00 |
| Sequence: | 4E13014 | Lab Sample ID: | 4E13014-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 50.3 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 63.8 | PASS |
| 70 | Less than 2% of 69 | 0.258 | PASS |
| 127 | 10 - 80% of 198 | 46.6 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.6 | PASS |
| 275 | 10 - 60% of 198 | 19 | PASS |
| 365 | Greater than 1% of 198 | 2.33 | PASS |
| 441 | Less than 100% of 443 | 89.2 | PASS |
| 442 | 50 - 100% of 198 | 52.3 | PASS |
| 443 | 15 - 24% of 442 | 18.7 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E13015-TUN170.d | Injection Date: | 05/13/14 |
| Instrument ID: | 5972hp70 | Injection Time: | 17:07 |
| Sequence: | 4E13015 | Lab Sample ID: | 4E13015-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 51.9 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 65.7 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 48.6 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.68 | PASS |
| 275 | 10 - 60% of 198 | 19.1 | PASS |
| 365 | Greater than 1% of 198 | 2.11 | PASS |
| 441 | Less than 100% of 443 | 89.7 | PASS |
| 442 | 50 - 100% of 198 | 63.4 | PASS |
| 443 | 15 - 24% of 442 | 18.8 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E14002-TUN160.d | Injection Date: | 05/14/14 |
| Instrument ID: | 5972hp60 | Injection Time: | 09:54 |
| Sequence: | 4E14002 | Lab Sample ID: | 4E14002-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 59 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 79.5 | PASS |
| 70 | Less than 2% of 69 | 0.338 | PASS |
| 127 | 10 - 80% of 198 | 52.1 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.74 | PASS |
| 275 | 10 - 60% of 198 | 20.5 | PASS |
| 365 | Greater than 1% of 198 | 2.54 | PASS |
| 441 | Less than 100% of 443 | 85.1 | PASS |
| 442 | 50 - 100% of 198 | 61.8 | PASS |
| 443 | 15 - 24% of 442 | 19.4 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E14004-TUN170.d | Injection Date: | 05/14/14 |
| Instrument ID: | 5972hp70 | Injection Time: | 09:09 |
| Sequence: | 4E14004 | Lab Sample ID: | 4E14004-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 52.5 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 64.8 | PASS |
| 70 | Less than 2% of 69 | 0.274 | PASS |
| 127 | 10 - 80% of 198 | 47.6 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.57 | PASS |
| 275 | 10 - 60% of 198 | 18.7 | PASS |
| 365 | Greater than 1% of 198 | 2.23 | PASS |
| 441 | Less than 100% of 443 | 87.5 | PASS |
| 442 | 50 - 100% of 198 | 63.3 | PASS |
| 443 | 15 - 24% of 442 | 19 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E15004-TUN160.d | Injection Date: | 05/15/14 |
| Instrument ID: | 5972hp60 | Injection Time: | 09:25 |
| Sequence: | 4E15004 | Lab Sample ID: | 4E15004-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 49.8 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 64.8 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 45.7 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.69 | PASS |
| 275 | 10 - 60% of 198 | 20.7 | PASS |
| 365 | Greater than 1% of 198 | 2.7 | PASS |
| 441 | Less than 100% of 443 | 37.1 | PASS |
| 442 | 50 - 100% of 198 | 73.1 | PASS |
| 443 | 15 - 24% of 442 | 19.5 | PASS |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404171
Client: DRAPER
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Sequence: 4D23005
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4D23005-ICV1 )** | | | Lab File ID: 4D23005-ICV1R66.d | | | Analyzed: 04/23/14 10:23 | | | |
| 1,4-Dichlorobenzene-d4 | 55375 | 7.589 | 44930 | 7.608 | 123 | 50 - 200 | -0.0190 | +/-0.50 | |
| Naphthalene-d8 | 204727 | 10.4 | 165817 | 10.43 | 123 | 50 - 200 | -0.0300 | +/-0.50 | |
| Acenaphthene-d10 | 114618 | 14.459 | 95627 | 14.478 | 120 | 50 - 200 | -0.0190 | +/-0.50 | |
| Phenanthrene-d10 | 204509 | 17.321 | 175900 | 17.341 | 116 | 50 - 200 | -0.0200 | +/-0.50 | |
| Chrysene-d12 | 217997 | 21.676 | 191030 | 21.685 | 114 | 50 - 200 | -0.0090 | +/-0.50 | |
| Perylene-d12 | 145556 | 23.761 | 132118 | 23.771 | 110 | 50 - 200 | -0.0100 | +/-0.50 | |
| **Secondary Cal Check (4D23005-SCV1 )** | | | Lab File ID: 4D23005-SCV166.d | | | Analyzed: 04/23/14 11:03 | | | |
| 1,4-Dichlorobenzene-d4 | 61456 | 7.584 | 55375 | 7.589 | 111 | 50 - 200 | -0.0050 | +/-0.50 | |
| Naphthalene-d8 | 230233 | 10.406 | 204727 | 10.4 | 112 | 50 - 200 | 0.0060 | +/-0.50 | |
| Acenaphthene-d10 | 132107 | 14.454 | 114618 | 14.459 | 115 | 50 - 200 | -0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 239568 | 17.327 | 204509 | 17.321 | 117 | 50 - 200 | 0.0060 | +/-0.50 | |
| Chrysene-d12 | 247843 | 21.682 | 217997 | 21.676 | 114 | 50 - 200 | 0.0060 | +/-0.50 | |
| Perylene-d12 | 170063 | 23.767 | 145556 | 23.761 | 117 | 50 - 200 | 0.0060 | +/-0.50 | |
| **Calibration Check (4D23005-CCV1 )** | | | Lab File ID: 4D23005-CCV166.d | | | Analyzed: 04/23/14 20:56 | | | |
| 1,4-Dichlorobenzene-d4 | 47920 | 7.582 | 55375 | 7.589 | 87 | 50 - 200 | -0.0070 | +/-0.50 | |
| Naphthalene-d8 | 173677 | 10.394 | 204727 | 10.4 | 85 | 50 - 200 | -0.0060 | +/-0.50 | |
| Acenaphthene-d10 | 96836 | 14.452 | 114618 | 14.459 | 84 | 50 - 200 | -0.0070 | +/-0.50 | |
| Phenanthrene-d10 | 183617 | 17.325 | 204509 | 17.321 | 90 | 50 - 200 | 0.0040 | +/-0.50 | |
| Chrysene-d12 | 199993 | 21.68 | 217997 | 21.676 | 92 | 50 - 200 | 0.0040 | +/-0.50 | |
| Perylene-d12 | 139196 | 23.765 | 145556 | 23.761 | 96 | 50 - 200 | 0.0040 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404171
Client: DRAPER
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Sequence: 4E01009
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4E01009-ICV1 )** | | | Lab File ID: 4E01009-ICV166.d | | | Analyzed: 05/01/14 13:39 | | | |
| 1,4-Dichlorobenzene-d4 | 69314 | 7.583 | 44930 | 7.608 | 154 | 50 - 200 | -0.0250 | +/-0.50 | |
| Naphthalene-d8 | 247457 | 10.404 | 165817 | 10.43 | 149 | 50 - 200 | -0.0260 | +/-0.50 | |
| Acenaphthene-d10 | 147695 | 14.452 | 95627 | 14.478 | 154 | 50 - 200 | -0.0260 | +/-0.50 | |
| Phenanthrene-d10 | 266324 | 17.325 | 175900 | 17.341 | 151 | 50 - 200 | -0.0160 | +/-0.50 | |
| Chrysene-d12 | 290644 | 21.67 | 191030 | 21.685 | 152 | 50 - 200 | -0.0150 | +/-0.50 | |
| Perylene-d12 | 202073 | 23.755 | 132118 | 23.771 | 153 | 50 - 200 | -0.0160 | +/-0.50 | |
| **Blank (4042917-BLK1 )** | | | Lab File ID: 4042917-BLK166.d | | | Analyzed: 05/01/14 14:31 | | | |
| 1,4-Dichlorobenzene-d4 | 63270 | 7.577 | 69314 | 7.583 | 91 | 50 - 200 | -0.0060 | +/-0.50 | |
| Naphthalene-d8 | 228168 | 10.399 | 247457 | 10.404 | 92 | 50 - 200 | -0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 129533 | 14.457 | 147695 | 14.452 | 88 | 50 - 200 | 0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 237716 | 17.319 | 266324 | 17.325 | 89 | 50 - 200 | -0.0060 | +/-0.50 | |
| Chrysene-d12 | 246046 | 21.664 | 290644 | 21.67 | 85 | 50 - 200 | -0.0060 | +/-0.50 | |
| Perylene-d12 | 164448 | 23.76 | 202073 | 23.755 | 81 | 50 - 200 | 0.0050 | +/-0.50 | |
| **LCS (4042917-BS1 )** | | | Lab File ID: 4042917-BS1J66.d | | | Analyzed: 05/01/14 15:41 | | | |
| 1,4-Dichlorobenzene-d4 | 72829 | 7.588 | 69314 | 7.583 | 105 | 50 - 200 | 0.0050 | +/-0.50 | |
| Naphthalene-d8 | 265707 | 10.399 | 247457 | 10.404 | 107 | 50 - 200 | -0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 155254 | 14.458 | 147695 | 14.452 | 105 | 50 - 200 | 0.0060 | +/-0.50 | |
| Phenanthrene-d10 | 278248 | 17.32 | 266324 | 17.325 | 104 | 50 - 200 | -0.0050 | +/-0.50 | |
| Chrysene-d12 | 301483 | 21.675 | 290644 | 21.67 | 104 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 213294 | 23.76 | 202073 | 23.755 | 106 | 50 - 200 | 0.0050 | +/-0.50 | |
| **16WC1A (1404171-01 )** | | | Lab File ID: 1404171-0166.d | | | Analyzed: 05/01/14 16:21 | | | |
| 1,4-Dichlorobenzene-d4 | 46904 | 7.586 | 69314 | 7.583 | 68 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 177961 | 10.408 | 247457 | 10.404 | 72 | 50 - 200 | 0.0040 | +/-0.50 | |
| Acenaphthene-d10 | 100809 | 14.456 | 147695 | 14.452 | 68 | 50 - 200 | 0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 188756 | 17.318 | 266324 | 17.325 | 71 | 50 - 200 | -0.0070 | +/-0.50 | |
| Chrysene-d12 | 198101 | 21.673 | 290644 | 21.67 | 68 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 128945 | 23.759 | 202073 | 23.755 | 64 | 50 - 200 | 0.0040 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4E01009
SDG: 1404171
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike (4042917-MS1 )** | | | Lab File ID: 4042917-MS166.d | | | Analyzed: 05/01/14 17:00 | | | |
| 1,4-Dichlorobenzene-d4 | 62739 | 7.583 | 69314 | 7.583 | 91 | 50 - 200 | 0.0000 | +/-0.50 | |
| Naphthalene-d8 | 237899 | 10.404 | 247457 | 10.404 | 96 | 50 - 200 | 0.0000 | +/-0.50 | |
| Acenaphthene-d10 | 147126 | 14.453 | 147695 | 14.452 | 100 | 50 - 200 | 0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 269632 | 17.325 | 266324 | 17.325 | 101 | 50 - 200 | 0.0000 | +/-0.50 | |
| Chrysene-d12 | 303839 | 21.68 | 290644 | 21.67 | 105 | 50 - 200 | 0.0100 | +/-0.50 | |
| Perylene-d12 | 216796 | 23.766 | 202073 | 23.755 | 107 | 50 - 200 | 0.0110 | +/-0.50 | |
| **Matrix Spike Dup (4042917-MSD1 )** | | | Lab File ID: 4042917-MSD166.d | | | Analyzed: 05/01/14 17:39 | | | |
| 1,4-Dichlorobenzene-d4 | 60832 | 7.586 | 69314 | 7.583 | 88 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 225428 | 10.397 | 247457 | 10.404 | 91 | 50 - 200 | -0.0070 | +/-0.50 | |
| Acenaphthene-d10 | 135416 | 14.456 | 147695 | 14.452 | 92 | 50 - 200 | 0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 256317 | 17.318 | 266324 | 17.325 | 96 | 50 - 200 | -0.0070 | +/-0.50 | |
| Chrysene-d12 | 288449 | 21.673 | 290644 | 21.67 | 99 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 202959 | 23.759 | 202073 | 23.755 | 100 | 50 - 200 | 0.0040 | +/-0.50 | |
| **16C1 (1404171-02 )** | | | Lab File ID: 1404171-0266.d | | | Analyzed: 05/01/14 18:19 | | | |
| 1,4-Dichlorobenzene-d4 | 74756 | 7.582 | 69314 | 7.583 | 108 | 50 - 200 | -0.0010 | +/-0.50 | |
| Naphthalene-d8 | 268272 | 10.403 | 247457 | 10.404 | 108 | 50 - 200 | -0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 156262 | 14.451 | 147695 | 14.452 | 106 | 50 - 200 | -0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 289417 | 17.324 | 266324 | 17.325 | 109 | 50 - 200 | -0.0010 | +/-0.50 | |
| Chrysene-d12 | 310324 | 21.669 | 290644 | 21.67 | 107 | 50 - 200 | -0.0010 | +/-0.50 | |
| Perylene-d12 | 202951 | 23.764 | 202073 | 23.755 | 100 | 50 - 200 | 0.0090 | +/-0.50 | |
| **16MW8 (1404171-03 )** | | | Lab File ID: 1404171-0366.d | | | Analyzed: 05/01/14 18:58 | | | |
| 1,4-Dichlorobenzene-d4 | 91601 | 7.587 | 69314 | 7.583 | 132 | 50 - 200 | 0.0040 | +/-0.50 | |
| Naphthalene-d8 | 334247 | 10.398 | 247457 | 10.404 | 135 | 50 - 200 | -0.0060 | +/-0.50 | |
| Acenaphthene-d10 | 195344 | 14.457 | 147695 | 14.452 | 132 | 50 - 200 | 0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 348306 | 17.319 | 266324 | 17.325 | 131 | 50 - 200 | -0.0060 | +/-0.50 | |
| Chrysene-d12 | 365656 | 21.674 | 290644 | 21.67 | 126 | 50 - 200 | 0.0040 | +/-0.50 | |
| Perylene-d12 | 248358 | 23.76 | 202073 | 23.755 | 123 | 50 - 200 | 0.0050 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404171
Client: DRAPER
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Sequence: 4E01009
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16MW9 (1404171-04 )** | | | Lab File ID: 1404171-0466.d | | | Analyzed: 05/01/14 19:38 | | | |
| 1,4-Dichlorobenzene-d4 | 62824 | 7.581 | 69314 | 7.583 | 91 | 50 - 200 | -0.0020 | +/-0.50 | |
| Naphthalene-d8 | 234674 | 10.403 | 247457 | 10.404 | 95 | 50 - 200 | -0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 138056 | 14.451 | 147695 | 14.452 | 93 | 50 - 200 | -0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 258071 | 17.324 | 266324 | 17.325 | 97 | 50 - 200 | -0.0010 | +/-0.50 | |
| Chrysene-d12 | 264244 | 21.669 | 290644 | 21.67 | 91 | 50 - 200 | -0.0010 | +/-0.50 | |
| Perylene-d12 | 176291 | 23.764 | 202073 | 23.755 | 87 | 50 - 200 | 0.0090 | +/-0.50 | |
| **16WDUP (1404171-05 )** | | | Lab File ID: 1404171-0566.d | | | Analyzed: 05/01/14 20:17 | | | |
| 1,4-Dichlorobenzene-d4 | 99448 | 7.586 | 69314 | 7.583 | 143 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 354446 | 10.397 | 247457 | 10.404 | 143 | 50 - 200 | -0.0070 | +/-0.50 | |
| Acenaphthene-d10 | 209438 | 14.456 | 147695 | 14.452 | 142 | 50 - 200 | 0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 378051 | 17.318 | 266324 | 17.325 | 142 | 50 - 200 | -0.0070 | +/-0.50 | |
| Chrysene-d12 | 406375 | 21.673 | 290644 | 21.67 | 140 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 272615 | 23.759 | 202073 | 23.755 | 135 | 50 - 200 | 0.0040 | +/-0.50 | |
| **16WC1B (1404171-06 )** | | | Lab File ID: 1404171-0666.d | | | Analyzed: 05/01/14 20:56 | | | |
| 1,4-Dichlorobenzene-d4 | 77652 | 7.583 | 69314 | 7.583 | 112 | 50 - 200 | 0.0000 | +/-0.50 | |
| Naphthalene-d8 | 282537 | 10.405 | 247457 | 10.404 | 114 | 50 - 200 | 0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 161878 | 14.453 | 147695 | 14.452 | 110 | 50 - 200 | 0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 298680 | 17.326 | 266324 | 17.325 | 112 | 50 - 200 | 0.0010 | +/-0.50 | |
| Chrysene-d12 | 329189 | 21.67 | 290644 | 21.67 | 113 | 50 - 200 | 0.0000 | +/-0.50 | |
| Perylene-d12 | 223743 | 23.766 | 202073 | 23.755 | 111 | 50 - 200 | 0.0110 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D APPIX

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4E09001

SDG: 1404171
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Instrument: 5972hp70
Calibration: 4051205

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4E09001-SCV1 )** | | | Lab File ID: 4E09001-SCV170.d | | | Analyzed: 05/09/14 13:58 | | | |
| 1,4-Dichlorobenzene-d4 | 63767 | 8.168 | 71388 | 8.162 | 89 | 50 - 200 | 0.0060 | +/-0.50 | |
| Naphthalene-d8 | 252110 | 10.963 | 279487 | 10.957 | 90 | 50 - 200 | 0.0060 | +/-0.50 | |
| Acenaphthene-d10 | 136188 | 15.017 | 153036 | 15.011 | 89 | 50 - 200 | 0.0060 | +/-0.50 | |
| Phenanthrene-d10 | 224800 | 17.853 | 266508 | 17.847 | 84 | 50 - 200 | 0.0060 | +/-0.50 | |
| Chrysene-d12 | 242733 | 22.255 | 281774 | 22.249 | 86 | 50 - 200 | 0.0060 | +/-0.50 | |
| Perylene-d12 | 160964 | 24.384 | 183126 | 24.379 | 88 | 50 - 200 | 0.0050 | +/-0.50 | |
| **Blank (4042918-BLK1 )** | | | Lab File ID: 4042918-BLK170.d | | | Analyzed: 05/09/14 14:39 | | | |
| 1,4-Dichlorobenzene-d4 | 58835 | 8.172 | 71388 | 8.162 | 82 | 50 - 200 | 0.0100 | +/-0.50 | |
| Naphthalene-d8 | 222854 | 10.967 | 279487 | 10.957 | 80 | 50 - 200 | 0.0100 | +/-0.50 | |
| Acenaphthene-d10 | 124429 | 15.031 | 153036 | 15.011 | 81 | 50 - 200 | 0.0200 | +/-0.50 | |
| Phenanthrene-d10 | 200396 | 17.857 | 266508 | 17.847 | 75 | 50 - 200 | 0.0100 | +/-0.50 | |
| Chrysene-d12 | 194922 | 22.249 | 281774 | 22.249 | 69 | 50 - 200 | 0.0000 | +/-0.50 | |
| Perylene-d12 | 127346 | 24.388 | 183126 | 24.379 | 70 | 50 - 200 | 0.0090 | +/-0.50 | |
| **LCS (4042918-BS1 )** | | | Lab File ID: 4042918-BS170.d | | | Analyzed: 05/09/14 15:20 | | | |
| 1,4-Dichlorobenzene-d4 | 95601 | 8.162 | 71388 | 8.162 | 134 | 50 - 200 | 0.0000 | +/-0.50 | |
| Naphthalene-d8 | 375286 | 10.957 | 279487 | 10.957 | 134 | 50 - 200 | 0.0000 | +/-0.50 | |
| Acenaphthene-d10 | 205980 | 15.021 | 153036 | 15.011 | 135 | 50 - 200 | 0.0100 | +/-0.50 | |
| Phenanthrene-d10 | 338425 | 17.847 | 266508 | 17.847 | 127 | 50 - 200 | 0.0000 | +/-0.50 | |
| Chrysene-d12 | 341898 | 22.259 | 281774 | 22.249 | 121 | 50 - 200 | 0.0100 | +/-0.50 | |
| Perylene-d12 | 206428 | 24.389 | 183126 | 24.379 | 113 | 50 - 200 | 0.0100 | +/-0.50 | |
| **16WC1A (1404171-01 )** | | | Lab File ID: 1404171-01A70.d | | | Analyzed: 05/09/14 16:01 | | | |
| 1,4-Dichlorobenzene-d4 | 63778 | 8.172 | 71388 | 8.162 | 89 | 50 - 200 | 0.0100 | +/-0.50 | |
| Naphthalene-d8 | 236937 | 10.977 | 279487 | 10.957 | 85 | 50 - 200 | 0.0200 | +/-0.50 | |
| Acenaphthene-d10 | 122990 | 15.031 | 153036 | 15.011 | 80 | 50 - 200 | 0.0200 | +/-0.50 | |
| Phenanthrene-d10 | 195639 | 17.857 | 266508 | 17.847 | 73 | 50 - 200 | 0.0100 | +/-0.50 | |
| Chrysene-d12 | 189092 | 22.259 | 281774 | 22.249 | 67 | 50 - 200 | 0.0100 | +/-0.50 | |
| Perylene-d12 | 122876 | 24.388 | 183126 | 24.379 | 67 | 50 - 200 | 0.0090 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D APPIX

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4E09001
SDG: 1404171
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Instrument: 5972hp70
Calibration: 4051205

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Matrix Spike (4042918-MS1 )** | | | Lab File ID: 4042918-MS170.d | | | Analyzed: 05/09/14 16:42 | | | |
| 1,4-Dichlorobenzene-d4 | 110519 | 8.172 | 71388 | 8.162 | 155 | 50 - 200 | 0.0100 | +/-0.50 | |
| Naphthalene-d8 | 437312 | 10.967 | 279487 | 10.957 | 156 | 50 - 200 | 0.0100 | +/-0.50 | |
| Acenaphthene-d10 | 235953 | 15.021 | 153036 | 15.011 | 154 | 50 - 200 | 0.0100 | +/-0.50 | |
| Phenanthrene-d10 | 398443 | 17.857 | 266508 | 17.847 | 150 | 50 - 200 | 0.0100 | +/-0.50 | |
| Chrysene-d12 | 417638 | 22.259 | 281774 | 22.249 | 148 | 50 - 200 | 0.0100 | +/-0.50 | |
| Perylene-d12 | 271280 | 24.389 | 183126 | 24.379 | 148 | 50 - 200 | 0.0100 | +/-0.50 | |
| **Matrix Spike Dup (4042918-MSD1 )** | | | Lab File ID: 4042918-MSD170.d | | | Analyzed: 05/09/14 17:23 | | | |
| 1,4-Dichlorobenzene-d4 | 87216 | 8.173 | 71388 | 8.162 | 122 | 50 - 200 | 0.0110 | +/-0.50 | |
| Naphthalene-d8 | 332811 | 10.968 | 279487 | 10.957 | 119 | 50 - 200 | 0.0110 | +/-0.50 | |
| Acenaphthene-d10 | 178539 | 15.022 | 153036 | 15.011 | 117 | 50 - 200 | 0.0110 | +/-0.50 | |
| Phenanthrene-d10 | 304440 | 17.858 | 266508 | 17.847 | 114 | 50 - 200 | 0.0110 | +/-0.50 | |
| Chrysene-d12 | 296296 | 22.26 | 281774 | 22.249 | 105 | 50 - 200 | 0.0110 | +/-0.50 | |
| Perylene-d12 | 191475 | 24.39 | 183126 | 24.379 | 105 | 50 - 200 | 0.0110 | +/-0.50 | |
| **16C1 (1404171-02 )** | | | Lab File ID: 1404171-02A70.d | | | Analyzed: 05/09/14 18:04 | | | |
| 1,4-Dichlorobenzene-d4 | 85543 | 8.176 | 71388 | 8.162 | 120 | 50 - 200 | 0.0140 | +/-0.50 | |
| Naphthalene-d8 | 333482 | 10.971 | 279487 | 10.957 | 119 | 50 - 200 | 0.0140 | +/-0.50 | |
| Acenaphthene-d10 | 183268 | 15.025 | 153036 | 15.011 | 120 | 50 - 200 | 0.0140 | +/-0.50 | |
| Phenanthrene-d10 | 298302 | 17.85 | 266508 | 17.847 | 112 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 291326 | 22.263 | 281774 | 22.249 | 103 | 50 - 200 | 0.0140 | +/-0.50 | |
| Perylene-d12 | 208888 | 24.392 | 183126 | 24.379 | 114 | 50 - 200 | 0.0130 | +/-0.50 | |
| **16MW8 (1404171-03 )** | | | Lab File ID: 1404171-03A70.d | | | Analyzed: 05/09/14 18:45 | | | |
| 1,4-Dichlorobenzene-d4 | 102186 | 8.169 | 71388 | 8.162 | 143 | 50 - 200 | 0.0070 | +/-0.50 | |
| Naphthalene-d8 | 385135 | 10.974 | 279487 | 10.957 | 138 | 50 - 200 | 0.0170 | +/-0.50 | |
| Acenaphthene-d10 | 208591 | 15.028 | 153036 | 15.011 | 136 | 50 - 200 | 0.0170 | +/-0.50 | |
| Phenanthrene-d10 | 329114 | 17.853 | 266508 | 17.847 | 123 | 50 - 200 | 0.0060 | +/-0.50 | |
| Chrysene-d12 | 321019 | 22.256 | 281774 | 22.249 | 114 | 50 - 200 | 0.0070 | +/-0.50 | |
| Perylene-d12 | 198739 | 24.395 | 183126 | 24.379 | 109 | 50 - 200 | 0.0160 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D APPIX

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4E09001

SDG: 1404171
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Instrument: 5972hp70
Calibration: 4051205

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16MW9 (1404171-04 )** | | | Lab File ID: 1404171-04A70.d | | | Analyzed: 05/09/14 19:26 | | | |
| 1,4-Dichlorobenzene-d4 | 58131 | 8.175 | 71388 | 8.162 | 81 | 50 - 200 | 0.0130 | +/-0.50 | |
| Naphthalene-d8 | 244420 | 10.97 | 279487 | 10.957 | 87 | 50 - 200 | 0.0130 | +/-0.50 | |
| Acenaphthene-d10 | 141309 | 15.024 | 153036 | 15.011 | 92 | 50 - 200 | 0.0130 | +/-0.50 | |
| Phenanthrene-d10 | 217634 | 17.85 | 266508 | 17.847 | 82 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 217601 | 22.252 | 281774 | 22.249 | 77 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 140867 | 24.392 | 183126 | 24.379 | 77 | 50 - 200 | 0.0130 | +/-0.50 | |
| **16WDUP (1404171-05 )** | | | Lab File ID: 1404171-05A70.d | | | Analyzed: 05/09/14 20:07 | | | |
| 1,4-Dichlorobenzene-d4 | 83561 | 8.172 | 71388 | 8.162 | 117 | 50 - 200 | 0.0100 | +/-0.50 | |
| Naphthalene-d8 | 310300 | 10.967 | 279487 | 10.957 | 111 | 50 - 200 | 0.0100 | +/-0.50 | |
| Acenaphthene-d10 | 178003 | 15.021 | 153036 | 15.011 | 116 | 50 - 200 | 0.0100 | +/-0.50 | |
| Phenanthrene-d10 | 278069 | 17.857 | 266508 | 17.847 | 104 | 50 - 200 | 0.0100 | +/-0.50 | |
| Chrysene-d12 | 295700 | 22.259 | 281774 | 22.249 | 105 | 50 - 200 | 0.0100 | +/-0.50 | |
| Perylene-d12 | 176525 | 24.388 | 183126 | 24.379 | 96 | 50 - 200 | 0.0090 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D APPIX

Laboratory: COMPUCHEM
SDG: 1404171
Client: DRAPER
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Sequence: 4E13002
Instrument: 5972hp60
Calibration: 4051502

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4E13002-SCV1 )** | | | Lab File ID: 4E13002-SCV160.d | | | Analyzed: 05/13/14 16:24 | | | |
| 1,4-Dichlorobenzene-d4 | 135095 | 7.563 | 107986 | 7.57 | 125 | 50 - 200 | -0.0070 | +/-0.50 | |
| Naphthalene-d8 | 532844 | 10.386 | 360213 | 10.383 | 148 | 50 - 200 | 0.0030 | +/-0.50 | |
| Acenaphthene-d10 | 287370 | 14.427 | 214417 | 14.424 | 134 | 50 - 200 | 0.0030 | +/-0.50 | |
| Phenanthrene-d10 | 503001 | 17.302 | 363262 | 17.289 | 138 | 50 - 200 | 0.0130 | +/-0.50 | |
| Chrysene-d12 | 487874 | 21.629 | 365559 | 21.626 | 133 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 289166 | 23.706 | 218347 | 23.703 | 132 | 50 - 200 | 0.0030 | +/-0.50 | |
| **Blank (4042918-BLK2 )** | | | Lab File ID: 4042918-BLK260.d | | | Analyzed: 05/13/14 17:05 | | | |
| 1,4-Dichlorobenzene-d4 | 194451 | 7.572 | 107986 | 7.57 | 180 | 50 - 200 | 0.0020 | +/-0.50 | |
| Naphthalene-d8 | 673808 | 10.385 | 360213 | 10.383 | 187 | 50 - 200 | 0.0020 | +/-0.50 | |
| Acenaphthene-d10 | 363916 | 14.426 | 214417 | 14.424 | 170 | 50 - 200 | 0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 602207 | 17.291 | 363262 | 17.289 | 166 | 50 - 200 | 0.0020 | +/-0.50 | |
| Chrysene-d12 | 589530 | 21.629 | 365559 | 21.626 | 161 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 371442 | 23.716 | 218347 | 23.703 | 170 | 50 - 200 | 0.0130 | +/-0.50 | |
| **16WC1B (1404171-06 )** | | | Lab File ID: 1404171-06AJ60.d | | | Analyzed: 05/13/14 17:46 | | | |
| 1,4-Dichlorobenzene-d4 | 135291 | 7.568 | 107986 | 7.57 | 125 | 50 - 200 | -0.0020 | +/-0.50 | |
| Naphthalene-d8 | 464709 | 10.382 | 360213 | 10.383 | 129 | 50 - 200 | -0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 257180 | 14.423 | 214417 | 14.424 | 120 | 50 - 200 | -0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 417713 | 17.298 | 363262 | 17.289 | 115 | 50 - 200 | 0.0090 | +/-0.50 | |
| Chrysene-d12 | 414477 | 21.635 | 365559 | 21.626 | 113 | 50 - 200 | 0.0090 | +/-0.50 | |
| Perylene-d12 | 259922 | 23.712 | 218347 | 23.703 | 119 | 50 - 200 | 0.0090 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Sequence: | 4E13014 | Instrument: | 5972hp60 |
| | | Calibration: | 4051506 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4E13014-SCV1 )** | | | Lab File ID: 4E13014-SCV160.d | | | Analyzed: 05/14/14 04:26 | | | |
| Chrysene-d12 | 238037 | 21.629 | 433313 | 21.628 | 55 | 50 - 200 | 0.0010 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Sequence: | 4E13015 | Instrument: | 5972hp70 |
| | | Calibration: | 4051401 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4E13015-SCV1 )** | | | Lab File ID: 4E13015-SCV170.d | | Analyzed: 05/13/14 21:36 | | | | |
| Acenaphthene-d10 | 95663 | 14.995 | 133943 | 14.997 | 71 | 50 - 200 | -0.0020 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D ADD

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4E14002
SDG: 1404171
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Instrument: 5972hp60
Calibration: 4051507

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4E14002-SCV1 )** | | | Lab File ID: 4E14002-SCV160.d | | | Analyzed: 05/14/14 15:06 | | | |
| Chrysene-d12 | 274674 | 21.628 | 340290 | 21.623 | 81 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 171341 | 23.705 | 224558 | 23.71 | 76 | 50 - 200 | -0.0050 | +/-0.50 | |
| **Blank (4042920-BLK1 )** | | | Lab File ID: 4042920-BLK160.d | | | Analyzed: 05/14/14 15:46 | | | |
| Chrysene-d12 | 387053 | 21.626 | 340290 | 21.623 | 114 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 213802 | 23.713 | 224558 | 23.71 | 95 | 50 - 200 | 0.0030 | +/-0.50 | |
| **LCS (4042920-BS1 )** | | | Lab File ID: 4042920-BS160.d | | | Analyzed: 05/14/14 16:27 | | | |
| Chrysene-d12 | 288450 | 21.63 | 340290 | 21.623 | 85 | 50 - 200 | 0.0070 | +/-0.50 | |
| Perylene-d12 | 192574 | 23.717 | 224558 | 23.71 | 86 | 50 - 200 | 0.0070 | +/-0.50 | |
| **LCS Dup (4042920-BSD1 )** | | | Lab File ID: 4042920-BSD160.d | | | Analyzed: 05/14/14 17:08 | | | |
| Chrysene-d12 | 283824 | 21.63 | 340290 | 21.623 | 83 | 50 - 200 | 0.0070 | +/-0.50 | |
| Perylene-d12 | 195665 | 23.717 | 224558 | 23.71 | 87 | 50 - 200 | 0.0070 | +/-0.50 | |
| **16WC1A (1404171-01 )** | | | Lab File ID: 1404171-01H60.d | | | Analyzed: 05/14/14 17:49 | | | |
| Chrysene-d12 | 247581 | 21.629 | 340290 | 21.623 | 73 | 50 - 200 | 0.0060 | +/-0.50 | |
| Perylene-d12 | 134189 | 23.706 | 224558 | 23.71 | 60 | 50 - 200 | -0.0040 | +/-0.50 | |
| **16C1 (1404171-02 )** | | | Lab File ID: 1404171-02H60.d | | | Analyzed: 05/14/14 18:30 | | | |
| Chrysene-d12 | 506775 | 21.626 | 340290 | 21.623 | 149 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 298017 | 23.713 | 224558 | 23.71 | 133 | 50 - 200 | 0.0030 | +/-0.50 | |
| **16MW8 (1404171-03 )** | | | Lab File ID: 1404171-03H60.d | | | Analyzed: 05/14/14 19:11 | | | |
| Chrysene-d12 | 569046 | 21.634 | 340290 | 21.623 | 167 | 50 - 200 | 0.0110 | +/-0.50 | |
| Perylene-d12 | 337984 | 23.71 | 224558 | 23.71 | 151 | 50 - 200 | 0.0000 | +/-0.50 | |
| **16MW9 (1404171-04 )** | | | Lab File ID: 1404171-04H60.d | | | Analyzed: 05/14/14 19:53 | | | |
| Chrysene-d12 | 455469 | 21.625 | 340290 | 21.623 | 134 | 50 - 200 | 0.0020 | +/-0.50 | |
| Perylene-d12 | 275082 | 23.712 | 224558 | 23.71 | 122 | 50 - 200 | 0.0020 | +/-0.50 | |
| **16WDUP (1404171-05 )** | | | Lab File ID: 1404171-05H60.d | | | Analyzed: 05/14/14 20:34 | | | |
| Chrysene-d12 | 428750 | 21.628 | 340290 | 21.623 | 126 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 255597 | 23.705 | 224558 | 23.71 | 114 | 50 - 200 | -0.0050 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D ADD

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404171 |
| Client: | DRAPER | Project: | RAAP APPIX 2013 UNIT 16 & 10/B03204-12 |
| Sequence: | 4E14002 | Instrument: | 5972hp60 |
| | | Calibration: | 4051507 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16WC1B (1404171-06 )** | | | Lab File ID: 1404171-06H60.d | | | Analyzed: 05/14/14 21:16 | | | |
| Chrysene-d12 | 525254 | 21.628 | 340290 | 21.623 | 154 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 309132 | 23.705 | 224558 | 23.71 | 138 | 50 - 200 | -0.0050 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D ADD

Laboratory: COMPUCHEM
SDG: 1404171
Client: DRAPER
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Sequence: 4E14004
Instrument: 5972hp70
Calibration: 4051401

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4E14004-ICV1 )** | | | Lab File ID: 4E14004-ICV170.d | | | Analyzed: 05/14/14 09:32 | | | |
| Acenaphthene-d10 | 140145 | 14.985 | 133943 | 14.997 | 105 | 50 - 200 | -0.0120 | +/-0.50 | |
| **Blank (4042921-BLK1 )** | | | Lab File ID: 4042921-BLK170.d | | | Analyzed: 05/14/14 10:19 | | | |
| Acenaphthene-d10 | 106452 | 14.991 | 140145 | 14.985 | 76 | 50 - 200 | 0.0060 | +/-0.50 | |
| **LCS (4042921-BS1 )** | | | Lab File ID: 4042921-BS170.d | | | Analyzed: 05/14/14 10:59 | | | |
| Acenaphthene-d10 | 130179 | 14.986 | 140145 | 14.985 | 93 | 50 - 200 | 0.0010 | +/-0.50 | |
| **LCS Dup (4042921-BSD1 )** | | | Lab File ID: 4042921-BSD170.d | | | Analyzed: 05/14/14 11:40 | | | |
| Acenaphthene-d10 | 121455 | 14.986 | 140145 | 14.985 | 87 | 50 - 200 | 0.0010 | +/-0.50 | |
| **16WC1A (1404171-01 )** | | | Lab File ID: 1404171-01P70.d | | | Analyzed: 05/14/14 12:21 | | | |
| Acenaphthene-d10 | 94528 | 14.994 | 140145 | 14.985 | 67 | 50 - 200 | 0.0090 | +/-0.50 | |
| **16C1 (1404171-02 )** | | | Lab File ID: 1404171-02P70.d | | | Analyzed: 05/14/14 13:02 | | | |
| Acenaphthene-d10 | 196968 | 14.987 | 140145 | 14.985 | 141 | 50 - 200 | 0.0020 | +/-0.50 | |
| **16MW8 (1404171-03 )** | | | Lab File ID: 1404171-03P70.d | | | Analyzed: 05/14/14 13:43 | | | |
| Acenaphthene-d10 | 95985 | 14.987 | 140145 | 14.985 | 68 | 50 - 200 | 0.0020 | +/-0.50 | |
| **16MW9 (1404171-04 )** | | | Lab File ID: 1404171-04P70.d | | | Analyzed: 05/14/14 14:24 | | | |
| Acenaphthene-d10 | 114456 | 14.985 | 140145 | 14.985 | 82 | 50 - 200 | 0.0000 | +/-0.50 | |
| **16WDUP (1404171-05 )** | | | Lab File ID: 1404171-05P70.d | | | Analyzed: 05/14/14 15:04 | | | |
| Acenaphthene-d10 | 98673 | 14.99 | 140145 | 14.985 | 70 | 50 - 200 | 0.0050 | +/-0.50 | |
| **16WC1B (1404171-06 )** | | | Lab File ID: 1404171-06P70.d | | | Analyzed: 05/14/14 15:45 | | | |
| Acenaphthene-d10 | 173261 | 14.994 | 140145 | 14.985 | 124 | 50 - 200 | 0.0090 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D ADD

Laboratory: COMPUCHEM
SDG: 1404171
Client: DRAPER
Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12
Sequence: 4E15004
Instrument: 5972hp60
Calibration: 4051506

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4E15004-ICV1 )** | | | Lab File ID: 4E15004-ICV160.d | | | Analyzed: 05/15/14 09:56 | | | |
| Chrysene-d12 | 571018 | 21.629 | 433313 | 21.628 | 132 | 50 - 200 | 0.0010 | +/-0.50 | |
| **Blank (4042919-BLK1 )** | | | Lab File ID: 4042919-BLK160.d | | | Analyzed: 05/15/14 10:37 | | | |
| Chrysene-d12 | 355320 | 21.629 | 571018 | 21.629 | 62 | 50 - 200 | 0.0000 | +/-0.50 | |
| **LCS (4042919-BS1 )** | | | Lab File ID: 4042919-BS160.d | | | Analyzed: 05/15/14 11:18 | | | |
| Chrysene-d12 | 379714 | 21.629 | 571018 | 21.629 | 66 | 50 - 200 | 0.0000 | +/-0.50 | |
| **LCS Dup (4042919-BSD1 )** | | | Lab File ID: 4042919-BSD160.d | | | Analyzed: 05/15/14 11:58 | | | |
| Chrysene-d12 | 515790 | 21.635 | 571018 | 21.629 | 90 | 50 - 200 | 0.0060 | +/-0.50 | |
| **16WC1A (1404171-01 )** | | | Lab File ID: 1404171-01F60.d | | | Analyzed: 05/15/14 12:39 | | | |
| Chrysene-d12 | 412819 | 21.63 | 571018 | 21.629 | 72 | 50 - 200 | 0.0010 | +/-0.50 | |
| **16C1 (1404171-02 )** | | | Lab File ID: 1404171-02F60.d | | | Analyzed: 05/15/14 13:20 | | | |
| Chrysene-d12 | 633099 | 21.635 | 571018 | 21.629 | 111 | 50 - 200 | 0.0060 | +/-0.50 | |
| **16MW8 (1404171-03 )** | | | Lab File ID: 1404171-03F60.d | | | Analyzed: 05/15/14 14:00 | | | |
| Chrysene-d12 | 537984 | 21.63 | 571018 | 21.629 | 94 | 50 - 200 | 0.0010 | +/-0.50 | |
| **16MW9 (1404171-04 )** | | | Lab File ID: 1404171-04F60.d | | | Analyzed: 05/15/14 14:41 | | | |
| Chrysene-d12 | 573733 | 21.63 | 571018 | 21.629 | 100 | 50 - 200 | 0.0010 | +/-0.50 | |
| **16WDUP (1404171-05 )** | | | Lab File ID: 1404171-05F60.d | | | Analyzed: 05/15/14 15:22 | | | |
| Chrysene-d12 | 400218 | 21.636 | 571018 | 21.629 | 70 | 50 - 200 | 0.0070 | +/-0.50 | |
| **16WC1B (1404171-06 )** | | | Lab File ID: 1404171-06F60.d | | | Analyzed: 05/15/14 16:03 | | | |
| Chrysene-d12 | 695594 | 21.639 | 571018 | 21.629 | 122 | 50 - 200 | 0.0100 | +/-0.50 | |

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# K. Target Compound Results

## (ANALYSIS DATA SHEETS)

### Analysis Data Sheets (ADS), Tentatively Identified Compounds (TICs), and Surrogate Recovery Results

Sample data shall be arranged in packets with the Analysis Data Sheet, followed by the raw data for volatile or semivolatile samples. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (ANALYSIS DATA SHEET)

Tabulated results (identification and quantitation) and Tentatively Identified Compounds (TICs) shall be included.

b. Reconstructed Ion Chromatograms (RICs)

Include for each sample or sample extract, including dilutions and reanalyses. The RIC shall contain the following header information: Client Sample ID Number, date and time of analysis, instrument ID, Lab file ID, and analyst ID.

d. Quantitation Report for target analytes and TICs.

Include a printout of the Extracted Ion Current Profile (EICP) for all manual changes to all compounds, internal standards, and surrogate compounds.

e. Copies of raw spectra and copies of background-subtracted mass spectra of target analytes plus TICs identified in the sample.

- The spectra shall include the following information: Client Sample ID number, Lab file ID, date and time of analysis, and instrument ID.
- The compound name must be clearly marked.

# ANALYSIS DATA SHEET

*SW8270D*

**16C1**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0266.d Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-02 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 18:19

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | | 0.98 | 5.0 | *U* |
| 110-86-1 | Pyridine | | 1.1 | 5.0 | *U* |
| 108-95-2 | Phenol | | 0.62 | 10 | *U* |
| 111-44-4 | Bis(2-chloroethyl)ether | | 1.3 | 5.0 | *U* |
| 95-57-8 | 2-Chlorophenol | | 1.4 | 10 | *U* |
| 95-48-7 | 2-Methylphenol | | 2.2 | 10 | *U* |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | | 1.6 | 5.0 | *U* |
| 106-44-5 | 3 & 4-Methylphenol | | 1.7 | 10 | *U* |
| 621-64-7 | N-Nitroso-di-N-propylamine | | 1.8 | 5.0 | *U* |
| 98-86-2 | Acetophenone | | 1.2 | 5.0 | *U* |
| 67-72-1 | Hexachloroethane | | 1.1 | 5.0 | *U* |
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 78-59-1 | Isophorone | | 0.94 | 5.0 | *U* |
| 88-75-5 | 2-Nitrophenol | | 0.99 | 10 | *U* |
| 105-67-9 | 2,4-Dimethylphenol | | 4.8 | 10 | *U* |
| 111-91-1 | Bis(2-chloroethoxy)methane | | 0.99 | 5.0 | *U* |
| 120-83-2 | 2,4-Dichlorophenol | | 1.6 | 10 | *U* |
| 106-47-8 | 4-Chloroaniline | | 1.1 | 10 | *U* |
| 59-50-7 | 4-Chloro-3-methylphenol | | 0.82 | 10 | *U* |
| 91-57-6 | 2-Methylnaphthalene | | 1.1 | 5.0 | *U* |
| 77-47-4 | Hexachlorocyclopentadiene | | 0.91 | 5.0 | *U* |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 1.1 | 5.0 | *U* |
| 88-06-2 | 2,4,6-Trichlorophenol | | 0.89 | 10 | *U* |
| 95-95-4 | 2,4,5-Trichlorophenol | | 1.5 | 10 | *U* |
| 91-58-7 | 2-Chloronaphthalene | | 1.0 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 131-11-3 | Dimethylphthalate | | 0.64 | 5.0 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 208-96-8 | Acenaphthylene | | 0.96 | 5.0 | *U* |
| 99-09-2 | 3-Nitroaniline | | 0.83 | 10 | *U* |
| 83-32-9 | Acenaphthene | | 0.80 | 5.0 | *U* |
| 51-28-5 | 2,4-Dinitrophenol | | 2.1 | 10 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16C1**

Client: DRAPER | SDG 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404171-0266.d | Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404171-02 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:58

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 18:19

Batch: 4042917 | Sequence: 4E01009 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-02-7 | 4-Nitrophenol | | 2.3 | 10 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 132-64-9 | Dibenzofuran | | 0.76 | 5.0 | *U* |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 0.70 | 10 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 7005-72-3 | 4-Chlorophenyl-phenylether | | 0.66 | 5.0 | *U* |
| 86-73-7 | Fluorene | | 0.71 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | | 1.1 | 10 | *U* |
| 86-30-6 | N-Nitrosodiphenylamine (1) | | 0.97 | 5.0 | *U* |
| 101-55-3 | 4-Bromophenyl-phenylether | | 0.80 | 5.0 | *U* |
| 118-74-1 | Hexachlorobenzene | | 0.57 | 5.0 | *U* |
| 87-86-5 | Pentachlorophenol | | 2.6 | 10 | *U* |
| 85-01-8 | Phenanthrene | | 0.70 | 5.0 | *U* |
| 120-12-7 | Anthracene | | 0.77 | 5.0 | *U* |
| 84-74-2 | Di-n-butylphthalate | | 0.74 | 5.0 | *U* |
| 206-44-0 | Fluoranthene | | 0.58 | 5.0 | *U* |
| 129-00-0 | Pyrene | | 0.73 | 5.0 | *U* |
| 85-68-7 | Butylbenzylphthalate | | 0.55 | 5.0 | *U* |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 1.4 | 5.0 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |
| 56-55-3 | Benzo (a) anthracene | | 0.57 | 5.0 | *U* |
| 218-01-9 | Chrysene | | 2.2 | 5.0 | *U* |
| 117-84-0 | Di-n-octylphthalate | | 0.71 | 5.0 | *U* |
| 205-99-2 | Benzo (b) fluoranthene | | 0.68 | 5.0 | *U* |
| 207-08-9 | Benzo(k)fluoranthene | | 1.5 | 5.0 | *U* |
| 50-32-8 | Benzo (a) pyrene | | 0.70 | 5.0 | *U* |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 0.64 | 5.0 | *U* |
| 53-70-3 | Dibenzo(a,h)anthracene | | 0.74 | 5.0 | *U* |
| 191-24-2 | Benzo (g,h,i) perylene | | 0.61 | 5.0 | *U* |
| 99-65-0 | 1,3-Dinitrobenzene | | 1.1 | 5.0 | *U* |
| 62-53-3 | Aniline | | 1.8 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16C1**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0266.d Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-02 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 18:19

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-51-6 | Benzyl alcohol | | 1.1 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 64.33 | 64 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36.25 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 48.05 | 96 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 42.72 | 85 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 102.1 | 102 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 48.50 | 97 | 59 - 110 | |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW8**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0366.d Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-03 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 18:58

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | | 0.98 | 5.0 | *U* |
| 110-86-1 | Pyridine | | 1.1 | 5.0 | *U* |
| 108-95-2 | Phenol | | 0.62 | 10 | *U* |
| 111-44-4 | Bis(2-chloroethyl)ether | | 1.3 | 5.0 | *U* |
| 95-57-8 | 2-Chlorophenol | | 1.4 | 10 | *U* |
| 95-48-7 | 2-Methylphenol | | 2.2 | 10 | *U* |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | | 1.6 | 5.0 | *U* |
| 106-44-5 | 3 & 4-Methylphenol | | 1.7 | 10 | *U* |
| 621-64-7 | N-Nitroso-di-N-propylamine | | 1.8 | 5.0 | *U* |
| 98-86-2 | Acetophenone | | 1.2 | 5.0 | *U* |
| 67-72-1 | Hexachloroethane | | 1.1 | 5.0 | *U* |
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 78-59-1 | Isophorone | | 0.94 | 5.0 | *U* |
| 88-75-5 | 2-Nitrophenol | | 0.99 | 10 | *U* |
| 105-67-9 | 2,4-Dimethylphenol | | 4.8 | 10 | *U* |
| 111-91-1 | Bis(2-chloroethoxy)methane | | 0.99 | 5.0 | *U* |
| 120-83-2 | 2,4-Dichlorophenol | | 1.6 | 10 | *U* |
| 106-47-8 | 4-Chloroaniline | | 1.1 | 10 | *U* |
| 59-50-7 | 4-Chloro-3-methylphenol | | 0.82 | 10 | *U* |
| 91-57-6 | 2-Methylnaphthalene | | 1.1 | 5.0 | *U* |
| 77-47-4 | Hexachlorocyclopentadiene | | 0.91 | 5.0 | *U* |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 1.1 | 5.0 | *U* |
| 88-06-2 | 2,4,6-Trichlorophenol | | 0.89 | 10 | *U* |
| 95-95-4 | 2,4,5-Trichlorophenol | | 1.5 | 10 | *U* |
| 91-58-7 | 2-Chloronaphthalene | | 1.0 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 131-11-3 | Dimethylphthalate | | 0.64 | 5.0 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 208-96-8 | Acenaphthylene | | 0.96 | 5.0 | *U* |
| 99-09-2 | 3-Nitroaniline | | 0.83 | 10 | *U* |
| 83-32-9 | Acenaphthene | | 0.80 | 5.0 | *U* |
| 51-28-5 | 2,4-Dinitrophenol | | 2.1 | 10 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW8**

Client: DRAPER | SDG 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404171-0366.d | Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404171-03 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:58

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 18:58

Batch: 4042917 | Sequence: 4E01009 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-02-7 | 4-Nitrophenol | | 2.3 | 10 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 132-64-9 | Dibenzofuran | | 0.76 | 5.0 | *U* |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 0.70 | 10 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 7005-72-3 | 4-Chlorophenyl-phenylether | | 0.66 | 5.0 | *U* |
| 86-73-7 | Fluorene | | 0.71 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | | 1.1 | 10 | *U* |
| 86-30-6 | N-Nitrosodiphenylamine (1) | | 0.97 | 5.0 | *U* |
| 101-55-3 | 4-Bromophenyl-phenylether | | 0.80 | 5.0 | *U* |
| 118-74-1 | Hexachlorobenzene | | 0.57 | 5.0 | *U* |
| 87-86-5 | Pentachlorophenol | | 2.6 | 10 | *U* |
| 85-01-8 | Phenanthrene | | 0.70 | 5.0 | *U* |
| 120-12-7 | Anthracene | | 0.77 | 5.0 | *U* |
| 84-74-2 | Di-n-butylphthalate | | 0.74 | 5.0 | *U* |
| 206-44-0 | Fluoranthene | | 0.58 | 5.0 | *U* |
| 129-00-0 | Pyrene | | 0.73 | 5.0 | *U* |
| 85-68-7 | Butylbenzylphthalate | | 0.55 | 5.0 | *U* |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 1.4 | 5.0 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |
| 56-55-3 | Benzo (a) anthracene | | 0.57 | 5.0 | *U* |
| 218-01-9 | Chrysene | | 2.2 | 5.0 | *U* |
| 117-84-0 | Di-n-octylphthalate | | 0.71 | 5.0 | *U* |
| 205-99-2 | Benzo (b) fluoranthene | | 0.68 | 5.0 | *U* |
| 207-08-9 | Benzo(k)fluoranthene | | 1.5 | 5.0 | *U* |
| 50-32-8 | Benzo (a) pyrene | | 0.70 | 5.0 | *U* |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 0.64 | 5.0 | *U* |
| 53-70-3 | Dibenzo(a,h)anthracene | | 0.74 | 5.0 | *U* |
| 191-24-2 | Benzo (g,h,i) perylene | | 0.61 | 5.0 | *U* |
| 99-65-0 | 1,3-Dinitrobenzene | | 1.1 | 5.0 | *U* |
| 62-53-3 | Aniline | | 1.8 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW8**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0366.d Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-03 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 18:58

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-51-6 | Benzyl alcohol | | 1.1 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 64.96 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36.33 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 49.43 | 99 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.93 | 88 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 100.3 | 100 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 51.92 | 104 | 59 - 110 | |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW9**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0466.d Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 19:38

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | | 0.98 | 5.0 | *U* |
| 110-86-1 | Pyridine | | 1.1 | 5.0 | *U* |
| 108-95-2 | Phenol | | 0.62 | 10 | *U* |
| 111-44-4 | Bis(2-chloroethyl)ether | | 1.3 | 5.0 | *U* |
| 95-57-8 | 2-Chlorophenol | | 1.4 | 10 | *U* |
| 95-48-7 | 2-Methylphenol | | 2.2 | 10 | *U* |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | | 1.6 | 5.0 | *U* |
| 106-44-5 | 3 & 4-Methylphenol | | 1.7 | 10 | *U* |
| 621-64-7 | N-Nitroso-di-N-propylamine | | 1.8 | 5.0 | *U* |
| 98-86-2 | Acetophenone | | 1.2 | 5.0 | *U* |
| 67-72-1 | Hexachloroethane | | 1.1 | 5.0 | *U* |
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 78-59-1 | Isophorone | | 0.94 | 5.0 | *U* |
| 88-75-5 | 2-Nitrophenol | | 0.99 | 10 | *U* |
| 105-67-9 | 2,4-Dimethylphenol | | 4.8 | 10 | *U* |
| 111-91-1 | Bis(2-chloroethoxy)methane | | 0.99 | 5.0 | *U* |
| 120-83-2 | 2,4-Dichlorophenol | | 1.6 | 10 | *U* |
| 106-47-8 | 4-Chloroaniline | | 1.1 | 10 | *U* |
| 59-50-7 | 4-Chloro-3-methylphenol | | 0.82 | 10 | *U* |
| 91-57-6 | 2-Methylnaphthalene | | 1.1 | 5.0 | *U* |
| 77-47-4 | Hexachlorocyclopentadiene | | 0.91 | 5.0 | *U* |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 1.1 | 5.0 | *U* |
| 88-06-2 | 2,4,6-Trichlorophenol | | 0.89 | 10 | *U* |
| 95-95-4 | 2,4,5-Trichlorophenol | | 1.5 | 10 | *U* |
| 91-58-7 | 2-Chloronaphthalene | | 1.0 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 131-11-3 | Dimethylphthalate | | 0.64 | 5.0 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 208-96-8 | Acenaphthylene | | 0.96 | 5.0 | *U* |
| 99-09-2 | 3-Nitroaniline | | 0.83 | 10 | *U* |
| 83-32-9 | Acenaphthene | | 0.80 | 5.0 | *U* |
| 51-28-5 | 2,4-Dinitrophenol | | 2.1 | 10 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW9**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0466.d Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 19:38

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-02-7 | 4-Nitrophenol | | 2.3 | 10 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 132-64-9 | Dibenzofuran | | 0.76 | 5.0 | *U* |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 0.70 | 10 | *U* |
| 84-66-2 | Diethylphthalate | 1.0 | 0.52 | 5.0 | *J* |
| 7005-72-3 | 4-Chlorophenyl-phenylether | | 0.66 | 5.0 | *U* |
| 86-73-7 | Fluorene | | 0.71 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | | 1.1 | 10 | *U* |
| 86-30-6 | N-Nitrosodiphenylamine (1) | | 0.97 | 5.0 | *U* |
| 101-55-3 | 4-Bromophenyl-phenylether | | 0.80 | 5.0 | *U* |
| 118-74-1 | Hexachlorobenzene | | 0.57 | 5.0 | *U* |
| 87-86-5 | Pentachlorophenol | | 2.6 | 10 | *U* |
| 85-01-8 | Phenanthrene | | 0.70 | 5.0 | *U* |
| 120-12-7 | Anthracene | | 0.77 | 5.0 | *U* |
| 84-74-2 | Di-n-butylphthalate | | 0.74 | 5.0 | *U* |
| 206-44-0 | Fluoranthene | | 0.58 | 5.0 | *U* |
| 129-00-0 | Pyrene | | 0.73 | 5.0 | *U* |
| 85-68-7 | Butylbenzylphthalate | | 0.55 | 5.0 | *U* |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 1.4 | 5.0 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |
| 56-55-3 | Benzo (a) anthracene | | 0.57 | 5.0 | *U* |
| 218-01-9 | Chrysene | | 2.2 | 5.0 | *U* |
| 117-84-0 | Di-n-octylphthalate | | 0.71 | 5.0 | *U* |
| 205-99-2 | Benzo (b) fluoranthene | | 0.68 | 5.0 | *U* |
| 207-08-9 | Benzo(k)fluoranthene | | 1.5 | 5.0 | *U* |
| 50-32-8 | Benzo (a) pyrene | | 0.70 | 5.0 | *U* |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 0.64 | 5.0 | *U* |
| 53-70-3 | Dibenzo(a,h)anthracene | | 0.74 | 5.0 | *U* |
| 191-24-2 | Benzo (g,h,i) perylene | | 0.61 | 5.0 | *U* |
| 99-65-0 | 1,3-Dinitrobenzene | | 1.1 | 5.0 | *U* |
| 62-53-3 | Aniline | | 1.8 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW9**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0466.d Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 19:38

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-51-6 | Benzyl alcohol | | 1.1 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 65.12 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36.13 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 45.99 | 92 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 41.13 | 82 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 94.38 | 94 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 48.58 | 97 | 59 - 110 | |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|
| 13114-72-2 | 1-Methyl-3,3-diphenylurea | 8.2 | 270240 | 18.99 | 96 | JN |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1A**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0166.d Sampled: 04/24/14 11:45

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-01 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 16:21

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | | 0.98 | 5.0 | *U* |
| 110-86-1 | Pyridine | | 1.1 | 5.0 | *U* |
| 108-95-2 | Phenol | | 0.62 | 10 | *U* |
| 111-44-4 | Bis(2-chloroethyl)ether | | 1.3 | 5.0 | *U* |
| 95-57-8 | 2-Chlorophenol | | 1.4 | 10 | *U* |
| 95-48-7 | 2-Methylphenol | | 2.2 | 10 | *U* |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | | 1.6 | 5.0 | *U* |
| 106-44-5 | 3 & 4-Methylphenol | | 1.7 | 10 | *U* |
| 621-64-7 | N-Nitroso-di-N-propylamine | | 1.8 | 5.0 | *U* |
| 98-86-2 | Acetophenone | | 1.2 | 5.0 | *U* |
| 67-72-1 | Hexachloroethane | | 1.1 | 5.0 | *U* |
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 78-59-1 | Isophorone | | 0.94 | 5.0 | *U* |
| 88-75-5 | 2-Nitrophenol | | 0.99 | 10 | *U* |
| 105-67-9 | 2,4-Dimethylphenol | | 4.8 | 10 | *U* |
| 111-91-1 | Bis(2-chloroethoxy)methane | | 0.99 | 5.0 | *U* |
| 120-83-2 | 2,4-Dichlorophenol | | 1.6 | 10 | *U* |
| 106-47-8 | 4-Chloroaniline | | 1.1 | 10 | *U* |
| 59-50-7 | 4-Chloro-3-methylphenol | | 0.82 | 10 | *U* |
| 91-57-6 | 2-Methylnaphthalene | | 1.1 | 5.0 | *U* |
| 77-47-4 | Hexachlorocyclopentadiene | | 0.91 | 5.0 | *U* |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 1.1 | 5.0 | *U* |
| 88-06-2 | 2,4,6-Trichlorophenol | | 0.89 | 10 | *U* |
| 95-95-4 | 2,4,5-Trichlorophenol | | 1.5 | 10 | *U* |
| 91-58-7 | 2-Chloronaphthalene | | 1.0 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 131-11-3 | Dimethylphthalate | | 0.64 | 5.0 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 208-96-8 | Acenaphthylene | | 0.96 | 5.0 | *U* |
| 99-09-2 | 3-Nitroaniline | | 0.83 | 10 | *U* |
| 83-32-9 | Acenaphthene | | 0.80 | 5.0 | *U* |
| 51-28-5 | 2,4-Dinitrophenol | | 2.1 | 10 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1A**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0166.d Sampled: 04/24/14 11:45

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-01 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 16:21

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-02-7 | 4-Nitrophenol | | 2.3 | 10 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 132-64-9 | Dibenzofuran | | 0.76 | 5.0 | *U* |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 0.70 | 10 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 7005-72-3 | 4-Chlorophenyl-phenylether | | 0.66 | 5.0 | *U* |
| 86-73-7 | Fluorene | | 0.71 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | | 1.1 | 10 | *U* |
| 86-30-6 | N-Nitrosodiphenylamine (1) | | 0.97 | 5.0 | *U* |
| 101-55-3 | 4-Bromophenyl-phenylether | | 0.80 | 5.0 | *U* |
| 118-74-1 | Hexachlorobenzene | | 0.57 | 5.0 | *U* |
| 87-86-5 | Pentachlorophenol | | 2.6 | 10 | *U* |
| 85-01-8 | Phenanthrene | | 0.70 | 5.0 | *U* |
| 120-12-7 | Anthracene | | 0.77 | 5.0 | *U* |
| 84-74-2 | Di-n-butylphthalate | | 0.74 | 5.0 | *U* |
| 206-44-0 | Fluoranthene | | 0.58 | 5.0 | *U* |
| 129-00-0 | Pyrene | | 0.73 | 5.0 | *U* |
| 85-68-7 | Butylbenzylphthalate | | 0.55 | 5.0 | *U* |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 1.4 | 5.0 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |
| 56-55-3 | Benzo (a) anthracene | | 0.57 | 5.0 | *U* |
| 218-01-9 | Chrysene | | 2.2 | 5.0 | *U* |
| 117-84-0 | Di-n-octylphthalate | | 0.71 | 5.0 | *U* |
| 205-99-2 | Benzo (b) fluoranthene | | 0.68 | 5.0 | *U* |
| 207-08-9 | Benzo(k)fluoranthene | | 1.5 | 5.0 | *U* |
| 50-32-8 | Benzo (a) pyrene | | 0.70 | 5.0 | *U* |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 0.64 | 5.0 | *U* |
| 53-70-3 | Dibenzo(a,h)anthracene | | 0.74 | 5.0 | *U* |
| 191-24-2 | Benzo (g,h,i) perylene | | 0.61 | 5.0 | *U* |
| 99-65-0 | 1,3-Dinitrobenzene | | 1.1 | 5.0 | *U* |
| 62-53-3 | Aniline | | 1.8 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1A**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0166.d Sampled: 04/24/14 11:45

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-01 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 16:21

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-51-6 | Benzyl alcohol | | 1.1 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 67.63 | 68 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36.93 | 37 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 49.11 | 98 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.48 | 87 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 100.3 | 100 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 49.14 | 98 | 59 - 110 | |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1B**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0666.d Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-06 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 20:56

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | | 0.98 | 5.0 | *U* |
| 110-86-1 | Pyridine | | 1.1 | 5.0 | *U* |
| 108-95-2 | Phenol | | 0.62 | 10 | *U* |
| 111-44-4 | Bis(2-chloroethyl)ether | | 1.3 | 5.0 | *U* |
| 95-57-8 | 2-Chlorophenol | | 1.4 | 10 | *U* |
| 95-48-7 | 2-Methylphenol | | 2.2 | 10 | *U* |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | | 1.6 | 5.0 | *U* |
| 106-44-5 | 3 & 4-Methylphenol | | 1.7 | 10 | *U* |
| 621-64-7 | N-Nitroso-di-N-propylamine | | 1.8 | 5.0 | *U* |
| 98-86-2 | Acetophenone | | 1.2 | 5.0 | *U* |
| 67-72-1 | Hexachloroethane | | 1.1 | 5.0 | *U* |
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 78-59-1 | Isophorone | | 0.94 | 5.0 | *U* |
| 88-75-5 | 2-Nitrophenol | | 0.99 | 10 | *U* |
| 105-67-9 | 2,4-Dimethylphenol | | 4.8 | 10 | *U* |
| 111-91-1 | Bis(2-chloroethoxy)methane | | 0.99 | 5.0 | *U* |
| 120-83-2 | 2,4-Dichlorophenol | | 1.6 | 10 | *U* |
| 106-47-8 | 4-Chloroaniline | | 1.1 | 10 | *U* |
| 59-50-7 | 4-Chloro-3-methylphenol | | 0.82 | 10 | *U* |
| 91-57-6 | 2-Methylnaphthalene | | 1.1 | 5.0 | *U* |
| 77-47-4 | Hexachlorocyclopentadiene | | 0.91 | 5.0 | *U* |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 1.1 | 5.0 | *U* |
| 88-06-2 | 2,4,6-Trichlorophenol | | 0.89 | 10 | *U* |
| 95-95-4 | 2,4,5-Trichlorophenol | | 1.5 | 10 | *U* |
| 91-58-7 | 2-Chloronaphthalene | | 1.0 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 131-11-3 | Dimethylphthalate | | 0.64 | 5.0 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 208-96-8 | Acenaphthylene | | 0.96 | 5.0 | *U* |
| 99-09-2 | 3-Nitroaniline | | 0.83 | 10 | *U* |
| 83-32-9 | Acenaphthene | | 0.80 | 5.0 | *U* |
| 51-28-5 | 2,4-Dinitrophenol | | 2.1 | 10 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1B**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0666.d Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-06 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 20:56

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-02-7 | 4-Nitrophenol | | 2.3 | 10 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 132-64-9 | Dibenzofuran | | 0.76 | 5.0 | *U* |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 0.70 | 10 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 7005-72-3 | 4-Chlorophenyl-phenylether | | 0.66 | 5.0 | *U* |
| 86-73-7 | Fluorene | | 0.71 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | | 1.1 | 10 | *U* |
| 86-30-6 | N-Nitrosodiphenylamine (1) | | 0.97 | 5.0 | *U* |
| 101-55-3 | 4-Bromophenyl-phenylether | | 0.80 | 5.0 | *U* |
| 118-74-1 | Hexachlorobenzene | | 0.57 | 5.0 | *U* |
| 87-86-5 | Pentachlorophenol | | 2.6 | 10 | *U* |
| 85-01-8 | Phenanthrene | | 0.70 | 5.0 | *U* |
| 120-12-7 | Anthracene | | 0.77 | 5.0 | *U* |
| 84-74-2 | Di-n-butylphthalate | | 0.74 | 5.0 | *U* |
| 206-44-0 | Fluoranthene | | 0.58 | 5.0 | *U* |
| 129-00-0 | Pyrene | | 0.73 | 5.0 | *U* |
| 85-68-7 | Butylbenzylphthalate | | 0.55 | 5.0 | *U* |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 1.4 | 5.0 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |
| 56-55-3 | Benzo (a) anthracene | | 0.57 | 5.0 | *U* |
| 218-01-9 | Chrysene | | 2.2 | 5.0 | *U* |
| 117-84-0 | Di-n-octylphthalate | | 0.71 | 5.0 | *U* |
| 205-99-2 | Benzo (b) fluoranthene | | 0.68 | 5.0 | *U* |
| 207-08-9 | Benzo(k)fluoranthene | | 1.5 | 5.0 | *U* |
| 50-32-8 | Benzo (a) pyrene | | 0.70 | 5.0 | *U* |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 0.64 | 5.0 | *U* |
| 53-70-3 | Dibenzo(a,h)anthracene | | 0.74 | 5.0 | *U* |
| 191-24-2 | Benzo (g,h,i) perylene | | 0.61 | 5.0 | *U* |
| 99-65-0 | 1,3-Dinitrobenzene | | 1.1 | 5.0 | *U* |
| 62-53-3 | Aniline | | 1.8 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1B**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0666.d Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-06 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 20:56

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-51-6 | Benzyl alcohol | | 1.1 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 55.28 | 55 | 33 - 110 | |
| Phenol-d5 | 100.0 | 29.04 | 29 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 43.50 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.00 | 86 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 100.1 | 100 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 47.82 | 96 | 59 - 110 | |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WDUP**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0566.d Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-05 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 20:17

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | | 0.98 | 5.0 | *U* |
| 110-86-1 | Pyridine | | 1.1 | 5.0 | *U* |
| 108-95-2 | Phenol | | 0.62 | 10 | *U* |
| 111-44-4 | Bis(2-chloroethyl)ether | | 1.3 | 5.0 | *U* |
| 95-57-8 | 2-Chlorophenol | | 1.4 | 10 | *U* |
| 95-48-7 | 2-Methylphenol | | 2.2 | 10 | *U* |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | | 1.6 | 5.0 | *U* |
| 106-44-5 | 3 & 4-Methylphenol | | 1.7 | 10 | *U* |
| 621-64-7 | N-Nitroso-di-N-propylamine | | 1.8 | 5.0 | *U* |
| 98-86-2 | Acetophenone | | 1.2 | 5.0 | *U* |
| 67-72-1 | Hexachloroethane | | 1.1 | 5.0 | *U* |
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | *U* |
| 78-59-1 | Isophorone | | 0.94 | 5.0 | *U* |
| 88-75-5 | 2-Nitrophenol | | 0.99 | 10 | *U* |
| 105-67-9 | 2,4-Dimethylphenol | | 4.8 | 10 | *U* |
| 111-91-1 | Bis(2-chloroethoxy)methane | | 0.99 | 5.0 | *U* |
| 120-83-2 | 2,4-Dichlorophenol | | 1.6 | 10 | *U* |
| 106-47-8 | 4-Chloroaniline | | 1.1 | 10 | *U* |
| 59-50-7 | 4-Chloro-3-methylphenol | | 0.82 | 10 | *U* |
| 91-57-6 | 2-Methylnaphthalene | | 1.1 | 5.0 | *U* |
| 77-47-4 | Hexachlorocyclopentadiene | | 0.91 | 5.0 | *U* |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 1.1 | 5.0 | *U* |
| 88-06-2 | 2,4,6-Trichlorophenol | | 0.89 | 10 | *U* |
| 95-95-4 | 2,4,5-Trichlorophenol | | 1.5 | 10 | *U* |
| 91-58-7 | 2-Chloronaphthalene | | 1.0 | 5.0 | *U* |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | *U* |
| 131-11-3 | Dimethylphthalate | | 0.64 | 5.0 | *U* |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 208-96-8 | Acenaphthylene | | 0.96 | 5.0 | *U* |
| 99-09-2 | 3-Nitroaniline | | 0.83 | 10 | *U* |
| 83-32-9 | Acenaphthene | | 0.80 | 5.0 | *U* |
| 51-28-5 | 2,4-Dinitrophenol | | 2.1 | 10 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16WDUP**

Client: DRAPER | SDG 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404171-0566.d | Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404171-05 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:58

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 20:17

Batch: 4042917 | Sequence: 4E01009 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-02-7 | 4-Nitrophenol | | 2.3 | 10 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 132-64-9 | Dibenzofuran | | 0.76 | 5.0 | *U* |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 0.70 | 10 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |
| 7005-72-3 | 4-Chlorophenyl-phenylether | | 0.66 | 5.0 | *U* |
| 86-73-7 | Fluorene | | 0.71 | 5.0 | *U* |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | *U* |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | | 1.1 | 10 | *U* |
| 86-30-6 | N-Nitrosodiphenylamine (1) | | 0.97 | 5.0 | *U* |
| 101-55-3 | 4-Bromophenyl-phenylether | | 0.80 | 5.0 | *U* |
| 118-74-1 | Hexachlorobenzene | | 0.57 | 5.0 | *U* |
| 87-86-5 | Pentachlorophenol | | 2.6 | 10 | *U* |
| 85-01-8 | Phenanthrene | | 0.70 | 5.0 | *U* |
| 120-12-7 | Anthracene | | 0.77 | 5.0 | *U* |
| 84-74-2 | Di-n-butylphthalate | | 0.74 | 5.0 | *U* |
| 206-44-0 | Fluoranthene | | 0.58 | 5.0 | *U* |
| 129-00-0 | Pyrene | | 0.73 | 5.0 | *U* |
| 85-68-7 | Butylbenzylphthalate | | 0.55 | 5.0 | *U* |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 1.4 | 5.0 | *U* |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | *U* |
| 56-55-3 | Benzo (a) anthracene | | 0.57 | 5.0 | *U* |
| 218-01-9 | Chrysene | | 2.2 | 5.0 | *U* |
| 117-84-0 | Di-n-octylphthalate | | 0.71 | 5.0 | *U* |
| 205-99-2 | Benzo (b) fluoranthene | | 0.68 | 5.0 | *U* |
| 207-08-9 | Benzo(k)fluoranthene | | 1.5 | 5.0 | *U* |
| 50-32-8 | Benzo (a) pyrene | | 0.70 | 5.0 | *U* |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 0.64 | 5.0 | *U* |
| 53-70-3 | Dibenzo(a,h)anthracene | | 0.74 | 5.0 | *U* |
| 191-24-2 | Benzo (g,h,i) perylene | | 0.61 | 5.0 | *U* |
| 99-65-0 | 1,3-Dinitrobenzene | | 1.1 | 5.0 | *U* |
| 62-53-3 | Aniline | | 1.8 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D*

**16WDUP**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-0566.d Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-05 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:58

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 20:17

Batch: 4042917 Sequence: 4E01009 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 100-51-6 | Benzyl alcohol | | 1.1 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 52.62 | 53 | 33 - 110 | |
| Phenol-d5 | 100.0 | 30.46 | 30 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 35.31 | 71 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 31.55 | 63 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 71.83 | 72 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 43.21 | 86 | 59 - 110 | |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**16C1**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-02P70.d Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-02 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/14/14 13:02

Batch: 4042921 Sequence: 4E14004 Calibration: 4051401 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 106-50-3 | p-Phenylenediamine | | 10 | 10 | *U* |
| 52-85-7 | Famphur | | 0.59 | 5.0 | *U* |
| 143-50-0 | Kepone | | 0.54 | 5.0 | *U* |
| 70-30-4 | Hexachlorophene | | 40 | 100 | *U* |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**16MW8**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-03P70.d Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-03 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/14/14 13:43

Batch: 4042921 Sequence: 4E14004 Calibration: 4051401 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 106-50-3 | p-Phenylenediamine | | 10 | 10 | *U* |
| 52-85-7 | Famphur | | 0.59 | 5.0 | *U* |
| 143-50-0 | Kepone | | 0.54 | 5.0 | *U* |
| 70-30-4 | Hexachlorophene | | 40 | 100 | *U* |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**16MW9**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-04P70.d Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/14/14 14:24

Batch: 4042921 Sequence: 4E14004 Calibration: 4051401 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 106-50-3 | p-Phenylenediamine | | 10 | 10 | *U* |
| 52-85-7 | Famphur | | 0.59 | 5.0 | *U* |
| 143-50-0 | Kepone | | 0.54 | 5.0 | *U* |
| 70-30-4 | Hexachlorophene | | 40 | 100 | *U* |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**16WC1A**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-01P70.d Sampled: 04/24/14 11:45

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-01 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/14/14 12:21

Batch: 4042921 Sequence: 4E14004 Calibration: 4051401 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 106-50-3 | p-Phenylenediamine | | 10 | 10 | *U* |
| 52-85-7 | Famphur | | 0.59 | 5.0 | *U* |
| 143-50-0 | Kepone | | 0.54 | 5.0 | *U* |
| 70-30-4 | Hexachlorophene | | 40 | 100 | *U* |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**16WC1B**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-06P70.d Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-06 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/14/14 15:45

Batch: 4042921 Sequence: 4E14004 Calibration: 4051401 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 106-50-3 | p-Phenylenediamine | | 10 | 10 | *U* |
| 52-85-7 | Famphur | | 0.59 | 5.0 | *U* |
| 143-50-0 | Kepone | | 0.54 | 5.0 | *U* |
| 70-30-4 | Hexachlorophene | | 40 | 100 | *U* |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**16WDUP**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-05P70.d Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-05 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/14/14 15:04

Batch: 4042921 Sequence: 4E14004 Calibration: 4051401 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 106-50-3 | p-Phenylenediamine | | 10 | 10 | *U* |
| 52-85-7 | Famphur | | 0.59 | 5.0 | *U* |
| 143-50-0 | Kepone | | 0.54 | 5.0 | *U* |
| 70-30-4 | Hexachlorophene | | 40 | 100 | *U* |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16C1**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-02A70.d Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-02 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/09/14 18:04

Batch: 4042918 Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | *U* |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | *U* |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | *U* |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | *U* |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | *U* |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | *U* |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | *U* |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | *U* |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | *U* |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | *U* |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | *U* |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | *U* |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | *U* |
| 94-59-7 | Safrole | | 0.37 | 5.0 | *U* |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | *U* |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | *U* |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | *U* |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | *U* |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | *U* |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | *U* |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | *U* |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | *U* |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | *U* |
| 298-02-2 | Phorate | | 0.47 | 5.0 | *U* |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | *U* |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | *U* |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | *U* |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | *U* |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | *U* |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | *U* |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | *U* |
| 56-38-2 | Parathion | | 0.43 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16C1**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-02A70.d Sampled: 04/24/14 15:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-02 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/09/14 18:04

Batch: 4042918 Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | *U* |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | *U* |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | *U* |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | *U* |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | *U* |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | *U* |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | *U* |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | *U* |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | *U* |
| 2303-16-4 | Diallate | | 0.92 | 10 | *U* |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | *U* |
| 140-57-8 | Aramite | | 0.84 | 5.0 | *U* |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16MW8**

Client: DRAPER | SDG 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404171-03A70.d | Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404171-03 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/09/14 18:45

Batch: 4042918 | Sequence: 4E09001 | Calibration: 4051205 | Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | *U* |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | *U* |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | *U* |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | *U* |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | *U* |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | *U* |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | *U* |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | *U* |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | *U* |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | *U* |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | *U* |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | *U* |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | *U* |
| 94-59-7 | Safrole | | 0.37 | 5.0 | *U* |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | *U* |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | *U* |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | *U* |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | *U* |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | *U* |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | *U* |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | *U* |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | *U* |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | *U* |
| 298-02-2 | Phorate | | 0.47 | 5.0 | *U* |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | *U* |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | *U* |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | *U* |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | *U* |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | *U* |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | *U* |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | *U* |
| 56-38-2 | Parathion | | 0.43 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16MW8**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-03A70.d Sampled: 04/24/14 09:15

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-03 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/09/14 18:45

Batch: 4042918 Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | *U* |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | *U* |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | *U* |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | *U* |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | *U* |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | *U* |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | *U* |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | *U* |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | *U* |
| 2303-16-4 | Diallate | | 0.92 | 10 | *U* |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | *U* |
| 140-57-8 | Aramite | | 0.84 | 5.0 | *U* |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16MW9**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-04A70.d Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/09/14 19:26

Batch: 4042918 Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | *U* |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | *U* |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | *U* |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | *U* |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | *U* |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | *U* |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | *U* |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | *U* |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | *U* |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | *U* |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | *U* |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | *U* |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | *U* |
| 94-59-7 | Safrole | | 0.37 | 5.0 | *U* |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | *U* |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | *U* |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | *U* |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | *U* |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | *U* |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | *U* |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | *U* |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | *U* |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | *U* |
| 298-02-2 | Phorate | | 0.47 | 5.0 | *U* |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | *U* |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | *U* |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | *U* |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | *U* |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | *U* |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | *U* |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | *U* |
| 56-38-2 | Parathion | | 0.43 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16MW9**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-04A70.d Sampled: 04/24/14 10:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/09/14 19:26

Batch: 4042918 Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | *U* |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | *U* |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | *U* |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | *U* |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | *U* |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | *U* |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | *U* |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | *U* |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | *U* |
| 2303-16-4 | Diallate | | 0.92 | 10 | *U* |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | *U* |
| 140-57-8 | Aramite | | 0.84 | 5.0 | *U* |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16WC1A**

Client: DRAPER | SDG 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404171-01A70.d | Sampled: 04/24/14 11:45

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404171-01 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/09/14 16:01

Batch: 4042918 | Sequence: 4E09001 | Calibration: 4051205 | Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | *U* |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | *U* |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | *U* |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | *U* |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | *U* |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | *U* |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | *U* |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | *U* |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | *U* |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | *U* |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | *U* |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | *U* |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | *U* |
| 94-59-7 | Safrole | | 0.37 | 5.0 | *U* |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | *U* |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | *U* |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | *U* |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | *U* |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | *U* |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | *U* |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | *U* |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | *U* |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | *U* |
| 298-02-2 | Phorate | | 0.47 | 5.0 | *U* |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | *U* |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | *U* |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | *U* |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | *U* |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | *U* |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | *U* |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | *U* |
| 56-38-2 | Parathion | | 0.43 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16WC1A**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-01A70.d Sampled: 04/24/14 11:45

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-01 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/09/14 16:01

Batch: 4042918 Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | *U* |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | *U* |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | *U* |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | *U* |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | *U* |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | *U* |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | *U* |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | *U* |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | *U* |
| 2303-16-4 | Diallate | | 0.92 | 10 | *U* |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | *U* |
| 140-57-8 | Aramite | | 0.84 | 5.0 | *U* |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16WC1B**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-06AJ60.d Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-06 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/13/14 17:46

Batch: 4042918 Sequence: 4E13002 Calibration: 4051502 Instrument: 5972hp60

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | *U* |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | *U* |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | *U* |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | *U* |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | *U* |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | *U* |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | *U* |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | *U* |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | *U* |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | *U* |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | *U* |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | *U* |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | *U* |
| 94-59-7 | Safrole | | 0.37 | 5.0 | *U* |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | *U* |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | *U* |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | *U* |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | *U* |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | *U* |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | *U* |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | *U* |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | *U* |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | *U* |
| 298-02-2 | Phorate | | 0.47 | 5.0 | *U* |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | *U* |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | *U* |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | *U* |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | *U* |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | *U* |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | *U* |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | *U* |
| 56-38-2 | Parathion | | 0.43 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16WC1B**

Client: DRAPER | SDG 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404171-06AJ60.d | Sampled: 04/24/14 14:05

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404171-06 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/13/14 17:46

Batch: 4042918 | Sequence: 4E13002 | Calibration: 4051502 | Instrument: 5972hp60

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | *U* |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | *U* |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | *U* |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | *U* |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | *U* |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | *U* |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | *U* |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | *U* |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | *U* |
| 2303-16-4 | Diallate | | 0.92 | 10 | *U* |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | *U* |
| 140-57-8 | Aramite | | 0.84 | 5.0 | *U* |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16WDUP**

Client: DRAPER | SDG 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1404171-05A70.d | Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1404171-05 | Received: 04/25/14 13:15

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/09/14 20:07

Batch: 4042918 | Sequence: 4E09001 | Calibration: 4051205 | Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | *U* |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | *U* |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | *U* |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | *U* |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | *U* |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | *U* |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | *U* |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | *U* |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | *U* |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | *U* |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | *U* |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | *U* |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | *U* |
| 94-59-7 | Safrole | | 0.37 | 5.0 | *U* |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | *U* |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | *U* |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | *U* |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | *U* |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | *U* |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | *U* |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | *U* |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | *U* |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | *U* |
| 298-02-2 | Phorate | | 0.47 | 5.0 | *U* |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | *U* |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | *U* |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | *U* |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | *U* |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | *U* |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | *U* |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | *U* |
| 56-38-2 | Parathion | | 0.43 | 5.0 | *U* |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**16WDUP**

Client: DRAPER SDG 1404171 Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404171-05A70.d Sampled: 04/24/14 12:00

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404171-05 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 11:59

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/09/14 20:07

Batch: 4042918 Sequence: 4E09001 Calibration: 4051205 Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | *U* |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | *U* |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | *U* |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | *U* |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | *U* |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | *U* |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | *U* |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | *U* |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | *U* |
| 2303-16-4 | Diallate | | 0.92 | 10 | *U* |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | *U* |
| 140-57-8 | Aramite | | 0.84 | 5.0 | *U* |

| CAS NO. | TICS | CONC. (ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# INITIAL CALIBRATION DATA

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| N-Nitrosodimethylamine | 5 | 1.271012 | 10 | 1.322214 | 25 | 1.221313 | 40 | 1.203747 | 50 | 1.300471 | 60 | 1.37863 |
| Pyridine | 5 | 1.089899 | 10 | 1.152912 | 25 | 1.242982 | 40 | 1.159728 | 50 | 1.311274 | 60 | 1.29051 |
| Phenol | 5 | 1.396248 | 10 | 1.559931 | 25 | 1.448938 | 40 | 1.387558 | 50 | 1.539809 | 60 | 1.577918 |
| Bis(2-chloroethyl)ether | 5 | 1.092104 | 10 | 1.224103 | 25 | 1.144661 | 40 | 1.10578 | 50 | 1.172235 | 60 | 1.211051 |
| 2-Chlorophenol | 5 | 1.277456 | 10 | 1.265754 | 25 | 1.281389 | 40 | 1.239952 | 50 | 1.311188 | 60 | 1.36631 |
| 2-Methylphenol | 5 | 1.00248 | 10 | 1.139221 | 25 | 1.079902 | 40 | 1.052254 | 50 | 1.15818 | 60 | 1.21742 |
| 2,2'-oxybis(1-Chloropropane) | 5 | 1.451192 | 10 | 1.453953 | 25 | 1.34166 | 40 | 1.359637 | 50 | 1.452986 | 60 | 1.479632 |
| 3 & 4-Methylphenol | 5 | 1.045299 | 10 | 1.090513 | 25 | 1.170318 | 40 | 1.086726 | 50 | 1.268149 | 60 | 1.259975 |
| N-Nitroso-di-N-propylamine | 5 | 0.8806359 | 10 | 0.8944466 | 25 | 0.9087202 | 40 | 0.8882789 | 50 | 0.9804005 | 60 | 1.00084 |
| Acetophenone | 5 | 0.4322135 | 10 | 0.5056345 | 25 | 0.5156914 | 40 | 0.5312704 | 50 | 0.5462469 | 60 | 0.5597364 |
| Hexachloroethane | 5 | 0.7897403 | 10 | 0.7664867 | 25 | 0.7337636 | 40 | 0.7074835 | 50 | 0.7446525 | 60 | 0.7887271 |
| Nitrobenzene | 5 | 0.3832066 | 10 | 0.3777684 | 25 | 0.3808488 | 40 | 0.3787373 | 50 | 0.3760694 | 60 | 0.3854268 |
| Isophorone | 5 | 0.5589981 | 10 | 0.6068754 | 25 | 0.6109193 | 40 | 0.6283594 | 50 | 0.642612 | 60 | 0.6568471 |
| 2-Nitrophenol | 5 | 0.172721 | 10 | 0.1893753 | 25 | 0.1769035 | 40 | 0.1983328 | 50 | 0.2010068 | 60 | 0.2023364 |
| 2,4-Dimethylphenol | 5 | 0.2593958 | 10 | 0.2570312 | 25 | 0.2738151 | 40 | 0.2623735 | 50 | 0.2726044 | 60 | 0.2699035 |
| Bis(2-chloroethoxy)methane | 5 | 0.3878728 | 10 | 0.413941 | 25 | 0.3826821 | 40 | 0.3840069 | 50 | 0.390283 | 60 | 0.4020633 |
| 2,4-Dichlorophenol | 5 | 0.2553099 | 10 | 0.2689972 | 25 | 0.2942039 | 40 | 0.2860001 | 50 | 0.2984331 | 60 | 0.2988123 |
| 4-Chloroaniline | 5 | 0.447155 | 10 | 0.4405555 | 25 | 0.4296882 | 40 | 0.4435713 | 50 | 0.4497269 | 60 | 0.4611048 |
| 4-Chloro-3-methylphenol | 5 | 0.2845883 | 10 | 0.2844696 | 25 | 0.2871503 | 40 | 0.2982767 | 50 | 0.3032997 | 60 | 0.315904 |
| 2-Methylnaphthalene | 5 | 0.5663238 | 10 | 0.5515235 | 25 | 0.5521846 | 40 | 0.5481304 | 50 | 0.5355081 | 60 | 0.5606171 |
| Hexachlorocyclopentadiene | 5 | 0.4111657 | 10 | 0.4357678 | 25 | 0.4527926 | 40 | 0.4844751 | 50 | 0.4864477 | 60 | 0.5093748 |
| 1,2,4,5-Tetrachlorobenzene | 5 | 0.6126501 | 10 | 0.610996 | 25 | 0.590327 | 40 | 0.614251 | 50 | 0.6236959 | 60 | 0.6344695 |
| 2,4,6-Trichlorophenol | 5 | 0.2969176 | 10 | 0.358912 | 25 | 0.4044213 | 40 | 0.4065201 | 50 | 0.4267646 | 60 | 0.4386328 |
| 2,4,5-Trichlorophenol | 5 | 0.3724318 | 10 | 0.3751969 | 25 | 0.4212952 | 40 | 0.4258017 | 50 | 0.4519896 | 60 | 0.4372027 |
| 2-Chloronaphthalene | 5 | 1.027978 | 10 | 1.065904 | 25 | 1.044174 | 40 | 1.053844 | 50 | 1.094156 | 60 | 1.097171 |

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# INITIAL CALIBRATION DATA

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| 2-Nitroaniline | 5 | 0.4433166 | 10 | 0.4670112 | 25 | 0.4827089 | 40 | 0.5062273 | 50 | 0.5360717 | 60 | 0.5376904 |
| Dimethylphthalate | 5 | 1.31139 | 10 | 1.340886 | 25 | 1.351325 | 40 | 1.471075 | 50 | 1.486212 | 60 | 1.409402 |
| 2,6-Dinitrotoluene | 5 | 0.2762765 | 10 | 0.309431 | 25 | 0.3058132 | 40 | 0.3352447 | 50 | 0.3398496 | 60 | 0.3189316 |
| Acenaphthylene | 5 | 1.666026 | 10 | 1.612884 | 25 | 1.681073 | 40 | 1.704051 | 50 | 1.762202 | 60 | 1.747136 |
| 3-Nitroaniline | 5 | 0.2938597 | 10 | 0.3365111 | 25 | 0.3463039 | 40 | 0.360657 | 50 | 0.3747374 | 60 | 0.3481148 |
| Acenaphthene | 5 | 1.042716 | 10 | 1.049435 | 25 | 1.097949 | 40 | 1.093343 | 50 | 1.119135 | 60 | 1.106184 |
| 2,4-Dinitrophenol | 5 | 4.391544E-02 | 10 | 0.1072517 | 25 | 0.1427045 | 40 | 0.1858873 | 50 | 0.1863632 | 60 | 0.198233 |
| 4-Nitrophenol | 5 | 0.2071331 | 10 | 0.2658819 | 25 | 0.2873582 | 40 | 0.3166138 | 50 | 0.2890657 | 60 | 0.3135141 |
| 2,4-Dinitrotoluene | 5 | 0.3425319 | 10 | 0.4294307 | 25 | 0.4038106 | 40 | 0.4381392 | 50 | 0.4420014 | 60 | 0.4437619 |
| Dibenzofuran | 5 | 1.443476 | 10 | 1.547284 | 25 | 1.53017 | 40 | 1.57492 | 50 | 1.586916 | 60 | 1.553481 |
| 2,3,4,6-Tetrachlorophenol | 5 | 0.288211 | 10 | 0.2978437 | 25 | 0.3625336 | 40 | 0.3751754 | 50 | 0.4075475 | 60 | 0.3766323 |
| Diethylphthalate | 5 | 1.462673 | 10 | 1.608279 | 25 | 1.517454 | 40 | 1.673174 | 50 | 1.675542 | 60 | 1.558416 |
| 4-Chlorophenyl-phenylether | 5 | 0.6014801 | 10 | 0.6237991 | 25 | 0.6445042 | 40 | 0.6579993 | 50 | 0.6724145 | 60 | 0.6335297 |
| Fluorene | 5 | 1.182956 | 10 | 1.239014 | 25 | 1.222592 | 40 | 1.339667 | 50 | 1.301555 | 60 | 1.246416 |
| 4-Nitroaniline | 5 | 0.2910991 | 10 | 0.3251633 | 25 | 0.331078 | 40 | 0.357856 | 50 | 0.339495 | 60 | 0.3444759 |
| 4,6-Dinitro-2-methylphenol | 5 | 0.071126 | 10 | 9.520953E-02 | 25 | 0.1142513 | 40 | 0.1245457 | 50 | 0.1420785 | 60 | 0.1492518 |
| N-Nitrosodiphenylamine (1) | 5 | 0.5719634 | 10 | 0.5167674 | 25 | 0.5537737 | 40 | 0.5585383 | 50 | 0.588124 | 60 | 0.5589647 |
| 4-Bromophenyl-phenylether | 5 | 0.2222934 | 10 | 0.2039173 | 25 | 0.2158818 | 40 | 0.2194903 | 50 | 0.2327403 | 60 | 0.2169412 |
| Hexachlorobenzene | 5 | 0.2814501 | 10 | 0.2917965 | 25 | 0.2817828 | 40 | 0.2775396 | 50 | 0.2894872 | 60 | 0.2803666 |
| Pentachlorophenol | 5 | 8.011526E-02 | 10 | 0.1256931 | 25 | 0.1355452 | 40 | 0.1603549 | 50 | 0.1706723 | 60 | 0.1759273 |
| Phenanthrene | 5 | 0.9790907 | 10 | 0.9343132 | 25 | 0.929328 | 40 | 0.958737 | 50 | 0.985034 | 60 | 0.9529705 |
| Anthracene | 5 | 0.9758152 | 10 | 0.9360192 | 25 | 0.9540466 | 40 | 0.9795152 | 50 | 0.9975803 | 60 | 0.9721114 |
| Di-n-butylphthalate | 5 | 1.315511 | 10 | 1.199629 | 25 | 1.374667 | 40 | 1.434525 | 50 | 1.406048 | 60 | 1.45132 |
| Fluoranthene | 5 | 0.9974633 | 10 | 0.9047764 | 25 | 1.015395 | 40 | 0.9890846 | 50 | 1.033424 | 60 | 1.03226 |
| Pyrene | 5 | 1.047985 | 10 | 1.024279 | 25 | 1.001895 | 40 | 0.9975433 | 50 | 0.9990874 | 60 | 1.022039 |

# INITIAL CALIBRATION DATA

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| Butylbenzylphthalate | 5 | 0.4472687 | 10 | 0.4853783 | 25 | 0.5430938 | 40 | 0.5981869 | 50 | 0.587081 | 60 | 0.6220433 |
| 3,3'-Dichlorobenzidine | 5 | 0.3163997 | 10 | 0.3729838 | 25 | 0.3830561 | 40 | 0.4111885 | 50 | 0.4248353 | 60 | 0.4317326 |
| bis(2-ethylhexyl)Phthalate | 5 | 0.671079 | 10 | 0.707517 | 25 | 0.7778548 | 40 | 0.8748133 | 50 | 0.862684 | 60 | 0.8829897 |
| Benzo (a) anthracene | 5 | 0.9125623 | 10 | 0.9674733 | 25 | 0.9684803 | 40 | 1.021755 | 50 | 1.056349 | 60 | 1.035587 |
| Chrysene | 5 | 1.011465 | 10 | 0.9388036 | 25 | 0.92865 | 40 | 0.9543551 | 50 | 0.9282211 | 60 | 0.9448708 |
| Di-n-octylphthalate | 5 | 1.32824 | 10 | 1.554899 | 25 | 1.78346 | 40 | 2.007074 | 50 | 2.152858 | 60 | 2.191379 |
| Benzo (b) fluoranthene | 5 | 1.486634 | 10 | 1.360524 | 25 | 1.437878 | 40 | 1.39636 | 50 | 1.518072 | 60 | 1.446669 |
| Benzo(k)fluoranthene | 5 | 1.51774 | 10 | 1.605044 | 25 | 1.532933 | 40 | 1.670017 | 50 | 1.605961 | 60 | 1.471336 |
| Benzo (a) pyrene | 5 | 1.260802 | 10 | 1.28231 | 25 | 1.337447 | 40 | 1.389577 | 50 | 1.466644 | 60 | 1.414253 |
| Indeno(1,2,3-cd)pyrene | 5 | 1.160989 | 10 | 1.088733 | 25 | 1.216724 | 40 | 1.260296 | 50 | 1.383264 | 60 | 1.339402 |
| Dibenzo(a,h)anthracene | 5 | 1.21968 | 10 | 1.230898 | 25 | 1.232952 | 40 | 1.367332 | 50 | 1.407971 | 60 | 1.393578 |
| Benzo (g,h,i) perylene | 5 | 1.42642 | 10 | 1.319588 | 25 | 1.447173 | 40 | 1.428347 | 50 | 1.522649 | 60 | 1.441648 |
| 1,3-Dinitrobenzene | 5 | 6.846392E-02 | 10 | 8.219809E-02 | 25 | 9.117927E-02 | 40 | 9.223449E-02 | 50 | 9.377823E-02 | 60 | 9.373626E-02 |
| Aniline | 5 | 1.750927 | 10 | 1.813151 | 25 | 1.816461 | 40 | 1.645792 | 50 | 1.861748 | 60 | 1.951467 |
| Benzyl alcohol | 5 | 0.7299629 | 10 | 0.7538758 | 25 | 0.7396394 | 40 | 0.7185534 | 50 | 0.8099641 | 60 | 0.8457615 |
| 2-Fluorophenol | 5 | 1.200806 | 10 | 1.092518 | 25 | 1.041282 | 40 | 1.04436 | 50 | 1.110219 | 60 | 1.153749 |
| Phenol-d5 | 5 | 1.300859 | 10 | 1.421597 | 25 | 1.326775 | 40 | 1.225576 | 50 | 1.386654 | 60 | 1.420304 |
| Nitrobenzene-d5 | 5 | 0.3271642 | 10 | 0.3601098 | 25 | 0.3629785 | 40 | 0.3640401 | 50 | 0.3857748 | 60 | 0.3812708 |
| 2-Fluorobiphenyl | 5 | 1.251505 | 10 | 1.231516 | 25 | 1.235793 | 40 | 1.270715 | 50 | 1.29251 | 60 | 1.299213 |
| 2,4,6-Tribromophenol | 5 | 0.2098512 | 10 | 0.2455995 | 25 | 0.2821797 | 40 | 0.2947091 | 50 | 0.2893745 | 60 | 0.2872632 |
| Terphenyl-d14 | 5 | 0.7924192 | 10 | 0.7046688 | 25 | 0.6886793 | 40 | 0.7161451 | 50 | 0.7246377 | 60 | 0.7173678 |

# INITIAL CALIBRATION DATA (Continued)

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| N-Nitrosodimethylamine | 1.282898 | 5.077798 | 2.3625 | 0.3527948 | | | CCC (20) | |
| Pyridine | 1.207884 | 7.218348 | 2.398333 | 0.5056575 | | | CCC (20) | |
| Phenol | 1.485067 | 5.707768 | 7.068333 | 4.722477E-02 | | | CCC (20) | |
| Bis(2-chloroethyl)ether | 1.158322 | 4.670432 | 7.151666 | 5.901364E-02 | | | CCC (20) | |
| 2-Chlorophenol | 1.290341 | 3.395068 | 7.163833 | 6.266554E-02 | | | CCC (20) | |
| 2-Methylphenol | 1.108243 | 7.047061 | 8.3735 | 2.931674E-02 | | | CCC (20) | |
| 2,2'-oxybis(1-Chloropropane) | 1.423177 | 4.035219 | 8.3615 | 0.1238909 | | | CCC (20) | |
| 3 & 4-Methylphenol | 1.153497 | 8.215073 | 8.744833 | 0.0278295 | | | CCC (20) | |
| N-Nitroso-di-N-propylamine | 0.9255537 | 5.579541 | 8.634333 | 4.669294E-02 | | | CCC (20) | |
| Acetophenone | 0.5151322 | 8.761093 | 8.539 | 4.115759E-02 | | | CCC (20) | |
| Hexachloroethane | 0.7551423 | 4.308266 | 8.690334 | 6.304173E-02 | | | CCC (20) | |
| Nitrobenzene | 0.3803429 | 0.9240529 | 8.8745 | 6.310448E-02 | | | CCC (20) | |
| Isophorone | 0.6174352 | 5.551883 | 9.467333 | 1.919303E-02 | | | CCC (20) | |
| 2-Nitrophenol | 0.1901126 | 6.708035 | 9.6105 | 0.0594738 | | | CCC (20) | |
| 2,4-Dimethylphenol | 0.2658539 | 2.696769 | 9.912 | 4.553678E-02 | | | CCC (20) | |
| Bis(2-chloroethoxy)methane | 0.3934748 | 3.092499 | 10.0925 | 3.886632E-02 | | | CCC (20) | |
| 2,4-Dichlorophenol | 0.2836261 | 6.273882 | 10.20167 | 3.580798E-02 | | | CCC (20) | |
| 4-Chloroaniline | 0.4453003 | 2.338254 | 10.70267 | 3.847406E-02 | | | CCC (20) | |
| 4-Chloro-3-methylphenol | 0.2956148 | 4.266174 | 11.999 | 4.015398E-02 | | | CCC (20) | |
| 2-Methylnaphthalene | 0.5523812 | 1.925682 | 12.09783 | 1.370865E-02 | | | CCC (20) | |
| Hexachlorocyclopentadiene | 0.4633373 | 7.896683 | 12.54283 | 2.917119E-02 | | | CCC (20) | |
| 1,2,4,5-Tetrachlorobenzene | 0.6143983 | 2.395837 | 12.5135 | 1.274998E-02 | | | CCC (20) | |
| 2,4,6-Trichlorophenol | 0.3886947 | 13.52486 | 12.84417 | 0.0192258 | | | CCC (20) | |
| 2,4,5-Trichlorophenol | 0.4139863 | 7.943903 | 12.9125 | 1.028113E-02 | | | CCC (20) | |
| 2-Chloronaphthalene | 1.063871 | 2.593704 | 13.1985 | 7.310595E-03 | | | CCC (20) | |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| 2-Nitroaniline | 0.4955044 | 7.67929 | 13.51883 | 0.0166055 | | | CCC (20) | |
| Dimethylphthalate | 1.395048 | 5.183057 | 14.09667 | 3.123747E-02 | | | CCC (20) | |
| 2,6-Dinitrotoluene | 0.3142578 | 7.331849 | 14.14933 | 2.177386E-02 | | | CCC (20) | |
| Acenaphthylene | 1.695562 | 3.240075 | 14.1305 | 2.528596E-02 | | | CCC (20) | |
| 3-Nitroaniline | 0.343364 | 8.041692 | 14.48317 | 2.957878E-02 | | | CCC (20) | |
| Acenaphthene | 1.084794 | 2.886878 | 14.54117 | 1.923341E-02 | | | CCC (20) | |
| 2,4-Dinitrophenol | 0.1440592 | 41.48658 | 14.72167 | 2.175905E-02 | | 0.9975446 | CCC (20) | |
| 4-Nitrophenol | 0.2799278 | 14.38638 | 15.03017 | 3.495018E-02 | | | CCC (20) | |
| 2,4-Dinitrotoluene | 0.4166126 | 9.395741 | 15.01667 | 3.320153E-02 | | | CCC (20) | |
| Dibenzofuran | 1.539374 | 3.320853 | 14.92967 | 1.889368E-02 | | | CCC (20) | |
| 2,3,4,6-Tetrachlorophenol | 0.3513239 | 13.55517 | 15.25683 | 0.0167449 | | | CCC (20) | |
| Diethylphthalate | 1.58259 | 5.414426 | 15.64717 | 4.180689E-02 | | | CCC (20) | |
| 4-Chlorophenyl-phenylether | 0.6389545 | 3.94476 | 15.73367 | 1.482606E-02 | | | CCC (20) | |
| Fluorene | 1.255367 | 4.492723 | 15.62983 | 0.0256874 | | | CCC (20) | |
| 4-Nitroaniline | 0.3315279 | 6.877637 | 15.74083 | 5.735518E-02 | | | CCC (20) | |
| 4,6-Dinitro-2-methylphenol | 0.1160771 | 25.28677 | 15.824 | 2.399668E-02 | | 0.9991502 | CCC (20) | |
| N-Nitrosodiphenylamine (1) | 0.5580219 | 4.257101 | 15.976 | 3.189377E-02 | | | CCC (20) | |
| 4-Bromophenyl-phenylether | 0.218544 | 4.292846 | 16.63683 | 2.235112E-02 | | | CCC (20) | |
| Hexachlorobenzene | 0.2837371 | 1.973911 | 16.6845 | 2.622705E-02 | | | CCC (20) | |
| Pentachlorophenol | 0.1413847 | 25.39377 | 17.07483 | 2.601698E-02 | 0.9950853 | | CCC (20) | |
| Phenanthrene | 0.9565789 | 2.371216 | 17.37617 | 2.370228E-02 | | | CCC (20) | |
| Anthracene | 0.9691813 | 2.210386 | 17.46483 | 2.540554E-02 | | | CCC (20) | |
| Di-n-butylphthalate | 1.363617 | 6.86752 | 18.58967 | 2.157461E-02 | | | CCC (20) | |
| Fluoranthene | 0.9954005 | 4.809813 | 19.37667 | 1.594118E-02 | | | CCC (20) | |
| Pyrene | 1.015471 | 1.945768 | 19.7225 | 9.091499E-03 | | | CCC (20) | |

# INITIAL CALIBRATION DATA (Continued)

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Butylbenzylphthalate | 0.5471753 | 12.56025 | 20.9885 | 1.178024E-02 | | | CCC (20) | |
| 3,3'-Dichlorobenzidine | 0.3900327 | 10.97322 | 21.716 | 9.003639E-03 | | | CCC (20) | |
| bis(2-ethylhexyl)Phthalate | 0.7961563 | 11.51027 | 21.99367 | 1.727018E-02 | | | CCC (20) | |
| Benzo (a) anthracene | 0.9937012 | 5.395663 | 21.675 | 1.792479E-02 | | | CCC (20) | |
| Chrysene | 0.9510609 | 3.282197 | 21.72617 | 1.227614E-02 | | | CCC (20) | |
| Di-n-octylphthalate | 1.836318 | 18.79442 | 22.96983 | 2.138425E-02 | 0.996172 | | CCC (20) | |
| Benzo (b) fluoranthene | 1.441023 | 3.990481 | 23.27 | 1.239509E-02 | | | CCC (20) | |
| Benzo(k)fluoranthene | 1.567172 | 4.629259 | 23.3075 | 1.971719E-02 | | | CCC (20) | |
| Benzo (a) pyrene | 1.358506 | 5.848422 | 23.6975 | 0.0108883 | | | CCC (20) | |
| Indeno(1,2,3-cd)pyrene | 1.241568 | 8.857479 | 25.1015 | 1.701162E-02 | | | CCC (20) | |
| Dibenzo(a,h)anthracene | 1.308735 | 6.852387 | 25.14767 | 1.781981E-02 | | | CCC (20) | |
| Benzo (g,h,i) perylene | 1.430971 | 4.552075 | 25.427 | 0.0264349 | | | CCC (20) | |
| 1,3-Dinitrobenzene | 8.693171E-02 | 11.53548 | 14.0385 | 2.296505E-02 | | | CCC (20) | |
| Aniline | 1.806591 | 5.705727 | 6.92 | 9.311435E-02 | | | CCC (20) | |
| Benzyl alcohol | 0.7662929 | 6.573278 | 8.008833 | 2.941709E-02 | | | CCC (20) | |
| 2-Fluorophenol | 1.107156 | 5.632986 | 4.9625 | 0.1426166 | | | CCC (20) | |
| Phenol-d5 | 1.346961 | 5.730769 | 7.046167 | 4.705705E-02 | | | CCC (20) | |
| Nitrobenzene-d5 | 0.3635564 | 5.696206 | 8.835167 | 4.219197E-02 | | | CCC (20) | |
| 2-Fluorobiphenyl | 1.263542 | 2.267339 | 13.047 | 3.035135E-02 | | | CCC (20) | |
| 2,4,6-Tribromophenol | 0.2681629 | 12.50803 | 16.1035 | 2.098516E-02 | | | CCC (20) | |
| Terphenyl-d14 | 0.7239863 | 4.944976 | 20.10933 | 1.637711E-02 | | | CCC (20) | |

# INITIAL CALIBRATION DATA

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051205 Instrument: 5972hp70

Calibration Date: 5/9/2014 8:43:39AM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| 2-Picoline | 5 | 1.380498 | 10 | 1.58963 | 25 | 1.560442 | 40 | 1.564082 | 50 | 1.666962 | 60 | 1.650752 |
| N-Nitrosomethylethylamine | 5 | 0.6346431 | 10 | 0.7686712 | 25 | 0.7900824 | 40 | 0.753059 | 50 | 0.8156268 | 60 | 0.7761091 |
| Methyl Methanesulfonate | 5 | 1.090039 | 10 | 1.1252 | 25 | 1.132683 | 40 | 1.122431 | 50 | 1.145501 | 60 | 1.12189 |
| N-Nitrosodiethylamine | 5 | 0.630687 | 10 | 0.7458691 | 25 | 0.7485068 | 40 | 0.6951664 | 50 | 0.7332375 | 60 | 0.7354278 |
| Ethyl Methanesulfonate | 5 | 1.433246 | 10 | 1.484852 | 25 | 1.573508 | 40 | 1.498217 | 50 | 1.554041 | 60 | 1.511906 |
| N-Nitrosopyrrolidine | 5 | 0.6873428 | 10 | 0.7663252 | 25 | 0.8402309 | 40 | 0.7880872 | 50 | 0.8488717 | 60 | 0.8817634 |
| N-Nitrosomorpholine | 5 | 0.284256 | 10 | 0.3022161 | 25 | 0.3034572 | 40 | 0.3135586 | 50 | 0.3067625 | 60 | 0.3159752 |
| o-Toluidine | 5 | 2.187892 | 10 | 2.102061 | 25 | 2.235558 | 40 | 2.138042 | 50 | 2.277684 | 60 | 2.157024 |
| N-Nitrosopiperidine | 5 | 0.1291764 | 10 | 0.179239 | 25 | 0.1927617 | 40 | 0.1933312 | 50 | 0.1850988 | 60 | 0.197152 |
| o,o,o-Triethyl phosphorothioate | 5 | 0.1258087 | 10 | 0.1360025 | 25 | 0.1408266 | 40 | 0.1386486 | 50 | 0.1341781 | 60 | 0.1413896 |
| 2,6-Dichlorophenol | 5 | 0.244882 | 10 | 0.2691885 | 25 | 0.2983953 | 40 | 0.2947753 | 50 | 0.2876707 | 60 | 0.3018306 |
| Hexachloropropene | 5 | 0.161573 | 10 | 0.1892109 | 25 | 0.1945221 | 40 | 0.2025184 | 50 | 0.1971097 | 60 | 0.2040135 |
| N-Nitroso-di-n-butylamine | 5 | 0.2873945 | 10 | 0.2604268 | 25 | 0.2939214 | 40 | 0.2974816 | 50 | 0.2743055 | 60 | 0.2800948 |
| Safrole | 5 | 0.2311167 | 10 | 0.2385643 | 25 | 0.2466433 | 40 | 0.2431171 | 50 | 0.2553264 | 60 | 0.2430046 |
| Isosafrole | 5 | 6.442032E-02 | 10 | 7.995357E-02 | 25 | 0.079908 | 40 | 8.112181E-02 | 50 | 8.234099E-02 | 60 | 7.656186E-02 |
| 1,4-Naphthoquinone | 5 | 0.3132152 | 10 | 0.3957939 | 25 | 0.4222222 | 40 | 0.4045361 | 50 | 0.4338847 | 60 | 0.3808164 |
| Pentachlorobenzene | 5 | 0.4523801 | 10 | 0.4736461 | 25 | 0.4974411 | 40 | 0.4905726 | 50 | 0.5084638 | 60 | 0.4882651 |
| 1-Naphthylamine | 5 | 1.077137 | 10 | 1.180823 | 25 | 1.223529 | 40 | 1.222224 | 50 | 1.277827 | 60 | 1.244403 |
| 2-Naphthylamine | 5 | 1.03452 | 10 | 1.185501 | 25 | 1.248234 | 40 | 1.223888 | 50 | 1.309152 | 60 | 1.259935 |
| Zinophos | 5 | 0.3350658 | 10 | 0.365519 | 25 | 0.4203612 | 40 | 0.3839372 | 50 | 0.4176618 | 60 | 0.404914 |
| 5-Nitro-o-toluidine | 5 | 0.1222171 | 10 | 0.1725323 | 25 | 0.240759 | 40 | 0.2563452 | 50 | 0.2733984 | 60 | 0.2965431 |
| Sulfotep | 5 | 0.1186343 | 10 | 0.1432318 | 25 | 0.1600669 | 40 | 0.1612269 | 50 | 0.165147 | 60 | 0.1580181 |
| 1,3,5-Trinitrobenzene | 5 | 1.205625E-02 | 10 | 2.119398E-02 | 25 | 2.468669E-02 | 40 | 2.760434E-02 | 50 | 2.796505E-02 | 60 | 3.322802E-02 |
| Phorate | 5 | 0.1455715 | 10 | 0.1610883 | 25 | 0.1595719 | 40 | 0.1721969 | 50 | 0.1658414 | 60 | 0.1573367 |
| Phenacetin | 5 | 0.3088718 | 10 | 0.4097485 | 25 | 0.4312936 | 40 | 0.4580942 | 50 | 0.4567019 | 60 | 0.4752792 |

Environmental Testing Laboratories

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# INITIAL CALIBRATION DATA

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051205 Instrument: 5972hp70

Calibration Date: 5/9/2014 8:43:39AM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| Dimethoate | 5 | 0.3122104 | 10 | 0.3765812 | 25 | 0.3991745 | 40 | 0.3976848 | 50 | 0.4263262 | 60 | 0.4127038 |
| 4-Aminobiphenyl | 5 | 0.7460189 | 10 | 0.803711 | 25 | 0.8192114 | 40 | 0.8398002 | 50 | 0.8472263 | 60 | 0.8072495 |
| Pentachloronitrobenzene | 5 | 0.0493997 | 10 | 6.629676E-02 | 25 | 7.493359E-02 | 40 | 8.004291E-02 | 50 | 8.228446E-02 | 60 | 8.423836E-02 |
| Pronamide | 5 | 0.2944197 | 10 | 0.348811 | 25 | 0.36131 | 40 | 0.3807818 | 50 | 0.3736695 | 60 | 0.3881077 |
| Disulfoton | 5 | 0.4781693 | 10 | 0.5037396 | 25 | 0.4981644 | 40 | 0.5066056 | 50 | 0.5090767 | 60 | 0.5036064 |
| Methyl Parathion | 5 | 9.716099E-02 | 10 | 0.141706 | 25 | 0.1770634 | 40 | 0.1999202 | 50 | 0.2149515 | 60 | 0.2365714 |
| Parathion | 5 | 6.348078E-02 | 10 | 0.104553 | 25 | 0.1266664 | 40 | 0.1452789 | 50 | 0.1576709 | 60 | 0.1598351 |
| 4-Nitroquinoline-1-oxide | 5 | 3.270643E-02 | 10 | 4.555705E-02 | 25 | 5.857986E-02 | 40 | 6.570184E-02 | 50 | 6.815019E-02 | 60 | 8.354725E-02 |
| Methapyrilene | 5 | 0.3101547 | 10 | 0.4629795 | 25 | 0.4468249 | 40 | 0.4534312 | 50 | 0.4614906 | 60 | 0.4372449 |
| Isodrin | 5 | 0.129141 | 10 | 0.1350704 | 25 | 0.1389287 | 40 | 0.1391416 | 50 | 0.1440916 | 60 | 0.1414851 |
| p-Dimethylaminoazobenzene | 5 | 0.140235 | 10 | 0.1805525 | 25 | 0.1892325 | 40 | 0.2097922 | 50 | 0.1965873 | 60 | 0.2060726 |
| Chlorobenzilate | 5 | 0.2095845 | 10 | 0.2496615 | 25 | 0.2777829 | 40 | 0.2852768 | 50 | 0.2831727 | 60 | 0.295422 |
| 3,3'-Dimethylbenzidine | 5 | 0.4567238 | 10 | 0.5692972 | 25 | 0.4925195 | 40 | 0.4544812 | 50 | 0.4170999 | 60 | 0.3765965 |
| 2-Acetylaminofluorene | 5 | 0.2046694 | 10 | 0.3448067 | 25 | 0.383601 | 40 | 0.4481559 | 50 | 0.4422852 | 60 | 0.4586398 |
| 7,12-Dimethylbenz(a)anthracene | 5 | 0.5751163 | 10 | 0.6446283 | 25 | 0.6936295 | 40 | 0.7377857 | 50 | 0.7483131 | 60 | 0.7239447 |
| 3-Methylcholanthrene | 5 | 0.618678 | 10 | 0.6985929 | 25 | 0.7494381 | 40 | 0.7939815 | 50 | 0.8141694 | 60 | 0.8046134 |
| Diallate | 5 | 0.4530367 | 10 | 0.4459334 | 25 | 0.4187221 | 40 | 0.446278 | 50 | 0.4338204 | 60 | 0.4088602 |
| a,a-Dimethylphenethylamine | 5 | 0.8731573 | 10 | 1.120422 | 25 | 1.308311 | 40 | 1.28277 | 50 | 1.257121 | 60 | 1.340781 |
| Aramite | 5 | 0.0516243 | 10 | 6.653272E-02 | 25 | 6.778198E-02 | 40 | 7.858796E-02 | 50 | 7.553935E-02 | 60 | 8.141934E-02 |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051205 Instrument: 5972hp70

Calibration Date: 5/9/2014 8:43:39AM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| 2-Picoline | 1.568728 | 6.52177 | 4.582 | 1.134875 | | | CCC (20) | |
| N-Nitrosomethylethylamine | 0.7563653 | 8.365382 | 4.773 | 0.3728654 | | | CCC (20) | |
| Methyl Methanesulfonate | 1.122957 | 1.638604 | 5.329167 | 0.2931336 | | | CCC (20) | |
| N-Nitrosodiethylamine | 0.7148158 | 6.357918 | 6.056167 | 0.2576375 | | | CCC (20) | |
| Ethyl Methanesulfonate | 1.509295 | 3.33081 | 6.7265 | 0.3600412 | | | CCC (20) | |
| N-Nitrosopyrrolidine | 0.8021035 | 8.750755 | 9.035333 | 0.2269979 | | | CCC (20) | |
| N-Nitrosomorpholine | 0.3043709 | 3.702189 | 9.127333 | 0.1512921 | | | CCC (20) | |
| o-Toluidine | 2.183043 | 2.968552 | 9.1565 | 0.1023371 | | | CCC (20) | |
| N-Nitrosopiperidine | 0.1794598 | 14.19048 | 9.7655 | 0.1477175 | | | CCC (20) | |
| o,o,o-Triethyl phosphorothioate | 0.1361423 | 4.23766 | 10.60317 | 0.2290582 | | | CCC (20) | |
| 2,6-Dichlorophenol | 0.2827904 | 7.74022 | 11.23967 | 7.651111E-02 | | | CCC (20) | |
| Hexachloropropene | 0.1914913 | 8.155475 | 11.2535 | 5.369585E-02 | | | CCC (20) | |
| N-Nitroso-di-n-butylamine | 0.2822708 | 4.854141 | 12.15417 | 0.132349 | | | CCC (20) | |
| Safrole | 0.2429621 | 3.323977 | 12.552 | 9.748338E-02 | | | CCC (20) | |
| Isosafrole | 7.738443E-02 | 8.57667 | 13.2465 | 6.434824E-02 | | | CCC (20) | |
| 1,4-Naphthoquinone | 0.3917448 | 10.9325 | 14.20683 | 5.761467E-02 | | | CCC (20) | |
| Pentachlorobenzene | 0.4851281 | 4.060219 | 15.39983 | 3.863411E-02 | | | CCC (20) | |
| 1-Naphthylamine | 1.204324 | 5.803744 | 15.63167 | 2.634177E-02 | | | CCC (20) | |
| 2-Naphthylamine | 1.210205 | 7.871399 | 15.80217 | 3.183788E-02 | | | CCC (20) | |
| Zinophos | 0.3879098 | 8.578724 | 16.26983 | 3.701308E-02 | | | CCC (20) | |
| 5-Nitro-o-toluidine | 0.2269659 | 29.21624 | 16.23917 | 3.684138E-02 | 0.9940981 | | CCC (20) | |
| Sulfotep | 0.1510542 | 11.63359 | 16.93167 | 5.223764E-02 | | | CCC (20) | |
| 1,3,5-Trinitrobenzene | 2.445572E-02 | 29.69102 | 17.03783 | 3.143673E-02 | | 0.9982417 | CCC (20) | |
| Phorate | 0.1602678 | 5.574527 | 17.0685 | 3.306734E-02 | | | CCC (20) | |
| Phenacetin | 0.4233315 | 14.31803 | 17.14667 | 3.846355E-02 | | | CCC (20) | |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051205 Instrument: 5972hp70

Calibration Date: 5/9/2014 8:43:39AM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Dimethoate | 0.3874468 | 10.43341 | 17.34483 | 3.340375E-02 | | | CCC (20) | |
| 4-Aminobiphenyl | 0.8105362 | 4.447568 | 17.60583 | 2.257895E-02 | | | CCC (20) | |
| Pentachloronitrobenzene | 7.286596E-02 | 18.07843 | 17.60583 | 2.257895E-02 | | | CCC (20) | |
| Pronamide | 0.35785 | 9.524774 | 17.82083 | 1.393302E-02 | | | CCC (20) | |
| Disulfoton | 0.4998937 | 2.250561 | 18.00317 | 2.577631E-02 | | | CCC (20) | |
| Methyl Parathion | 0.1778956 | 28.80543 | 18.63317 | 1.544065E-02 | | 0.9999918 | CCC (20) | |
| Parathion | 0.1262475 | 29.39993 | 19.32083 | 0.0240169 | 0.9962752 | | CCC (20) | |
| 4-Nitroquinoline-1-oxide | 5.904044E-02 | 30.33136 | 19.24383 | 1.797985E-02 | | 0.9988768 | CCC (20) | |
| Methapyrilene | 0.4286876 | 13.72788 | 19.49817 | 2.482587E-02 | | | CCC (20) | |
| Isodrin | 0.1379764 | 3.814221 | 19.65867 | 3.204061E-02 | | | CCC (20) | |
| p-Dimethylaminoazobenzene | 0.1870787 | 13.54103 | 20.87183 | 1.507492E-02 | | | CCC (20) | |
| Chlorobenzilate | 0.2668167 | 11.98932 | 20.99133 | 2.627376E-02 | | | CCC (20) | |
| 3,3'-Dimethylbenzidine | 0.4611197 | 14.3306 | 21.42483 | 8.970481E-03 | | | CCC (20) | |
| 2-Acetylaminofluorene | 0.3803597 | 25.40862 | 21.8205 | 2.191056E-02 | 0.9981205 | | CCC (20) | |
| 7,12-Dimethylbenz(a)anthracene | 0.6872363 | 9.665291 | 23.87467 | 7.931604E-03 | | | CCC (20) | |
| 3-Methylcholanthrene | 0.7465789 | 10.17501 | 24.80117 | 7.403023E-03 | | | CCC (20) | |
| Diallate | 0.4344418 | 4.013105 | 17.22183 | 3.007812E-02 | | | CCC (20) | |
| a,a-Dimethylphenethylamine | 1.197094 | 14.69716 | 10.95983 | 0.3330507 | | | CCC (20) | |
| Aramite | 7.024761E-02 | 15.45148 | 20.82417 | 0.0112296 | | | CCC (20) | |

# INITIAL CALIBRATION DATA

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051401 Instrument: 5972hp70

Calibration Date: 5/13/2014 5:07:18PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| p-Phenylenediamine | 5 | 0.4465918 | 10 | 0.7600158 | 25 | 0.869761 | 40 | 0.9239291 | 60 | 1.03044 | 80 | 1.070505 |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051401 Instrument: 5972hp70

Calibration Date: 5/13/2014 5:07:18PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| p-Phenylenediamine | 0.8502071 | 26.71114 | 12.059 | 0.1439255 | 0.9971688 | | CCC (20) | |

# INITIAL CALIBRATION DATA

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051502 Instrument: 5972hp60

Calibration Date: 5/13/2014 10:46:42AM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| 2-Picoline | 5 | 1.32228 | 10 | 1.631273 | 25 | 1.49615 | 40 | 1.501184 | 50 | 1.57337 | 60 | 1.544029 |
| N-Nitrosomethylethylamine | 5 | 0.665405 | 10 | 0.6800244 | 25 | 0.6520771 | 40 | 0.6829145 | 50 | 0.7068415 | 60 | 0.6983304 |
| Methyl Methanesulfonate | 5 | 1.0972 | 10 | 1.179141 | 25 | 1.16661 | 40 | 1.194463 | 50 | 1.236376 | 60 | 1.177219 |
| N-Nitrosodiethylamine | 5 | 0.5390838 | 10 | 0.6380177 | 25 | 0.6297409 | 40 | 0.6701095 | 50 | 0.6666047 | 60 | 0.6374883 |
| Ethyl Methanesulfonate | 5 | 1.334862 | 10 | 1.38919 | 25 | 1.359613 | 40 | 1.449145 | 50 | 1.463687 | 60 | 1.477676 |
| N-Nitrosopyrrolidine | 5 | 0.56454 | 10 | 0.6205238 | 25 | 0.6557517 | 40 | 0.692268 | 50 | 0.7343563 | 60 | 0.671961 |
| N-Nitrosomorpholine | 5 | 0.2091669 | 10 | 0.2448691 | 25 | 0.2498472 | 40 | 0.2921533 | 50 | 0.2657491 | 60 | 0.2594938 |
| o-Toluidine | 5 | 1.719636 | 10 | 1.831319 | 25 | 1.80393 | 40 | 1.982508 | 50 | 2.005291 | 60 | 1.883921 |
| N-Nitrosopiperidine | 5 | 0.1524708 | 10 | 0.1557626 | 25 | 0.1858034 | 40 | 0.1880801 | 50 | 0.1677394 | 60 | 0.1829138 |
| o,o,o-Triethyl phosphorothioate | 5 | 0.1135469 | 10 | 0.1101682 | 25 | 0.1379006 | 40 | 0.1212703 | 50 | 0.120712 | 60 | 0.1278588 |
| 2,6-Dichlorophenol | 5 | 0.248406 | 10 | 0.2869744 | 25 | 0.2939883 | 40 | 0.2882941 | 50 | 0.2814165 | 60 | 0.301202 |
| Hexachloropropene | 5 | 0.1927398 | 10 | 0.2237562 | 25 | 0.2292488 | 40 | 0.2224188 | 50 | 0.2249901 | 60 | 0.2406577 |
| N-Nitroso-di-n-butylamine | 5 | 0.2157316 | 10 | 0.2360098 | 25 | 0.2578785 | 40 | 0.2488965 | 50 | 0.2520674 | 60 | 0.2630727 |
| Safrole | 5 | 3.297912E-02 | 10 | 3.693119E-02 | 25 | 4.137552E-02 | 40 | 4.083575E-02 | 50 | 3.859173E-02 | 60 | 4.311366E-02 |
| Isosafrole | 5 | 1.400112 | 10 | 1.638768 | 25 | 1.497012 | 40 | 1.524327 | 50 | 1.584715 | 60 | 1.563001 |
| 1,4-Naphthoquinone | 5 | 0.3095525 | 10 | 0.4175645 | 25 | 0.4391592 | 40 | 0.4838958 | 50 | 0.4625834 | 60 | 0.4275533 |
| Pentachlorobenzene | 5 | 0.4740234 | 10 | 0.538449 | 25 | 0.4858234 | 40 | 0.5123275 | 50 | 0.516338 | 60 | 0.5021652 |
| 1-Naphthylamine | 5 | 0.9473865 | 10 | 1.15242 | 25 | 1.150066 | 40 | 1.32873 | 50 | 1.342392 | 60 | 1.304572 |
| 2-Naphthylamine | 5 | 1.044189 | 10 | 1.214313 | 25 | 1.205613 | 40 | 1.388499 | 50 | 1.456252 | 60 | 1.388574 |
| Zinophos | 5 | 0.2950142 | 10 | 0.3783065 | 25 | 0.3909839 | 40 | 0.444744 | 50 | 0.4712637 | 60 | 0.4375493 |
| 5-Nitro-o-toluidine | 5 | 0.2223083 | 10 | 0.2919306 | 25 | 0.3420885 | 40 | 0.4103501 | 50 | 0.4598902 | 60 | 0.4228369 |
| Sulfotep | 5 | 8.473263E-02 | 10 | 0.117774 | 25 | 0.1174161 | 40 | 0.1280946 | 50 | 0.1579376 | 60 | 0.1232951 |
| 1,3,5-Trinitrobenzene | 5 | 3.768069E-02 | 10 | 0.0545438 | 25 | 7.506208E-02 | 40 | 8.958305E-02 | 50 | 8.460284E-02 | 60 | 8.996728E-02 |
| Phorate | 5 | 0.11657 | 10 | 0.1417412 | 25 | 0.1486596 | 40 | 0.1575493 | 50 | 0.1607944 | 60 | 0.1550838 |
| Phenacetin | 5 | 0.2572345 | 10 | 0.3472793 | 25 | 0.4176886 | 40 | 0.4347753 | 50 | 0.4394978 | 60 | 0.4523991 |

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# INITIAL CALIBRATION DATA

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051502 Instrument: 5972hp60

Calibration Date: 5/13/2014 10:46:42AM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| Dimethoate | 5 | 0.2772342 | 10 | 0.3176864 | 25 | 0.3795013 | 40 | 0.367779 | 50 | 0.3713315 | 60 | 0.3786848 |
| 4-Aminobiphenyl | 5 | 0.634325 | 10 | 0.6663477 | 25 | 0.7889116 | 40 | 0.7920297 | 50 | 0.7822102 | 60 | 0.7713032 |
| Pentachloronitrobenzene | 5 | 7.734634E-02 | 10 | 8.337043E-02 | 25 | 0.1015664 | 40 | 0.1061878 | 50 | 0.1119575 | 60 | 0.1046641 |
| Pronamide | 5 | 0.2695946 | 10 | 0.3328262 | 25 | 0.3845577 | 40 | 0.4150576 | 50 | 0.3972343 | 60 | 0.4068186 |
| Disulfoton | 5 | 0.3627371 | 10 | 0.4360581 | 25 | 0.4812196 | 40 | 0.475203 | 50 | 0.5128085 | 60 | 0.4793611 |
| Methyl Parathion | 5 | 0.1765772 | 10 | 0.2264139 | 25 | 0.3124445 | 40 | 0.3245944 | 50 | 0.3282257 | 60 | 0.315837 |
| Parathion | 5 | 0.1196058 | 10 | 0.1487353 | 25 | 0.2067929 | 40 | 0.2106782 | 50 | 0.2090084 | 60 | 0.2117841 |
| 4-Nitroquinoline-1-oxide | 5 | 4.849784E-02 | 10 | 5.686482E-02 | 25 | 8.763702E-02 | 40 | 9.810756E-02 | 50 | 0.105903 | 60 | 0.1006014 |
| Methapyrilene | 5 | 0.3055989 | 10 | 0.3414237 | 25 | 0.3583794 | 40 | 0.3460724 | 50 | 0.3652122 | 60 | 0.3632435 |
| Isodrin | 5 | 0.1215407 | 10 | 0.1350351 | 25 | 0.1538702 | 40 | 0.1463673 | 50 | 0.1578126 | 60 | 0.1460928 |
| p-Dimethylaminoazobenzene | 5 | 0.1257827 | 10 | 0.1553784 | 25 | 0.1908639 | 40 | 0.2032692 | 50 | 0.191434 | 60 | 0.2032951 |
| Chlorobenzilate | 5 | 0.2247551 | 10 | 0.2588614 | 25 | 0.2776657 | 40 | 0.3122034 | 50 | 0.2961119 | 60 | 0.2949254 |
| 3,3'-Dimethylbenzidine | 5 | 0.3606852 | 10 | 0.3961509 | 25 | 0.3734817 | 40 | 0.3674915 | 50 | 0.296819 | 60 | 0.2429182 |
| 2-Acetylaminofluorene | 5 | 0.2021105 | 10 | 0.2585175 | 25 | 0.3622025 | 40 | 0.4295859 | 50 | 0.4319463 | 60 | 0.4162444 |
| 7,12-Dimethylbenz(a)anthracene | 5 | 0.4846544 | 10 | 0.5892338 | 25 | 0.6367699 | 40 | 0.704942 | 50 | 0.7263367 | 60 | 0.6906881 |
| 3-Methylcholanthrene | 5 | 0.4770096 | 10 | 0.578432 | 25 | 0.7143895 | 40 | 0.7548479 | 50 | 0.7763707 | 60 | 0.7799452 |
| Diallate | 5 | 0.3602017 | 10 | 0.3974159 | 25 | 0.3869251 | 40 | 0.4191082 | 50 | 0.398468 | 60 | 0.3955809 |
| a,a-Dimethylphenethylamine | 5 | 0.6227391 | 10 | 0.5573745 | 25 | 0.654204 | 40 | 0.7054014 | 50 | 0.7503652 | 60 | 0.7495897 |
| Aramite | 5 | 4.312628E-02 | 10 | 5.182407E-02 | 25 | 7.669788E-02 | 40 | 8.100557E-02 | 50 | 7.355257E-02 | 60 | 7.553872E-02 |

# INITIAL CALIBRATION DATA (Continued)

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051502 Instrument: 5972hp60

Calibration Date: 5/13/2014 10:46:42AM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| 2-Picoline | 1.511381 | 6.963208 | 3.5745 | 0.310089 | | | CCC (20) | |
| N-Nitrosomethylethylamine | 0.6809321 | 2.975417 | 3.8625 | 0.2377549 | | | CCC (20) | |
| Methyl Methanesulfonate | 1.175168 | 3.860474 | 4.493167 | 0.1767614 | | | CCC (20) | |
| N-Nitrosodiethylamine | 0.6301742 | 7.555445 | 5.299833 | 0.1211282 | | | CCC (20) | |
| Ethyl Methanesulfonate | 1.412362 | 4.198225 | 6.024833 | 0.1177991 | | | CCC (20) | |
| N-Nitrosopyrrolidine | 0.6565668 | 8.967123 | 8.420333 | 2.615001E-02 | | | CCC (20) | |
| N-Nitrosomorpholine | 0.2535466 | 10.77713 | 8.544833 | 5.575366E-02 | | | CCC (20) | |
| o-Toluidine | 1.871101 | 5.835927 | 8.575167 | 3.609037E-02 | | | CCC (20) | |
| N-Nitrosopiperidine | 0.1721283 | 9.116889 | 9.163667 | 4.953927E-02 | | | CCC (20) | |
| o,o,o-Triethyl phosphorothioate | 0.1219095 | 8.208898 | 10.03483 | 0.0384911 | | | CCC (20) | |
| 2,6-Dichlorophenol | 0.2833802 | 6.495838 | 10.66567 | 3.878255E-02 | | | CCC (20) | |
| Hexachloropropene | 0.2223019 | 7.164942 | 10.683 | 2.551709E-02 | | | CCC (20) | |
| N-Nitroso-di-n-butylamine | 0.2456094 | 7.035218 | 11.56967 | 3.222425E-02 | | | CCC (20) | |
| Safrole | 3.897116E-02 | 9.366989 | 12.66067 | 3.653218E-02 | | | CCC (20) | |
| Isosafrole | 1.534656 | 5.355463 | 13.1825 | 2.877831E-02 | | | CCC (20) | |
| 1,4-Naphthoquinone | 0.4233848 | 14.34989 | 13.5815 | 3.349851E-02 | | | CCC (20) | |
| Pentachlorobenzene | 0.5048544 | 4.548235 | 14.81783 | 0.022016 | | | CCC (20) | |
| 1-Naphthylamine | 1.204261 | 12.66135 | 15.0495 | 1.024608E-02 | | | CCC (20) | |
| 2-Naphthylamine | 1.282907 | 12.07713 | 15.22517 | 2.081086E-02 | | | CCC (20) | |
| Zinophos | 0.4029769 | 15.699 | 15.72467 | 1.048825E-02 | | | CCC (20) | |
| 5-Nitro-o-toluidine | 0.3582341 | 25.07861 | 15.67183 | 2.554867E-02 | 0.9904737 | | CCC (20) | |
| Sulfotep | 0.1215417 | 19.31934 | 16.402 | 8.827652E-03 | | | CCC (20) | |
| 1,3,5-Trinitrobenzene | 7.190662E-02 | 29.71449 | 16.49217 | 2.620629E-02 | 0.9965817 | | CCC (20) | |
| Phorate | 0.1467331 | 11.08532 | 16.53833 | 0.0275622 | | | CCC (20) | |
| Phenacetin | 0.3914791 | 19.3036 | 16.60967 | 0.0366079 | | | CCC (20) | |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051502 Instrument: 5972hp60

Calibration Date: 5/13/2014 10:46:42AM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Dimethoate | 0.3487029 | 12.02633 | 16.79383 | 3.932088E-02 | | | CCC (20) | |
| 4-Aminobiphenyl | 0.7391879 | 9.45998 | 17.05983 | 3.161438E-02 | | | CCC (20) | |
| Pentachloronitrobenzene | 9.751543E-02 | 14.19591 | 17.0545 | 1.930668E-02 | | | CCC (20) | |
| Pronamide | 0.3676815 | 15.27438 | 17.29883 | 1.743268E-02 | | | CCC (20) | |
| Disulfoton | 0.4578979 | 11.49474 | 17.476 | 2.209448E-02 | | | CCC (20) | |
| Methyl Parathion | 0.2806821 | 22.65431 | 18.08817 | 1.141832E-02 | 0.9979477 | | CCC (20) | |
| Parathion | 0.1844341 | 21.71194 | 18.77517 | 1.192586E-02 | 0.9992784 | | CCC (20) | |
| 4-Nitroquinoline-1-oxide | 8.293527E-02 | 29.3251 | 18.678 | 2.778564E-02 | 0.9962041 | | CCC (20) | |
| Methapyrilene | 0.346655 | 6.412004 | 18.9525 | 2.266333E-02 | | | CCC (20) | |
| Isodrin | 0.1434531 | 9.254217 | 19.09733 | 2.511485E-02 | | | CCC (20) | |
| p-Dimethylaminoazobenzene | 0.1783372 | 17.48565 | 20.2995 | 1.091355E-02 | | | CCC (20) | |
| Chlorobenzilate | 0.2774205 | 11.38036 | 20.42567 | 1.532027E-02 | | | CCC (20) | |
| 3,3'-Dimethylbenzidine | 0.3395911 | 17.0418 | 20.83317 | 1.776637E-02 | | | CCC (20) | |
| 2-Acetylaminofluorene | 0.3501012 | 27.93549 | 21.21517 | 2.016362E-02 | 0.9964313 | | CCC (20) | |
| 7,12-Dimethylbenz(a)anthracene | 0.6387708 | 14.16789 | 23.22367 | 1.746763E-02 | | | CCC (20) | |
| 3-Methylcholanthrene | 0.6801658 | 18.31392 | 24.12233 | 8.444833E-03 | | | CCC (20) | |
| Diallate | 0.39295 | 4.895532 | 16.6865 | 0.0217734 | | | CCC (20) | |
| a,a-Dimethylphenethylamine | 0.673279 | 11.34059 | 10.27183 | 1.253821 | | | CCC (20) | |
| Aramite | 6.695752E-02 | 23.19764 | 20.26733 | 1.937371E-02 | 0.9938223 | | CCC (20) | |

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# INITIAL CALIBRATION DATA

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051506 Instrument: 5972hp60

Calibration Date: 5/13/2014 7:00:27PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| Famphur | 5 | 0.2432622 | 10 | 0.3020139 | 25 | 0.3782799 | 40 | 0.455468 | 60 | 0.4656752 | 80 | 0.49568 |
| Kepone | 5 | 9.567313E-02 | 10 | 0.1198177 | 25 | 0.1302393 | 40 | 0.1427411 | 60 | 0.1424875 | 80 | 0.1433684 |

# INITIAL CALIBRATION DATA (Continued)

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051506 Instrument: 5972hp60

Calibration Date: 5/13/2014 7:00:27PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Famphur | 0.3900632 | 25.78818 | 20.796 | 2.903769E-02 | 0.9972054 | | CCC (20) | |
| Kepone | 0.1290545 | 14.59423 | 20.7975 | 1.240869E-02 | | | CCC (20) | |

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# INITIAL CALIBRATION DATA

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051507 Instrument: 5972hp60

Calibration Date: 5/14/2014 9:54:02AM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| Hexachlorophene | 100 | 7.766194E-02 | 150 | 9.291573E-02 | 200 | 0.1120882 | 250 | 0.1387604 | 300 | 0.1499919 | 350 | 0.1653062 |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Calibration: 4051507 Instrument: 5972hp60

Calibration Date: 5/14/2014 9:54:02AM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| Hexachlorophene | 0.1227874 | 27.84818 | 23.554 | 1.660305E-02 | | 0.9965394 | CCC (20) | |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp66 Calibration: 4042307

Lab File ID: 4D23005-SCV166.d Standard ID: 3K19012

Sequence: 4D23005 Injection Date: 04/23/14

Lab Sample ID: 4D23005-SCV1 InjectionTime: 11:03

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| N-Nitrosodimethylamine | 25.00 | 27.02 | 8.1 | 30.00 |
| Pyridine | 25.00 | 24.79 | -0.8 | 30.00 |
| Phenol | 25.00 | 26.28 | 5.1 | 30.00 |
| Bis(2-chloroethyl)ether | 25.00 | 26.22 | 4.9 | 30.00 |
| 2-Chlorophenol | 25.00 | 24.98 | -0.09 | 30.00 |
| 2-Methylphenol | 25.00 | 26.05 | 4.2 | 30.00 |
| 2,2'-oxybis(1-Chloropropane) | 25.00 | 26.77 | 7.1 | 30.00 |
| N-Nitroso-di-N-propylamine | 25.00 | 26.50 | 6.0 | 30.00 |
| Acetophenone | 25.00 | 28.21 | 12.8 | 30.00 |
| Hexachloroethane | 25.00 | 25.19 | 0.8 | 30.00 |
| Nitrobenzene | 25.00 | 25.30 | 1.2 | 30.00 |
| Isophorone | 25.00 | 26.09 | 4.3 | 30.00 |
| 2-Nitrophenol | 25.00 | 25.48 | 1.9 | 30.00 |
| 2,4-Dimethylphenol | 25.00 | 26.17 | 4.7 | 30.00 |
| Bis(2-chloroethoxy)methane | 25.00 | 26.50 | 6.0 | 30.00 |
| 2,4-Dichlorophenol | 25.00 | 26.07 | 4.3 | 30.00 |
| 4-Chloroaniline | 25.00 | 25.29 | 1.2 | 30.00 |
| 4-Chloro-3-methylphenol | 25.00 | 26.75 | 7.0 | 30.00 |
| 2-Methylnaphthalene | 25.00 | 25.72 | 2.9 | 30.00 |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp66 Calibration: 4042307

Lab File ID: 4D23005-SCV166.d Standard ID: 3K19012

Sequence: 4D23005 Injection Date: 04/23/14

Lab Sample ID: 4D23005-SCV1 InjectionTime: 11:03

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Hexachlorocyclopentadiene | 25.00 | 24.94 | -0.2 | 30.00 |
| 1,2,4,5-Tetrachlorobenzene | 25.00 | 26.27 | 5.1 | 30.00 |
| 2,4,6-Trichlorophenol | 25.00 | 26.67 | 6.7 | 30.00 |
| 2,4,5-Trichlorophenol | 25.00 | 26.25 | 5.0 | 30.00 |
| 2-Chloronaphthalene | 25.00 | 25.62 | 2.5 | 30.00 |
| 2-Nitroaniline | 25.00 | 26.12 | 4.5 | 30.00 |
| Dimethylphthalate | 25.00 | 24.61 | -1.6 | 30.00 |
| 2,6-Dinitrotoluene | 25.00 | 25.01 | 0.03 | 30.00 |
| Acenaphthylene | 25.00 | 25.29 | 1.2 | 30.00 |
| 3-Nitroaniline | 25.00 | 25.33 | 1.3 | 30.00 |
| Acenaphthene | 25.00 | 26.05 | 4.2 | 30.00 |
| 2,4-Dinitrophenol | 25.00 | 24.31 | -2.8 | 30.00 |
| 4-Nitrophenol | 25.00 | 26.05 | 4.2 | 30.00 |
| 2,4-Dinitrotoluene | 25.00 | 26.39 | 5.6 | 30.00 |
| Dibenzofuran | 25.00 | 25.69 | 2.8 | 30.00 |
| 2,3,4,6-Tetrachlorophenol | 25.00 | 26.10 | 4.4 | 30.00 |
| Diethylphthalate | 25.00 | 24.75 | -1.0 | 30.00 |
| 4-Chlorophenyl-phenylether | 25.00 | 24.72 | -1.1 | 30.00 |
| Fluorene | 25.00 | 24.48 | -2.1 | 30.00 |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp66 Calibration: 4042307

Lab File ID: 4D23005-SCV166.d Standard ID: 3K19012

Sequence: 4D23005 Injection Date: 04/23/14

Lab Sample ID: 4D23005-SCV1 InjectionTime: 11:03

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 4-Nitroaniline | 25.00 | 25.68 | 2.7 | 30.00 |
| 4,6-Dinitro-2-methylphenol | 25.00 | 26.80 | 7.2 | 30.00 |
| N-Nitrosodiphenylamine (1) | 25.00 | 25.03 | 0.1 | 30.00 |
| 4-Bromophenyl-phenylether | 25.00 | 25.39 | 1.6 | 30.00 |
| Hexachlorobenzene | 25.00 | 25.30 | 1.2 | 30.00 |
| Pentachlorophenol | 25.00 | 25.64 | 2.6 | 30.00 |
| Phenanthrene | 25.00 | 25.68 | 2.7 | 30.00 |
| Anthracene | 25.00 | 24.99 | -0.05 | 30.00 |
| Di-n-butylphthalate | 25.00 | 26.67 | 6.7 | 30.00 |
| Fluoranthene | 25.00 | 26.34 | 5.3 | 30.00 |
| Pyrene | 25.00 | 26.13 | 4.5 | 30.00 |
| Butylbenzylphthalate | 25.00 | 27.62 | 10.5 | 30.00 |
| 3,3'-Dichlorobenzidine | 25.00 | 28.10 | 12.4 | 30.00 |
| bis(2-ethylhexyl)Phthalate | 25.00 | 26.33 | 5.3 | 30.00 |
| Benzo (a) anthracene | 25.00 | 26.17 | 4.7 | 30.00 |
| Chrysene | 25.00 | 27.29 | 9.1 | 30.00 |
| Di-n-octylphthalate | 25.00 | 25.35 | 1.4 | 30.00 |
| Benzo (b) fluoranthene | 25.00 | 25.21 | 0.8 | 30.00 |
| Benzo(k)fluoranthene | 25.00 | 26.83 | 7.3 | 30.00 |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp66 Calibration: 4042307

Lab File ID: 4D23005-SCV166.d Standard ID: 3K19012

Sequence: 4D23005 Injection Date: 04/23/14

Lab Sample ID: 4D23005-SCV1 InjectionTime: 11:03

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Benzo (a) pyrene | 25.00 | 26.17 | 4.7 | 30.00 |
| Indeno(1,2,3-cd)pyrene | 25.00 | 24.78 | -0.9 | 30.00 |
| Dibenzo(a,h)anthracene | 25.00 | 26.16 | 4.7 | 30.00 |
| Benzo (g,h,i) perylene | 25.00 | 25.66 | 2.6 | 30.00 |
| 1,3-Dinitrobenzene | 25.00 | 26.68 | 6.7 | 30.00 |
| Aniline | 25.00 | 26.82 | 7.3 | 30.00 |
| Benzyl alcohol | 25.00 | 27.04 | 8.2 | 30.00 |

* Values outside of QC limits

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp70 Calibration: 4051205

Lab File ID: 4E09001-SCV170.d Standard ID: 4D24049

Sequence: 4E09001 Injection Date: 05/09/14

Lab Sample ID: 4E09001-SCV1 InjectionTime: 13:58

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2-Picoline | 25.00 | 27.52 | 10.1 | 30.00 |
| N-Nitrosomethylethylamine | 25.00 | 26.39 | 5.6 | 30.00 |
| Methyl Methanesulfonate | 25.00 | 26.23 | 4.9 | 30.00 |
| N-Nitrosodiethylamine | 25.00 | 25.86 | 3.4 | 30.00 |
| Ethyl Methanesulfonate | 25.00 | 25.70 | 2.8 | 30.00 |
| N-Nitrosopyrrolidine | 25.00 | 27.18 | 8.7 | 30.00 |
| N-Nitrosomorpholine | 25.00 | 26.60 | 6.4 | 30.00 |
| o-Toluidine | 25.00 | 26.01 | 4.0 | 30.00 |
| N-Nitrosopiperidine | 25.00 | 25.28 | 1.1 | 30.00 |
| o,o,o-Triethyl phosphorothioate | 25.00 | 23.75 | -5.0 | 30.00 |
| 2,6-Dichlorophenol | 25.00 | 22.94 | -8.2 | 30.00 |
| Hexachloropropene | 25.00 | 25.37 | 1.5 | 30.00 |
| N-Nitroso-di-n-butylamine | 25.00 | 25.31 | 1.2 | 30.00 |
| Safrole | 25.00 | 25.37 | 1.5 | 30.00 |
| Isosafrole | 25.00 | 24.16 | -3.4 | 30.00 |
| 1,4-Naphthoquinone | 25.00 | 29.94 | 19.8 | 30.00 |
| Pentachlorobenzene | 25.00 | 26.47 | 5.9 | 30.00 |
| 1-Naphthylamine | 25.00 | 25.62 | 2.5 | 30.00 |
| 2-Naphthylamine | 25.00 | 26.56 | 6.2 | 30.00 |

# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp70 Calibration: 4051205

Lab File ID: 4E09001-SCV170.d Standard ID: 4D24049

Sequence: 4E09001 Injection Date: 05/09/14

Lab Sample ID: 4E09001-SCV1 InjectionTime: 13:58

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Zinophos | 25.00 | 25.08 | 0.3 | 30.00 |
| 5-Nitro-o-toluidine | 25.00 | 24.05 | -3.8 | 30.00 |
| Sulfotep | 25.00 | 26.15 | 4.6 | 30.00 |
| 1,3,5-Trinitrobenzene | 25.00 | 27.75 | 11.0 | 30.00 |
| Phorate | 25.00 | 32.79 | 31.2 * | 30.00 |
| Phenacetin | 25.00 | 27.66 | 10.6 | 30.00 |
| Dimethoate | 25.00 | 27.06 | 8.3 | 30.00 |
| 4-Aminobiphenyl | 25.00 | 25.79 | 3.2 | 30.00 |
| Pentachloronitrobenzene | 25.00 | 27.45 | 9.8 | 30.00 |
| Pronamide | 25.00 | 27.97 | 11.9 | 30.00 |
| Disulfoton | 25.00 | 25.43 | 1.7 | 30.00 |
| Methyl Parathion | 25.00 | 21.61 | -13.6 | 30.00 |
| Parathion | 25.00 | 21.97 | -12.1 | 30.00 |
| 4-Nitroquinoline-1-oxide | 25.00 | 26.61 | 6.5 | 30.00 |
| Methapyrilene | 25.00 | 28.45 | 13.8 | 30.00 |
| Isodrin | 25.00 | 26.91 | 7.6 | 30.00 |
| p-Dimethylaminoazobenzene | 25.00 | 27.45 | 9.8 | 30.00 |
| Chlorobenzilate | 25.00 | 27.00 | 8.0 | 30.00 |
| 3,3'-Dimethylbenzidine | 25.00 | 33.41 | 33.6 * | 30.00 |

# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp70 Calibration: 4051205

Lab File ID: 4E09001-SCV170.d Standard ID: 4D24049

Sequence: 4E09001 Injection Date: 05/09/14

Lab Sample ID: 4E09001-SCV1 InjectionTime: 13:58

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2-Acetylaminofluorene | 25.00 | 24.75 | -1.0 | 30.00 |
| 7,12-Dimethylbenz(a)anthracene | 25.00 | 26.59 | 6.4 | 30.00 |
| 3-Methylcholanthrene | 25.00 | 28.23 | 12.9 | 30.00 |
| Diallate | 25.00 | 32.20 | 28.8 | 30.00 |
| a,a-Dimethylphenethylamine | 25.00 | 21.82 | -12.7 | 30.00 |
| Aramite | 25.00 | 26.39 | 5.6 | 30.00 |

* Values outside of QC limits

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp70 Calibration: 4051401

Lab File ID: 4E13015-SCV170.d Standard ID: 4D24032

Sequence: 4E13015 Injection Date: 05/13/14

Lab Sample ID: 4E13015-SCV1 InjectionTime: 21:36

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| p-Phenylenediamine | 25.00 | 22.03 | -11.9 | 30.00 |

* Values outside of QC limits

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp60 Calibration: 4051502

Lab File ID: 4E13002-SCV160.d Standard ID: 4D24049

Sequence: 4E13002 Injection Date: 05/13/14

Lab Sample ID: 4E13002-SCV1 InjectionTime: 16:24

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2-Picoline | 25.00 | 27.07 | 8.3 | 30.00 |
| N-Nitrosomethylethylamine | 25.00 | 27.12 | 8.5 | 30.00 |
| Methyl Methanesulfonate | 25.00 | 25.05 | 0.2 | 30.00 |
| N-Nitrosodiethylamine | 25.00 | 26.49 | 5.9 | 30.00 |
| Ethyl Methanesulfonate | 25.00 | 26.40 | 5.6 | 30.00 |
| N-Nitrosopyrrolidine | 25.00 | 29.90 | 19.6 | 30.00 |
| N-Nitrosomorpholine | 25.00 | 30.10 | 20.4 | 30.00 |
| o-Toluidine | 25.00 | 27.04 | 8.1 | 30.00 |
| N-Nitrosopiperidine | 25.00 | 24.62 | -1.5 | 30.00 |
| o,o,o-Triethyl phosphorothioate | 25.00 | 23.31 | -6.8 | 30.00 |
| 2,6-Dichlorophenol | 25.00 | 24.07 | -3.7 | 30.00 |
| Hexachloropropene | 25.00 | 25.11 | 0.4 | 30.00 |
| N-Nitroso-di-n-butylamine | 25.00 | 24.42 | -2.3 | 30.00 |
| Safrole | 25.00 | 24.13 | -3.5 | 30.00 |
| Isosafrole | 25.00 | 27.60 | 10.4 | 30.00 |
| 1,4-Naphthoquinone | 25.00 | 28.93 | 15.7 | 30.00 |
| Pentachlorobenzene | 25.00 | 26.83 | 7.3 | 30.00 |
| 1-Naphthylamine | 25.00 | 24.59 | -1.6 | 30.00 |
| 2-Naphthylamine | 25.00 | 24.45 | -2.2 | 30.00 |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp60 Calibration: 4051502

Lab File ID: 4E13002-SCV160.d Standard ID: 4D24049

Sequence: 4E13002 Injection Date: 05/13/14

Lab Sample ID: 4E13002-SCV1 InjectionTime: 16:24

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Zinophos | 25.00 | 23.49 | -6.0 | 30.00 |
| 5-Nitro-o-toluidine | 25.00 | 24.57 | -1.7 | 30.00 |
| Sulfotep | 25.00 | 23.60 | -5.6 | 30.00 |
| 1,3,5-Trinitrobenzene | 25.00 | 25.14 | 0.6 | 30.00 |
| Phorate | 25.00 | 28.66 | 14.7 | 30.00 |
| Phenacetin | 25.00 | 26.74 | 7.0 | 30.00 |
| Dimethoate | 25.00 | 24.99 | -0.04 | 30.00 |
| 4-Aminobiphenyl | 25.00 | 24.32 | -2.7 | 30.00 |
| Pentachloronitrobenzene | 25.00 | 26.65 | 6.6 | 30.00 |
| Pronamide | 25.00 | 27.39 | 9.6 | 30.00 |
| Disulfoton | 25.00 | 23.88 | -4.5 | 30.00 |
| Methyl Parathion | 25.00 | 23.33 | -6.7 | 30.00 |
| Parathion | 25.00 | 23.39 | -6.5 | 30.00 |
| 4-Nitroquinoline-1-oxide | 25.00 | 24.37 | -2.5 | 30.00 |
| Methapyrilene | 25.00 | 28.57 | 14.3 | 30.00 |
| Isodrin | 25.00 | 27.31 | 9.3 | 30.00 |
| p-Dimethylaminoazobenzene | 25.00 | 24.76 | -1.0 | 30.00 |
| Chlorobenzilate | 25.00 | 26.74 | 7.0 | 30.00 |
| 3,3'-Dimethylbenzidine | 25.00 | 33.72 | 34.9 * | 30.00 |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D APPIX*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp60 Calibration: 4051502

Lab File ID: 4E13002-SCV160.d Standard ID: 4D24049

Sequence: 4E13002 Injection Date: 05/13/14

Lab Sample ID: 4E13002-SCV1 InjectionTime: 16:24

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2-Acetylaminofluorene | 25.00 | 24.19 | -3.3 | 30.00 |
| 7,12-Dimethylbenz(a)anthracene | 25.00 | 28.13 | 12.5 | 30.00 |
| 3-Methylcholanthrene | 25.00 | 28.35 | 13.4 | 30.00 |
| Diallate | 25.00 | 30.92 | 23.7 | 30.00 |
| a,a-Dimethylphenethylamine | 25.00 | 27.85 | 11.4 | 30.00 |
| Aramite | 25.00 | 23.58 | -5.7 | 30.00 |

* Values outside of QC limits

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp60 Calibration: 4051506

Lab File ID: 4E13014-SCV160.d Standard ID: 4C06027

Sequence: 4E13014 Injection Date: 05/14/14

Lab Sample ID: 4E13014-SCV1 InjectionTime: 04:26

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Famphur | 25.00 | 19.41 | -22.4 | 30.00 |
| Kepone | 25.00 | 22.51 | -9.9 | 30.00 |

* Values outside of QC limits

# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp60 Calibration: 4051507

Lab File ID: 4E14002-SCV160.d Standard ID: 4D24040

Sequence: 4E14002 Injection Date: 05/14/14

Lab Sample ID: 4E14002-SCV1 InjectionTime: 15:06

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| Hexachlorophene | 250.0 | 243.8 | -2.5 | 30.00 |

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4E01009-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4E01009 Injection Date: 05/01/14

Lab Sample ID: 4E01009-ICV1 Injection Time: 13:39

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| N-Nitrosodimethylamine | Avg | 25.00 | 24.00 | 1.282898 | 1.246444 | 0.05 | -2.8 | 20 |
| Pyridine | Avg | 25.00 | 25.00 | 1.207884 | 1.201177 | 0.05 | -0.6 | 20 |
| Phenol | Avg | 25.00 | 24.50 | 1.485067 | 1.463035 | 0.8 | -1.5 | 20 |
| Bis(2-chloroethyl)ether | Avg | 25.00 | 24.50 | 1.158322 | 1.133855 | 0.7 | -2.1 | 20 |
| 2-Chlorophenol | Avg | 25.00 | 25.00 | 1.290341 | 1.285986 | 0.8 | -0.3 | 20 |
| 2-Methylphenol | Avg | 25.00 | 24.50 | 1.108243 | 1.09055 | 0.7 | -1.6 | 20 |
| 2,2'-oxybis(1-Chloropropane) | Avg | 25.00 | 25.00 | 1.423177 | 1.437031 | 0.01 | 1.0 | 20 |
| 3 & 4-Methylphenol | Avg | 25.00 | 25.50 | 1.153497 | 1.17567 | 0.05 | 1.9 | 20 |
| N-Nitroso-di-N-propylamine | Avg | 25.00 | 23.00 | 0.9255537 | 0.8608131 | 0.5 | -7.0 | 20 |
| Acetophenone | Avg | 25.00 | 23.00 | 0.5151322 | 0.4756544 | 0.01 | -7.7 | 20 |
| Hexachloroethane | Avg | 25.00 | 24.00 | 0.7551423 | 0.7268257 | 0.3 | -3.7 | 20 |
| Nitrobenzene | Avg | 25.00 | 24.00 | 0.3803429 | 0.3687364 | 0.2 | -3.1 | 20 |
| Isophorone | Avg | 25.00 | 26.00 | 0.6174352 | 0.646341 | 0.4 | 4.7 | 20 |
| 2-Nitrophenol | Avg | 25.00 | 26.00 | 0.1901126 | 0.1959839 | 0.1 | 3.1 | 20 |
| 2,4-Dimethylphenol | Avg | 25.00 | 24.50 | 0.2658539 | 0.2629823 | 0.2 | -1.1 | 20 |
| Bis(2-chloroethoxy)methane | Avg | 25.00 | 25.50 | 0.3934748 | 0.4008066 | 0.3 | 1.9 | 20 |
| 2,4-Dichlorophenol | Avg | 25.00 | 26.50 | 0.2836261 | 0.3012467 | 0.2 | 6.2 | 20 |
| 4-Chloroaniline | Avg | 25.00 | 25.00 | 0.4453003 | 0.446122 | 0.01 | 0.2 | 20 |
| 4-Chloro-3-methylphenol | Avg | 25.00 | 26.00 | 0.2956148 | 0.3107384 | 0.2 | 5.1 | 20 |
| 2-Methylnaphthalene | Avg | 25.00 | 25.00 | 0.5523812 | 0.5534731 | 0.4 | 0.2 | 20 |
| Hexachlorocyclopentadiene | Avg | 25.00 | 23.50 | 0.4633373 | 0.4355137 | 0.05 | -6.0 | 20 |
| 1,2,4,5-Tetrachlorobenzene | Avg | 25.00 | 25.00 | 0.6143983 | 0.6182254 | 0.01 | 0.6 | 20 |

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4E01009-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4E01009 Injection Date: 05/01/14

Lab Sample ID: 4E01009-ICV1 Injection Time: 13:39

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,4,6-Trichlorophenol | Avg | 25.00 | 25.50 | 0.3886947 | 0.3972836 | 0.2 | 2.2 | 20 |
| 2,4,5-Trichlorophenol | Avg | 25.00 | 24.00 | 0.4139863 | 0.3986973 | 0.2 | -3.7 | 20 |
| 2-Chloronaphthalene | Avg | 25.00 | 24.50 | 1.063871 | 1.040479 | 0.8 | -2.2 | 20 |
| 2-Nitroaniline | Avg | 25.00 | 24.50 | 0.4955044 | 0.4852487 | 0.01 | -2.1 | 20 |
| Dimethylphthalate | Avg | 25.00 | 23.50 | 1.395048 | 1.31784 | 0.01 | -5.5 | 20 |
| 2,6-Dinitrotoluene | Avg | 25.00 | 25.50 | 0.3142578 | 0.3191117 | 0.2 | 1.5 | 20 |
| Acenaphthylene | Avg | 25.00 | 24.50 | 1.695562 | 1.65318 | 0.9 | -2.5 | 20 |
| 3-Nitroaniline | Avg | 25.00 | 24.00 | 0.343364 | 0.3280003 | 0.01 | -4.5 | 20 |
| Acenaphthene | Avg | 25.00 | 24.50 | 1.084794 | 1.059974 | 0.9 | -2.3 | 20 |
| 2,4-Dinitrophenol | Q | 25.00 | 20.50 | 0.1440592 | 0.1210495 | 0.01 | -18.0 | 20 |
| 4-Nitrophenol | Avg | 25.00 | 21.50 | 0.2799278 | 0.2393256 | 0.01 | -14.5 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 26.50 | 0.4166126 | 0.4424524 | 0.2 | 6.2 | 20 |
| Dibenzofuran | Avg | 25.00 | 24.50 | 1.539374 | 1.497898 | 0.8 | -2.7 | 20 |
| 2,3,4,6-Tetrachlorophenol | Avg | 25.00 | 25.50 | 0.3513239 | 0.3616967 | 0.01 | 3.0 | 20 |
| Diethylphthalate | Avg | 25.00 | 23.50 | 1.58259 | 1.493142 | 0.01 | -5.7 | 20 |
| 4-Chlorophenyl-phenylether | Avg | 25.00 | 24.50 | 0.6389545 | 0.6248065 | 0.4 | -2.2 | 20 |
| Fluorene | Avg | 25.00 | 24.00 | 1.255367 | 1.208799 | 0.9 | -3.7 | 20 |
| 4-Nitroaniline | Avg | 25.00 | 24.50 | 0.3315279 | 0.325227 | 0.01 | -1.9 | 20 |
| 4,6-Dinitro-2-methylphenol | Q | 25.00 | 24.00 | 0.1160771 | 0.1104549 | 0.01 | -4.0 | 20 |
| N-Nitrosodiphenylamine (1) | Avg | 25.00 | 25.00 | 0.5580219 | 0.5524459 | 0.01 | -1.0 | 20 |
| 4-Bromophenyl-phenylether | Avg | 25.00 | 25.50 | 0.218544 | 0.2234481 | 0.1 | 2.2 | 20 |
| Hexachlorobenzene | Avg | 25.00 | 25.00 | 0.2837371 | 0.2811793 | 0.1 | -0.9 | 20 |

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4E01009-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4E01009 Injection Date: 05/01/14

Lab Sample ID: 4E01009-ICV1 Injection Time: 13:39

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| Pentachlorophenol | Lin | 25.00 | 21.00 | 0.1413847 | 0.1242336 | 0.05 | -16.0 | 20 |
| Phenanthrene | Avg | 25.00 | 25.00 | 0.9565789 | 0.9511993 | 0.7 | -0.6 | 20 |
| Anthracene | Avg | 25.00 | 25.00 | 0.9691813 | 0.9790661 | 0.7 | 1.0 | 20 |
| Di-n-butylphthalate | Avg | 25.00 | 25.00 | 1.363617 | 1.37857 | 0.01 | 1.1 | 20 |
| Fluoranthene | Avg | 25.00 | 25.50 | 0.9954005 | 1.015806 | 0.6 | 2.0 | 20 |
| Pyrene | Avg | 25.00 | 24.00 | 1.015471 | 0.9826317 | 0.6 | -3.2 | 20 |
| Butylbenzylphthalate | Avg | 25.00 | 25.50 | 0.5471753 | 0.5583738 | 0.01 | 2.0 | 20 |
| 3,3'-Dichlorobenzidine | Avg | 25.00 | 22.50 | 0.3900327 | 0.3500888 | 0.01 | -10.2 | 20 |
| bis(2-ethylhexyl)Phthalate | Avg | 25.00 | 25.00 | 0.7961563 | 0.7936995 | 0.01 | -0.3 | 20 |
| Benzo (a) anthracene | Avg | 25.00 | 25.50 | 0.9937012 | 1.005926 | 0.8 | 1.2 | 20 |
| Chrysene | Avg | 25.00 | 25.50 | 0.9510609 | 0.9737191 | 0.7 | 2.4 | 20 |
| Di-n-octylphthalate | Lin | 25.00 | 23.00 | 1.836318 | 1.766874 | 0.01 | -8.0 | 20 |
| Benzo (b) fluoranthene | Avg | 25.00 | 25.50 | 1.441023 | 1.463333 | 0.7 | 1.5 | 20 |
| Benzo(k)fluoranthene | Avg | 25.00 | 25.00 | 1.567172 | 1.563863 | 0.7 | -0.2 | 20 |
| Benzo (a) pyrene | Avg | 25.00 | 25.00 | 1.358506 | 1.372926 | 0.7 | 1.1 | 20 |
| Indeno(1,2,3-cd)pyrene | Avg | 25.00 | 23.50 | 1.241568 | 1.161976 | 0.5 | -6.4 | 20 |
| Dibenzo(a,h)anthracene | Avg | 25.00 | 24.50 | 1.308735 | 1.280832 | 0.4 | -2.1 | 20 |
| Benzo (g,h,i) perylene | Avg | 25.00 | 26.00 | 1.430971 | 1.479109 | 0.5 | 3.4 | 20 |
| 1,3-Dinitrobenzene | Avg | 25.00 | 25.00 | 8.693171E-02 | 8.728258E-02 | 0.01 | 0.4 | 20 |
| Aniline | Avg | 25.00 | 24.50 | 1.806591 | 1.776241 | 0.01 | -1.7 | 20 |
| Benzyl alcohol | Avg | 25.00 | 24.00 | 0.7662929 | 0.7329775 | 0.01 | -4.3 | 20 |
| 2-Fluorophenol | Avg | 25.00 | 24.00 | 1.107156 | 1.072014 | 0.05 | -3.2 | 20 |

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4E01009-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4E01009 Injection Date: 05/01/14

Lab Sample ID: 4E01009-ICV1 Injection Time: 13:39

| COMPOUND | TYPE | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| | | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| Phenol-d5 | Avg | 25.00 | 24.50 | 1.346961 | 1.317656 | 0.05 | -2.2 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 25.00 | 0.3635564 | 0.3672848 | 0.05 | 1.0 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 25.00 | 1.263542 | 1.255403 | 0.05 | -0.6 | 20 |
| 2,4,6-Tribromophenol | Avg | 25.00 | 26.50 | 0.2681629 | 0.2834003 | 0.05 | 5.7 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 24.00 | 0.7239863 | 0.694367 | 0.05 | -4.1 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp70 Calibration: 4051401

Lab File ID: 4E14004-ICV170.d Calibration Date: 05/13/14 17:07

Sequence: 4E14004 Injection Date: 05/14/14

Lab Sample ID: 4E14004-ICV1 Injection Time: 09:32

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| p-Phenylenediamine | Lin | 25.00 | 24.50 | 0.8502071 | 0.8990117 | 0.05 | -2.0 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*SW8270D ADD*

Client: DRAPER SDG: 1404171

Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp60 Calibration: 4051506

Lab File ID: 4E15004-ICV160.d Calibration Date: 05/13/14 19:00

Sequence: 4E15004 Injection Date: 05/15/14

Lab Sample ID: 4E15004-ICV1 Injection Time: 09:56

| COMPOUND | TYPE | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| | | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| Famphur | Lin | 25.00 | 23.00 | 0.3900632 | 0.387454 | 0.05 | -8.0 | 20 |
| Kepone | Avg | 25.00 | 24.00 | 0.1290545 | 0.1251463 | 0.05 | -3.0 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*SW8270D*

**SBLKQA**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042917-BLK166.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042917-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:58

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 14:31

Batch: 4042917 | Sequence: 4E01009 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 62-75-9 | N-Nitrosodimethylamine | | 0.98 | 5.0 | U |
| 110-86-1 | Pyridine | | 1.1 | 5.0 | U |
| 108-95-2 | Phenol | | 0.62 | 10 | U |
| 111-44-4 | Bis(2-chloroethyl)ether | | 1.3 | 5.0 | U |
| 95-57-8 | 2-Chlorophenol | | 1.4 | 10 | U |
| 95-48-7 | 2-Methylphenol | | 2.2 | 10 | U |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | | 1.6 | 5.0 | U |
| 106-44-5 | 3 & 4-Methylphenol | | 1.7 | 10 | U |
| 621-64-7 | N-Nitroso-di-N-propylamine | | 1.8 | 5.0 | U |
| 98-86-2 | Acetophenone | | 1.2 | 5.0 | U |
| 67-72-1 | Hexachloroethane | | 1.1 | 5.0 | U |
| 98-95-3 | Nitrobenzene | | 1.3 | 5.0 | U |
| 78-59-1 | Isophorone | | 0.94 | 5.0 | U |
| 88-75-5 | 2-Nitrophenol | | 0.99 | 10 | U |
| 105-67-9 | 2,4-Dimethylphenol | | 4.8 | 10 | U |
| 111-91-1 | Bis(2-chloroethoxy)methane | | 0.99 | 5.0 | U |
| 120-83-2 | 2,4-Dichlorophenol | | 1.6 | 10 | U |
| 106-47-8 | 4-Chloroaniline | | 1.1 | 10 | U |
| 59-50-7 | 4-Chloro-3-methylphenol | | 0.82 | 10 | U |
| 91-57-6 | 2-Methylnaphthalene | | 1.1 | 5.0 | U |
| 77-47-4 | Hexachlorocyclopentadiene | | 0.91 | 5.0 | U |
| 95-94-3 | 1,2,4,5-Tetrachlorobenzene | | 1.1 | 5.0 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | | 0.89 | 10 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | | 1.5 | 10 | U |
| 91-58-7 | 2-Chloronaphthalene | | 1.0 | 5.0 | U |
| 88-74-4 | 2-Nitroaniline | | 1.5 | 10 | U |
| 131-11-3 | Dimethylphthalate | | 0.64 | 5.0 | U |
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | U |
| 208-96-8 | Acenaphthylene | | 0.96 | 5.0 | U |
| 99-09-2 | 3-Nitroaniline | | 0.83 | 10 | U |
| 83-32-9 | Acenaphthene | | 0.80 | 5.0 | U |

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# ANALYSIS DATA SHEET

*SW8270D*

**SBLKQA**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042917-BLK166.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042917-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:58

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 14:31

Batch: 4042917 | Sequence: 4E01009 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | | 2.1 | 10 | U |
| 100-02-7 | 4-Nitrophenol | | 2.3 | 10 | U |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | U |
| 132-64-9 | Dibenzofuran | | 0.76 | 5.0 | U |
| 58-90-2 | 2,3,4,6-Tetrachlorophenol | | 0.70 | 10 | U |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | | 0.66 | 5.0 | U |
| 86-73-7 | Fluorene | | 0.71 | 5.0 | U |
| 100-01-6 | 4-Nitroaniline | | 2.7 | 10 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | | 1.1 | 10 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | | 0.97 | 5.0 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | | 0.80 | 5.0 | U |
| 118-74-1 | Hexachlorobenzene | | 0.57 | 5.0 | U |
| 87-86-5 | Pentachlorophenol | | 2.6 | 10 | U |
| 85-01-8 | Phenanthrene | | 0.70 | 5.0 | U |
| 120-12-7 | Anthracene | | 0.77 | 5.0 | U |
| 84-74-2 | Di-n-butylphthalate | | 0.74 | 5.0 | U |
| 206-44-0 | Fluoranthene | | 0.58 | 5.0 | U |
| 129-00-0 | Pyrene | | 0.73 | 5.0 | U |
| 85-68-7 | Butylbenzylphthalate | | 0.55 | 5.0 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | | 1.4 | 5.0 | U |
| 117-81-7 | bis(2-ethylhexyl)Phthalate | | 0.57 | 5.0 | U |
| 56-55-3 | Benzo (a) anthracene | | 0.57 | 5.0 | U |
| 218-01-9 | Chrysene | | 2.2 | 5.0 | U |
| 117-84-0 | Di-n-octylphthalate | | 0.71 | 5.0 | U |
| 205-99-2 | Benzo (b) fluoranthene | | 0.68 | 5.0 | U |
| 207-08-9 | Benzo(k)fluoranthene | | 1.5 | 5.0 | U |
| 50-32-8 | Benzo (a) pyrene | | 0.70 | 5.0 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | | 0.64 | 5.0 | U |
| 53-70-3 | Dibenzo(a,h)anthracene | | 0.74 | 5.0 | U |
| 191-24-2 | Benzo (g,h,i) perylene | | 0.61 | 5.0 | U |

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# ANALYSIS DATA SHEET

*SW8270D*

**SBLKQA**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042917-BLK166.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042917-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:58

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/01/14 14:31

Batch: 4042917 | Sequence: 4E01009 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 99-65-0 | 1,3-Dinitrobenzene | | 1.1 | 5.0 | U |
| 62-53-3 | Aniline | | 1.8 | 5.0 | U |
| 100-51-6 | Benzyl alcohol | | 1.1 | 5.0 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 69.01 | 69 | 33 - 110 | |
| Phenol-d5 | 100.0 | 40.21 | 40 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 47.57 | 95 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.84 | 88 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 92.18 | 92 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 51.52 | 103 | 59 - 110 | |

| CAS NO. | TICS | CONC.(ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**SBLKQB**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042918-BLK170.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042918-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/09/14 14:39

Batch: 4042918 | Sequence: 4E09001 | Calibration: 4051205 | Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | U |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | U |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | U |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | U |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | U |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | U |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | U |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | U |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | U |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | U |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | U |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | U |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | U |
| 94-59-7 | Safrole | | 0.37 | 5.0 | U |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | U |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | U |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | U |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | U |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | U |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | U |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | U |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | U |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | U |
| 298-02-2 | Phorate | | 0.47 | 5.0 | U |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | U |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | U |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | U |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | U |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | U |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | U |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | U |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**SBLKQB**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042918-BLK170.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042918-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/09/14 14:39

Batch: 4042918 | Sequence: 4E09001 | Calibration: 4051205 | Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-38-2 | Parathion | | 0.43 | 5.0 | U |
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | U |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | U |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | U |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | U |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | U |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | U |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | U |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | U |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | U |
| 2303-16-4 | Diallate | | 0.92 | 10 | U |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | U |
| 140-57-8 | Aramite | | 0.84 | 5.0 | U |

| CAS NO. | TICS | CONC.(ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**SBLKBQ**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042918-BLK260.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042918-BLK2 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/13/14 17:05

Batch: 4042918 | Sequence: 4E13002 | Calibration: 4051502 | Instrument: 5972hp60

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 109-06-8 | 2-Picoline | | 0.74 | 5.0 | U |
| 10595-95-6 | N-Nitrosomethylethylamine | | 0.99 | 5.0 | U |
| 66-27-3 | Methyl Methanesulfonate | | 0.78 | 5.0 | U |
| 55-18-5 | N-Nitrosodiethylamine | | 0.78 | 5.0 | U |
| 62-50-0 | Ethyl Methanesulfonate | | 1.1 | 5.0 | U |
| 930-55-2 | N-Nitrosopyrrolidine | | 0.61 | 5.0 | U |
| 59-89-2 | N-Nitrosomorpholine | | 0.85 | 5.0 | U |
| 95-53-4 | o-Toluidine | | 0.46 | 5.0 | U |
| 100-75-4 | N-Nitrosopiperidine | | 0.35 | 5.0 | U |
| 126-68-1 | o,o,o-Triethyl phosphorothioate | | 0.57 | 5.0 | U |
| 87-65-0 | 2,6-Dichlorophenol | | 0.42 | 10 | U |
| 1888-71-7 | Hexachloropropene | | 0.50 | 5.0 | U |
| 924-16-3 | N-Nitroso-di-n-butylamine | | 0.57 | 5.0 | U |
| 94-59-7 | Safrole | | 0.37 | 5.0 | U |
| 120-58-1 | Isosafrole | | 0.47 | 5.0 | U |
| 130-15-4 | 1,4-Naphthoquinone | | 0.28 | 5.0 | U |
| 608-93-5 | Pentachlorobenzene | | 0.75 | 5.0 | U |
| 134-32-7 | 1-Naphthylamine | | 0.59 | 5.0 | U |
| 91-59-8 | 2-Naphthylamine | | 0.45 | 5.0 | U |
| 297-97-2 | Zinophos | | 0.75 | 5.0 | U |
| 99-55-8 | 5-Nitro-o-toluidine | | 0.37 | 5.0 | U |
| 3689-24-5 | Sulfotep | | 0.52 | 5.0 | U |
| 99-35-4 | 1,3,5-Trinitrobenzene | | 0.42 | 5.0 | U |
| 298-02-2 | Phorate | | 0.47 | 5.0 | U |
| 62-44-2 | Phenacetin | | 0.38 | 5.0 | U |
| 60-51-5 | Dimethoate | | 0.39 | 5.0 | U |
| 92-67-1 | 4-Aminobiphenyl | | 0.35 | 5.0 | U |
| 82-68-8 | Pentachloronitrobenzene | | 0.44 | 5.0 | U |
| 23950-58-5 | Pronamide | | 0.27 | 5.0 | U |
| 298-04-4 | Disulfoton | | 0.45 | 5.0 | U |
| 298-00-0 | Methyl Parathion | | 0.52 | 5.0 | U |

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# ANALYSIS DATA SHEET

*SW8270D APPIX*

**SBLKBQ**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042918-BLK260.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042918-BLK2 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/13/14 17:05

Batch: 4042918 | Sequence: 4E13002 | Calibration: 4051502 | Instrument: 5972hp60

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 56-38-2 | Parathion | | 0.43 | 5.0 | U |
| 56-57-5 | 4-Nitroquinoline-1-oxide | | 0.54 | 5.0 | U |
| 91-80-5 | Methapyrilene | | 1.4 | 5.0 | U |
| 465-73-6 | Isodrin | | 0.52 | 5.0 | U |
| 60-11-7 | p-Dimethylaminoazobenzene | | 0.47 | 5.0 | U |
| 510-15-6 | Chlorobenzilate | | 0.34 | 5.0 | U |
| 119-93-7 | 3,3'-Dimethylbenzidine | | 1.4 | 5.0 | U |
| 53-96-3 | 2-Acetylaminofluorene | | 0.82 | 5.0 | U |
| 57-97-6 | 7,12-Dimethylbenz(a)anthracene | | 0.31 | 5.0 | U |
| 56-49-5 | 3-Methylcholanthrene | | 0.26 | 5.0 | U |
| 2303-16-4 | Diallate | | 0.92 | 10 | U |
| 122-09-8 | a,a-Dimethylphenethylamine | | 3.8 | 15 | U |
| 140-57-8 | Aramite | | 0.84 | 5.0 | U |

| CAS NO. | TICS | CONC.(ug/L) | Response | R.T. | % Match | Q |
|---|---|---|---|---|---|---|

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**SBLKQC**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042919-BLK160.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042919-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/15/14 10:37

Batch: 4042919 | Sequence: 4E15004 | Calibration: 4051506 | Instrument: 5972hp60

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 52-85-7 | Famphur | | 0.59 | 5.0 | U |
| 143-50-0 | Kepone | | 0.54 | 5.0 | U |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**SBLKQD**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042920-BLK160.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042920-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/14/14 15:46

Batch: 4042920 | Sequence: 4E14002 | Calibration: 4051507 | Instrument: 5972hp60

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 70-30-4 | Hexachlorophene | | 40 | 100 | U |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D ADD*

**SBLKQE**

Client: DRAPER | SDG: 1404171 | Project: RAAP APPIX 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042921-BLK170.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042921-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 11:59

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 05/14/14 10:19

Batch: 4042921 | Sequence: 4E14004 | Calibration: 4051401 | Instrument: 5972hp70

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 106-50-3 | p-Phenylenediamine | | 10 | 10 | U |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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B Patterson
Assigned To
2713
Employee ID Number

# PREPARATION BENCH SHEET

H: 5/1
D: 5/15

4042917

**SVOC 8270D**

**Matrix: Water**

**Prepared using: SVOA - EPA 3510C_SVOA**

**Date/Time Extracted:** 4-30-14 @ 1158

| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH A/N | Adjusted pH BASE | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1404171-01 | 16WC1A | Sample | 1000 | 1000 | 1.6 | 13 | QC | 500 | Extract MS, MSD @ 500 ml |
| 1404171-02 | 16C1 | Sample | 1000 | 1000 | 1.6 | 13 | NA | 500 | |
| 1404171-03 | 16MW8 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-04 | 16MW9 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-05 | 16WDUP | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-06 | 16WC1B | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042917-BLK1 | SBLKQA | Blank | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042917-BS1 | SLCSQA | LCS | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042917-MS1 | 16WC1AMS | Matrix Spike | 500 | 500 | 1.6 | 14 | ↓ | 250 | |
| 4042917-MSD1 | 16WC1AMSD | Matrix Spike Dup | 500 | 500 | 1.6 | 14 | NA | 250 | |

4-30-14 BP

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 250 | | 4D24014 |
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4D24014 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 250 | MS/MSD | 4B14024 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | LCS/LCSD | 4B14024 |
| SPIKE | 8270 Full Short LCS/MS Spike 2 | 250 | MS/MSD | 4C27035 |
| SPIKE | 8270 Full Short LCS/MS Spike 2 | 500 | LCS/LCSD | 4C27035 |

**Surrogate & Spike Added By:** BAP 4-30-14
Initials / Date

**Spiking Witnessed By:** SAB 4-30-14
Initials / Date

**Analysts Initials: Extracted:** BAP, SAB **KD:** NB, CH **N2:** CH **Bottled up:** CH

**Final Vol Verified:** CH

**Reviewed By:** BP

Assoc. Batches 404 2918
404 2919
404 2920
404 2921



**Manuf. and lot # of reagents/solvents used:** $Na_2SO_4$ - 4D29001, $CH_2Cl_2$ - 4C14004, $H_2SO_4$ - 3L05001, 10N NaOH - 4D18019

B Patterson
Assigned To

2713
Employee ID Number

Matrix: Water

# PREPARATION BENCH SHEET

4042918

## SVOC 8270D APPIX

H: 5/1
D: 5/15

Prepared using: SVOA - EPA 3510C_SVOA

Date/Time Extracted: 4-30-14@ 1159

| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH A/N | Adjusted pH BASE | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1404171-01 | 16WC1A | Sample | 1000 | 1000 | 1.6 | 13 | QC | 500 | Extract MS, MSD @ 500 ml |
| 1404171-02 | 16C1 | Sample | 1000 | 1000 | 1.6 | 13 | NA | 500 | |
| 1404171-03 | 16MW8 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-04 | 16MW9 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-05 | 16WDUP | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-06 | 16WC1B | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042918-BLK1 | SBLKQB | Blank | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042918-BS1 | SLCSQB | LCS | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042918-MS1 | 16WC1AMS | Matrix Spike | 500 | 500 | 1.6 | 14 | | 250 | |
| 4042918-MSD1 | 16WC1AMSD | Matrix Spike Dup | 500 | 500 | 1.6 | 14 | NA | 250 | |

B Patterson 4-30-14

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 250 | | 4D24014 |
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4D24014 |
| SPIKE | 8270 Full APP IX LCS/MS Spike | 250 | MS/MSD | 4D24067 |
| SPIKE | 8270 Full APP IX LCS/MS Spike | 500 | LCS/LCSD | 4D24067 |

Surrogate & Spike Added By: BPP 4-30-14
Initials / Date

Spiking Witnessed By: SAB 4-30-14
Initials / Date

Final Vol Verified: CH

Reviewed By: B Patterson

Analysts Initials: Extracted: BPP, SAB KD: CH, NB N2: CH Bottled up: CH

Use Blank 4042917 + Sample extractions

Assoc. Batches 4042917
4042919
4042920
4042921

Manuf. and lot # of reagents/solvents used: $Na_2SO_4$ - 4D29001, $CH_2Cl_2$ - 4C14004, $H_2SO_4$ - 3L05001, 10N NaOH - 4D18019

B Patterson
Assigned To

2713
Employee ID Number

Matrix: Water

# PREPARATION BENCH SHEET

4042919

**SVOC 8270D Kepone & Famphur-ADDNL**

**Prepared using: SVOA - EPA 3510C_SVOA**

Date/Time Extracted: 4-30-14 @ 1459

| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH A/N | Adjusted pH BASE | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1404171-01 | 16WC1A | Sample | 1000 | 1000 | 1.6 | 13 | QC | 500 | |
| 1404171-02 | 16C1 | Sample | 1000 | 1000 | 1.6 | 13 | NA | 500 | |
| 1404171-03 | 16MW8 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-04 | 16MW9 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-05 | 16WDUP | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-06 | 16WC1B | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042919-BLK1 | SBLKQC | Blank | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042919-BS1 | SLCSQC | LCS | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042919-BSD1 | SLCSDQC | LCS Dup | 1000 | 1000 | 1.6 | 13 | NA | 500 | |

4-30-14

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4D24014 |
| SPIKE | 8270 Full Kepone/Famphur LCS/MS | 500 | LCS/LCSD | 3L10014 |

Surrogate & Spike Added By: BKP 4-30-14
Initials / Date

Spiking Witnessed By: SAB 4-30-14
Initials / Date

Final Vol Verified:

Reviewed By:

Analysts Initials: Extracted: BKP, SAB KD: CH, NB N2: CH Bottled up: CH

Use Blank 4042917

Assoc. Batches 4042917
4042918
4042920
4042921

Manuf. and lot # of reagents/solvents used: $Na_2SO_4$-4D29001, $CH_2Cl_2$-4C14004, $H_2SO_4$-3L05001, 10N NaOH-4D18019

B Patterson
Assigned To

2713
Employee ID Number

Matrix: Water

# PREPARATION BENCH SHEET

4042920

**SVOC 8270D Hexachlorphene-Addnl**

**Prepared using: SVOA - EPA 3510C_SVOA**

Date/Time Extracted: 4-30-14@ 1159

| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH A/N | Adjusted pH BASE | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1404171-01 | 16WC1A | Sample | 1000 | 1000 | 1.6 | 13 | QC | 500 | |
| 1404171-02 | 16C1 | Sample | 1000 | 1000 | 1.6 | 13 | N/A | 500 | |
| 1404171-03 | 16MW8 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-04 | 16MW9 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-05 | 16WDUP | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-06 | 16WC1B | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042920-BLK1 | SBLKQD | Blank | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042920-BS1 | SLCSQD | LCS | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042920-BSD1 | SLCSDQD | LCS Dup | 1000 | 1000 | 1.6 | 13 | N/A | 500 | |

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4D24014 |
| SPIKE | 8270 Full Hexachlorophene LCS/MS | 500 | LCS/LCSD | 4D23048 |

Surrogate & Spike Added By: BFP 4-30-14
Initials / Date

Spiking Witnessed By: SAB 4-30-14
Initials / Date

Final Vol Verified:

Reviewed By:

Analysts Initials: Extracted: BFP, SAB KD: CH, NB N2: CH Bottled up: CH

Use Blank 4042917

Assoc. Batches 4042917
4042918
4042919
4042921

Manuf. and lot # of reagents/solvents used: $Na_2SO_4$ - 4D29001, $CH_2Cl_2$ - 4C14004, $H_2SO_4$ - 3L05001, 10N NaOH - 4D18019

B Patterson
Assigned To

2713
Employee ID Number

Matrix: Water

# PREPARATION BENCH SHEET

4042921

**SVOC 8270D p-phenylenediamine-ADDNL**

**Prepared using: SVOA - EPA 3510C_SVOA**

Date/Time Extracted: 4-30-14 @ 1159

| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH | | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | A/N | BASE | | | |
| 1404171-01 | 16WC1A | Sample | 1000 | 1000 | 1.6 | 13 | QC | 500 | |
| 1404171-02 | 16C1 | Sample | 1000 | 1000 | 1.6 | 13 | NA | 500 | |
| 1404171-03 | 16MW8 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-04 | 16MW9 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-05 | 16WDUP | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404171-06 | 16WC1B | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042921-BLK1 | SBLKQE | Blank | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042921-BS1 | SLCSQE | LCS | 1000 | 1000 | 1.6 | 13 | ↓ | 500 | |
| 4042921-BSD1 | SLCSDQE | LCS Dup | 1000 | 1000 | 1.6 | 13 | NA | 500 | |

4-30-14

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4D24014 |
| SPIKE | 8270 Full p-Phenylenediamine LCS/M | 500 | LCS/LCSD | 4D23047 |

Surrogate & Spike Added By: BFP 4-30-14
Initials / Date

Spiking Witnessed By: SAB 4-30-14
Initials / Date

Final Vol Verified: CH 05/04

Reviewed By:

Analysts Initials: Extracted: BFP, SAB KD: CH, NB N2: CH Bottled up: CH

Use Blank 4042917

Assoc. Batches 4042917
4042918
4042919
4042920



Manuf. and lot # of reagents/solvents used: $Na_2SO_4$-4D29001, $CH_2Cl_2$-4C14004, $H_2SO_4$-3L05001, 10N NaOH-4D18019

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5/16/2014

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Abridged data package.

Full deliverable available.

Subject:

Report of Data - Project: RAAP 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1404172

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1404172

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1404172

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1404172-01 | 16-1 | Water | 04/23/2014 09:25 | 04/25/2014 13:15 |
| 1404172-02 | 16-2 | Water | 04/23/2014 10:15 | 04/25/2014 13:15 |
| 1404172-03 | 16-3 | Water | 04/23/2014 11:15 | 04/25/2014 13:15 |
| 1404172-04 | 16-5 | Water | 04/23/2014 12:05 | 04/25/2014 13:15 |
| 1404172-05 | 16WC2B | Water | 04/23/2014 13:30 | 04/25/2014 13:15 |
| 1404172-06 | 16SPRING | Water | 04/23/2014 12:25 | 04/25/2014 13:15 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1404172

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16-1 | SW8270D | 1404172-01 |
| 16-2 | SW8270D | 1404172-02 |
| 16-3 | SW8270D | 1404172-03 |
| 16-5 | SW8270D | 1404172-04 |
| 16WC2B | SW8270D | 1404172-05 |
| 16SPRING | SW8270D | 1404172-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Patricia A Murphy

Name: Pat Murphy

Date: 05/15/2014

Title: Senior Chemist

Environmental Testing Laboratories

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# CompuChem

**A division of Liberty Analytical Corporation**
**501 Madison Avenue**
**Cary, N.C. 27513**
**Tel: 919/379-4100 Fax: 919/379-4050**


## SDG NARRATIVE
## SDG # 1404172
## PROTOCOL: SW-846

**SAMPLE IDENTIFICATIONS:** 16-1 16-2 16-3 16-5 16WC2B 16SPRING

The 6 aqueous samples listed above were received intact, temperatures ranging from 1.2°C to 3.1°C, with proper documentation, in sealed shipping containers, on April 25, 2014. These samples were scheduled for the requested analyses of the semivolatile fraction. SW-846, 3rd Edition, Update 3, Separatory Funnel extraction (Method 3510C), and Method 8270D were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the narrative deals with the semivolatile fraction only.

**Semivolatile**

Extraction and analysis holding time requirements were met for these samples.

There were no semivolatile project analytes identified above the Quantitation Limit (QL) in these samples.

Manual integrations were performed on one or more of the process files associated with this SDG. Please see the detailed Manual Integration Summary report that is located in section S. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Tailing factor criteria were met for pentachlorophenol and benzidine. The breakdown criterion was met for DDT. These three compounds have been added to the DFTPP solution and analyzed together.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of these samples.

All of the internal standards met response and retention time criteria in the analyses of these samples.

The associated method blanks met all quality control criteria.

Laboratory Control Sample (LCS/LCSD) was prepared and analyzed along with these samples.

No duplicate matrix spikes were requested.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Patricia A. Murphy
Senior Scientist
May 15, 2014

# CHAIN OF CUSTODY RECORD

JK JLe 4/24/14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | 0 | **Consultant:** | Draper Aden Associates | **Sample Site:** | RAAP, Radford, Virginia |
| **Attn:** | 0 | **Attn:** | Janet C. Frazier | **Location:** | HWMU16 |
| **Address:** | 0 | **Address:** | 2206 South Main Street, Blacksburg, Virginia 24060 | **Event:** | t Semiannual 2014 Groundwater Verification Monitoring Ev |
| | 0 | | | **DAA JN:** | B03204-12 |
| **Phone:** | 0 | **Phone:** | (540) 552-0444 | **Lab JN:** | |
| **Fax:** | 0 | **Fax:** | (540) 552-0291 | | |
| **Fax:** | 0 | | | | |

**Project Specific (PS) or Batch (B) QC:**
~~Sample Collection for Project Complete?~~ YES
**Carrier:** DASH COURIER
**Tracking Number:** SERVICE

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Box 4: Sample Type**
G Grab; C Composite

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on Ice: YES

| Box 4 - Sample Type | | | | | G | G | G | G | G | G | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 3 - Filtered/Unfiltered | | | | | U | U | U | U | U | U | | | |
| Required pH of Sample | | | | | <2 | <2 | | | >12 | <2 | | | |
| Box 2 - Preservative | | | | | B | B | H | H | E | B | H | | |
| Box 5 - Sample Container Type | | | | | 1-500 ml P | | 2-1LAG | 2-1L AG | 1-500-P | 1-500ml P | 2-1LAG | | |
| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | ICP/MS 6020A/3005A and 6010C/3010A (Metals-Total) | 7470A (Mercury-Total) | 8151A (Herbicides) | 8270D/3510C (Semivolatiles) | 9012B/9010C(Cyanide) | 6020A - COBALT ONLY - (DISSOLVED) | 8081B (Pesticides) W/CLEANUP | | |
| 16C1 | 4/24 | 1525 | GW | 8 | X | X | X | X | X | | X | | |
| 16MW8 | 4/24 | 0915 | GW | 8 | X | X | X | X | X | | X | | |
| 16MW9 | 4/24 | 1030 | GW | 8 | X | X | X | X | X | | X | | |
| 16WC1A | 4/24 | 1145 | GW | 24 | X | X | X | X | X | | X | | |
| 16WDUP | 4/24 | 1200 | GW | 8 | X | X | X | X | X | | X | | |
| 16WC1B | 4/24 | 1405 | GW | 9 (4/25/14) | X | X | X | X | X | X | X | | |
| 16-1 | 4/23 | 0925 | GW | 3 | X | X | | X | | | | | |
| 16-2 | 4/23 | 1015 | GW | 3 | X | X | | X | | | | | |
| 16-3 | 4/23 | 1115 | GW | 3 | X | X | | X | | | | | |
| 16-5 | 4/23 | 1205 | GW | 3 | X | X | | X | | | | | |
| 16WC2B | 4/23 | 1330 | GW | 3 | X | X | | X | | | | | |
| 16SPRING | 4/23 | 1225 | GW | 3 | X | X | | X | | | | | |

**GENERAL NOTES:**
1. Report results to detection limit, with J flags, for italicized wells.
2. Report results at or greater than QL for non-italicized wells. 3. ERIS Deliverable required.
4. VELAP accreditation required.
5. Full deliverable.

DISS. Co

1404171-02
-03
-04
-01 USE FOR QC
-05
-06 * 1404173-01

1404172-01
-02
-03
-04
-05
-06

diss. Co in this cooler

**Clients Special Instructions:** Level 4 with edd. See attached target analyte list. 2.2°C, 1.7°C, 3.1°C, 2.3°C, 1.9°C, 1.2°C IR GUN: SN0010

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No

Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Ken Coddington | Date: 4/25/14 | #2 Relinquished by (Signature): | Date: 4/25/14 | Sample Storage Time Requested: |
| Sampler Signature: Ken Coddington | Time: 0700 | Company Name: DAA | Time: 0930 | Company Name: Dash Courier | Time: 1315 | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: 4-25-14 | #2 Received by (Signature): | Date: 4/25/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: Dash Courier | Time: 0930 | Company Name: CompuChem | Time: 1315 | |

JLe 4/25/2014 1/0

# HOLDING TIME SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16-1 | 04/23/14 | 04/25/14 | 04/30/14 | 7 | 7 | 05/01/14 | 0.6 | 40 | |
| 16-2 | 04/23/14 | 04/25/14 | 04/30/14 | 7 | 7 | 05/01/14 | 0.7 | 40 | |
| 16-3 | 04/23/14 | 04/25/14 | 04/30/14 | 7 | 7 | 05/01/14 | 0.7 | 40 | |
| 16-5 | 04/23/14 | 04/25/14 | 04/30/14 | 7 | 7 | 05/01/14 | 1.1 | 40 | |
| 16WC2B | 04/23/14 | 04/25/14 | 04/30/14 | 7 | 7 | 05/01/14 | 1.1 | 40 | |
| 16SPRING | 04/23/14 | 04/25/14 | 04/30/14 | 7 | 7 | 05/01/14 | 1.1 | 40 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1404172 Instrument: 5972hp66

Sequence: 4D30012 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Blank (4042606-BLK1 ) ug/L** Lab File ID: 4042606-BLK166.d Analyzed: 04/30/14 15:49 | | | | |
| Nitrobenzene-d5 | 50.00 | 90 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 84 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 100 | 59 - 110 | |
| **LCS (4042606-BS1 ) ug/L** Lab File ID: 4042606-BS166.d Analyzed: 04/30/14 16:28 | | | | |
| Nitrobenzene-d5 | 50.00 | 93 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 87 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 98 | 59 - 110 | |
| **LCS Dup (4042606-BSD1 ) ug/L** Lab File ID: 4042606-BSD166.d Analyzed: 04/30/14 17:07 | | | | |
| Nitrobenzene-d5 | 50.00 | 94 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 88 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 97 | 59 - 110 | |
| **16-1 (1404172-01 ) ug/L** Lab File ID: 1404172-0166.d Analyzed: 05/01/14 00:17 | | | | |
| Nitrobenzene-d5 | 50.00 | 90 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 83 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 102 | 59 - 110 | |
| **16-2 (1404172-02 ) ug/L** Lab File ID: 1404172-0266.d Analyzed: 05/01/14 00:56 | | | | |
| Nitrobenzene-d5 | 50.00 | 82 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 79 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 94 | 59 - 110 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1404172 Instrument: 5972hp66

Sequence: 4D30012 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16-3 (1404172-03 ) ug/L** Lab File ID: 1404172-0366.d Analyzed: 05/01/14 01:35 | | | | |
| Nitrobenzene-d5 | 50.00 | 79 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 76 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 88 | 59 - 110 | |

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# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1404172 Instrument: 5972hp66

Sequence: 4E01004 Calibration: 4042307

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16-5 (1404172-04 ) ug/L** Lab File ID: 1404172-0466.d Analyzed: 05/01/14 11:13 | | | | |
| Nitrobenzene-d5 | 50.00 | 93 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 88 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 103 | 59 - 110 | |
| **16WC2B (1404172-05 ) ug/L** Lab File ID: 1404172-0566.d Analyzed: 05/01/14 11:52 | | | | |
| Nitrobenzene-d5 | 50.00 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 84 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 95 | 59 - 110 | |
| **16SPRING (1404172-06 ) ug/L** Lab File ID: 1404172-0666.d Analyzed: 05/01/14 12:32 | | | | |
| Nitrobenzene-d5 | 50.00 | 74 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 71 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 88 | 59 - 110 | |

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# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042606-BS1 Matrix: Water Client ID: SLCSPO Batch: 4042606

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 40.00 | 40.96 | 102 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 42.59 | 106 | | 58 - 123 |
| Diethylphthalate | 40.00 | 39.08 | 98 | | 64 - 114 |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4042606-BSD1 Matrix: Water Client ID: SLCSDPO Batch: 4042606

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| 2,6-Dinitrotoluene | 40.00 | 40.92 | 102 | 0.1 | 30 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 42.47 | 106 | 0.3 | 30 | | 58 - 123 |
| Diethylphthalate | 40.00 | 38.34 | 96 | 2 | 30 | | 64 - 114 |

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# PREPARATION BATCH SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Batch: 4042606 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16-1 | 1404172-01 | 04/30/14 09:15 | 1000 | 1000 |
| 16-2 | 1404172-02 | 04/30/14 09:15 | 1000 | 1000 |
| 16-3 | 1404172-03 | 04/30/14 09:15 | 1000 | 1000 |
| 16-5 | 1404172-04 | 04/30/14 09:15 | 1000 | 1000 |
| 16WC2B | 1404172-05 | 04/30/14 09:15 | 1000 | 1000 |
| 16SPRING | 1404172-06 | 04/30/14 09:15 | 1000 | 1000 |
| SBLKPO | 4042606-BLK1 | 04/30/14 09:15 | 1000 | 1000 |
| SLCSPO | 4042606-BS1 | 04/30/14 09:15 | 1000 | 1000 |
| SLCSDPO | 4042606-BSD1 | 04/30/14 09:15 | 1000 | 1000 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D22009 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCJ | 4D22009-TUN1 | 4D22009-TUN166.d | 04/22/14 12:18:00 |
| SSTD060CJ | 4D22009-CAL6 | 4D22009-CAL666.d | 04/22/14 12:46:00 |
| SSTD050CJ | 4D22009-CAL5 | 4D22009-CAL566.d | 04/22/14 13:26:00 |
| SSTD040CJ | 4D22009-CAL4 | 4D22009-CAL466.d | 04/22/14 14:06:00 |
| SSTD025CJ | 4D22009-CAL3 | 4D22009-CAL366.d | 04/22/14 14:46:00 |
| SSTD010CJ | 4D22009-CAL2 | 4D22009-CAL266.d | 04/22/14 15:26:00 |
| SSTD005CJ | 4D22009-CAL1 | 4D22009-CAL166.d | 04/22/14 16:06:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D23005 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCK | 4D23005-TUN1 | 4D23005-TUN166.d | 04/23/14 09:18:00 |
| SCV025VAL1CK | 4D23005-SCV1 | 4D23005-SCV166.d | 04/23/14 11:03:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4D30012 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCY | 4D30012-TUN1 | 4D30012-TUN166.d | 04/30/14 14:46:00 |
| SSTD025CY | 4D30012-ICV1 | 4D30012-ICV166.d | 04/30/14 15:07:00 |
| SBLKPO | 4042606-BLK1 | 4042606-BLK166.d | 04/30/14 15:49:00 |
| SLCSPO | 4042606-BS1 | 4042606-BS166.d | 04/30/14 16:28:00 |
| SLCSDPO | 4042606-BSD1 | 4042606-BSD166.d | 04/30/14 17:07:00 |
| 16-1 | 1404172-01 | 1404172-0166.d | 05/01/14 00:17:00 |
| 16-2 | 1404172-02 | 1404172-0266.d | 05/01/14 00:56:00 |
| 16-3 | 1404172-03 | 1404172-0366.d | 05/01/14 01:35:00 |
| SSTD025CZ | 4D30012-CCV1 | 4D30012-CCV166.d | 05/01/14 02:14:00 |

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# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4E01004 Calibration: 4042307 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCA | 4E01004-TUN1 | 4E01004-TUN166.d | 05/01/14 10:02:00 |
| SSTD025CA | 4E01004-ICV1 | 4E01004-ICV166.d | 05/01/14 10:32:00 |
| 16-5 | 1404172-04 | 1404172-0466.d | 05/01/14 11:13:00 |
| 16WC2B | 1404172-05 | 1404172-0566.d | 05/01/14 11:52:00 |
| 16SPRING | 1404172-06 | 1404172-0666.d | 05/01/14 12:32:00 |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404172 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4D22009-TUN166.d | Injection Date: | 04/22/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 12:18 |
| Sequence: | 4D22009 | Lab Sample ID: | 4D22009-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 55.7 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 68.1 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 53.9 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.58 | PASS |
| 275 | 10 - 60% of 198 | 20.2 | PASS |
| 365 | Greater than 1% of 198 | 2.32 | PASS |
| 441 | Less than 100% of 443 | 79 | PASS |
| 442 | 50 - 100% of 198 | 60.4 | PASS |
| 443 | 15 - 24% of 442 | 19.5 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404172 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4D23005-TUN166.d | Injection Date: | 04/23/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 09:18 |
| Sequence: | 4D23005 | Lab Sample ID: | 4D23005-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 50.6 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 63.8 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 51.5 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 7.39 | PASS |
| 275 | 10 - 60% of 198 | 21.6 | PASS |
| 365 | Greater than 1% of 198 | 2.71 | PASS |
| 441 | Less than 100% of 443 | 84.7 | PASS |
| 442 | 50 - 100% of 198 | 70.8 | PASS |
| 443 | 15 - 24% of 442 | 18.4 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404172 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4D30012-TUN166.d | Injection Date: | 04/30/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 14:46 |
| Sequence: | 4D30012 | Lab Sample ID: | 4D30012-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 52.9 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 67.2 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 51.9 | PASS |
| 197 | Less than 2% of 198 | 0.369 | PASS |
| 199 | 5 - 9% of 198 | 6.43 | PASS |
| 275 | 10 - 60% of 198 | 20.1 | PASS |
| 365 | Greater than 1% of 198 | 2.78 | PASS |
| 441 | Less than 100% of 443 | 86.1 | PASS |
| 442 | 50 - 100% of 198 | 70.2 | PASS |
| 443 | 15 - 24% of 442 | 18.9 | PASS |

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# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1404172 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4E01004-TUN166.d | Injection Date: | 05/01/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 10:02 |
| Sequence: | 4E01004 | Lab Sample ID: | 4E01004-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 52.3 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 64.2 | PASS |
| 70 | Less than 2% of 69 | 0 | PASS |
| 127 | 10 - 80% of 198 | 52.1 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.98 | PASS |
| 275 | 10 - 60% of 198 | 21 | PASS |
| 365 | Greater than 1% of 198 | 2.79 | PASS |
| 441 | Less than 100% of 443 | 82.7 | PASS |
| 442 | 50 - 100% of 198 | 76.1 | PASS |
| 443 | 15 - 24% of 442 | 18.2 | PASS |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404172
Client: DRAPER
Project: RAAP 2013 UNIT 16 & 10/B03204-12
Sequence: 4D23005
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4D23005-SCV1 )** | | | Lab File ID: 4D23005-SCV166.d | | Analyzed: 04/23/14 11:03 | | | | |
| 1,4-Dichlorobenzene-d4 | 61456 | 7.584 | 44930 | 7.608 | 137 | 50 - 200 | -0.0240 | +/-0.50 | |
| Naphthalene-d8 | 230233 | 10.406 | 165817 | 10.43 | 139 | 50 - 200 | -0.0240 | +/-0.50 | |
| Acenaphthene-d10 | 132107 | 14.454 | 95627 | 14.478 | 138 | 50 - 200 | -0.0240 | +/-0.50 | |
| Phenanthrene-d10 | 239568 | 17.327 | 175900 | 17.341 | 136 | 50 - 200 | -0.0140 | +/-0.50 | |
| Chrysene-d12 | 247843 | 21.682 | 191030 | 21.685 | 130 | 50 - 200 | -0.0030 | +/-0.50 | |
| Perylene-d12 | 170063 | 23.767 | 132118 | 23.771 | 129 | 50 - 200 | -0.0040 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4D30012

SDG: 1404172
Project: RAAP 2013 UNIT 16 & 10/B03204-12
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4D30012-ICV1 )** | | | Lab File ID: 4D30012-ICV166.d | | | Analyzed: 04/30/14 15:07 | | | |
| 1,4-Dichlorobenzene-d4 | 65692 | 7.574 | 44930 | 7.608 | 146 | 50 - 200 | -0.0340 | +/-0.50 | |
| Naphthalene-d8 | 236673 | 10.396 | 165817 | 10.43 | 143 | 50 - 200 | -0.0340 | +/-0.50 | |
| Acenaphthene-d10 | 139711 | 14.454 | 95627 | 14.478 | 146 | 50 - 200 | -0.0240 | +/-0.50 | |
| Phenanthrene-d10 | 253090 | 17.317 | 175900 | 17.341 | 144 | 50 - 200 | -0.0240 | +/-0.50 | |
| Chrysene-d12 | 278395 | 21.672 | 191030 | 21.685 | 146 | 50 - 200 | -0.0130 | +/-0.50 | |
| Perylene-d12 | 202428 | 23.757 | 132118 | 23.771 | 153 | 50 - 200 | -0.0140 | +/-0.50 | |
| **Blank (4042606-BLK1 )** | | | Lab File ID: 4042606-BLK166.d | | | Analyzed: 04/30/14 15:49 | | | |
| 1,4-Dichlorobenzene-d4 | 87873 | 7.576 | 65692 | 7.574 | 134 | 50 - 200 | 0.0020 | +/-0.50 | |
| Naphthalene-d8 | 302299 | 10.398 | 236673 | 10.396 | 128 | 50 - 200 | 0.0020 | +/-0.50 | |
| Acenaphthene-d10 | 174130 | 14.456 | 139711 | 14.454 | 125 | 50 - 200 | 0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 315250 | 17.318 | 253090 | 17.317 | 125 | 50 - 200 | 0.0010 | +/-0.50 | |
| Chrysene-d12 | 335697 | 21.663 | 278395 | 21.672 | 121 | 50 - 200 | -0.0090 | +/-0.50 | |
| Perylene-d12 | 228160 | 23.759 | 202428 | 23.757 | 113 | 50 - 200 | 0.0020 | +/-0.50 | |
| **LCS (4042606-BS1 )** | | | Lab File ID: 4042606-BS166.d | | | Analyzed: 04/30/14 16:28 | | | |
| 1,4-Dichlorobenzene-d4 | 59062 | 7.585 | 65692 | 7.574 | 90 | 50 - 200 | 0.0110 | +/-0.50 | |
| Naphthalene-d8 | 209022 | 10.396 | 236673 | 10.396 | 88 | 50 - 200 | 0.0000 | +/-0.50 | |
| Acenaphthene-d10 | 124263 | 14.455 | 139711 | 14.454 | 89 | 50 - 200 | 0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 224067 | 17.317 | 253090 | 17.317 | 89 | 50 - 200 | 0.0000 | +/-0.50 | |
| Chrysene-d12 | 258956 | 21.672 | 278395 | 21.672 | 93 | 50 - 200 | 0.0000 | +/-0.50 | |
| Perylene-d12 | 178667 | 23.758 | 202428 | 23.757 | 88 | 50 - 200 | 0.0010 | +/-0.50 | |
| **LCS Dup (4042606-BSD1 )** | | | Lab File ID: 4042606-BSD166.d | | | Analyzed: 04/30/14 17:07 | | | |
| 1,4-Dichlorobenzene-d4 | 62695 | 7.586 | 65692 | 7.574 | 95 | 50 - 200 | 0.0120 | +/-0.50 | |
| Naphthalene-d8 | 222731 | 10.407 | 236673 | 10.396 | 94 | 50 - 200 | 0.0110 | +/-0.50 | |
| Acenaphthene-d10 | 132112 | 14.456 | 139711 | 14.454 | 95 | 50 - 200 | 0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 240133 | 17.318 | 253090 | 17.317 | 95 | 50 - 200 | 0.0010 | +/-0.50 | |
| Chrysene-d12 | 268931 | 21.673 | 278395 | 21.672 | 97 | 50 - 200 | 0.0010 | +/-0.50 | |
| Perylene-d12 | 192512 | 23.758 | 202428 | 23.757 | 95 | 50 - 200 | 0.0010 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404172
Client: DRAPER
Project: RAAP 2013 UNIT 16 & 10/B03204-12
Sequence: 4D30012
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16-1 (1404172-01 )** | | | Lab File ID: 1404172-0166.d | | | Analyzed: 05/01/14 00:17 | | | |
| 1,4-Dichlorobenzene-d4 | 60735 | 7.577 | 65692 | 7.574 | 92 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 212213 | 10.389 | 236673 | 10.396 | 90 | 50 - 200 | -0.0070 | +/-0.50 | |
| Acenaphthene-d10 | 126236 | 14.447 | 139711 | 14.454 | 90 | 50 - 200 | -0.0070 | +/-0.50 | |
| Phenanthrene-d10 | 226001 | 17.32 | 253090 | 17.317 | 89 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 232499 | 21.664 | 278395 | 21.672 | 84 | 50 - 200 | -0.0080 | +/-0.50 | |
| Perylene-d12 | 150872 | 23.75 | 202428 | 23.757 | 75 | 50 - 200 | -0.0070 | +/-0.50 | |
| **16-2 (1404172-02 )** | | | Lab File ID: 1404172-0266.d | | | Analyzed: 05/01/14 00:56 | | | |
| 1,4-Dichlorobenzene-d4 | 68743 | 7.574 | 65692 | 7.574 | 105 | 50 - 200 | 0.0000 | +/-0.50 | |
| Naphthalene-d8 | 243238 | 10.395 | 236673 | 10.396 | 103 | 50 - 200 | -0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 139870 | 14.443 | 139711 | 14.454 | 100 | 50 - 200 | -0.0110 | +/-0.50 | |
| Phenanthrene-d10 | 253101 | 17.316 | 253090 | 17.317 | 100 | 50 - 200 | -0.0010 | +/-0.50 | |
| Chrysene-d12 | 263144 | 21.671 | 278395 | 21.672 | 95 | 50 - 200 | -0.0010 | +/-0.50 | |
| Perylene-d12 | 172093 | 23.756 | 202428 | 23.757 | 85 | 50 - 200 | -0.0010 | +/-0.50 | |
| **16-3 (1404172-03 )** | | | Lab File ID: 1404172-0366.d | | | Analyzed: 05/01/14 01:35 | | | |
| 1,4-Dichlorobenzene-d4 | 67246 | 7.572 | 65692 | 7.574 | 102 | 50 - 200 | -0.0020 | +/-0.50 | |
| Naphthalene-d8 | 237457 | 10.394 | 236673 | 10.396 | 100 | 50 - 200 | -0.0020 | +/-0.50 | |
| Acenaphthene-d10 | 137488 | 14.452 | 139711 | 14.454 | 98 | 50 - 200 | -0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 249863 | 17.315 | 253090 | 17.317 | 99 | 50 - 200 | -0.0020 | +/-0.50 | |
| Chrysene-d12 | 262437 | 21.67 | 278395 | 21.672 | 94 | 50 - 200 | -0.0020 | +/-0.50 | |
| Perylene-d12 | 168498 | 23.755 | 202428 | 23.757 | 83 | 50 - 200 | -0.0020 | +/-0.50 | |
| **Calibration Check (4D30012-CCV1 )** | | | Lab File ID: 4D30012-CCV166.d | | | Analyzed: 05/01/14 02:14 | | | |
| 1,4-Dichlorobenzene-d4 | 70157 | 7.578 | 65692 | 7.574 | 107 | 50 - 200 | 0.0040 | +/-0.50 | |
| Naphthalene-d8 | 249318 | 10.389 | 236673 | 10.396 | 105 | 50 - 200 | -0.0070 | +/-0.50 | |
| Acenaphthene-d10 | 149080 | 14.448 | 139711 | 14.454 | 107 | 50 - 200 | -0.0060 | +/-0.50 | |
| Phenanthrene-d10 | 266401 | 17.32 | 253090 | 17.317 | 105 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 290915 | 21.675 | 278395 | 21.672 | 104 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 209262 | 23.761 | 202428 | 23.757 | 103 | 50 - 200 | 0.0040 | +/-0.50 | |

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# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1404172
Client: DRAPER
Project: RAAP 2013 UNIT 16 & 10/B03204-12
Sequence: 4E01004
Instrument: 5972hp66
Calibration: 4042307

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4E01004-ICV1 )** | | | Lab File ID: 4E01004-ICV166.d | | | Analyzed: 05/01/14 10:32 | | | |
| 1,4-Dichlorobenzene-d4 | 52100 | 7.582 | 44930 | 7.608 | 116 | 50 - 200 | -0.0260 | +/-0.50 | |
| Naphthalene-d8 | 189950 | 10.393 | 165817 | 10.43 | 115 | 50 - 200 | -0.0370 | +/-0.50 | |
| Acenaphthene-d10 | 112266 | 14.452 | 95627 | 14.478 | 117 | 50 - 200 | -0.0260 | +/-0.50 | |
| Phenanthrene-d10 | 211327 | 17.314 | 175900 | 17.341 | 120 | 50 - 200 | -0.0270 | +/-0.50 | |
| Chrysene-d12 | 237145 | 21.669 | 191030 | 21.685 | 124 | 50 - 200 | -0.0160 | +/-0.50 | |
| Perylene-d12 | 161198 | 23.755 | 132118 | 23.771 | 122 | 50 - 200 | -0.0160 | +/-0.50 | |
| **16-5 (1404172-04 )** | | | Lab File ID: 1404172-0466.d | | | Analyzed: 05/01/14 11:13 | | | |
| 1,4-Dichlorobenzene-d4 | 75688 | 7.577 | 52100 | 7.582 | 145 | 50 - 200 | -0.0050 | +/-0.50 | |
| Naphthalene-d8 | 259557 | 10.398 | 189950 | 10.393 | 137 | 50 - 200 | 0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 154197 | 14.457 | 112266 | 14.452 | 137 | 50 - 200 | 0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 279346 | 17.319 | 211327 | 17.314 | 132 | 50 - 200 | 0.0050 | +/-0.50 | |
| Chrysene-d12 | 295857 | 21.664 | 237145 | 21.669 | 125 | 50 - 200 | -0.0050 | +/-0.50 | |
| Perylene-d12 | 196354 | 23.759 | 161198 | 23.755 | 122 | 50 - 200 | 0.0040 | +/-0.50 | |
| **16WC2B (1404172-05 )** | | | Lab File ID: 1404172-0566.d | | | Analyzed: 05/01/14 11:52 | | | |
| 1,4-Dichlorobenzene-d4 | 48751 | 7.576 | 52100 | 7.582 | 94 | 50 - 200 | -0.0060 | +/-0.50 | |
| Naphthalene-d8 | 178371 | 10.397 | 189950 | 10.393 | 94 | 50 - 200 | 0.0040 | +/-0.50 | |
| Acenaphthene-d10 | 103669 | 14.456 | 112266 | 14.452 | 92 | 50 - 200 | 0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 191526 | 17.318 | 211327 | 17.314 | 91 | 50 - 200 | 0.0040 | +/-0.50 | |
| Chrysene-d12 | 202487 | 21.673 | 237145 | 21.669 | 85 | 50 - 200 | 0.0040 | +/-0.50 | |
| Perylene-d12 | 124301 | 23.758 | 161198 | 23.755 | 77 | 50 - 200 | 0.0030 | +/-0.50 | |
| **16SPRING (1404172-06 )** | | | Lab File ID: 1404172-0666.d | | | Analyzed: 05/01/14 12:32 | | | |
| 1,4-Dichlorobenzene-d4 | 71653 | 7.582 | 52100 | 7.582 | 138 | 50 - 200 | 0.0000 | +/-0.50 | |
| Naphthalene-d8 | 252256 | 10.403 | 189950 | 10.393 | 133 | 50 - 200 | 0.0100 | +/-0.50 | |
| Acenaphthene-d10 | 150248 | 14.452 | 112266 | 14.452 | 134 | 50 - 200 | 0.0000 | +/-0.50 | |
| Phenanthrene-d10 | 281967 | 17.324 | 211327 | 17.314 | 133 | 50 - 200 | 0.0100 | +/-0.50 | |
| Chrysene-d12 | 294296 | 21.669 | 237145 | 21.669 | 124 | 50 - 200 | 0.0000 | +/-0.50 | |
| Perylene-d12 | 189569 | 23.754 | 161198 | 23.755 | 118 | 50 - 200 | -0.0010 | +/-0.50 | |

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# K. Target Compound Results

## (ANALYSIS DATA SHEETS)

### Analysis Data Sheets (ADS), Tentatively Identified Compounds (TICs), and Surrogate Recovery Results

Sample data shall be arranged in packets with the Analysis Data Sheet, followed by the raw data for volatile or semivolatile samples. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (ANALYSIS DATA SHEET)

Tabulated results (identification and quantitation) and Tentatively Identified Compounds (TICs) shall be included.

b. Reconstructed Ion Chromatograms (RICs)

Include for each sample or sample extract, including dilutions and reanalyses. The RIC shall contain the following header information: Client Sample ID Number, date and time of analysis, instrument ID, Lab file ID, and analyst ID.

d. Quantitation Report for target analytes and TICs.

Include a printout of the Extracted Ion Current Profile (EICP) for all manual changes to all compounds, internal standards, and surrogate compounds.

e. Copies of raw spectra and copies of background-subtracted mass spectra of target analytes plus TICs identified in the sample.

- The spectra shall include the following information: Client Sample ID number, Lab file ID, date and time of analysis, and instrument ID.
- The compound name must be clearly marked.

# ANALYSIS DATA SHEET

*SW8270D*

**16-1**

Client: DRAPER SDG 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404172-0166.d Sampled: 04/23/14 09:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404172-01 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 09:15

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 00:17

Batch: 4042606 Sequence: 4D30012 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 45.19 | 90 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 41.48 | 83 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 51.23 | 102 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16-2**

Client: DRAPER SDG 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404172-0266.d Sampled: 04/23/14 10:15

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404172-02 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 09:15

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 00:56

Batch: 4042606 Sequence: 4D30012 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 41.08 | 82 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 39.55 | 79 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 46.98 | 94 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16-3**

Client: DRAPER SDG 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404172-0366.d Sampled: 04/23/14 11:15

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404172-03 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 09:15

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 01:35

Batch: 4042606 Sequence: 4D30012 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 39.57 | 79 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 37.77 | 76 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 44.04 | 88 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16-5**

Client: DRAPER SDG 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404172-0466.d Sampled: 04/23/14 12:05

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404172-04 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 09:15

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 11:13

Batch: 4042606 Sequence: 4E01004 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 46.55 | 93 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.77 | 88 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 51.28 | 103 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16SPRING**

Client: DRAPER SDG 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404172-0666.d Sampled: 04/23/14 12:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404172-06 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 09:15

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 12:32

Batch: 4042606 Sequence: 4E01004 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 36.86 | 74 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 35.64 | 71 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 44.15 | 88 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC2B**

Client: DRAPER SDG 1404172 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1404172-0566.d Sampled: 04/23/14 13:30

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1404172-05 Received: 04/25/14 13:15

Dilution: 1 pH: Florisil Cleanup: N Prepared: 04/30/14 09:15

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 05/01/14 11:52

Batch: 4042606 Sequence: 4E01004 Calibration: 4042307 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 43.32 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 42.22 | 84 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 47.73 | 95 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# INITIAL CALIBRATION DATA

*SW8270D*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| 2,6-Dinitrotoluene | 5 | 0.2762765 | 10 | 0.309431 | 25 | 0.3058132 | 40 | 0.3352447 | 50 | 0.3398496 | 60 | 0.3189316 |
| 2,4-Dinitrotoluene | 5 | 0.3425319 | 10 | 0.4294307 | 25 | 0.4038106 | 40 | 0.4381392 | 50 | 0.4420014 | 60 | 0.4437619 |
| Diethylphthalate | 5 | 1.462673 | 10 | 1.608279 | 25 | 1.517454 | 40 | 1.673174 | 50 | 1.675542 | 60 | 1.558416 |
| Nitrobenzene-d5 | 5 | 0.3271642 | 10 | 0.3601098 | 25 | 0.3629785 | 40 | 0.3640401 | 50 | 0.3857748 | 60 | 0.3812708 |
| 2-Fluorobiphenyl | 5 | 1.251505 | 10 | 1.231516 | 25 | 1.235793 | 40 | 1.270715 | 50 | 1.29251 | 60 | 1.299213 |
| Terphenyl-d14 | 5 | 0.7924192 | 10 | 0.7046688 | 25 | 0.6886793 | 40 | 0.7161451 | 50 | 0.7246377 | 60 | 0.7173678 |

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# INITIAL CALIBRATION DATA (Continued)

*SW8270D*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4042307 Instrument: 5972hp66

Calibration Date: 4/22/2014 12:18:13PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 0.3142578 | 7.331849 | 14.14933 | 2.177386E-02 | | | CCC (20) | |
| 2,4-Dinitrotoluene | 0.4166126 | 9.395741 | 15.01667 | 3.320153E-02 | | | CCC (20) | |
| Diethylphthalate | 1.58259 | 5.414426 | 15.64717 | 4.180689E-02 | | | CCC (20) | |
| Nitrobenzene-d5 | 0.3635564 | 5.696206 | 8.835167 | 4.219197E-02 | | | CCC (20) | |
| 2-Fluorobiphenyl | 1.263542 | 2.267339 | 13.047 | 3.035135E-02 | | | CCC (20) | |
| Terphenyl-d14 | 0.7239863 | 4.944976 | 20.10933 | 1.637711E-02 | | | CCC (20) | |

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# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp66 Calibration: 4042307

Lab File ID: 4D23005-SCV166.d Standard ID: 3K19012

Sequence: 4D23005 Injection Date: 04/23/14

Lab Sample ID: 4D23005-SCV1 InjectionTime: 11:03

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2,6-Dinitrotoluene | 25.00 | 25.01 | 0.03 | 30.00 |
| 2,4-Dinitrotoluene | 25.00 | 26.39 | 5.6 | 30.00 |
| Diethylphthalate | 25.00 | 24.75 | -1.0 | 30.00 |

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4D30012-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4D30012 Injection Date: 04/30/14

Lab Sample ID: 4D30012-ICV1 Injection Time: 15:07

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,6-Dinitrotoluene | Avg | 25.00 | 26.00 | 0.3142578 | 0.3252027 | 0.2 | 3.5 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 27.00 | 0.4166126 | 0.4542921 | 0.2 | 9.0 | 20 |
| Diethylphthalate | Avg | 25.00 | 24.00 | 1.58259 | 1.536417 | 0.01 | -2.9 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 26.50 | 0.3635564 | 0.385406 | 0.05 | 6.0 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 25.50 | 1.263542 | 1.28558 | 0.05 | 1.7 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 25.00 | 0.7239863 | 0.7200244 | 0.05 | -0.5 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4E01004-ICV166.d Calibration Date: 04/22/14 12:18

Sequence: 4E01004 Injection Date: 05/01/14

Lab Sample ID: 4E01004-ICV1 Injection Time: 10:32

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,6-Dinitrotoluene | Avg | 25.00 | 25.00 | 0.3142578 | 0.3168404 | 0.2 | 0.8 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 25.50 | 0.4166126 | 0.4276201 | 0.2 | 2.6 | 20 |
| Diethylphthalate | Avg | 25.00 | 23.50 | 1.58259 | 1.493674 | 0.01 | -5.6 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 26.00 | 0.3635564 | 0.3816962 | 0.05 | 5.0 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 24.00 | 1.263542 | 1.223138 | 0.05 | -3.2 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 23.50 | 0.7239863 | 0.675111 | 0.05 | -6.8 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1404172

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4042307

Lab File ID: 4D30012-CCV166.d Calibration Date: 04/22/14 12:18

Sequence: 4D30012 Injection Date: 05/01/14

Lab Sample ID: 4D30012-CCV1 Injection Time: 02:14

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,6-Dinitrotoluene | Avg | 25.00 | 25.00 | 0.3142578 | 0.3132493 | 0.2 | -0.3 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 25.00 | 0.4166126 | 0.4213684 | 0.2 | 1.1 | 20 |
| Diethylphthalate | Avg | 25.00 | 23.50 | 1.58259 | 1.491629 | 0.01 | -5.7 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 26.00 | 0.3635564 | 0.3748081 | 0.05 | 3.1 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 24.50 | 1.263542 | 1.243354 | 0.05 | -1.6 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 24.50 | 0.7239863 | 0.7164512 | 0.05 | -1.0 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

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# ANALYSIS DATA SHEET

*SW8270D*

**SBLKPO**

Client: DRAPER | SDG: 1404172 | Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4042606-BLK166.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4042606-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 04/30/14 09:15

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 04/30/14 15:49

Batch: 4042606 | Sequence: 4D30012 | Calibration: 4042307 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | U |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | U |
| 84-66-2 | Diethylphthalate | | | 5.0 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 45.10 | 90 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 41.82 | 84 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 50.21 | 100 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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B Patterson
Assigned To

2713
Employee ID Number

# PREPARATION BENCH SHEET

A: 4/30
D: 5/14

4042606

**SVOC 8270D**

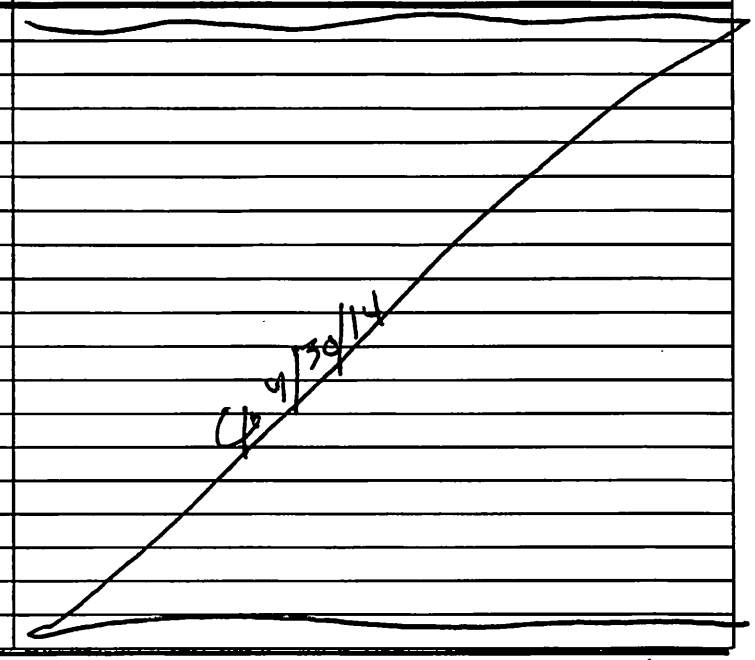
**Matrix: Water**

**Prepared using: SVOA - EPA 3510C_SVOA**

**Date/Time Extracted:** 4-30-14@0915



| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH A/N | Adjusted pH BASE | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1404155-10 | ER140423 | Sample | 1000 | 1000 | 1.9 | 13 | NA | 500 | |
| * 1404155-11 | MW-16 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404155-12 | MW-13 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404155-13 | MW-14 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| * 1404155-14 | MW-3 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404155-15 | MW-6 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| * 1404155-16 | MW-4 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404155-17 | MW-2 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404155-18 | MW-2D | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404155-19 | MW-5 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404172-01 | 16-1 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404172-02 | 16-2 | Sample | 1000 | 1000 | 1.9 | 13 | | 500 | |
| 1404172-03 | 16-3 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404172-04 | 16-5 | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404172-05 | 16WC2B | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 1404172-06 | 16SPRING | Sample | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042606-BLK1 | SBLKPO | Blank | 1000 | 1000 | 1.6 | 13 | | 500 | |
| 4042606-BS1 | SLCSPO | LCS | 1000 | 1000 | 1.6 | 13 | ↓ | 500 | |
| 4042606-BSD1 | SLCSDPO | LCS Dup | 1000 | 1000 | 1.6 | 13 | NA | 500 | |




| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4D24014 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | LCS/LCSD | 4B14024 |
| SPIKE | 8270 Full Short LCS/MS Spike 2 | 500 | LCS/LCSD | 4C27035 |

**Surrogate & Spike Added By:** BFP 4-30-14 (Initials / Date)

**Spiking Witnessed By:** SAB 4-30-14 (Initials / Date)

**Final Vol Verified:** CHooley

**Reviewed By:**

**Analysts Initials: Extracted:** BFP, SAB **KD:** CH/NB **N2:** CH **Bottled up:** CH

* Samples formed emulsion during extractions BFP 4/30/14

**Manuf. and lot # of reagents/solvents used:** $Na_2SO_4$ - 4D29001, $CH_2Cl_2$ - 4C14004, $H_2SO_4$ - 3L05001, 10N NaOH - 4D18019

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# ANALYTICAL REPORT

Job Number: 240-36528-1

Job Description: RAAP - HWMU16

For:
Draper Aden Associates, Inc.
2206 South Main street
Blacksburg, VA 24060

Attention: Janet Frazier

Approved for release.
Mark J Loeb
Project Manager II
5/12/2014 2:52 PM

Mark J Loeb, Project Manager II
4101 Shuffel Street NW, North Canton, OH, 44720
(330)966-9387
mark.loeb@testamericainc.com
05/12/2014

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. This report is confidential and is intended for the sole use of TestAmerica and its client. All questions regarding this report should be directed to the TestAmerica Project Manager who has signed this report.

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## CASE NARRATIVE

## Client: Draper Aden Associates, Inc.

## Project: RAAP - HWMU16

## Report Number: 240-36528-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

**RECEIPT**

The samples were received on 4/25/2014 10:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.6º C.

**SULFIDE**

Samples 16C1 (240-36528-1), 16MW8 (240-36528-2), 16MW9 (240-36528-3), 16WC1A (240-36528-4), 16WDUP (240-36528-5) and 16WC1B (240-36528-6) were analyzed for sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 04/30/2014.

No difficulties were encountered during the sulfide analysis. All quality control parameters were within the acceptance limits.

## SAMPLE SUMMARY

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 240-36528-1 | 16C1 | Water | 04/24/2014 1525 | 04/25/2014 1010 |
| 240-36528-2 | 16MW8 | Water | 04/24/2014 0915 | 04/25/2014 1010 |
| 240-36528-3 | 16MW9 | Water | 04/24/2014 1030 | 04/25/2014 1010 |
| 240-36528-4 | 16WC1A | Water | 04/24/2014 1145 | 04/25/2014 1010 |
| 240-36528-4MS | 16WC1A | Water | 04/24/2014 1145 | 04/25/2014 1010 |
| 240-36528-4MSD | 16WC1A | Water | 04/24/2014 1145 | 04/25/2014 1010 |
| 240-36528-5FD | 16WDUP | Water | 04/24/2014 1200 | 04/25/2014 1010 |
| 240-36528-6 | 16WC1B | Water | 04/24/2014 1405 | 04/25/2014 1010 |

## EXECUTIVE SUMMARY - Detections

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

| Lab Sample ID<br>Analyte | Client Sample ID | Result | Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|

No Detections

# METHOD SUMMARY

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Sulfide, Acid soluble and Insoluble (Titrimetric) | TAL CAN | SW846 9034 | |
| Sulfide, Distillation (Acid Soluble and Insoluble) | TAL CAN | | SW846 9030B |

**Lab References:**

TAL CAN = TestAmerica Canton

**Method References:**

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 9034 | Burns, Jill | JMB |

**General Chemistry**

**Client Sample ID:** **16C1**

Lab Sample ID: 240-36528-1 Date Sampled: 04/24/2014 1525

Client Matrix: Water Date Received: 04/25/2014 1010

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Sulfide | 3.0 | U | mg/L | 3.0 | 1.0 | 9034 |

Analysis Batch: 240-128641 Analysis Date: 04/30/2014 1624

Prep Batch: 240-128564 Prep Date: 04/30/2014 1019

**General Chemistry**

**Client Sample ID:** **16MW8**

Lab Sample ID: 240-36528-2 Date Sampled: 04/24/2014 0915

Client Matrix: Water Date Received: 04/25/2014 1010

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Sulfide | 3.0 | U | mg/L | 3.0 | 1.0 | 9034 |

Analysis Batch: 240-128641 Analysis Date: 04/30/2014 1624

Prep Batch: 240-128564 Prep Date: 04/30/2014 1019

**General Chemistry**

**Client Sample ID:** **16MW9**

Lab Sample ID: 240-36528-3 Date Sampled: 04/24/2014 1030

Client Matrix: Water Date Received: 04/25/2014 1010

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Sulfide | 3.0 | U | mg/L | 3.0 | 1.0 | 9034 |

Analysis Batch: 240-128641 Analysis Date: 04/30/2014 1624

Prep Batch: 240-128564 Prep Date: 04/30/2014 1019

**General Chemistry**

**Client Sample ID:** **16WC1A**

Lab Sample ID: 240-36528-4 Date Sampled: 04/24/2014 1145

Client Matrix: Water Date Received: 04/25/2014 1010

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Sulfide | 3.0 | U | mg/L | 3.0 | 1.0 | 9034 |

Analysis Batch: 240-128641 Analysis Date: 04/30/2014 1624

Prep Batch: 240-128564 Prep Date: 04/30/2014 1019

**General Chemistry**

**Client Sample ID:** **16WDUP**

Lab Sample ID: 240-36528-5FD Date Sampled: 04/24/2014 1200

Client Matrix: Water Date Received: 04/25/2014 1010

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Sulfide | 3.0 | U | mg/L | 3.0 | 1.0 | 9034 |

Analysis Batch: 240-128641 Analysis Date: 04/30/2014 1624

Prep Batch: 240-128564 Prep Date: 04/30/2014 1019

**General Chemistry**

**Client Sample ID:** **16WC1B**

Lab Sample ID: 240-36528-6 Date Sampled: 04/24/2014 1405

Client Matrix: Water Date Received: 04/25/2014 1010

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Sulfide | 3.0 | U | mg/L | 3.0 | 1.0 | 9034 |

Analysis Batch: 240-128641 Analysis Date: 04/30/2014 1624

Prep Batch: 240-128564 Prep Date: 04/30/2014 1019

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

**Method Blank - Batch: 240-128564**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 240-128564/1-A | Analysis Batch: | 240-128641 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 240-128564 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 04/30/2014 1624 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/30/2014 1019 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Sulfide | 3.0 | U | 3.0 |

**Lab Control Sample - Batch: 240-128564**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 240-128564/2-A | Analysis Batch: | 240-128641 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 240-128564 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 04/30/2014 1624 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/30/2014 1019 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Sulfide | 8.13 | 6.80 | 84 | 70 - 130 | |

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 240-128564**

**Method: 9034**
**Preparation: 9030B**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 240-36528-4 | Analysis Batch: | 240-128641 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 240-128564 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 04/30/2014 1624 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/30/2014 1019 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 240-36528-4 | Analysis Batch: | 240-128641 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 240-128564 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 04/30/2014 1624 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 04/30/2014 1019 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Sulfide | 64 | 74 | 27 - 124 | 14 | 20 | | |

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 240-128564**

**Method: 9034**
**Preparation: 9030B**

| | | | |
|---|---|---|---|
| MS Lab Sample ID: | 240-36528-4 | Units: mg/L | |
| Client Matrix: | Water | | |
| Dilution: | 1.0 | | |
| Analysis Date: | 04/30/2014 1624 | | |
| Prep Date: | 04/30/2014 1019 | | |
| Leach Date: | N/A | | |

| | |
|---|---|
| MSD Lab Sample ID: | 240-36528-4 |
| Client Matrix: | Water |
| Dilution: | 1.0 |
| Analysis Date: | 04/30/2014 1624 |
| Prep Date: | 04/30/2014 1019 |
| Leach Date: | N/A |

| Analyte | Sample Result/Qual | | MS Spike Amount | MSD Spike Amount | MS Result/Qual | MSD Result/Qual |
|---|---|---|---|---|---|---|
| Sulfide | 3.0 | U | 8.13 | 8.13 | 5.20 | 6.00 |

## DATA REPORTING QUALIFIERS

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

| Lab Section | Qualifier | Description |
|---|---|---|
| General Chemistry | | |
| | U | Indicates the analyte was analyzed for but not detected. |

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Prep Batch: 240-128564** | | | | | |
| LCS 240-128564/2-A | Lab Control Sample | T | Water | 9030B | |
| MB 240-128564/1-A | Method Blank | T | Water | 9030B | |
| 240-36528-1 | 16C1 | T | Water | 9030B | |
| 240-36528-2 | 16MW8 | T | Water | 9030B | |
| 240-36528-3 | 16MW9 | T | Water | 9030B | |
| 240-36528-4 | 16WC1A | T | Water | 9030B | |
| 240-36528-4MS | Matrix Spike | T | Water | 9030B | |
| 240-36528-4MSD | Matrix Spike Duplicate | T | Water | 9030B | |
| 240-36528-5FD | 16WDUP | T | Water | 9030B | |
| 240-36528-6 | 16WC1B | T | Water | 9030B | |
| **Analysis Batch:240-128641** | | | | | |
| LCS 240-128564/2-A | Lab Control Sample | T | Water | 9034 | 240-128564 |
| MB 240-128564/1-A | Method Blank | T | Water | 9034 | 240-128564 |
| 240-36528-1 | 16C1 | T | Water | 9034 | 240-128564 |
| 240-36528-2 | 16MW8 | T | Water | 9034 | 240-128564 |
| 240-36528-3 | 16MW9 | T | Water | 9034 | 240-128564 |
| 240-36528-4 | 16WC1A | T | Water | 9034 | 240-128564 |
| 240-36528-4MS | Matrix Spike | T | Water | 9034 | 240-128564 |
| 240-36528-4MSD | Matrix Spike Duplicate | T | Water | 9034 | 240-128564 |
| 240-36528-5FD | 16WDUP | T | Water | 9034 | 240-128564 |
| 240-36528-6 | 16WC1B | T | Water | 9034 | 240-128564 |

**Report Basis**
T = Total

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

## Laboratory Chronicle

**Lab ID:** 240-36528-1 **Client ID:** 16C1

Sample Date/Time: 04/24/2014 15:25 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-A-1-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-A-1-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** 240-36528-2 **Client ID:** 16MW8

Sample Date/Time: 04/24/2014 09:15 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-A-2-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-A-2-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** 240-36528-3 **Client ID:** 16MW9

Sample Date/Time: 04/24/2014 10:30 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-A-3-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-A-3-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** 240-36528-4 **Client ID:** 16WC1A

Sample Date/Time: 04/24/2014 11:45 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-C-4-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-C-4-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** 240-36528-4 **Client ID:** 16WC1A

Sample Date/Time: 04/24/2014 11:45 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-C-4-B MS | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-C-4-B MS | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** 240-36528-4 **Client ID:** 16WC1A

Sample Date/Time: 04/24/2014 11:45 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-C-4-C MSD | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-C-4-C MSD | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

Client: Draper Aden Associates, Inc. Job Number: 240-36528-1

## Laboratory Chronicle

**Lab ID:** 240-36528-5 **Client ID:** 16WDUP

Sample Date/Time: 04/24/2014 12:00 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-A-5-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-A-5-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** 240-36528-6 **Client ID:** 16WC1B

Sample Date/Time: 04/24/2014 14:05 Received Date/Time: 04/25/2014 10:10

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | 240-36528-A-6-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | 240-36528-A-6-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** MB **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | MB 240-128564/1-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | MB 240-128564/1-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab ID:** LCS **Client ID:** N/A

Sample Date/Time: N/A Received Date/Time: N/A

| Method | Bottle ID | Run | Analysis Batch | Prep Batch | Date Prepared / Analyzed | Dil | Lab | Analyst |
|---|---|---|---|---|---|---|---|---|
| P:9030B | LCS 240-128564/2-A | | 240-128641 | 240-128564 | 04/30/2014 10:19 | 1 | TAL CAN | JMB |
| A:9034 | LCS 240-128564/2-A | | 240-128641 | 240-128564 | 04/30/2014 16:24 | 1 | TAL CAN | JMB |

**Lab References:**
TAL CAN = TestAmerica Canton

# CHAIN OF CUSTODY RECORD

3, 6

**Laboratory:** Test America, 4101 Shuffel Drive NW, North Canton, OH, 44720 / Mark Loeb, Manager/1-800-966-9387

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU16 Tdj 4/24/14<br>**Event:** 1st Semiannual 2014 Groundwater ~~Verification~~ Monitoring Eve<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>**Carrier:** UPS<br>**Tracking Number:** 1Z 237 301 01 9508 7936 | | |

| **Box 1: Matrix** | | **Box 2: Preservative** | | **Box 3: Filtered/Unfiltered** | **Box 4: Sample Type** | **Invoice** |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | **Copy to Consultant:** YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | **Bill:** CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | **Preserved and shipped on ice:** YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA<br>AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | | | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | | | | | | | | |
| **Required pH of Sample** | | | | | >9 | | | | | | | | |
| **Box 2 - Preservative** | | | | | E/F | | | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 1-500-ml P | | | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **9034 (Sulfide)** | | | | | | | | |
| 16C1 | 4/24 | 1525 | GW | 1 | X | | | | | | | | |
| 16MW8 | 4/24 | 0915 | GW | 1 | X | | | | | | | | |
| 16MW9 | 4/24 | 1030 | GW | 1 | X | | | | | | | | |
| 16WC1A | 4/24 | 1145 | GW | 3 | X | | | | | | | | USE FOR QC |
| 16WDUP | 4/24 | 1200 | GW | 1 | X | | | | | | | | |
| 16WC1B | 4/24 | 1405 | GW | 1 | X | | | | | | | | |
| 16-1 | | | ~~GW~~ | ~~0~~ | | | | | | | | | |
| 16-2 | | | ~~GW~~ | ~~0~~ | | | | | | | | | |
| 16-3 | | | ~~GW~~ | ~~0~~ | | | | | | | | | |
| 16-5 | | | ~~GW~~ | ~~0~~ | | | | | | | | | |
| 16WC2B | | | ~~GW~~ | ~~0~~ | | | | | | | | | |
| 16SPRING | | | ~~GW~~ | ~~0~~ | | | | | | | | | |

No analysis required JWC 4/14/14

**GENERAL NOTES:**

1. Report results to detection limit, with J flags, for italicized wells.
2. Non-italicized wells not sampled during this event.
3. Full deliverable
4. VELAP Accreditation. JWC 4/14/14

**Clients Special Instructions:** Level 4 with edd.

Received by lab in Good Condition _____ Yes _____ No Custody Seal Intact _____ Yes _____ No Temperature upon arrival _____ Received on Ice _____ Yes _____ No

Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEITH CODDINGTON | Date: 4/23/14 | #1 Relinquished by (Signature): Tiffany Jebson | Date: 4/24/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0700 | Company Name: Draper Aden Assoc. | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tiffany Jebson | Date: 4/23/14 | #1 Received by (Signature): | Date: 4/25/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: Tiffany Jebson | Time: 0700 | Company Name: Test America | Time: 1010 | Company Name: | Time: | |



Y1 JWC 4/14/14

**TestAmerica Canton Sample Receipt Form/Narrative** Login # : 36528
**Canton Facility**

Client Draper Aden Associates Site Name _____ Cooler unpacked by: Ryan Rotz

Cooler Received on 4/28/14 Opened on 4/25/14

FedEx: 1st Grd Exp (UPS) FAS Stetson Client Drop Off TestAmerica Courier Other _____

TestAmerica Cooler # _____ Foam Box (Client Cooler) Box Other _____

Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt

| | | | | |
|---|---|---|---|---|
| IR GUN# A | (CF +0 °C) | Observed Cooler Temp. 3.6 °C | Corrected Cooler Temp. 3.6 °C | ☐ See Multiple Cooler Form |
| IR GUN# 4 | (CF -1 °C) | Observed Cooler Temp. _____ °C | Corrected Cooler Temp. _____ °C | |
| IR GUN# 5 | (CF +1 °C) | Observed Cooler Temp. _____ °C | Corrected Cooler Temp. _____ °C | |
| IR GUN# 8 | (CF +1 °C) | Observed Cooler Temp. _____ °C | Corrected Cooler Temp. _____ °C | |

2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 2 (Yes) No
   -Were custody seals on the outside of the cooler(s) signed & dated? (Yes) No NA
   -Were custody seals on the bottle(s)? Yes (No)
3. Shippers' packing slip attached to the cooler(s)? (Yes) No
4. Did custody papers accompany the sample(s)? (Yes) No
5. Were the custody papers relinquished & signed in the appropriate place? (Yes) No
6. Did all bottles arrive in good condition (Unbroken)? (Yes) No
7. Could all bottle labels be reconciled with the COC? (Yes) No
8. Were correct bottle(s) used for the test(s) indicated? (Yes) No
9. Sufficient quantity received to perform indicated analyses? (Yes) No
10. Were sample(s) at the correct pH upon receipt? (Yes) No NA pH Strip Lot# HC391902
11. Were VOAs on the COC? Yes (No)
12. Were air bubbles >6 mm in any VOA vials? Yes No (NA)
13. Was a trip blank present in the cooler(s)? Yes (No)

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other
Concerning _____

**14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES**

Samples processed by: [signature]

**15. SAMPLE CONDITION**

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

**16. SAMPLE PRESERVATION**

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____.

Temperature readings: _____

| Client Sample ID | Lab ID | Container Type | Container pH | Preservative Added (mls) | Lot # |
|---|---|---|---|---|---|
| 16C1 | 240-36528-A-1 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |
| 16MW8 | 240-36528-A-2 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |
| 16MW9 | 240-36528-A-3 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |
| 16WC1A | 240-36528-A-4 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |
| 16WC1A | 240-36528-B-4 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |
| 16WC1A | 240-36528-C-4 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |
| 16WDUP | 240-36528-A-5 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |
| 16WC1B | 240-36528-A-6 | Plastic 500ml - with Zn Acetate and | >9 | _____ | _____ |

**Draper Aden Associates**
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# *Data Validation Summary*

## *Second Quarter 2014 Groundwater Monitoring Event - Annual Monitoring under 40 CFR 264 Appendix IX For HWMU-16; and Corrective Action Annual Groundwater Monitoring Event for HWMU-5*

## *Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Management Units 5, 7, 10 and 16 Radford Facility Army Ammunition Plant, Radford, Virginia EPA ID# VA1210020730*

Draper Aden Associates performed data validation of the analytical results for the Second Quarter 2014 semiannual groundwater monitoring event at Hazardous Waste Management Units (HWMUs) 5 and 16 located at the Radford Facility Army Ammunition Plant (RFAAP) in Radford, Virginia. The monitoring event also served as annual monitoring under 40 CFR 264 Appendix IX for HWMU-16. As well, the event served as the corrective action annual monitoring for HWMU-5 conducted in accordance with the *Final Class 3 Hazardous Waste Permit Modification* dated November 5, 2009 and in accordance with the VDEQ-approved Class 3 Permit Modification dated September 27, 2011. The following information and attached tables summarize the data validation results. Additionally, no groundwater sampling was conducted at HWMU-7 or at HWMU-10 during Second Quarter 2014; the VDEQ issued approval of clean closure for groundwater with immediate cessation of groundwater post-closure related activities for both Units in correspondence dated June 26, 2013 (HWMU-7) and dated April 2, 2014 (HWMU-10).

### *Sample Collection/Analytical Services*

Draper Aden Associates, of Blacksburg, Virginia, collected groundwater samples during April 21-24, 2014. During this event, additional sample aliquot was also collected at select HWMU-5 and HWMU-16 sample locations and submitted to an alternate laboratory to further evaluate observed detections as discussed below.

Samples were submitted for laboratory analysis via courier to CompuChem, a Division of Liberty Analytical (CompuChem), of Cary, North Carolina; Eurofins Lancaster Laboratories Environmental, LLC, (Lancaster) of Lancaster, Pennsylvania; Summit Environmental Technologies (Summit), Inc., of Cuyahoga Falls, Ohio; and TestAmerica Laboratories (TestAmerica), North Canton, Ohio.

### *Receipt of Monitoring Event Data*

On behalf of BAE SYSTEMS, Ordnance Systems, Inc., each laboratory submitted results to Draper Aden Associates in a final certificate of analysis which included analytical results as well

as relevant documentation to verify and validate the results. The final certificate of analysis for the event was received on July 13, 2014.

### *Verification Events*

Verification sampling was required and conducted on June 12, 2014, at HWMU-16 to confirm or refute detections of concern reported for the Second Quarter 2014 monitoring event. Results of the verification event are summarized below and reported in the permit required semiannual groundwater monitoring report.

- ***HWMU-16:*** Silver was initially detected in well 16MW8 below the QL. Cobalt was initially detected in well 16WC1A above the QL. The verification results did not confirm the original detections and the verification results were reported as the final results. No further action was required.
- ***HWMU-16:*** 1,1-Dichloroethene was initially detected in well 16MW9 below the QL. The verification result confirmed the original detection and the original result was reported as the final result. 1,1-Dichloroethene will be added to the permit compliance monitoring target analyte list for HWMU-16.

### *Summary of Monitoring Event Data by Analytical Method*

Certificates of analysis were received from each laboratory in the following sample delivery groups (SDGs):

***Summary of Required Analytical Methods and SDGs***

| Analytical Method | Hazardous Waste Management Unit | |
|---|---|---|
| | HWMU-5 | HWMU-16 |
| *8260C Volatiles* | RAE16 | RAE17<br>RAE23 |
| *8270D Semivolatiles* | 1404151 | 1404171<br>1404172 |
| *8081B Pesticides* | Not required | 1404171<br>14042427 |
| *8151A Herbicides* | Not required | 1404171 |
| *6020A/6010C Inorganics* | 1404151<br>1404152 | 1404171<br>1404172<br>1406086<br>RAE22 |
| *9012B Cyanide* | Not required | 1404171 |
| *9034 Sulfide* | Not required | 240-36528-1 |
| *9066 Phenolics* | Not required | RAE17 |
| *7470A Mercury* | 1404151 | 1404171 |

Each final certificate of analysis was complete in its presentation and the data were of acceptable quality. Chains of custody and permit required target analytes are provided in each SDG.

***Data Analysis and Validation***

Samples were analyzed by *SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates).* Data were evaluated in general accordance with:

- *Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods*, USEPA SW-846, 3rd edition - Final Update I, II/IIA and III)
- *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*, October 1999 and *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, June 2008, where applicable.
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004 and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010*, where applicable.

Draper Aden Associates, of Blacksburg, Virginia, performed a comprehensive data validation, including recalculation of 10% of the data, where noted. For each HWMU, data validation reports and a summary table of data validation results are provided as an attachment (Appendix A – data validation summary tables, Appendix B – data validation reports [CD ROM]).

***Reporting of Results***

For HWMU-16, compliance well results were reported to at or above the detection limit for the target analytes (constituents) listed in Appendix IX to 40 CFR Part 264 as presented in Appendix I of Attachment 1 of the Final Post-Closure Care Permit. The 8270D target analyte detection limits vary slightly from the permit required detection limit; however, no corrective action was needed. Results reported between the detection limit and quantitation limit should be considered estimated concentrations. Plume well results were reported to at or above the permit quantitation limit for the constituents listed in the semiannual compliance monitoring lists.

For HWMU-5, results were reported to at or above the permit detection limit for the target analytes (constituents) listed in Appendix J and K of Module VI-Groundwater Corrective Action & Monitoring Program for Unit-5 (approved by the VDEQ in the Final Class 3 Hazardous Waste Permit Modification dated November 5, 2009) which was incorporated into the Final Hazardous Waste Post-Closure Care Permit for Hazardous Waste Units 5, 7, 10, and 16 (October 4, 2002), with the exception of Methods 8260C and 8270D target analytes. Select 8260C and 8270D target analyte detection limits based on current laboratory method detection limit studies varied slightly from the detection limit listed in the permit; however, no corrective action was needed. Results reported between the detection limit and quantitation limit should be considered estimated concentrations.

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**This Report has been prepared by:**

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# Summary of Quantitation Limits and Detection Limits

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## Appendix IX Monitoring Event

## Monitoring Event: Second Quarter 2014

| Analyte | Quantitation Limit/QL (ug/L) | Detection Limit/DL (ug/L) |
|---|---|---|
| **Method: 6010C** | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | |
| Tin | 50 | 17.4 |
| **Method: 6020A** | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | |
| Antimony | 1 | 0.4 |
| Arsenic | 10 | 2 |
| Barium | 10 | 1 |
| Beryllium | 1 | 0.2 |
| Cadmium | 1 | 0.2 |
| Chromium | 5 | 1 |
| Cobalt | 5 | 1 |
| Copper | 5 | 1 |
| Lead | 1 | 0.2 |
| Nickel | 10 | 2 |
| Selenium | 5 | 3 |
| Silver | 1 | 0.2 |
| Thallium | 1 | 0.2 |
| Vanadium | 10 | 1 |
| Zinc | 10 | 3 |
| **Method: 7470A** | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | |
| Mercury | 2 | 0.2 |
| **Method: 8081B** | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | |
| Aldrin | 0.025 | 0.0027 |
| alpha-BHC | 0.025 | 0.0019 |
| beta-BHC | 0.025 | 0.0095 |
| delta-BHC | 0.025 | 0.0032 |
| gamma-BHC | 0.025 | 0.0019 |
| Chlordane | 0.8 | 0.24 |
| 4,4'-DDD | 0.05 | 0.0055 |
| 4,4'-DDE | 0.05 | 0.0039 |
| 4,4'-DDT | 0.05 | 0.0051 |
| Dieldrin | 0.05 | 0.0051 |
| Endosulfan I | 0.025 | 0.0043 |
| Endosulfan II | 0.05 | 0.0055 |
| Endosulfan sulfate | 0.05 | 0.0068 |
| Endrin | 0.05 | 0.0069 |
| Endrin aldehyde | 0.05 | 0.012 |
| Heptachlor | 0.025 | 0.0024 |
| Heptachlor epoxide | 0.025 | 0.0028 |
| Methoxychlor | 0.25 | 0.015 |
| Toxaphene | 2.5 | 0.48 |
| **Method: 8151A** | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | |
| 2,4-Dichlorophenoxyacetic acid | 5 | 3.4 |
| Dinoseb | 2.5 | 0.93 |
| Silvex | 2.5 | 0.59 |
| 2,4,5-Trichlorophenoxyacetic acid | 2.5 | 0.74 |

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## Appendix IX Monitoring Event

## Monitoring Event: Second Quarter 2014

| Analyte | Quantitation Limit/QL (ug/L) | Detection Limit/DL (ug/L) |
|---|---|---|
| **Method: 8260C** | | |
| *Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA* | | |
| Acetone | 10 | 3 |
| Acetonitrile | 100 | 32 |
| Acrolein | 25 | 5 |
| Acrylonitrile | 10 | 1 |
| Allyl chloride | 10 | 0.8 |
| Benzene | 1 | 0.1 |
| Bromobenzene | 1 | 0.1 |
| Bromochloromethane | 1 | 0.2 |
| Bromodichloromethane | 1 | 0.1 |
| Bromoform | 1 | 0.1 |
| 2-Butanone | 10 | 1 |
| n-Butyl alcohol | 50 | 20 |
| tert-Butyl alcohol | 200 | 50 |
| n-Butylbenzene | 1 | 0.1 |
| sec-Butylbenzene | 1 | 0.1 |
| tert-Butylbenzene | 1 | 0.1 |
| Carbon disulfide | 10 | 0.4 |
| Carbon tetrachloride | 1 | 0.2 |
| Chlorobenzene | 1 | 0.1 |
| Chloroethane | 1 | 0.1 |
| Chloroform | 1 | 0.1 |
| 2-Chloroethyl vinyl ether | 20 | 0.5 |
| Chloroprene | 10 | 0.5 |
| 2-Chlorotoluene | 1 | 0.1 |
| 4-Chlorotoluene | 1 | 0.1 |
| Cyclohexane | 1 | 0.2 |
| Dibromochloromethane | 1 | 0.1 |
| 1,2-Dibromo-3-chloropropane | 1 | 0.2 |
| 1,2-Dibromoethane | 1 | 0.1 |
| 1,2-Dichlorobenzene | 1 | 0.1 |
| 1,3-Dichlorobenzene | 1 | 0.1 |
| 1,4-Dichlorobenzene | 1 | 0.1 |
| trans-1,4-Dichloro-2-butene | 10 | 1 |
| Dichlorodifluoromethane | 1 | 0.1 |
| 1,1-Dichloroethane | 1 | 0.1 |
| 1,2-Dichloroethane | 1 | 0.1 |
| 1,1-Dichloroethene | 1 | 0.2 |
| trans-1,2-Dichloroethene | 1 | 0.2 |
| 1,2-Dichloropropane | 1 | 0.1 |
| 1,3-Dichloropropane | 1 | 0.1 |
| 2,2-Dichloropropane | 1 | 0.3 |
| 1,1-Dichloropropene | 1 | 0.1 |
| cis-1,3-Dichloropropene | 1 | 0.1 |
| trans-1,3-Dichloropropene | 1 | 0.1 |
| Diethyl ether | 13 | 11 |
| Dimethyl ether | 13 | 0.1 |
| 1,4-Dioxane | 200 | 45 |
| Ethyl acetate | 10 | 1 |
| Ethanol | 250 | 52 |
| Ethylbenzene | 1 | 0.1 |
| Ethyl methacrylate | 10 | 0.8 |
| Ethylene oxide | 100 | 20 |

# Summary of Quantitation Limits and Detection Limits

Draper Aden Associates
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## Appendix IX Monitoring Event

## Monitoring Event: Second Quarter 2014

| Analyte | Quantitation Limit/QL (ug/L) | Detection Limit/DL (ug/L) |
|---|---|---|
| **Method: 8260C** | | |
| *Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA* | | |
| Hexachlorobutadiene | 1 | 0.1 |
| Hexachloroethane | 10 | 0.1 |
| 2-Hexanone | 10 | 1 |
| Isobutyl alcohol | 200 | 10 |
| Isopropylbenzene | 1 | 0.1 |
| Isopropylether | 10 | 0.6 |
| 4-Isopropyltoluene | 1 | 0.1 |
| Methacrylonitrile | 100 | 9.8 |
| Bromomethane | 1 | 0.5 |
| Chloromethane | 1 | 0.2 |
| Iodomethane | 10 | 0.6 |
| Methyl methacrylate | 10 | 3.6 |
| 4-Methyl-2-pentanone | 10 | 1 |
| Methyl tert-butyl ether | 10 | 0.4 |
| Dibromomethane | 1 | 0.1 |
| Methylene chloride | 1 | 0.2 |
| Naphthalene | 1 | 0.1 |
| Pentachloroethane | 10 | 0.8 |
| 1-Propanol | 100 | 20 |
| 2-Propanol | 100 | 50 |
| Propionitrile | 100 | 10 |
| n-Propylbenzene | 1 | 0.1 |
| Styrene | 1 | 0.1 |
| 1,1,1,2-Tetrachloroethane | 1 | 0.1 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.2 |
| Tetrachloroethene | 1 | 0.1 |
| Tetrahydrofuran | 25 | 2 |
| Toluene | 1 | 0.1 |
| 1,2,3-Trichlorobenzene | 1 | 0.1 |
| 1,2,4-Trichlorobenzene | 1 | 0.1 |
| 1,1,1-Trichloroethane | 1 | 0.1 |
| 1,1,2-Trichloroethane | 1 | 0.1 |
| Trichloroethene | 1 | 0.2 |
| Trichlorofluoromethane | 1 | 0.2 |
| 1,2,3-Trichloropropane | 1 | 0.3 |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 1 | 0.2 |
| 1,2,4-Trimethylbenzene | 1 | 0.2 |
| 1,3,5-Trimethylbenzene | 1 | 0.2 |
| Vinyl acetate | 10 | 3.3 |
| Vinyl chloride | 1 | 0.2 |
| Xylenes (Total) | 3 | 0.2 |

# Summary of Quantitation Limits and Detection Limits

Draper Aden Associates
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## Appendix IX Monitoring Event

## Monitoring Event: Second Quarter 2014

| Analyte | Quantitation Limit/QL (ug/L) | Detection Limit/DL (ug/L) |
|---|---|---|
| **Method: 8270D** | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | |
| Acenaphthene | 5 | 0.8 |
| Acenaphthylene | 5 | 0.96 |
| Acetophenone | 5 | 1.2 |
| 2-Acetylaminofluorene | 5 | 0.82 |
| 4-Aminobiphenyl | 5 | 0.35 |
| Aniline | 5 | 1.8 |
| Anthracene | 5 | 0.77 |
| Aramite | 5 | 0.84 |
| Benzo[a]anthracene | 5 | 0.57 |
| Benzo[b]fluoranthene | 5 | 0.68 |
| Benzo[k]fluoranthene | 5 | 1.5 |
| Benzo[ghi]perylene | 5 | 0.61 |
| Benzo(a)pyrene | 5 | 0.7 |
| 1,4-Benzenediamine | 10 | 10 |
| Benzyl alcohol | 5 | 1.1 |
| bis(2-Chloroethoxy)methane | 5 | 0.99 |
| bis(2-Chloroethyl)ether | 5 | 1.3 |
| bis(2-Chloro-1-methylethyl)ether | 5 | 1.6 |
| bis(2-Ethylhexyl)phthalate | 5 | 0.57 |
| 4-Bromophenyl phenyl ether | 5 | 0.8 |
| Butyl benzyl phthalate | 5 | 0.55 |
| p-Chloroaniline | 10 | 1.1 |
| Chlorobenzilate | 5 | 0.34 |
| p-Chloro-m-cresol | 10 | 0.82 |
| 2-Chloronaphthalene | 5 | 1 |
| 2-Chlorophenol | 10 | 1.4 |
| 4-Chlorophenyl phenyl ether | 5 | 0.66 |
| Chrysene | 5 | 2.2 |
| Diallate | 10 | 0.92 |
| Dibenz(a,h)anthracene | 5 | 0.74 |
| Dibenzofuran | 5 | 0.76 |
| Di-n-butyl phthalate | 5 | 0.74 |
| 3,3'-Dichlorobenzidine | 5 | 1.4 |
| 2,4-Dichlorophenol | 10 | 1.6 |
| 2,6-Dichlorophenol | 10 | 0.42 |
| Diethyl phthalate | 5 | 0.52 |
| O,O-Diethyl O-2-pyrazinyl | 5 | 0.75 |
| Dimethoate | 5 | 0.39 |
| p-(Dimethylamino)azobenzene | 5 | 0.47 |
| 7,12-Dimethylbenz[a]anthracene | 5 | 0.31 |
| 3,3'-Dimethylbenzidine | 5 | 1.4 |
| a,a-Dimethylphenethylamine | 15 | 3.8 |
| 2,4-Dimethylphenol | 10 | 4.8 |
| Dimethyl phthalate | 5 | 0.64 |
| m-Dinitrobenzene | 5 | 1.1 |
| 4,6-Dinitro-o-cresol | 10 | 1.1 |
| 2,4-Dinitrophenol | 10 | 2.1 |
| 2,4-Dinitrotoluene | 5 | 0.84 |
| 2,6-Dinitrotoluene | 5 | 0.75 |
| Di-n-octyl phthalate | 5 | 0.71 |
| Diphenylamine | 5 | 0.97 |
| Disulfoton | 5 | 0.45 |

# Summary of Quantitation Limits and Detection Limits

Draper Aden Associates
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## Appendix IX Monitoring Event

## Monitoring Event: Second Quarter 2014

| Analyte | Quantitation Limit/QL (ug/L) | Detection Limit/DL (ug/L) |
|---|---|---|
| **Method: 8270D** | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | |
| **Ethyl methanesulfonate** | 5 | 1.1 |
| **Famphur** | 5 | 0.59 |
| **Fluoranthene** | 5 | 0.58 |
| **Fluorene** | 5 | 0.71 |
| **Hexachlorobenzene** | 5 | 0.57 |
| **Hexachlorocyclopentadiene** | 5 | 0.91 |
| **Hexachloroethane** | 5 | 1.1 |
| **Hexachlorophene** | 100 | 40 |
| **Hexachloropropene** | 5 | 0.5 |
| **Indeno[1,2,3-cd]pyrene** | 5 | 0.64 |
| **Isodrin** | 5 | 0.52 |
| **Isophorone** | 5 | 0.94 |
| **Isosafrole** | 5 | 0.47 |
| **Kepone** | 5 | 0.54 |
| **Methapyrilene** | 5 | 1.4 |
| **3-Methylcholanthrene** | 5 | 0.26 |
| **Methyl methane sulfonate** | 5 | 0.78 |
| **2-Methylnaphthalene** | 5 | 1.1 |
| **Methyl parathion** | 5 | 0.52 |
| **2-Methylphenol** | 10 | 2.2 |
| **3 & 4-Methylphenol** | 10 | 1.7 |
| **1,4-Naphthoquinone** | 5 | 0.28 |
| **1-Naphthylamine** | 5 | 0.59 |
| **2-Naphthylamine** | 5 | 0.45 |
| **o-Nitroaniline** | 10 | 1.5 |
| **m-Nitroaniline** | 10 | 0.83 |
| **p-Nitroaniline** | 10 | 2.7 |
| **Nitrobenzene** | 5 | 1.3 |
| **o-Nitrophenol** | 10 | 0.99 |
| **p-Nitrophenol** | 10 | 2.3 |
| **4-Nitroquinoline-1-oxide** | 5 | 0.54 |
| **N-Nitrosodi-n-butylamine** | 5 | 0.57 |
| **N-Nitrosodiethylamine** | 5 | 0.78 |
| **N-Nitrosodimethylamine** | 5 | 0.98 |
| **N-Nitrosodiphenylamine** | 5 | 0.97 |
| **N-Nitrosodipropylamine** | 5 | 1.8 |
| **N-Nitrosomethylethylamine** | 5 | 0.99 |
| **N-Nitrosomorpholine** | 5 | 0.85 |
| **N-Nitrosopiperidine** | 5 | 0.35 |
| **N-Nitrosopyrrolidine** | 5 | 0.61 |
| **5-Nitroso-o-toluidine** | 5 | 0.37 |
| **Parathion** | 5 | 0.43 |
| **Pentachlorobenzene** | 5 | 0.75 |
| **Pentachloronitrobenzene** | 5 | 0.44 |
| **Pentachlorophenol** | 10 | 2.6 |
| **Phenacetin** | 5 | 0.38 |
| **Phenanthrene** | 5 | 0.7 |
| **Phenol** | 10 | 0.62 |
| **Phorate** | 5 | 0.47 |
| **2-Picoline** | 5 | 0.74 |
| **Pronamide** | 5 | 0.27 |
| **Pyrene** | 5 | 0.73 |

# Summary of Quantitation Limits and Detection Limits

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## Appendix IX Monitoring Event

## Monitoring Event: Second Quarter 2014

| Analyte | Quantitation Limit/QL (ug/L) | Detection Limit/DL (ug/L) |
|---|---|---|
| **Method: 8270D** | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | |
| Pyridine | 5 | 1.1 |
| Safrole | 5 | 0.37 |
| Sulfotep | 5 | 0.52 |
| 1,2,4,5-Tetrachlorobenzene | 5 | 1.1 |
| 2,3,4,6-Tetrachlorophenol | 10 | 0.7 |
| o-Toluidine | 5 | 0.46 |
| 2,4,5-Trichlorophenol | 10 | 1.5 |
| 2,4,6-Trichlorophenol | 10 | 0.89 |
| O,O,O-Triethyl phosphorothioate | 5 | 0.57 |
| sym-Trinitrobenzene | 5 | 0.42 |
| **Method: 9012B** | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | |
| Cyanide | 20 | 4 |
| **Method: 9034** | | |
| *Laboratory: TestAmerica, North Canton, OH* | | |
| Sulfide | 3000 | 940 |
| **Method: 9066** | | |
| *Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA* | | |
| Total Recoverable Phenolics | 40 | 15 |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | | | | | |
| **Antimony** | 5W5B | 0.4 | U | U | | 2 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.4 | U | U | | 2 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.4 | U | U | | 2 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.4 | U | U | | 2 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.4 | U | U | | 2 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.4 | U | U | | 2 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **Arsenic** | 5W5B | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **Barium** | 5W5B | 27 | | 27 | | 10 | 1 | | | ug/l | No action taken. |
| | 5W7B | 32.7 | | 32.7 | | 10 | 1 | | | ug/l | No action taken. |
| | 5WC21 | 12.7 | | 12.7 | | 10 | 1 | | | ug/l | No action taken. Sample/Blind field duplicate (RPD 4.6) |
| | 5WC22 | 31.6 | | 31.6 | | 10 | 1 | | | ug/l | No action taken. |
| | 5WC23 | 24 | | 24 | | 10 | 1 | | | ug/l | No action taken. |
| | 5WDUP | 13.3 | | 13.3 | | 10 | 1 | | | ug/l | No action taken. Blind field duplicate for 5WC21. (RPD 4.6) |
| **Beryllium** | 5W5B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.997 | J | 0.997 | J | 1 | 0.2 | | | ug/l | Result < QL. |
| | 5WC22 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.909 | J | 0.909 | J | 1 | 0.2 | | | ug/l | Result < QL. Blind field duplicate for 5WC21. |
| **Cadmium** | 5W5B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | | | | | |
| **Cadmium** | 5WC21 | 0.514 | J | 0.514 | J | 1 | 0.2 | | | ug/l | Result < QL. |
| | 5WC22 | 0.289 | J | 0.289 | J | 1 | 0.2 | | | ug/l | Result < QL. |
| | 5WC23 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.477 | J | 0.477 | J | 1 | 0.2 | | | ug/l | Result < QL. Blind field duplicate for 5WC21. |
| **Chromium** | 5W5B | 1 | U | U | | 5 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 1 | U | U | | 5 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 4.74 | J | 4.74 | J | 5 | 1 | | | ug/l | Result < QL. |
| | 5WC22 | 1 | U | U | | 5 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 1 | U | U | | 5 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 5.07 | | 5.07 | | 5 | 1 | | | ug/l | No action taken. Blind field duplicate for 5WC21. Sample result < QL. No RPD calculated. |
| **Cobalt** | 5W8B | 1 | U | U | | 5 | 1 | 5 | 1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W5B | 1 | U | U | | 5 | 1 | 5 | 1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 2.23 | J | 2.23 | J | 5 | 1 | 5 | 1 | ug/l | Result < QL. |
| | 5WC21 | 62.3 | | 62.3 | | 5 | 1 | 5 | 1 | ug/l | No action taken. (RPD 4.9) |
| | 5WC22 | 13.9 | | 13.9 | | 5 | 1 | 5 | 1 | ug/l | No action taken. |
| | 5WC23 | 2.97 | J | 2.97 | J | 5 | 1 | 5 | 1 | ug/l | Result < QL. |
| | 5WDUP | 59.5 | | 59.5 | | 5 | 1 | 5 | 1 | ug/l | No action taken. Blind field duplicate for 5WC21. (RPD 4.9) |
| | 5W12A | 1 | U | U | | 5 | 1 | 5 | 1 | ug/l | Analyte not detected at or above DL or QL. |
| **Copper** | 5W5B | 1 | U | U | | 5 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 1.33 | J | 1.33 | J | 5 | 1 | | | ug/l | Result < QL. |
| | 5WC21 | 3.77 | J | 3.77 | J | 5 | 1 | | | ug/l | Result < QL. |
| | 5WC22 | 1 | U | U | | 5 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 1 | U | U | | 5 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 3.77 | J | 3.77 | J | 5 | 1 | | | ug/l | Result < QL. Blind field duplicate for 5WC21. |
| **Lead** | 5W5B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.63 | J | 0.63 | J | 1 | 0.2 | | | ug/l | Result < QL. |
| | 5WC21 | 0.279 | J | 0.279 | J | 1 | 0.2 | | | ug/l | Result < QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | | | | | |
| **Lead** | 5WC22 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.333 | J | 0.333 | J | 1 | 0.2 | | | ug/l | Result < QL. Blind field duplicate for 5WC21. |
| **Nickel** | 5W5B | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 2 | U | U | | 10 | 2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 30.9 | | 30.9 | | 10 | 2 | | | ug/l | No action taken. (RPD 1.6) |
| | 5WC22 | 7.71 | J | 7.71 | J | 10 | 2 | | | ug/l | Result < QL. |
| | 5WC23 | 5.65 | J | 5.65 | J | 10 | 2 | | | ug/l | Result < QL. |
| | 5WDUP | 30.4 | | 30.4 | | 10 | 2 | | | ug/l | No action taken. Blind field duplicate for 5WC21. (RPD 1.6) |
| **Selenium** | 5W5B | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **Silver** | 5W5B | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **Thallium** | 5W5B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | | | | | |
| **Thallium** | 5WDUP | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **Vanadium** | 5W5B | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 1.89 | J | 1.89 | J | 10 | 1 | | | ug/l | Result < QL. |
| | 5WC22 | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 2.31 | J | 2.31 | J | 10 | 1 | | | ug/l | Result < QL. Blind field duplicate for 5WC21. |
| **Zinc** | 5W5B | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 5.37 | J | 5.37 | J | 10 | 3 | | | ug/l | Result < QL. |
| | 5WC21 | 36.6 | | 36.6 | J | 10 | 3 | | | ug/l | Sample and field duplicate RPD >20. (RPD 35) |
| | 5WC22 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 25.7 | | 25.7 | J | 10 | 3 | | | ug/l | Blind field duplicate for 5WC21. Sample and field duplicate RPD >20. (RPD 35) |
| **Method: 7470A** | | | | | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | | | | | |
| **Mercury** | 5W5B | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.2 | U | U | | 2 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | | | | | |
| **Acetone** | 5W5B | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 3 | U | U | | 10 | 3 | | | ug/l | Analyte not detected at or above DL or QL. |
| **2-Butanone** | 5W5B | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 1 | U | U | | 10 | 1 | | | ug/l | Analyte not detected at or above DL or QL. |
| **Chloroform** | 5W5B | 1.1 | | 1.1 | J | 1 | 0.1 | | | ug/l | MSD recovered high (140%). |
| | 5W7B | 19 | | 19 | J | 1 | 0.1 | | | ug/l | MSD recovered high (140%). |
| | 5WC21 | 0.6 | J | 0.6 | J | 1 | 0.1 | | | ug/l | Result < QL. MSD recovered high (140%). |
| | 5WC22 | 0.7 | J | 0.7 | J | 1 | 0.1 | | | ug/l | Result < QL. MSD recovered high (140%). |
| | 5WC23 | 0.9 | J | 0.9 | J | 1 | 0.1 | | | ug/l | Result < QL. MSD recovered high (140%). |
| | 5WDUP | 0.6 | J | 0.6 | J | 1 | 0.1 | | | ug/l | Result < QL. MSD recovered high (140%). Field duplicate result 0.6 J ug/l. |
| | Trip Blank 1 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| **Dichlorodifluoromethane** | 5W5B | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | | | | | |
| **Dichlorodifluoromethane** | 5WC21 | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.3 | U | U | | 1 | 0.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| **1,2-Dichloroethane** | 5W5B | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| **1,1-Dichloroethene** | 5W8B | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W5B | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | 5W12A | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 1 | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.4 | U | U | | 1 | 0.4 | 1 | 0.44 | ug/l | Analyte not detected at or above DL or QL. |
| **cis-1,2-Dichloroethene** | 5W8B | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W5B | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | | | | | |
| **cis-1,2-Dichloroethene** | 5W7B | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | 5W12A | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 1 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| **trans-1,2-Dichloroethene** | 5W8B | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W5B | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | 5W12A | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 1 | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.8 | U | U | | 1 | 0.8 | 1 | 0.8 | ug/l | Analyte not detected at or above DL or QL. |
| **Diethyl ether** | 5W5B | 0.4 | U | U | | 12 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.4 | U | U | | 12 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 2.5 | J | 2.5 | J | 12 | 0.4 | | | ug/l | Result < QL. |
| | 5WC22 | 4.5 | J | 4.5 | J | 12 | 0.4 | | | ug/l | Result < QL. |
| | 5WC23 | 16 | | 16 | | 12 | 0.4 | | | ug/l | No action taken. |
| | 5WDUP | 2.5 | J | 2.5 | J | 12 | 0.4 | | | ug/l | Result < QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 0.4 | U | U | | 12 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.4 | U | U | | 12 | 0.4 | | | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | | | | | |
| **Methylene chloride** | 5W5B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.2 | U | U | | 1 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| **Toluene** | 5W5B | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 1 | 0.1 | | | ug/l | Analyte not detected at or above DL or QL. |
| **Trichloroethene** | 5W8B | 0.2 | U | U | | 1 | 0.2 | 1 | 0.177 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W5B | 0.2 | U | U | | 1 | 0.2 | 1 | 0.177 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 1 | 0.2 | 1 | 0.177 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 4.8 | | 4.8 | | 1 | 0.2 | 1 | 0.177 | ug/l | No action taken. Sample/blind field duplicate RPD <20. |
| | 5WC22 | 4 | | 4 | | 1 | 0.2 | 1 | 0.177 | ug/l | No action taken. |
| | 5WC23 | 5.5 | | 5.5 | | 1 | 0.2 | 1 | 0.177 | ug/l | No action taken. |
| | 5WDUP | 4.9 | | 4.9 | | 1 | 0.2 | 1 | 0.177 | ug/l | No action taken. Blind field duplicate for 5WC21. Sample/blind field duplicate RPD <20. |
| | 5W12A | 0.2 | U | U | | 1 | 0.2 | 1 | 0.177 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 1 | 0.2 | U | U | | 1 | 0.2 | 1 | 0.177 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.2 | U | U | | 1 | 0.2 | 1 | 0.177 | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | | | | | |
| **Vinyl chloride** | 5W8B | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W5B | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | 5W12A | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 1 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 1 | 0.1 | 1 | 0.1 | ug/l | Analyte not detected at or above DL or QL. |
| **Xylenes (Total)** | 5W5B | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| | Trip Blank 1 | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |
| | Trip Blank 2 | 0.2 | U | U | | 3 | 0.2 | | | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | | | | | |
| **bis(2-Ethylhexyl)phthalate** | 5W5B | 5 | U | U | | 5 | 0.57 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 5 | U | U | | 5 | 0.57 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 5 | U | U | | 5 | 0.57 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 5 | U | U | | 5 | 0.57 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 5 | U | U | | 5 | 0.57 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 5 | U | U | | 5 | 0.57 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **Diethyl phthalate** | 5W5B | 5 | U | U | | 5 | 0.52 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 5 | U | U | | 5 | 0.52 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 5 | U | U | | 5 | 0.52 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 5 | U | U | | 5 | 0.52 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 5 | U | U | | 5 | 0.52 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 5 | U | U | | 5 | 0.52 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **2,4-Dinitrotoluene** | 5W5B | 5 | U | U | | 5 | 0.84 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 5 | U | U | | 5 | 0.84 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 5 | U | U | | 5 | 0.84 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 5 | U | U | | 5 | 0.84 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 5 | U | U | | 5 | 0.84 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 5 | U | U | | 5 | 0.84 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **2,6-Dinitrotoluene** | 5W5B | 5 | U | U | | 5 | 0.75 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 5 | U | U | | 5 | 0.75 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 5 | U | U | | 5 | 0.75 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 5 | U | U | | 5 | 0.75 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 5 | U | U | | 5 | 0.75 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 5 | U | U | | 5 | 0.75 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **o-Nitroaniline** | 5W5B | 10 | U | U | | 10 | 1.5 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 10 | U | U | | 10 | 1.5 | | | ug/l | Analyte not detected at or above DL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | | | | | |
| **o-Nitroaniline** | 5WC21 | 10 | U | U | | 10 | 1.5 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 10 | U | U | | 10 | 1.5 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 1.8 | J | 1.8 | J | 10 | 1.5 | | | ug/l | Result < QL. |
| | 5WDUP | 10 | U | U | | 10 | 1.5 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **p-Nitroaniline** | 5W5B | 10 | U | U | | 10 | 2.7 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 10 | U | U | | 10 | 2.7 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 10 | U | U | | 10 | 2.7 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 10 | U | U | | 10 | 2.7 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 10 | U | U | | 10 | 2.7 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 10 | U | U | | 10 | 2.7 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |
| **Nitrobenzene** | 5W5B | 5 | U | U | | 5 | 1.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5W7B | 5 | U | U | | 5 | 1.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC21 | 5 | U | U | | 5 | 1.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC22 | 5 | U | U | | 5 | 1.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WC23 | 5 | U | U | | 5 | 1.3 | | | ug/l | Analyte not detected at or above DL or QL. |
| | 5WDUP | 5 | U | U | | 5 | 1.3 | | | ug/l | Analyte not detected at or above DL or QL. Blind field duplicate for 5WC21. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Definitions:**

**QL** Denotes quantitation limit**.**
**DL** Denotes detection limit
**Q** Denotes data qualifier.
**U** Denotes analyte not detected at or above Detection Limit (DL) or Quantitation Limit (QL).
**UA** Denotes analyte not detected at or above adjusted sample DL or QL.
**J** Denotes analyte reported at or above the DL and associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above DL and QL and DL and QL are estimated. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted DL and QL and adjusted DL and QL are estimated.
**R** Denotes result rejected.
**Laboratory Data Qualifiers**, "U" and "<", denote not detected at or above the QL.

# Comprehensive Data Validation Report

## Sample/Blind Field Duplicate Results Greater Than the Quantitation Limit

## Facility: HWMU-5 Monitoring Event: Second Quarter 2014

Draper Aden Associates
Engineering • Surveying • Environmental Services

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | |
| **Barium** | 5WC21 | 12.7 | | 12.7 | | 10 | No action taken. Sample/Blind field duplicate (RPD 4.6) |
| | 5WDUP | 13.3 | | 13.3 | | 10 | No action taken. Blind field duplicate for 5WC21. (RPD 4.6) |
| **Chromium** | 5WDUP | 5.07 | | 5.07 | | 5 | No action taken. Blind field duplicate for 5WC21. Sample result < QL. No RPD calculated. |
| **Cobalt** | 5WC21 | 62.3 | | 62.3 | | 5 | No action taken. (RPD 4.9) |
| | 5WDUP | 59.5 | | 59.5 | | 5 | No action taken. Blind field duplicate for 5WC21. (RPD 4.9) |
| **Nickel** | 5WC21 | 30.9 | | 30.9 | | 10 | No action taken. (RPD 1.6) |
| | 5WDUP | 30.4 | | 30.4 | | 10 | No action taken. Blind field duplicate for 5WC21. (RPD 1.6) |
| **Zinc** | 5WC21 | 36.6 | | 36.6 | J | 10 | Sample and field duplicate RPD >20. (RPD 35) |
| | 5WDUP | 25.7 | | 25.7 | J | 10 | Blind field duplicate for 5WC21. Sample and field duplicate RPD >20. (RPD 35) |
| **Method: 8260C** | | | | | | | |
| *Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA* | | | | | | | |
| **Trichloroethene** | 5WC21 | 4.8 | | 4.8 | | 1 | No action taken. Sample/blind field duplicate RPD <20. |
| | 5WDUP | 4.9 | | 4.9 | | 1 | No action taken. Blind field duplicate for 5WC21. Sample/blind field duplicate RPD <20. |

**Definitions:**

**Data Validation Qualifiers:**

**QL** Denotes permit quantitation limit. **Q** Denotes data qualifier.

**J** Denotes analyte reported at or above quantitation limit and associated result is estimated.

## SW-846 METHODS 6020A AND 7470A INORGANIC DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive data review of the analytical results for the April 21-22, 2014 Corrective Action groundwater monitoring event at RFAAP HWMU5. Draper Aden Associates collected the groundwater samples from monitoring wells 5W8B, 5W5B, 5W7B, 5WC21, 5WC22, 5WC23, and 5W12A. Groundwater sample 5WDUP was submitted to the laboratory as a blind sample duplicate for 5WC21. The following information and attached table summarize the inorganic data validation results. Validation of other required methods is presented on separate reports.

For this Corrective Action annual groundwater monitoring event, samples 5W5B, 5W7B, 5WC21, 5WC22 and 5WC23 (downgradient point of compliance (POC) wells) were analyzed for the sixteen inorganic constituents listed in Appendix K of the facility's permit by SW-846 Method 6020A and SW-846 Method 7470A. Samples 5W8B (upgradient groundwater monitoring well) and 5W12A (plume monitoring well) were analyzed for cobalt only by SW-846 Method 6020A.

Inductively coupled plasma atomic emission spectroscopy/mass spectrometry (ICP-MS) and cold vapor atomic absorption (CVAA) were the techniques used for the metal analyses. ICP-MS Method 6020A was used to analyze for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium and zinc. CVAA Method 7470A was used to analyze for mercury. Target analytes were analyzed for total (T) concentrations.

Draper Aden Associates sent samples to CompuChem (CompuChem), a Division of Liberty Analytical, of Cary, North Carolina. CompuChem performed the Method 6020A and 7470A analyses. On behalf of RFAAP, CompuChem submitted results to Draper Aden Associates in a final certificate of analysis, which included sample analytical results, as well as relevant documentation to validate and verify the results. CompuChem is a VELAP accredited laboratory for the above analytes, methods and matrix.

The evaluation of CompuChem's compliance with the method and validation of results presented here are based upon a review of QA/QC information including chain-of-custody, case narrative, holding times, preservation procedures, instrument calibration, tuning, blank analyses (method, calibration and other blanks), interference check sample results, matrix spike/matrix spike duplicate (MS/MSD) sample analyses, laboratory control sample (LCS), internal standard, and serial dilution data. A review of transcriptions from instrument data to sample summary sheets was performed. Calculation checks were performed on ten percent of the data set, where applicable. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

CompuChem received the samples on ice and in good condition with custody seals intact. The chain of custody was appropriately signed and dated by field and laboratory personnel. Applicable holding time and preservation criteria were met.

***Method 6020A (ICP-MS)***

The original certificates of analysis were received on May 2, 2014. The certificates of analysis appeared complete in its presentation and the data were of acceptable quality. The data set demonstrated the laboratory's ability to achieve the reported permit quantitation limit (QL). The certificate of analysis was revised to include the current MDL study.

QC history documentation was provided. Applicable preservation and technical holding time criteria were met. Instrument calibration, calibration verification and tuning requirements were met. QL check standards, blank, interference check samples (ICSAB), MS/MSD, LCS, internal standard data, and serial dilution sample results were within control limits, where applicable. Field duplicate/sample results exhibited acceptable precision, except as noted. Calculation checks were performed on ten percent of the data set. A review of transcriptions from instrument data to sample summary sheets was performed. Deviations from QA/QC criteria that were noted during data review are summarized below.

The QL standard concentration for antimony was 2 µg/l instead of 1 µg/l. The instrument data were evaluated and antimony was not detected in any sample at or above 1 µg/l and no data qualification was required for antimony. The QL standard concentration was at or below the project QL for the other analytes.

The field duplicate precision for zinc was >20 RPD and the results for this analyte were qualified as estimated in both 5WC21 and field duplicate.

For this Corrective Action groundwater monitoring event, sample results for the monitoring wells were reported at or above the permit detection limit or laboratory method detection limit, if higher than the permit detection limit. Target analytes detected at or above the detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized on the attached table.

Results for samples unaffected by the data validation process and reported as not detected at or above the detection limit were validated and qualified "U." Reported values less than the QL should be considered estimated concentrations and were validated and qualified "J." No results were rejected based on the data validation criteria.

***Method 7470A (CVAA)***

The original certificate of analysis was received on May 2, 2014. The certificate of analysis appeared complete in its presentation and the final data were of acceptable quality. The certificate of analysis demonstrated the ability of the laboratory to achieve the reported permit QL for mercury.

QC history documentation was provided. Applicable preservation and technical holding time criteria were met. Instrument calibration and calibration verification criteria were met. QL

standard, blank, MS/MSD and LCS results recovered within control limits, unless noted below. Field duplicate/sample results exhibited acceptable precision, where applicable. Calculation checks were performed on ten percent of the data set. A review of transcriptions from instrument data to sample summary sheets was performed. No deviations from QA/QC criteria were noted during data review.

For this Corrective Action groundwater monitoring event, sample results for the monitoring wells were reported at or above the permit detection limit. Target analytes detected at or above the detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized on the attached table.

For this Corrective Action groundwater monitoring event, mercury results for the samples unaffected by the data validation process and not detected at or above the detection limit and/or QL were validated and reported as "U." No results were rejected based on the data validation criteria. No results were rejected based on the data validation criteria.

## INORGANIC DATA EVALUATION FOR ICP/MS SW-846 METHOD 6020A

CompuChem, a Division of Liberty Analytical. Cary, NC; SDGs: 1404151, 1404152 (Co only)
Preparation Method 3005A

"☑" denotes items reviewed. See Data Validation Summary for additional comments.

### A. DOCUMENTION COMPLETENESS CRITERIA:

***Data Quality Objective: Representativeness***

- ☑ Chain of custody – Custody transfers must be signed and dated
- ☑ Chain of custody properly and completely filled out including sampler signatures, date and time of sampling, sample ID, analysis requested

### B. DETECTION LIMIT AND QUANTITATION LIMIT CRITERIA:

***Data Quality Objective: Analytical Sensitivity***

- ☑ Specific detection limit reported
- ☑ Specific quantitation limit reported
- ☑ Standard analyzed at the QL (LLQC), digested, 70-130% recovery, analyzed after MDL determination and as needed
- ☑ Instrument detection limit (IDL) less than QL
- ☑ Performance evaluation sample analyzed within 12 months

### C. INITIAL DEMONSTRATION OF CAPABILITY (IDOC) CRITERIA:

***Data Quality Objective: Laboratory Method Sensitivity***

- ☑ Analyst IDOC for J. Feldhaus submitted previously

### D. SAMPLE AND STANDARD PREPARATION CRITERIA:

***Data Quality Objective: Accuracy and Representativeness***

- ☑ Digestion prior to analysis
- ☑ Digestion method: 3005A
- ☑ Samples and standards matrix matched

### E. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:

***Data Quality Objective: Representativeness***

- ☑ 6 month holding time, pH<2 with Nitric Acid ($HNO_3$)

### F. INSTRUMENT TUNE CRITERIA:

***Data Quality Objective: Verify Operating Conditions***

- ☑ Prior to calibration
- ☑ Relative Standard Deviation (RSD) </=5%
- ☑ Resolution < 0.9 amu full width at 10% peak height (or lower)
- ☑ Mass calibration </=0.1 amu difference from true value

### G. INITIAL CALIBRATION CRITERIA:

***Data Quality Objective: Laboratory Accuracy***

- ☑ 1 calibration blank and at least 1 standard,
- ☑ Linear curve fit with correlation coefficient r>0.998
- ☑ Daily calibration following tuning and prior to sample analysis

**H. INITIAL CALIBRATION VERIFICATION (ICV) CRITERIA:**

***Data Quality Objective: Laboratory Accuracy***

- ☑ Daily following initial calibration
- ☑ ICV concentration near mid-point of calibration curve, 90-110% recovery
- ☑ Low level ICV (LLICV) – prior to analysis, at QL concentration, 70-130% recovery

**I. INITIAL CALIBRATION BLANK CRITERIA:**

***Data Quality Objective: Laboratory Analytical Sensitivity/Instrument Drift/Contamination Evaluation***

- ☑ Daily following ICV
- ☑ Interference free

**J. CONTINUING CALIBRATION VERIFICATION (CCV) CRITERIA:**

***Data Quality Objective: Laboratory Analytical Accuracy***

- ☑ CCV, prior to analysis, after every 10 samples, at end of analysis
- ☑ CCV recovery within 90-110%, mid-point of curve concentration
- ☑ Low level CCV (LLCCV), concentration at QL, prior to analysis, after every 10 samples, end of analysis (70-130% R)

**K. CONTINUING CALIBRATION BLANK CRITERIA:**

***Data Quality Objective: Laboratory Analytical Sensitivity/Instrument Drift/Contamination Evaluation***

- ☑ Immediately after the CCV, 10 sample frequency
- ☑ Interference free

**L. BLANK CRITERIA:**

***Data Quality Objective: Sensitivity/Instrument Drift/Contamination Evaluation***

- N/A Trip Blank (check only if analyzed)
- ☑ Method/Other Lab Blanks (check only if analyzed), one per digestion batch
- ☑ Interference free

**M. INTERFERENCE CHECK SAMPLE (ICS) CRITERIA:**

***Data Quality Objective: Analytical Accuracy/Verification of Isobaric Interference Corrections***

- ☑ At beginning of analytical run
- ☑ Recovery: 80-120%

**N. MATRIX SPIKE DUPLICATE (MSD) OR SAMPLE DUPLICATE CRITERIA:**

***Data Quality Objective: Method Precision in Sample Matrix***

- ☑ All analytes, one MSD or sample duplicate per batch of 20 samples
- ☑ Spiked prior to sample preparation
- ☑ RPD $\leq$ 20 between MS and MSD results or sample and duplicate results
- ☑ MSD analyte recovery 75-125%

**O. MATRIX SPIKE (MS) CRITERIA:**

***Data Quality Objective: Method Accuracy in Sample Matrix***

- ☑ All analytes, one MS per digestion batch of 20 samples
- ☑ Spiked prior to sample preparation
- ☑ Recovery: 75-125%
- ☑ Post digestion spike if MS/MSD recoveries low
- ☑ Recovery of post digestion spike analytes within 80-120%

**P. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:**

***Data Quality Objective: Laboratory Method Accuracy, Laboratory Performance***

- ☑ LCS for all target analytes, one LCS per 20 sample batch
- ☑ LCS concentration at approximately mid-point of analytical curve

☑ Recovery within 80-120% for all analytes

**Q. INTERNAL STANDARDS (IS) CRITERIA:**

***Data Quality Objective: Analytical Accuracy in Sample Matrix***

☑ IS added to each sample and QC sample
☑ % Relative intensity (RI) within 70-125%

**R. SERIAL DILUTION TEST CRITERIA:**

***Data Quality Objective: Accuracy in Sample Matrix***

☑ Similar matrix, if concentration is 10X QL, then % Difference < 10%

**S. SAMPLE QUANTITATION AND GENERAL REPORTING CRITERIA:**

***Data Quality Objective: n/a***

☑ Sample results reported within instrument calibration range
☑ Sample results reported to the project detection limit
☑ Calculation checks on 10% of the data set
☑ Sample/Field duplicate RPD ≤ 20, where applicable

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

## INORGANIC DATA EVALUATION FOR MERCURY BY COLD VAPOR AA METHOD 7470A

CompuChem, a Division of Liberty Analytical. Cary, NC; SDGs: 1404151
"☑" denotes items were reviewed. See Data Validation Summary for additional comments.

**A. QC DOCUMENTATION CRITERIA:**
- ☑ Specific quantitation limit for mercury
- ☑ Specific detection limit for mercury, where applicable
- ☑ Electronic data file reviewed
- ☑ QC standard analyzed at or less than the QL (70-130%Recovery)
- ☑ Analyst IDOC for N. Bolton submitted previously
- ☑ Performance evaluation sample analyzed within 12 months

**B. TECHNICAL HOLDING TIMES / PRESERVATION REQUIREMENTS:**
- ☑ 28 days holding time
- ☑ Adjust pH <2 w/ $HNO_3$

**C. INSTRUMENT CALIBRATION CRITERIA:**
- ☑ 1 calibration blank and at least 5 standards
- ☑ Instrument calibrated for every analytical sequence for every method

**D. INITIAL / CONTINUING CALIBRATION VERIFICATION CRITERIA:**
- ☑ 10 sample frequency for CCV
- ☑ Recovery within 80-120% range

**E. BLANK CRITERIA:**
- N/A Trip Blank (check only if analyzed)
- N/A Equipment Blank (check only if analyzed)
- ☑ Method/other laboratory blanks (check only if analyzed)
- ☑ Interference free

**F. DUPLICATE/MATRIX SPIKE DUPLICATE (MSD) CRITERIA:**
- ☑ All target analytes: mercury
- ☑ One sample duplicate or matrix spike duplicate per batch of 20 samples
- ☑ RPD $\leq$ 20 for spike/sample values greater than 5 times QL
- ☑ RPD $\leq$ 20 between MS and MSD results

**G. MATRIX SPIKE (MS) SAMPLE CRITERIA:**
- ☑ Mercury, MS spiked prior to digestion
- ☑ Recovery within 75-125%

**H. LABORATORY CONTROL SAMPLE CRITERIA:**
- ☑ Recovery within 80-120%
- ☑ Mercury

**I. SAMPLE RESULTS CRITERIA:**

- ☑ Results reported within instrument calibration range
- ☑ Results reported to detection limit
- ☑ Calculation checks on 10% of the data set
- ☑ Sample/Field duplicate RPD $\leq$ 20, where applicable

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

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Conclusions presented are based upon a review of available information, the results of our field studies, and/or professional judgment. To the best of our knowledge, information provided by others is true and accurate, unless otherwise noted.

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Draper Aden Associates
Engineering ♦ Surveying ♦ Environmental Services

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Kathy Olsen 7/29/14

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## SW-846 METHOD 8260C VOLATILE ORGANIC DATA REVIEW SUMMARY

Draper Aden Associates performed a manual comprehensive review of the analytical results for the April 21-22, 2014 semiannual groundwater monitoring event at HWMU5 located at RFAAP, Radford, Virginia. Draper Aden Associates collected the groundwater samples from monitoring wells 5W8B, 5W5B, 5W7B, 5WC21, 5WC22, 5WC23, and 5W12A. Groundwater sample 5WDUP was submitted to the laboratory as a blind sample duplicate for 5WC21. The following information and attached table summarize the Method 8260C data validation results. Validation of other required methods is presented on separate reports.

For this Corrective Action annual groundwater monitoring event, samples 5W5B, 5W7B, 5WC21, 5WC22 and 5WC23 (downgradient point of compliance (POC) wells) were analyzed for five Appendix J and nine Appendix K volatile organic target analytes, as listed in the facility's permit, by USEPA SW-846 Method 8260C. Samples 5W8B (upgradient groundwater monitoring well) and 5W12A (plume monitoring well) were analyzed for the five Appendix J volatile organic target analytes by USEPA SW-846 Method 8260C.

Draper Aden Associates sent samples to Eurofins Lancaster Laboratories Environmental, (Lancaster), of Lancaster, Pennsylvania. Lancaster performed the SW-846 Method 8260C volatile analysis. Lancaster is a VELAP accredited laboratory for the analytes, method and matrix as reported on the certificate of analysis. On behalf of RFAAP, Lancaster submitted results to Draper Aden Associates in a final certificate of analysis that included sample analytical results as well as relevant documentation to validate and verify the results (SDG RAE16).

The evaluation of Lancaster's compliance with Method 8260C and validation of the results were based on a review of the following items: QC deliverables package, QC history documentation, technical holding time and preservation requirements, instrument performance (tune) check, instrument calibration and calibration verification data, blank, surrogate spike recoveries, matrix spike and matrix spike duplicate (MS/MSD) analyses, laboratory control sample (LCS) data, internal standard, and/or target analyte identification and quantitation results. A review of transcriptions from instrument data to sample summary sheets was performed. Calculation verifications were performed on ten percent of the data set, where applicable. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

Lancaster received the samples on ice and in good condition, with custody seals intact. The chain of custody was appropriately signed and dated by field and laboratory personnel. Applicable holding time and preservation criteria were met for the samples.

The original certificate of analysis was received on May 15, 2014. The revised certificate of analysis appeared complete in its presentation and the data were of acceptable quality. The certificate of analysis demonstrated the ability of the laboratory to achieve the permit required quantitation limit (QL) for each target analyte, except where noted below.

QC deliverables package requirements were met. QC history documentation and instrument performance check criteria were met. Sample holding time, preservation, initial calibration, calibration verification, blanks, surrogates, MS/MSD, LCS, and internal standards criteria were met, except where noted below. Field duplicate/sample results exhibited acceptable precision, where applicable. Sample results were verified and no transcription errors were observed.

Chloroform recovered high in the MSD. Chloroform was detected in each sample and sample results for this analyte were validated and qualified "J" to note that the results were estimated due to the observed QC deficiency. The remaining MS/MSD/LCS criteria were met or no data qualifications were needed.

A 25 ml sample purge volume was used for the analysis of the target analytes.

Results were reported by the laboratory to at or above the laboratory MDL for this Corrective Action monitoring event instead of the permit MDL. The laboratory MDL was at or below the permit MD, or slightly above due to rounding.

The laboratory revised the certificate of analysis to include the initial demonstration of capability (IDOC) for analyst K. Sposito.

The chain of custody notes preparation method SW-846 Method 5030B, however, the laboratory reported Method 5030C and no action was required. The COC will be updated with future events. Target analytes detected at or above the detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized on the attached table.

Results for samples unaffected by the data validation process and reported as not detected at or above the detection limit were validated and qualified "U." Except where noted above, reported values less than the QL should be considered estimated concentrations and were validated and qualified "J." No results were rejected based on the data validation criteria.

## SW-846 METHOD 8260C (GC/MS) VOLATILE ORGANIC DATA VALIDATION

***Comments:*** *Volatile organic analysis uses a purge and trap system to remove volatile organic target analytes from a 25 ml water sample (SW-846 5030C). Target analytes are separated and quantified using a capillary column gas chromatograph (GC)/mass spectrometer (MS).*

### A. QC DELIVERABLES PACKAGE:

| | | |
|---|---|---|
| 1. | Was the case narrative present/signed by a lab representative? | ☑ YES ☐ NO |
| 2. | Was the Chain of Custody present/signed by a lab representative? | ☑ YES ☐ NO |
| 3. | Were the sample results included for the sample locations? | ☑ YES ☐ NO |
| 4. | Did the laboratory report the required target analytes? | ☑ YES ☐ NO |
| 5. | Were the analyte QLs reported on reports in agreement with the instrument specific MDL study and project required QL? | ☑ YES ☐ NO |
| 6. | Were the sample locations, analytes and QLs in agreement with the electronic deliverable (EDD)? | ☑ YES ☐ NO |

**Comments:** QC deliverables package requirements were met.

### B. QC HISTORY DOCUMENTATION CRITERIA:

| | | |
|---|---|---|
| 1. | Was an instrument specific MDL study provided which included DL and QL values for the target analytes? | ☑ YES ☐ NO |
| 2. | Was the instrument calibration range provided? | ☑ YES ☐ NO |
| 3. | Were the instrument specific check sample data provided for the target analytes? | ☑ YES ☐ NO |

**Comments:** QC history documentation was provided and met criteria. The laboratory analyzed a MDL check sample at 0.1 µg/l (25 ml purge) for most target analytes.

### C. TECHNICAL HOLDING TIME AND PRESERVATION CRITERIA:

| | | |
|---|---|---|
| 1. | Was the 14-day sample collection to analysis holding time met? | ☑ YES ☐ NO |
| 2. | Were the samples received at ≤6°C, zero headspace? | ☑ YES ☐ NO |
| 3. | Were the sample pHs adjusted to < 2 with HCl? | ☑ YES ☐ NO |
| 4. | Were sample pHs adjusted to 4-5 with HCl? (Acrolein) | ☑ NA ☐ YES ☐ NO |
| 5. | Were samples analyzed unpreserved (2-Chloroethyl vinyl) | ☑ NA ☐ YES ☐ NO |

**Comments:** Technical holding time and sample preservation criteria were met.

### D. GC/MS INSTRUMENT PERFORMANCE (TUNING) CHECK CRITERIA:

1. Was analysis of the instrument performance check solution

performed at the beginning of each 12-hour period during which standards or samples were analyzed? ☑ YES ☐ NO

2. Was there documentation of the injection of 5-50 ng bromofluorobenzene (BFB)? ☑ YES ☐ NO
3. Were the ion abundance criteria met? ☑ YES ☐ NO
4. Were calibration, blank, and sample analyses performed within 12 hours of tuning? ☑ YES ☐ NO

**Comments:** Instrument performance check criteria were met.

## E. INITIAL GC/MS CALIBRATION CRITERIA:

***SW-846 Criteria:***

1. Did the internal standard (IS) which was selected for target analyte RF calculation have a retention time close to the IS? ☑ YES ☐ NO
2. Were the target analytes included in the ICAL? ☑ YES ☐ NO
3. Were any calibration levels removed from the curve that would negatively influence the data integrity? ☐ YES ☑ NO
4. Did the ICALs consist of a minimum of 5 calibration levels? ☑ YES ☐ NO
5. Was the lowest concentration calibration standard at or below the associated MCL? ☑ YES ☐ NO
6. Was the calibration curve developed using the same purge volume used for sample analysis? ☑ YES ☐ NO
7. Were 8260C minimum Relative Response Factor (RRF) criteria met? *Refer to Table 4- SW-846 Method 8260C (Rev3 2/06) for specific analyte RRFs* ☑ YES ☐ NO
8. Was each target analyte %RSD ≤ 20%? ☐ YES ☑ NO
9. Was the correlation coefficient >0.99 for target analytes with ≥20 % RSD? *(System recalibrated if >10% analytes fail above condition)* ☑ YES ☐ NO
10. Was an initial calibration verification (ICV) standard analyzed immediately following the ICAL? ☑ YES ☐ NO
11. Was the recovery within 70-130%? ☑ YES ☐ NO
12. Was the ICV standard prepared from a different source from the ICAL ? ☑ YES ☐ NO

***Method Validation Performance Criteria:***

1. Did target analytes and surrogates that have RSDs > 20% have ≥0.99 correlation coefficient or coefficient of determination? ☑ YES ☐ NO
2. For linear regression curves, was the recalculated concentration of the low calibration point within ±30%? ☑ NA ☐ YES ☐ NO
3. For quadratic curves, was a minimum six standards used? ☑ YES ☐ NO

**Comments:** Initial calibration criteria were met.

**F. CALIBRATION VERIFICATION CRITERIA:**

***SW-846 Criteria:***

1. Was a calibration verification analyzed at the beginning of each 12-hour period following the analysis of the instrument performance check and prior to analysis of the method blank and samples? The calibration verification may be part of the ICAL or analyzed independently during another 12-hour analysis period. ☑ YES ☐ NO
2. Were 8260C minimum Relative Response Factor (RRF) criteria met? *Refer to Table 4- SW-846 Method 8260C (Rev3 2/06) for specific analyte RRFs* ☑ YES ☐ NO
3. Did the target analytes and system monitoring analytes (surrogates) have the % D within ± 20%? ☑ YES ☐ NO
   If "NO", list analytes that exceed these criteria:

***Draper Aden Associates Contractual Requirements:***

1. Did the target analytes and system monitoring analytes (surrogates) have % Ds within ± 20%? ☑ YES ☐ NO

**Comments:** The CV standard criteria were met.

**G. BLANK CRITERIA:**

1. Was a method blank analyzed after the calibration standards, prior to sample analysis, and once for every 12-hour period beginning with the injection of BFB? ☑ YES ☐ NO
2. Was a trip blank analyzed with this sample batch? ☑ YES ☐ NO
3. Were the trip blanks and method blanks interference free? ☐ YES ☑ NO
4. Was the level of blank contamination less than 5% of the regulatory limit associated with an analyte or less than 5% of the sample result for the same analyte, whichever is greater? ☑ YES ☐ NO
5. List target analytes detected in the blanks: none
6. Did any result exceed the calibration range? ☐ YES ☑ NO
7. Were one or more blanks analyzed following the high concentration sample to prevent cross contamination? ☑ NA ☐ YES ☐ NO

**Comments:** A trip blank was submitted and analyzed for each day of sample collection. Blank criteria were met.

**H. SURROGATE CRITERIA:**

***SW-846 Criteria:***

1. Were the following surrogates used? ☑ YES ☐ NO
   - dibromofluoromethane (80-120%)
   - 4-bromofluorobenzene (80-120%)
   - toluene-d8 (80-120%)
   - 1,2-dichloroethane-d4 (80-120%)
2. Were recoveries within specified ranges? ☑ YES ☐ NO

If "NO", corrective action is required. Flagging of the data as estimated is not acceptable until corrective action has been attempted

3. Were samples with surrogates outside the QC window reanalyzed as required? ☑ NA ☐ YES ☐ NO

**Comments:** Surrogate criteria were met.

## I. MATRIX SPIKE, MATRIX SPIKE DUPLICATE (MS/MSD) CRITERIA:

(MS/MSD Requirements - CLP Guidelines)

| *Analyte* | *% R Water* | *% RPD Water* |
|---|---|---|
| 1,1-dichloroethene | 61-145 | 14 |
| trichloroethene | 71-120 | 14 |
| benzene | 76-127 | 11 |
| toluene | 76-125 | 13 |
| chlorobenzene | 75-130 | 13 |

1. Was a MS/MSD analyzed per sample batch or every 20 samples? ☑ YES ☐ NO
2. Did the MS/MSD spike contain additional target analytes? ☑ YES ☐ NO
3. Was the MS/MSD analyzed on the specific project matrix? ☑ YES ☐ NO
4. List the MS % recovery range: 75-125%; 70-130% poor purge analytes; RPD ≤20
5. Were any analytes qualified as estimated? ☑ YES ☐ NO
   - If yes, and the LCS for the analyte(s) recovered within control limits, matrix interference is suspected.

**Comments:** MS/MSD criteria were met except as noted above.

## J. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

1. Was a LCS included in the sample analysis? ☑ YES ☐ NO
2. Did the LCS contain the required target analytes? ☑ YES ☐ NO
3. List the LCS acceptance criteria: 80-120% (most analytes).
4. List the LCS analytes which were not within the specified ranges: *None*
5. Were any analytes flagged as estimated due to LCS criteria? ☐ YES ☑ NO

**Comments:** LCS criteria were met or no qualifications were needed.

## K. INTERNAL STANDARDS (IS) CRITERIA:

1. Were the following internal standards (IS) used? ☑ YES ☐ NO
   t-butyl alcohol-d10, fluorobenzene, chlorobenzene-$d_5$, 1,4-dichlorobenzene-$d_4$
2. Were IS areas within - 50% to + 100% of the last CV? ☑ YES ☐ NO
3. Were IS RTs within ± 30 seconds of the last CV? ☑ YES ☐ NO
4. Were samples failing Items 2 and/or 3 above reanalyzed as required by the method? ☑ NA ☐ YES ☐ NO

**Comments:** Internal standards criteria were met.

## L. TARGET ANALYTE IDENTIFICATION:

1. Were the RRTs of the reported analytes within ± 0.06 RRT units of the standard RRT? ☑ YES ☐ NO
2. Check the sample spectra against the laboratory standard spectra to see that the following criteria were met:
   * Did characteristic ions maximize in the same scan or within one scan of each other? ☑ YES ☐ NO
   * Were the characteristic ions present in the standard spectra and sample spectra for analytes detected above the QL? ☑ YES ☐ NO
   * Were the relative intensities of the ions between the standard and sample spectra within ± 30%? ☑ YES ☐ NO
3. Were the reported analytes confirmed? ☑ YES ☐ NO

**Comments:** See attached table for detected analytes. Identification criteria were met.

## M. TARGET ANALYTE QUANTITATION:

* If the %RSD of an analyte was 20% or less, then the average relative response factor should have been used for quantitation.
* If the %RSD of an analyte was greater than 20%, then the quantitation should have been based on a calibration curve using the first or higher order regression fit of the five calibration points. (6 calibration points for 2nd order).

1. List the detected analytes whose %RSD was > 20%: *None.*
   - Was quantitation based on a linear regression fit? ☑ NA ☐ YES ☐ NO
2. Did the initial analysis of any sample have a concentration of a analyte which exceeded the initial calibration range? ☐ YES ☑ NO
   If so, was the sample reanalyzed at a higher dilution? ☑ NA ☐ YES ☐ NO
3. Were the analyte concentrations that were recorded on the raw sample quantitation reports accurately transferred to the sample summary sheets? ☑ YES ☐ NO
4. Were sample/ field duplicate RPDs <20% where applicable? ☑ YES ☐ NO

**Comments:** Target analyte quantitation criteria were met. Calculation checks were performed on ten percent of the data set and no errors were noted.

## N. CORRECTIVE ACTION TAKEN AND GENERAL COMMENTS:

**Comments:** No corrective action was taken. Library searches were not requested. The IDOC for analyst K. Sposito was provided as a revision.

**REFERENCES:**

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

**LIMITATIONS:**

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Conclusions presented are based upon a review of available information, the results of our field studies, and/or professional judgment. To the best of our knowledge, information provided by others is true and accurate, unless otherwise noted. Draper Aden Associates' liability, hereunder, shall be limited to amounts due Draper Aden Associates for services actually rendered, or reimbursable expenses actually incurred.

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Engineering ♦ Surveying ♦ Environmental Services

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Date:

## SW-846 METHOD 8270D SEMIVOLATILE ORGANIC DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive manual review of the analytical results for the April 21-22, 2014 Corrective Action groundwater monitoring event at RFAAP HWMU5. Draper Aden Associates collected the groundwater samples from point of compliance (POC) monitoring wells 5W5B, 5W7B, 5WC21, 5WC22, and 5WC23. Sample 5WDUP was submitted to the laboratory as a blind sample duplicate for 5WC21.

Samples were analyzed for the seven Appendix K semivolatile target analytes listed in the facility's permit by USEPA SW-846 Method 8270D. The following information and attached table summarize the Method 8270D data validation results. Other wells were listed on the chain of custody (COC); however, USEPA SW-846 Method 8270D was not required for those sample locations.

Draper Aden Associates sent samples to CompuChem (CompuChem), a Division of Liberty Analytical, of Cary, North Carolina. CompuChem performed the Method 8270D analyses. On behalf of RFAAP, CompuChem submitted results to Draper Aden Associates in a final certificate of analysis, which included sample analytical results, as well as relevant documentation to validate and verify the results. CompuChem is a VELAP accredited laboratory for the parameters, methods and matrix as reported on the certificate of analysis.

The evaluation of CompuChem's compliance with Method 8270D and validation of the results was based on a limited review of the following items: QC deliverables package, QC history documentation, case narrative, technical holding time and preservation requirements, instrument performance (tune) check, instrument calibrations, blank analysis, surrogate spike recoveries, matrix spike and matrix spike duplicate (MS/MSD) analyses, laboratory control sample (LCS) data, and internal standard requirements. A review of transcriptions from instrument data to sample summary sheets was performed. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

The original certificate of analysis was received on May 16, 2014. The revised certificate of analysis appeared complete and data were of acceptable quality, except where noted below. The data set demonstrated the laboratory's ability to achieve the reported permit required quantitation limit (QL). The analyst IDOC and the most recent MDL study were provided as a revision to the certificate of analysis.

CompuChem received the samples on ice and in good condition, with custody seals intact. The chain of custody was appropriately signed and dated by field and laboratory personnel.

QC history documentation (instrument specific initial demonstration of proficiency and method detection limit data) were provided. Applicable preservation and technical holding time criteria were met. Instrument performance check (tuning) criteria, initial calibration, calibration verification, blank, MS/MSD, LCS, surrogate recoveries, and internal standard requirements were met, except where noted below. Sample results were reviewed for transcription errors from

the instrument data to the laboratory report and no errors were noted. Deviations from specific QA/QC criteria that were identified during the review process are summarized below. Calculations checks were performed on ten percent of the data set, where applicable. Field duplicate/sample results exhibited acceptable precision, where applicable.

A footnote presented in Appendix K, Groundwater Corrective Action Annual Monitoring List, of Permit Module VI – *Groundwater Corrective Action & Monitoring Program for Unit 5* indicates that verification is required for constituents detected at concentrations less than the Limit of Quantitation (LOQ)/QL if their associated groundwater protection standard (GPS) are:

(1) based on background values equal to the QL/LOQ/PQL
(2) greater than the applicable risk-based concentrations (i.e., ACL or RBC).

During Second Quarter 2014, no constituent with a GPS based on a background value equal to the QL/LOQ/PQL was detected at or above the detection limit or QL in any project sample and the alternate low-level analytical method of analysis for confirmation was not required.

Except where noted above, results remain as reported by the laboratory. Sample results were reported by the laboratory to at or above the method detection limit (MDL) for this monitoring event. These current laboratory established MDLs slightly differ from the method detected limits listed in Appendix K.

Target analytes detected at or above the detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized on the attached table.

Results for samples unaffected by the data validation process and reported as not detected at or above the detection limit were validated and qualified "U." Reported values less than the QL should be considered estimated concentrations and were validated and qualified "J." No results were rejected based on the data validation criteria.

## SW-846 METHOD 8270D (GC/MS) SEMIVOLATILE ORGANIC DATA VALIDATION

CompuChem, Division of Liberty Analytical, Cary, NC; SDG: 1404151

**Comments:** *Semivolatile (a.k.a, base/neutral and acid extractables) analysis involves sample preparation using liquid/liquid extraction technique (SW-846 Method 3510C). The semivolatile extracts are concentrated through evaporation. Target analytes are separated and quantified using a capillary column gas chromatograph (GC)/mass spectrometer (MS).*

### A. QC DELIVERABLES PACKAGE:

1. Was the case narrative present/signed by a lab representative? ☑ YES ☐ NO
2. Was the Chain of Custody present/signed by a lab representative? ☑ YES ☐ NO
3. Were the sample results included for the sample locations? ☑ YES ☐ NO
4. Did the data correspond to the project specific analyte list? ☑ YES ☐ NO
5. Were the analyte QLs reported on sample summary sheets in agreement with the instrument specific MDL study? ☑ YES ☐ NO

**Comments:** QC deliverables package criteria were met.

### B. QC HISTORY DOCUMENTATION CRITERIA:

1. Were instrument specific detection limits provided for the analytes? ☑ YES ☐ NO
2. Were the instrument specific QLs for target analytes provided? ☑ YES ☐ NO
3. Was calibration range specified for the target analytes? ☑ YES ☐ NO

**Comments:** QC history documentation criteria were met.

### C. TECHNICAL HOLDING TIME AND PRESERVATION CRITERIA:

1. Was the 7-day sample collection to extraction holding time met? ☑ YES ☐ NO
2. Was the 40-day extraction to analysis holding time met? ☑ YES ☐ NO
3. Were the samples received at ≤6°C? ☑ YES ☐ NO

**Comments:** Sample holding times and preservation criteria were met.

### D. GC/MS INSTRUMENT PERFORMANCE CHECK CRITERIA:
***(Tuning, Injection Port and Column Performance)***

1. Was performance check solution analysis performed at the beginning of each 12-hour period of standard and/or sample analysis? ☑ YES ☐ NO
2. Was there documentation of the injection of 50 ng of DFTPP? ☑ YES ☐ NO
3. Were the ion abundance criteria met? ☑ YES ☐ NO
4. Was the injection port inertness verified by analysis of 4,4'-DDT? ☑ YES ☐ NO
   - If no, does associated data require qualification? ☑ NA ☐ YES ☐ NO
   - Was the injection port inertness check acceptable? ☑ YES ☐ NO

5. Was column performance checked through the analysis of peak tailing of pentachlorophenol and benzidine? ☑ YES ☐ NO
   - If no, does associated data require qualification? ☑ NA ☐ YES ☐ NO
   - Was column performance check acceptable? ☑ YES ☐ NO

**Comments:** Instrument performance check criteria were met. Per the laboratory, 50 ng of DFTPP was injected.

## E. INITIAL GC/MS CALIBRATION CRITERIA:

***SW-846 Criteria:***

1. Were the initial calibrations (ICAL) and any directly associated blanks and samples analyzed within 12-hours of the associated instrument performance (tune) check? ☑ YES ☐ NO
2. Were quantitation ions, used and listed on data, randomly checked against primary quantitation ions as required by Method 8270D and the RFP? ☑ YES ☐ NO
3. Were the target analytes included in the ICAL? ☑ YES ☐ NO
4. Did the ICAL consist of a minimum of 5 calibration levels? ☑ YES ☐ NO
5. Was the lowest concentration calibration standard at or below the associated MCL, regulatory compliance, or action limit? ☑ YES ☐ NO
6. Were calibration levels removed from the curve that would negatively impact the data integrity? ☐ YES ☑ NO
7. Were 8270D minimum RRF criteria met? Relative Response Factor-range (RRF 0.010-0.900) ☑ YES ☐ NO
   **Refer to Table 4 of SW-846 Method 8270D (Rev4 2/07) for specific analyte RRFs*
8. Was each target analyte %RSD ≤ 20%? ☑ YES ☐ NO
9. Was the correlation coefficient or coefficient of determination >0.99 for target analytes with > 20% RSD? ☑ NA ☐ YES ☐ NO
   **System recalibrated if >10% analytes fail above condition*
10. Was an initial calibration verification (ICV) standard analyzed immediately following the ICAL? ☑ YES ☐ NO
11. Was the recovery within 70-130%? ☑ YES ☐ NO
12. Was the ICV standard prepared from a different source from the ICAL ? ☑ YES ☐ NO

***Method Validation Performance Criteria:***

1. Did target analytes and surrogates that have RSDs > 20% have ≥0.99 correlation coefficient or coefficient of determination? ☑ NA ☐ YES ☐ NO
2. For linear regression curves, was the recalculated concentration of the low calibration point within ±30%? ☑ NA ☐ YES ☐ NO
3. For quadratic curves, was a minimum six standards used? ☑ NA ☐ YES ☐ NO

**Comments:** Initial calibration criteria were met.

## F. CALIBRATION VERIFICATION CRITERIA:

***SW-846 Criteria:***

1. Was a calibration verification analyzed at the beginning of each 12-hour period following the analysis of the instrument performance check and prior to analysis of the method blank and samples? The calibration verification may be part of the ICAL or run independently on another 12-hour analysis period. ☑ YES ☐ NO
2. Was each target analyte % difference/drift ≤ 20%? ☑ YES ☐ NO
   (Corrective action if >20%)
3. Were 8270D minimum RRF criteria met?
   Relative Response Factor-range (RRF 0.010-0.900) ☑ YES ☐ NO
   **Refer to Table 4 of SW-846 Method 8270D (Rev4 2/07) for specific analyte RRFs*

***Method Validation Performance Criteria:***

1. Did target analytes and system monitoring analytes (surrogates) have % Ds within ± 20.0%? ☑ YES ☐ NO
   If "NO", list analytes that exceed this criterion: see attached table

**Comments:** Calibration verification criteria were met.

## G. BLANK CRITERIA:

1. Was a method/extraction blank analyzed on each GC/MS system used for sample analysis? ☑ YES ☐ NO
2. Was a trip blank analyzed with this sample batch? ☑ NA ☐ YES ☐ NO
3. Were the blank samples interference free? ☑ YES ☐ NO
4. Was the level of blank contamination > 5% of the MCL? ☑ NA ☐ YES ☐ NO
5. List target analytes detected in the blanks: none

**Comments:** Blank criteria were met.

## H. SURROGATE CRITERIA:

1. Were the following surrogates used? See comment
   - phenol - $d_6$ (10%-94%)
   - 2-fluorophenol (21%-100%)
   - 2,4,6-tribromophenol (10%-123%)
   - nitrobenzene – $d_8$ (35%-114%)
   - 2-fluorobiphenyl (43%-116%)
   - p-terphenyl - $d_{14}$ (33%-141%)
2. Were recoveries within the specified ranges? ☐ YES ☑ NO
3. Were any two base/neutral or acid surrogates out of specification or did any one base/neutral or acid extractable surrogate have a recovery of less than 10%? ☐ YES ☑ NO
   If yes, was a reextraction and reanalysis performed to confirm that the non-compliance was due to sample matrix effects rather than laboratory deficiencies?

**Comments:** The laboratory made surrogate substitutions as allowed by the method. The surrogate criteria were met or no data qualifications were needed.

## I. MATRIX SPIKE/ MATRIX SPIKE DUPLICATE (MS/MSD) CRITERIA:

(MS/MSD Requirements - CLP Guidelines)

| Analyte | % R Water | % RPD Water |
|---|---|---|
| Phenol | 12-110 | 42 |
| 2-Chlorophenol | 27-123 | 40 |
| N-Nitroso-di-n-propylamine | 41-116 | 38 |
| 4-Chloro-3-methylphenol | 23-97 | 42 |
| Acenaphthene | 46-118 | 31 |
| 4-Nitrophenol | 10-80 | 50 |
| 2,4-Dinitrotoluene | 24-96 | 38 |
| Pyrene | 26-127 | 31 |

1. Was a MS/MSD analyzed per sample batch or every 20 samples, whichever may occur first? ☑ YES ☐ NO
2. Did the MS/MSD spike contain additional target analytes? ☑ YES ☐ NO
3. Was the MS/MSD analyzed on the specific project matrix? ☑ YES ☐ NO
4. List the MS % recovery range: *See certificate of analysis*
5. Were any analytes qualified as estimated? ☐ YES ☑ NO
   - If yes, and the LCS for the analyte(s) recovered within control limits, matrix interference is suspected.

**Comments:** MS/MSD criteria were met. Field duplicate/sample results exhibited acceptable precision, where applicable.

## J. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

1. Was a LCS included in the sample analysis? ☑ YES ☐ NO
2. Did the LCS contain required target analytes? ☑ YES ☐ NO
3. List the LCS target analytes and laboratory recovery range: *See semivolatile certificate of analysis.*
4. Were any analytes qualified as estimated due to LCS criteria? ☐ YES ☑ NO

**Comments:** LCS criteria were met.

## K. INTERNAL STANDARDS (IS) CRITERIA:

1. Were the following internal standards used? ☑ YES ☐ NO
   - 1,4-Dichlorobenzene-$d_4$
   - Naphthalene-$d_8$
   - Acenaphthene-$d_{10}$
   - Phenanthrene-$d_{10}$
   - Chrysene-$d_{12}$
   - Perylene-$d_{12}$
2. Were the IS areas within - 50% to + 100% of the last CV? ☑ YES ☐ NO
3. Were IS RTs within ± 30 seconds of last CV? ☑ YES ☐ NO

**Comments:** Internal standard criteria were met.

## L. TARGET ANALYTE IDENTIFICATION:

1. Were the RRTs of the reported analytes within ± 0.06 RRT units of the standard RRT? ☑ YES ☐ NO
2. Check the sample spectra against the laboratory standard spectra to see that the following criteria were met: ☑ YES ☐ NO
   * Did characteristic ions maximize in the same scan or within one scan of each other?
   * Were characteristic ions present in the standard spectra present in the sample spectra for analytes detected above the QL?
   * Were the relative ion intensities between the standard and sample spectra within ± 30%?
3. Were the reported analytes confirmed? ☑ YES ☐ NO

**Comments:** Target analyte identification criteria were met.

## M. TARGET ANALYTE QUANTITATION:

* If the %RSD of an analyte was 20% or less, then the average relative response factor should have been used for quantitation.
* If the %RSD of an analyte was greater than 20%, then the quantitation should be based on a calibration curve using the first or higher order regression fit of the five calibration points (6 calibration points for 2nd order).

1. List the analytes detected above the QL whose %RSD was >20%: *none*
   a. Was quantitation based on a linear regression fit? ☑ NA ☐ YES ☐ NO
   b. Was the curve forced through the origin? ☑ NA ☐ YES ☐ NO
2. Did the initial analysis of any sample have a concentration of a target analyte that exceeded the initial calibration range? ☐ YES ☑ NO
   -If so, was the sample reanalyzed at a higher dilution? ☑ NA ☐ YES ☐ NO
3. Were the analyte concentrations that were recorded on the raw sample quantitation reports accurately transferred to the sample summary sheets? ☑ YES ☐ NO

**Comments:** Target analyte quantitation criteria were met. Calculations checks were performed on ten percent of the data set, where applicable.

## N. CORRECTIVE ACTION TAKEN AND GENERAL COMMENTS:

**Comments:** No corrective action was required. Library searches were not requested with this data set. The current MDL study and IDOC for analyst OWS were submitted as a revision.

**REFERENCES:**

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

**LIMITATIONS:**

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Engineering ♦ Surveying ♦ Environmental Services

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Date:

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6010C** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Tin** | 16C1 | 17.4 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 17.4 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 17.4 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 17.4 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 17.4 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 17.4 | U | U | | 50 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Antimony** | 16C1 | 0.4 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.4 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.4 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.4 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.4 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.4 | U | U | | 1 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Arsenic** | 16C1 | 2 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 2 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 2 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 2 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 2 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.14 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-1 | 0.14 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-2 | 0.14 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-3 | 0.14 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-5 | 0.14 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16SPRING | 0.14 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16WDUP | 2 | U | U | | 10 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Barium** | 16C1 | 159 | | 159 | | 10 | No action taken. |
| | 16MW8 | 123 | | 123 | | 10 | No action taken. |
| | 16MW9 | 579 | | 579 | | 10 | Analyzed in dilution (1:2). Actual QL 20 ug/l. No action taken. |
| | 16WC1A | 274 | | 274 | | 10 | No action taken. Sample/Blind field duplicate for 16WC1A RPD 4.8. |
| | 16WC1B | 111 | | 111 | | 10 | No action taken. |
| | 16WC2B | 114 | | 114 | | 10 | No action taken. |
| | 16-1 | 147 | | 147 | | 10 | No action taken. |
| | 16-2 | 206 | | 206 | | 10 | No action taken. |
| | 16-3 | 707 | | 707 | | 10 | No action taken. |
| | 16-5 | 164 | | 164 | | 10 | No action taken. |
| | 16SPRING | 198 | | 198 | | 10 | No action taken. |
| | 16WDUP | 261 | | 261 | | 10 | No action taken. Blind field duplicate for 16WC1A. RPD 4.8 |
| **Beryllium** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.253 | J | 0.253 | J | 1 | Result < QL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Beryllium** | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.033 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.033 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.033 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.033 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.033 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.033 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Cadmium** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.22 | J | 0.22 | J | 1 | Result < QL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.011 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.011 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.011 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.011 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.011 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.011 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Chromium** | 16C1 | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.068 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-1 | 0.068 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-2 | 0.068 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-3 | 0.068 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-5 | 0.068 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16SPRING | 0.068 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Cobalt** | 16C1 | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 2.47 | J | 2.47 | J | 5 | Result < QL. |
| | 16MW9 | 4.49 | J | 4.49 | J | 5 | Result < QL. |
| | 16WC1A | 4.7 | J | 4.7 | J | 5 | Result < QL. Verification event performed on June 12, 2014. Verification result reported. Original result 5.24 ug/l. |
| | 16WC1B | 46.8 | | 46.8 | | 5 | No action taken. |
| | 16WC2B | 0.0095 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-1 | 0.0095 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-2 | 0.0095 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-3 | 0.0095 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-5 | 0.0095 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16SPRING | 0.0095 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16WDUP | 5.19 | | 5.19 | | 5 | No action taken. Blind field duplicate for 16WC1A. Sample result < QL. RPD not calculated. |
| **Cobalt, Dissolved** | 16WC1B | 57.6 | | 57.6 | | 5 | No action taken. |
| **Copper** | 16C1 | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 9.44 | | 9.44 | | 5 | No action taken. |
| | 16MW9 | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 2.17 | J | 2.17 | J | 5 | Result < QL. |
| | 16WC2B | 0.12 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-1 | 0.12 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-2 | 0.12 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-3 | 0.12 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-5 | 0.12 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16SPRING | 0.12 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 5 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Lead** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.604 | J | 0.604 | J | 1 | Result < QL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.021 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.021 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.021 | U | U | | 1 | Analyte not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Lead** | 16-3 | 0.021 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.021 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.021 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Nickel** | 16C1 | 4.65 | J | 4.65 | J | 10 | Result < QL. |
| | 16MW8 | 5.17 | J | 5.17 | J | 10 | Result < QL. |
| | 16MW9 | 16.8 | | 16.8 | | 10 | No action taken. |
| | 16WC1A | 8.1 | J | 8.1 | J | 10 | Result < QL. |
| | 16WC1B | 9.35 | J | 9.35 | J | 10 | Result < QL. |
| | 16WC2B | 0.0091 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-1 | 0.0091 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-2 | 0.0091 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-3 | 0.0091 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-5 | 0.0091 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16SPRING | 0.0091 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16WDUP | 8.01 | J | 8.01 | J | 10 | Result < QL. Blind field duplicate for 16WC1A. |
| **Selenium** | 16C1 | 3 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 3 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 3 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 3 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 3 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 3 | U | U | | 5 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Silver** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Verification event performed on June 12, 2014. Verification result reported. Original result (0.207 J ug/l) disconfirmed. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Thallium** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Thallium** | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Vanadium** | 16C1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.056 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-1 | 0.056 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-2 | 0.056 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-3 | 0.056 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-5 | 0.056 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16SPRING | 0.056 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. Blind field duplicate for 16WC1A. |
| **Zinc** | 16C1 | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 35.1 | | 35.1 | | 10 | No action taken. |
| | 16MW9 | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 6.7 | J | 6.7 | J | 10 | Result < QL. |
| | 16WC1B | 10.2 | | 10.2 | | 10 | No action taken. |
| | 16WC2B | 0.12 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-1 | 0.12 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-2 | 0.12 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-3 | 0.12 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-5 | 0.12 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16SPRING | 0.12 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16WDUP | 6.93 | J | 6.93 | J | 10 | Result < QL. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 7470A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Mercury** | 16C1 | 0.2 | U | U | | 2 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 2 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 2 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 2 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 2 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.2 | U | U | | 2 | Analyte not detected at or above QL. |
| | 16-1 | 0.2 | U | U | | 2 | Analyte not detected at or above QL. |
| | 16-2 | 0.2 | U | U | | 2 | Analyte not detected at or above QL. |
| | 16-3 | 0.2 | U | U | | 2 | Analyte not detected at or above QL. |
| | 16-5 | 0.2 | U | U | | 2 | Analyte not detected at or above QL. |
| | 16SPRING | 0.2 | U | U | | 2 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 2 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8081B** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Aldrin** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| **alpha-BHC** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| **beta-BHC** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| **delta-BHC** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| **gamma-BHC** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| **Chlordane** | 16C1 | 0.8 | U | U | | 0.8 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.8 | U | U | | 0.8 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.8 | U | U | | 0.8 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8081B** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Chlordane** | 16WC1A | 0.8 | U | U | | 0.8 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.8 | U | U | | 0.8 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.8 | U | U | | 0.8 | Analyte not detected at or above QL or DL. |
| **4,4'-DDD** | 16C1 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.05 | U | U | | 0.05 | Summit result reported as final result. Original result < QL (0.0142 ug/l) disconfirmed by Summit. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **4,4'-DDE** | 16C1 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **4,4'-DDT** | 16C1 | 0.0062 | J | U | N | 0.05 | Result < QL. Attributed to laboratory blank contamination (0.0287 ug/l). |
| | 16MW8 | 0.0163 | J | U | N | 0.05 | Result < QL. Attributed to laboratory blank contamination (0.0287 ug/l). |
| | 16MW9 | 0.00535 | J | U | N | 0.05 | Result < QL. Attributed to laboratory blank contamination (0.0287 ug/l). |
| | 16WC1A | 0.00575 | J | U | N | 0.05 | Result < QL. Attributed to laboratory blank contamination (0.0287 ug/l). |
| | 16WC1B | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **Dieldrin** | 16C1 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **Endosulfan I** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8081B** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Endosulfan II** | 16C1 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **Endosulfan sulfate** | 16C1 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **Endrin** | 16C1 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **Endrin aldehyde** | 16C1 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.05 | U | U | | 0.05 | Analyte not detected at or above QL or DL. |
| **Heptachlor** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| **Heptachlor epoxide** | 16C1 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8081B** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Heptachlor epoxide** | 16WC1A | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.025 | U | U | | 0.025 | Analyte not detected at or above QL or DL. |
| **Methoxychlor** | 16C1 | 0.25 | U | U | | 0.25 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.25 | U | U | | 0.25 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.25 | U | U | | 0.25 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.25 | U | U | | 0.25 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.25 | U | U | | 0.25 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.25 | U | U | | 0.25 | Analyte not detected at or above QL or DL. |
| **Toxaphene** | 16C1 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8151A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **2,4-Dichlorophenoxyacetic acid** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Dinoseb** | 16C1 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| **Silvex** | 16C1 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| **2,4,5-Trichlorophenoxyacetic acid** | 16C1 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 2.5 | U | U | | 2.5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Acetone** | 16C1 | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Acetonitrile** | 16C1 | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 32 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| **Acrolein** | 16C1 | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| | 16MW8 | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| | 16MW9 | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| | 16WC1A | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| | 16WC1B | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| | 16WDUP | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| | Trip_Blank_1 | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| | Trip_Blank_2 | 5 | U | U | J | 25 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. |
| **Acrylonitrile** | 16C1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Allyl chloride** | 16C1 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Allyl chloride** | 16MW8 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Benzene** | 16C1 | 0.3 | J | 0.3 | J | 1 | Result < QL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.3 | J | 0.3 | J | 1 | Result < QL. |
| | 16WC1A | 0.1 | J | 0.1 | J | 1 | Result < QL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.1 | J | 0.1 | J | 1 | Result < QL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Bromobenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Bromochloromethane** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Bromochloromethane** | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Bromodichloromethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Bromoform** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **2-Butanone** | 16C1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 1 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-1 | 1 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-2 | 1 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-3 | 1 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16-5 | 1 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 10 | Analyte not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **2-Butanone** | Trip_Blank_2 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **n-Butyl alcohol** | 16C1 | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 20 | U | U | | 50 | Analyte not detected at or above QL or DL. |
| **tert-Butyl alcohol** | 16C1 | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 50 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| **n-Butylbenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **sec-Butylbenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **tert-Butylbenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Carbon disulfide** | 16C1 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Carbon tetrachloride** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Chlorobenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Chlorobenzene** | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Chloroethane** | 16C1 | 4.8 | | 4.8 | | 1 | No action taken. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 2.9 | | 2.9 | | 1 | No action taken. |
| | 16WC1A | 1 | J | 1 | J | 1 | Result < QL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 1 | | 1 | | 1 | No action taken. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Chloroform** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **2-Chloroethyl vinyl ether** | 16C1 | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |
| | 16MW8 | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |
| | 16MW9 | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |
| | 16WC1A | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |
| | 16WC1B | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |
| | 16WDUP | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **2-Chloroethyl vinyl ether** | Trip_Blank_1 | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |
| | Trip_Blank_2 | 0.5 | U | U | J | 20 | Analyte not detected at or above DL or QL. Aliquot pH <2 SU. MS/MSD did not recover. |
| **Chloroprene** | 16C1 | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.5 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **2-Chlorotoluene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **4-Chlorotoluene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Cyclohexane** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Cyclohexane** | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Dibromochloromethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2-Dibromo-3-chloropropane** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2-Dibromoethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2-Dichlorobenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **1,3-Dichlorobenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,4-Dichlorobenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **trans-1,4-Dichloro-2-butene** | 16C1 | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| | 16MW8 | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| | 16MW9 | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| | 16WC1A | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| | 16WC1B | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| | 16WDUP | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| | Trip_Blank_1 | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| | Trip_Blank_2 | 1 | U | U | J | 10 | Analyte not detected. CV %D > /- 20 (21%). |
| **Dichlorodifluoromethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.3 | J | U | | 1 | Analyte not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Dichlorodifluoromethane** | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,1-Dichloroethane** | 16C1 | 8 | | 8 | | 1 | No action taken. |
| | 16MW8 | 0.3 | J | 0.3 | J | 1 | Result < QL. |
| | 16MW9 | 9.5 | | 9.5 | | 1 | No action taken. |
| | 16WC1A | 2.9 | | 2.9 | | 1 | No action taken. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | J | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.4 | J | U | | 1 | Result < QL. |
| | 16WDUP | 3 | | 3 | | 1 | No action taken. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2-Dichloroethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,1-Dichloroethene** | 16C1 | 0.3 | J | 0.3 | J | 1 | Result < QL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.3 | J | 0.3 | J | 1 | Result < QL. Verification event performed June 12, 2014. Verification event confirmed the original result. Original result reported. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **1,1-Dichloroethene** | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **trans-1,2-Dichloroethene** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2-Dichloropropane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,3-Dichloropropane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **2,2-Dichloropropane** | 16C1 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **2,2-Dichloropropane** | Trip_Blank_2 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,1-Dichloropropene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **cis-1,3-Dichloropropene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **trans-1,3-Dichloropropene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Diethyl ether** | 16C1 | 38 | J | 38 | J | 13 | Result < QL. Analyzed in dilution (1:10). Actual QL 130 ug/l/ DL 11 ug/l. |
| | 16MW8 | 7.4 | J | 7.4 | J | 13 | Result < QL. |
| | 16MW9 | 52 | J | 52 | J | 13 | Result < QL. Analyzed in dilution (1:10). Actual QL 130 ug/l/ DL 11 ug/l. |
| | 16WC1A | 13 | | 13 | | 13 | No action taken. |
| | 16WC1B | 1.1 | U | U | | 13 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Diethyl ether** | 16-3 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16WDUP | 14 | | 14 | | 13 | No action taken. |
| | Trip_Blank_1 | 1.1 | U | U | | 13 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 1.1 | U | U | | 13 | Analyte not detected at or above QL or DL. |
| **Dimethyl ether** | 16C1 | 9.4 | J | 9.4 | J | 13 | Result < QL. |
| | 16MW8 | 0.3 | J | 0.3 | J | 13 | Result < QL. |
| | 16MW9 | 0.9 | J | 0.9 | J | 13 | Result < QL. |
| | 16WC1A | 0.9 | J | 0.9 | J | 13 | Result < QL. |
| | 16WC1B | 0.2 | J | 0.2 | J | 13 | Result < QL. |
| | 16WC2B | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 13 | Analyte not detected at or above QL. |
| | 16WDUP | 0.9 | J | 0.9 | J | 13 | Result < QL. |
| | Trip_Blank_1 | 0.1 | U | U | | 13 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 13 | Analyte not detected at or above QL or DL. |
| **1,4-Dioxane** | 16C1 | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 45 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| **Ethyl acetate** | 16C1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Ethyl acetate** | 16WDUP | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Ethanol** | 16C1 | 52 | U | U | | 250 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 52 | U | U | | 250 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 52 | U | U | | 250 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 52 | U | U | | 250 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 52 | U | U | | 250 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 52 | U | U | | 250 | Analyte not detected at or above QL or DL. |
| **Ethylbenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Ethyl methacrylate** | 16C1 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Ethylene oxide** | 16C1 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16MW8 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16MW9 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16WC1A | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Ethylene oxide** | 16WC1B | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16WDUP | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. Field duplicate of 16WC1A. |
| | Trip_Blank_1 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | Trip_Blank_2 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| **Hexachlorobutadiene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Hexachloroethane** | 16C1 | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **2-Hexanone** | 16C1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Isobutyl alcohol** | 16C1 | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Isobutyl alcohol** | 16WDUP | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 10 | U | U | | 200 | Analyte not detected at or above QL or DL. |
| **Isopropylbenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Isopropylether** | 16C1 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **4-Isopropyltoluene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Methacrylonitrile** | 16C1 | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Methacrylonitrile** | Trip_Blank_1 | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 9.8 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| **Bromomethane** | 16C1 | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.5 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Chloromethane** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Iodomethane** | 16C1 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Methyl methacrylate** | 16C1 | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Methyl methacrylate** | 16MW8 | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 3.6 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **4-Methyl-2-pentanone** | 16C1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 1 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Methyl tert-butyl ether** | 16C1 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.4 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Dibromomethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Methylene chloride** | 16C1 | 3.9 | | 3.9 | | 1 | No action taken. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Methylene chloride** | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Naphthalene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Pentachloroethane** | 16C1 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.8 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **1-Propanol** | 16C1 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16MW8 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16MW9 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16WC1A | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | 16WC1B | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **1-Propanol** | 16WDUP | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. Field duplicate of 16WC1A. |
| | Trip_Blank_1 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| | Trip_Blank_2 | 20 | U | U | J | 100 | Analyzed as a TIC and reported as not detected. |
| **2-Propanol** | 16C1 | 50 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 50 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 50 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 50 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 50 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 50 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| **Propionitrile** | 16C1 | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 10 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| **n-Propylbenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Styrene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **1,1,1,2-Tetrachloroethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,1,2,2-Tetrachloroethane** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Tetrachloroethene** | 16C1 | 0.4 | J | 0.4 | J | 1 | Result < QL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | J | 0.1 | J | 1 | Result < QL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.1 | J | 0.1 | J | 1 | Result < QL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Tetrahydrofuran** | 16C1 | 15 | J | 15 | J | 25 | Result < QL. |
| | 16MW8 | 2 | U | U | | 25 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 2 | U | U | | 25 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Tetrahydrofuran** | 16WC1A | 2 | U | U | | 25 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 2 | U | U | | 25 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 2 | U | U | | 25 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 2 | U | U | | 25 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 2 | U | U | | 25 | Analyte not detected at or above QL or DL. |
| **Toluene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2,3-Trichlorobenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2,4-Trichlorobenzene** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **1,2,4-Trichlorobenzene** | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,1,1-Trichloroethane** | 16C1 | 0.4 | J | 0.4 | J | 1 | Result < QL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.2 | J | U | | 1 | Result < QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,1,2-Trichloroethane** | 16C1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Trichloroethene** | 16C1 | 0.3 | J | 0.3 | J | 1 | Result < QL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Trichloroethene** | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Trichlorofluoromethane** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2,3-Trichloropropane** | 16C1 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.3 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | 16-1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-3 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16-5 | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16SPRING | 0.2 | U | U | | 1 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,2,4-Trimethylbenzene** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **1,3,5-Trimethylbenzene** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Vinyl acetate** | 16C1 | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 3.3 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Vinyl chloride** | 16C1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Vinyl chloride** | 16MW8 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 1 | Analyte not detected at or above QL or DL. |
| **Xylenes (Total)** | 16C1 | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 0.1 | U | U | | 3 | Analyte not detected at or above QL. |
| | 16-1 | 0.1 | U | U | | 3 | Analyte not detected at or above QL. |
| | 16-2 | 0.1 | U | U | | 3 | Analyte not detected at or above QL. |
| | 16-3 | 0.1 | U | U | | 3 | Analyte not detected at or above QL. |
| | 16-5 | 0.1 | U | U | | 3 | Analyte not detected at or above QL. |
| | 16SPRING | 0.1 | U | U | | 3 | Analyte not detected at or above QL. |
| | 16WDUP | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_1 | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |
| | Trip_Blank_2 | 0.2 | U | U | | 3 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Acenaphthene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Acenaphthylene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Acetophenone** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2-Acetylaminofluorene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **4-Aminobiphenyl** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Aniline** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Aniline** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Anthracene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Aramite** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Benzo[a]anthracene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Benzo[b]fluoranthene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Benzo[k]fluoranthene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Benzo[ghi]perylene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Benzo(a)pyrene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **1,4-Benzenediamine** | 16C1 | 10 | U | U | J | 10 | Analyte not detected. LCS recovered low (6%). |
| | 16MW8 | 10 | U | U | J | 10 | Analyte not detected. LCS recovered low (6%). |
| | 16MW9 | 10 | U | U | J | 10 | Analyte not detected. LCS recovered low (6%). |
| | 16WC1A | 10 | U | U | J | 10 | Analyte not detected. LCS recovered low (6%). |
| | 16WC1B | 10 | U | U | J | 10 | Analyte not detected. LCS recovered low (6%). |
| | 16WDUP | 10 | U | U | J | 10 | Analyte not detected. LCS recovered low (6%). |
| **Benzyl alcohol** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **bis(2-Chloroethoxy)methane** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **bis(2-Chloroethyl)ether** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **bis(2-Chloroethyl)ether** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **bis(2-Chloro-1-methylethyl)ether** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **bis(2-Ethylhexyl)phthalate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **4-Bromophenyl phenyl ether** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Butyl benzyl phthalate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **p-Chloroaniline** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Chlorobenzilate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **p-Chloro-m-cresol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **2-Chloronaphthalene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2-Chlorophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **4-Chlorophenyl phenyl ether** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Chrysene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Chrysene** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Diallate** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Dibenz(a,h)anthracene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Dibenzofuran** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Di-n-butyl phthalate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **3,3'-Dichlorobenzidine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **2,4-Dichlorophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **2,6-Dichlorophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Diethyl phthalate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 1 | J | 1 | J | 5 | Result < QL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-1 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-2 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-3 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-5 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16SPRING | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **O,O-Diethyl O-2-pyrazinyl** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Dimethoate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Dimethoate** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **p-(Dimethylamino)azobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **7,12-Dimethylbenz[a]anthracene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **3,3'-Dimethylbenzidine** | 16C1 | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (33.6%). MS/MSD did not recover. |
| | 16MW8 | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (33.6%). MS/MSD did not recover. |
| | 16MW9 | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (33.6%). MS/MSD did not recover. |
| | 16WC1A | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (33.6%). MS/MSD did not recover. |
| | 16WC1B | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (33.6%). MS/MSD did not recover. |
| | 16WDUP | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (33.6%). MS/MSD did not recover. |
| **a,a-Dimethylphenethylamine** | 16C1 | 15 | U | U | | 15 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 15 | U | U | | 15 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 15 | U | U | | 15 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 15 | U | U | | 15 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 15 | U | U | | 15 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 15 | U | U | | 15 | Analyte not detected at or above QL or DL. |
| **2,4-Dimethylphenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Dimethyl phthalate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **m-Dinitrobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **4,6-Dinitro-o-cresol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **2,4-Dinitrophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **2,4-Dinitrotoluene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-1 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-2 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-3 | 5 | U | U | | 5 | Analyte not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **2,4-Dinitrotoluene** | 16-5 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16SPRING | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2,6-Dinitrotoluene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC2B | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-1 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-2 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-3 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16-5 | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16SPRING | 5 | U | U | | 5 | Analyte not detected at or above QL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Di-n-octyl phthalate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Diphenylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Disulfoton** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Ethyl methanesulfonate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Famphur** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Fluoranthene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Fluorene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Hexachlorobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Hexachlorocyclopentadiene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Hexachlorocyclopentadiene** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Hexachloroethane** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Hexachlorophene** | 16C1 | 100 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 100 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 100 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 100 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 100 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 100 | U | U | | 100 | Analyte not detected at or above QL or DL. |
| **Hexachloropropene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Indeno[1,2,3-cd]pyrene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Isodrin** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Isophorone** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Isosafrole** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Kepone** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Methapyrilene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **3-Methylcholanthrene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Methyl methane sulfonate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Methyl methane sulfonate** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2-Methylnaphthalene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Methyl parathion** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2-Methylphenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **3 & 4-Methylphenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **1,4-Naphthoquinone** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **1-Naphthylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2-Naphthylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **o-Nitroaniline** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **m-Nitroaniline** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **p-Nitroaniline** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Nitrobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Nitrobenzene** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **o-Nitrophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **p-Nitrophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **4-Nitroquinoline-1-oxide** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosodi-n-butylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosodiethylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **N-Nitrosodimethylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosodiphenylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosodipropylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosomethylethylamine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosomorpholine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosopiperidine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **N-Nitrosopiperidine** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **N-Nitrosopyrrolidine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **5-Nitroso-o-toluidine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Parathion** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Pentachlorobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Pentachloronitrobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Pentachlorophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Phenacetin** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Phenanthrene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Phenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **Phorate** | 16C1 | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (31.2%). |
| | 16MW8 | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (31.2%). |
| | 16MW9 | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (31.2%). |
| | 16WC1A | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (31.2%). |
| | 16WC1B | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (31.2%). |
| | 16WDUP | 5 | U | U | J | 5 | Analyte not detected. ICV %D > +/- 30 (31.2%). |
| **2-Picoline** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **2-Picoline** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Pronamide** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Pyrene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Pyridine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Safrole** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Sulfotep** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **1,2,4,5-Tetrachlorobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2,3,4,6-Tetrachlorophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **o-Toluidine** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **2,4,5-Trichlorophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **2,4,6-Trichlorophenol** | 16C1 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 10 | U | U | | 10 | Analyte not detected at or above QL or DL. |
| **O,O,O-Triethyl phosphorothioate** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **O,O,O-Triethyl phosphorothioate** | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **sym-Trinitrobenzene** | 16C1 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 5 | U | U | | 5 | Analyte not detected at or above QL or DL. |
| **Method: 9012B** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Cyanide** | 16C1 | 4 | U | U | | 20 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 4 | U | U | | 20 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 4 | U | U | | 20 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 4 | U | U | | 20 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 4 | U | U | | 20 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 4 | U | U | | 20 | Analyte not detected at or above QL or DL. |
| **Method: 9034** | | | | | | | |
| ***Laboratory: TestAmerica, North Canton, OH*** | | | | | | | |
| **Sulfide** | 16C1 | 3000 | U | U | J | 3000 | Analyte not detected. MS/MSD recovered low (64/74%). |
| | 16MW8 | 3000 | U | U | J | 3000 | Analyte not detected. MS/MSD recovered low (64/74%). |
| | 16MW9 | 3000 | U | U | J | 3000 | Analyte not detected. MS/MSD recovered low (64/74%). |
| | 16WC1A | 3000 | U | U | J | 3000 | Analyte not detected. MS/MSD recovered low (64/74%). |
| | 16WC1B | 3000 | U | U | J | 3000 | Analyte not detected. MS/MSD recovered low (64/74%). |
| | 16WDUP | 3000 | U | U | J | 3000 | Analyte not detected. MS/MSD recovered low (64/74%). |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 9066** | | | | | | | |
| ***Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA*** | | | | | | | |
| **Total Recoverable Phenolics** | 16C1 | 15 | U | U | | 40 | Analyte not detected at or above QL or DL. |
| | 16MW8 | 15 | U | U | | 40 | Analyte not detected at or above QL or DL. |
| | 16MW9 | 15 | U | U | | 40 | Analyte not detected at or above QL or DL. |
| | 16WC1A | 15 | U | U | | 40 | Analyte not detected at or above QL or DL. |
| | 16WC1B | 15 | U | U | | 40 | Analyte not detected at or above QL or DL. |
| | 16WDUP | 15 | U | U | | 40 | Analyte not detected at or above QL or DL. |

**Definitions:**

**Appendix IX monitoring events and compliance monitoring wells:**
**For Appendix IX monitoring events, all compliance well results evaluated to the project detection limit.**
**See separate table for Appendix IX monitoring event detection limits.**
**QL**Denotes permit quantitation limit**.**
**Q** Denotes data qualifier.
**U** Denotes analyte not detected at or above laboratory detection limit (DL) or QL.
**J** Denotes analyte reported at or above laboratory detection limit and associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above laboratory detection limit and project required quantitation limit/detection limit is estimated.
**UA** Denotes analyte not detected at or above adjusted sample detection limit /QL.
**UN** Denotes analyte concentration is less than the quantitation limit and five times the blank concentration. Analyte was not reliably detected due to blank contamination.
**R** Denotes result rejected.
**Laboratory Data Qualifiers**,
"U" and "<", denote not detected at or above the detection limit or QL.
B or J denote result detected between DL and QL, associated value should be considered an estimated concentration.

***Appendix IX monitoring events:***
Third Quarter 2003, Second Quarter 2004, Second Quarter 2005, Third Quarter 2006, Second Quarter 2007, Second Quarter 2008, Second Quarter 2009, Second Quarter 2010, Second Quarter 2011, Second Quarter 2012, Second Quarter 2013.

**Definitions for Non-Appendix IX Monitoring Events and plume monitoring wells:**
**QL** Denotes permit quantitation limit**.**
**Q** Denotes data qualifier.
**U** Denotes analyte not detected at or above QL.
**UA** Denotes analyte not detected at or above adjusted sample QL. See data validation report for further explanation.
**J** Denotes analyte reported at or above QL and associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA"(i.e., "**UAJ**"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.
**R** Denotes result rejected. See data validation report for further explanation.
**Laboratory Data Qualifiers**, "U" and "<", denote not detected at or above the QL.

# Comprehensive Data Validation Report

Draper Aden Associates
Engineering • Surveying • Environmental Services

## Sample/Blind Field Duplicate Results Greater Than the Quantitation Limit

## Facility: HWMU-16 Monitoring Event: Second Quarter 2014

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | |
| **Barium** | 16WC1A | 274 | | 274 | | 10 | No action taken. Sample/Blind field duplicate for 16WC1A RPD 4.8. |
| | 16WDUP | 261 | | 261 | | 10 | No action taken. Blind field duplicate for 16WC1A. RPD 4.8 |
| **Cobalt** | 16WDUP | 5.19 | | 5.19 | | 5 | No action taken. Blind field duplicate for 16WC1A. Sample result < QL. RPD not calculated. |
| **Method: 8260C** | | | | | | | |
| *Laboratory: Eurofins Lancaster Laboratories Environmental, Lancaster, PA* | | | | | | | |
| **Chloroethane** | 16WDUP | 1 | | 1 | | 1 | No actiou taken. |
| **1,1-Dichloroethane** | 16WC1A | 2.9 | | 2.9 | | 1 | No action taken. |
| | 16WDUP | 3 | | 3 | | 1 | No action taken. |
| **Diethyl ether** | 16WC1A | 13 | | 13 | | 13 | No action taken. |
| | 16WDUP | 14 | | 14 | | 13 | No action taken. |

**Definitions:**
**Data Validation Qualifiers:**
**QL** Denotes permit quantitation limit. **Q** Denotes data qualifier.
**J** Denotes analyte reported at or above quantitation limit and associated result is estimated.

## SW-846 METHODS 6020A, 6010C & 7470A INORGANIC DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive manual review of the inorganic analytical results for the April 23-24, 2014 groundwater monitoring event at RFAAP HWMU 16. Draper Aden Associates collected the samples from monitoring wells 16C1, 16MW8, 16MW9, 16WC1A, 16WC1B, 16-1, 16-2, 16-3, 16-5, 16WC2B, and 16SPRING. Sample 16WDUP was submitted to the laboratory as a blind sample duplicate for sample 16WC1A.

Samples 16C1, 16MW8, 16MW9, 16WC1A and 16WC1B (compliance wells) were analyzed for fifteen (15) metals by SW-846 Method 6020A, tin by SW-846 6010C, and mercury by SW-846 Method 7470A. Samples 16-1, 16-2, 16-3, 16-5, 16WC2B and 16SPRING (plume wells) were analyzed for eleven (11) metals by SW-846 Method 6020A and mercury by SW-846 Method 7470A. The following information and attached table summarize the inorganic data validation results.

Techniques used for metals analysis include inductively coupled plasma ICP-mass spectrometry (ICP-MS), atomic emission spectroscopy (ICP-AES), and cold vapor atomic absorption (CVAA). Samples 16C1, 16MW8, 16MW9, 16WC1A, 16WC1B were analyzed for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, thallium, vanadium and zinc by lCP-MS Method 6020A, tin by SW-846 Method 6010C, and mercury by CVAA Method 7470A. The remaining plume monitoring well samples were analyzed for arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, vanadium, and zinc by ICP-MS Method 6020A and mercury by CVAA Method 7470A. Total (T) concentrations were determined for the inorganic (metal) analytes.

Draper Aden Associates sent samples to CompuChem (CompuChem), a Division of Liberty Analytical, of Cary, North Carolina, for the inorganic analyses. On behalf of RFAAP, CompuChem submitted results to Draper Aden Associates in a final certificate of analysis which included sample analytical results as well as relevant documentation to verify and validate the results. CompuChem is a VELAP accredited laboratory for the above analytes, methods and matrix as reported on the certificate of analysis.

The evaluation of CompuChem's compliance with the method and validation of results presented here are based upon a limited review of QA/QC information including holding times, preservation procedures, instrument tuning, calibration and calibration verification data, QL standards, blank samples (method, calibration, and others), interference check sample, pre-digestion matrix spike and matrix spike duplicate (MS/MSD), laboratory control sample (LCS), internal standard, and serial dilution results, where applicable. A review of transcriptions from instrument data to sample summary sheets was performed. Calculation checks were performed on ten percent of the data set, where applicable. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

CompuChem received the samples on ice and in good condition, with custody seals intact. Applicable holding time and preservation criteria were met. The chain of custody was appropriately signed and dated by field and laboratory personnel.

***6020A (ICP-MS)***

The original certificates of analysis were received on May 19, 2014 and May 21, 2014. The certificates of analysis appeared complete in their presentation and the data were of acceptable quality. The data set demonstrated the laboratory's ability to achieve the reported permit quantitation limit (QL). As previously approved by VDEQ, tin was analyzed by USEPA Method SW-846 6010C and reported with this certificate of analysis.

QC documentation criteria were met. Applicable instrument tune, calibration and QC documentation criteria were met. Applicable instrument tune, calibration and calibration verification requirements were met. Blank samples, interference check samples, pre-digestion MS/MSD, LCS, internal standard and serial dilution results were within control limits, except where noted below. Deviations from QA/QC control limits that were identified during the data review process are summarized below.

The laboratory QL for antimony was greater than the permit specified QL. As required by the method, the laboratory analyzed the QL standard for antimony at 2 µg/l, the laboratory QL, instead of 1 µg/l, the permit QL. However, the instrument data for antimony were evaluated and antimony was not detected at or above the method detection limit of 0.4 µg/l and no data qualification was required. Validated results for antimony note the QL as 1 µg/l and reflect the permit QL. The QL standard concentration was at or below the project QL for the other analytes.

Barium was diluted (1:2) in samples 16-3 and 16MW9. QLs and DLs were adjusted accordingly.

Silver was detected below the QL in 16MW8 and cobalt was detected above the QL in 16WC1A. A verification event to confirm or refute these detections was performed on June 12, 2014. For the verification event, silver (SDG: 1406086) was not detected in 16MW8 and cobalt (SDG: RAE22) was detected below the QL in 16WC1A. The verification results were reported as the final results.

Field duplicate/sample results exhibited acceptable precision, where applicable.

Target analytes detected at or above the permit detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized on the attached table. The reported concentration for target analytes detected less than the QL were validated and qualified "J" to note that the reported concentration should be considered estimated.

For this Appendix IX groundwater monitoring event, results for samples 16C1, 16MW8, 16MW9, 16WC1A, 16WC1B, and 16WDUP were reported to at or above the permit detection limit. Sample results unaffected by the data validation process, and not detected at or above the detection limit and/or QL, were validated and reported as "U."

Sample results for 16-1, 16-2, 16-3, 16-5, 16WC2B, and 16SPRING were reported at or above the permit required QL. Sample results unaffected by the data validation process, and not detected at or above the permit QL, were validated and reported as "U." No results were rejected based on the data validation criteria.

***Method 6010C***

The original certificate of analysis was received on May 21, 2014. The certificate of analysis appeared complete in its presentation and the data were of acceptable quality. Tin was analyzed by USEPA Method SW-846 6010C. The current laboratory method detection limit is 17.4 µg/l and quantitation limit is 50 µg/l.

QC documentation criteria were met, except where noted below. Initial calibration and calibration verification criteria were met. Blank sample, interference check sample, pre-digestion MS/MSD, LCS and serial dilution results recovered within control limits, except where noted below. No deviations from QA/QC control limits were identified during the data review process.

The detection limit and QL for tin reflect the laboratory's current MDL study

Field duplicate/sample results exhibited acceptable precision, where applicable.

Target analytes detected at or above the permit detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized on the attached table.

For this Appendix IX monitoring event, tin was not reported at or above the laboratory detection limit or QL in any sample. Tin results for samples 16MW8, 16MW9, 16C1, 16C1A, 16C1B, and 16WDUP were validated and reported as "U." No results were rejected based on the data validation criteria.

***7470A (CVAA)***

The original certificates of analysis were received on May 19, 2014 and May 21, 2014. The certificates of analysis appeared complete in its presentation and the final data were of acceptable quality. The certificate of analysis demonstrated the ability of the laboratory to achieve the reported permit required QL for mercury.

QC documentation criteria were met. Instrument calibration and calibration verification criteria were met. QL standards, blank samples, MS/MSD, and LCS were analyzed as required

and applicable criteria were met unless noted below. No deviations from QA/QC control limits were identified during the data review process.

Field duplicate/sample results exhibited acceptable precision, where applicable.

Target analytes detected at or above the permit detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized on the attached table. The reported concentration for target analytes detected less than the QL were validated and qualified "J" to note that the reported concentration should be considered estimated.

For samples 16-1, 16-2, 16-3, 16-5, 16WC2B and 16SPRING, results were reported at or above the permit required QL. For this Appendix IX groundwater monitoring event, results for samples 16C1, 16MW8, 16MW9, 16WC1A, 16WC1B were reported to at or above the permit detection limit. Sample results unaffected by the data validation process, and not detected at or above the detection limit and/or QL, were validated and reported as "U." No results were rejected based on the data validation criteria.

## INORGANIC DATA EVALUATION FOR ICP/MS SW-846 METHOD 6020A

CompuChem, a Division of Liberty Analytical, Cary, NC; SDGs: 1404171, 1404172
Compliance Wells - Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, Se, Ag, Tl, V, Zn
Plume Wells - As, Ba, Be, Cd, Cr, Co, Cu, Pb, Ni, V, Zn
Preparation Method: 3005A
"☑" denotes items reviewed. See Data Validation Summary for additional comments.

### A. DOCUMENTION COMPLETENESS CRITERIA:

***Data Quality Objective: Representativeness***

- ☑ Chain of custody – Custody transfers must be signed and dated
- ☑ Chain of custody properly and completely filled out including sampler signatures, date and time of sampling, sample ID, analysis requested

### B. DETECTION LIMIT AND QUANTITATION LIMIT CRITERIA:

***Data Quality Objective: Analytical Sensitivity***

- ☑ Specific detection limit reported
- ☑ Specific quantitation limit reported
- ☑ Standard analyzed at the QL (LLQC), digested, 70-130% recovery, analyzed after MDL determination and as needed
- ☑ Method detection limit (MDL) less than QL
- ☑ Performance evaluation sample analyzed within 12 months

### C. INITIAL DEMONSTRATION OF CAPABILITY (IDOC) CRITERIA:

***Data Quality Objective: Laboratory Method Sensitivity***

- ☑ Analyst IDOC for J. Feldhaus submitted previously

### D. SAMPLE AND STANDARD PREPARATION CRITERIA:

***Data Quality Objective: Accuracy and Representativeness***

- ☑ Digestion prior to analysis
- ☑ Digestion method: 3005A
- ☑ Samples and standards matrix matched

### E. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:

***Data Quality Objective: Representativeness***

- ☑ 6 month holding time, pH<2 with Nitric Acid ($HNO_3$)

### F. INSTRUMENT TUNE CRITERIA:

***Data Quality Objective: Verify Operating Conditions***

- ☑ Prior to calibration
- ☑ Relative Standard Deviation (RSD) </=5%
- ☑ Resolution < 0.9 amu full width at 10% peak height (or lower)
- ☑ Mass calibration </=0.1 amu difference from true value

### G. INITIAL CALIBRATION CRITERIA:

***Data Quality Objective: Laboratory Accuracy***

- ☑ 1 calibration blank and 3 standards,
- ☑ Linear curve fit with correlation coefficient $r \geq 0.998$
- ☑ Daily calibration following tuning and prior to sample analysis

## H. INITIAL CALIBRATION VERIFICATION (ICV) CRITERIA:

***Data Quality Objective: Laboratory Accuracy***

- ☑ Daily following initial calibration, independent/second source used for ICV
- ☑ ICV concentration near mid-point of calibration curve, 90-110% recovery
- ☑ Low level ICV (LLICV) – prior to analysis, at QL concentration, 70-130% recovery

## I. INITIAL CALIBRATION BLANK CRITERIA:

***Data Quality Objective: Laboratory Analytical Sensitivity/Instrument Drift/Contamination Evaluation***

- ☑ Daily following ICV
- ☑ Interference free

## J. CONTINUING CALIBRATION VERIFICATION (CCV) CRITERIA:

***Data Quality Objective: Laboratory Analytical Accuracy***

- ☑ CCV, prior to analysis, after every 10 samples, at end of analysis
- ☑ CCV recovery within 90-110%, mid-point of curve concentration
- ☑ Low level CCV (LLCCV), concentration at QL, prior to analysis, end of analysis, after every 10 samples, if necessary (70-130% R)

## K. CONTINUING CALIBRATION BLANK CRITERIA:

***Data Quality Objective: Laboratory Analytical Sensitivity/Instrument Drift/Contamination Evaluation***

- ☑ Immediately after the CCV, 10 sample frequency
- ☑ Interference free

## L. BLANK CRITERIA:

***Data Quality Objective: Sensitivity/Instrument Drift/Contamination Evaluation***

- N/A Trip Blank (check only if analyzed)
- ☑ Method/Other Lab Blanks (check only if analyzed), one per digestion batch
- ☑ Interference free

## M. INTERFERENCE CHECK SAMPLE (ICS) CRITERIA:

***Data Quality Objective: Analytical Accuracy/Verification of Isobaric Interference Corrections***

- ☑ At beginning of analytical run
- ☑ Recovery: 80-120% (ICSAB)

## N. MATRIX SPIKE DUPLICATE (MSD) CRITERIA:

***Data Quality Objective: Method Precision in Sample Matrix***

- ☑ All analytes, one MSD or sample duplicate per batch of 20 samples
- ☑ Spiked prior to sample preparation
- ☑ RPD $\leq$ 20 between MS and MSD results or sample and duplicate results
- ☑ MSD analyte recovery 75-125%

## O. MATRIX SPIKE (MS) CRITERIA:

***Data Quality Objective: Method Accuracy in Sample Matrix***

- ☑ All analytes, one MS per digestion batch of 20 samples
- ☑ Spiked prior to sample preparation
- ☑ Recovery: 75-125%
- ☑ Post digestion spike if MS/MSD recoveries fail
- ☑ Recovery of post digestion spike analytes within 80-120%

## P. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

***Data Quality Objective: Laboratory Method Accuracy, Laboratory Performance***

- ☑ LCS for all target analytes, one LCS per 20 sample batch

☑ LCS concentration at approximately mid-point of analytical curve
☑ Recovery within 80-120% for all analytes

## Q. INTERNAL STANDARDS (IS) CRITERIA:

***Data Quality Objective: Analytical Accuracy in Sample Matrix***

☑ IS added to each sample and QC sample
☑ % Relative intensity (RI) within 70-125%

## R. SERIAL DILUTION (DILUTION TEST) TEST CRITERIA:

***Data Quality Objective: Accuracy in Sample Matrix***

☑ <10% Difference (applicable when sample concentration >10X QL)

## S. SAMPLE QUANTITATION AND GENERAL REPORTING CRITERIA:

***Data Quality Objective: n/a***

☑ Sample results reported within instrument linear dynamic range
☑ Sample results reported to the detection limit

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

## INORGANIC DATA EVALUATION FOR ICP SW-846 METHOD 6010C

CompuChem, a Division of Liberty Analytical, Cary, NC; SDG: 1404171
Compliance Wells – Sn
Preparation Method: 3010A
"☑" denotes items reviewed. See Data Validation Summary for additional comments.

**A. QC DOCUMENTATION CRITERIA:**
- ☑ Specific quantitation limit (QL) / detection limit (DL) for all analytes
- ☑ Passed single blind performance evaluation study within 12 months
- ☑ Standard analyzed at the QL (LLQC), digested, 70-130% recovery, analyzed after MDL determination and as needed
- ☑ MDL check sample analyzed
- ☑ IDOC for J. Feldhaus submitted previously

**B. METHOD INFORMATION DOCUMENTATION:**
- ☑ Target analytes analyzed by requested methods

**C. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:**
- ☑ 6 month holding time
- ☑ Adjust pH <2 w/ $HNO_3$

**D. INSTRUMENT CALIBRATION CRITERIA:**
- ☑ 1 calibration blank and 1 calibration standard
  1 calibration blank and at least 3 standards (alternate calibration procedure)
- ☑ Linear curve fit with correlation coefficient r ≥0.998

**E. INITIAL / CONTINUING CALIBRATION VERIFICATION CRITERIA:**
- ☑ ICV, analyzed prior to analysis (90-110% R)
- ☑ LLICV concentration at QL, prior to analysis (70-130% R)
- ☑ CCV prior to analysis, after every 10 samples, end of analysis, (90-110% R)
- ☑ LLCCV concentration at QL, prior to analysis, after every 10 samples, end of analysis (70-130% R)

**F. BLANK CRITERIA:**
- N/A Trip Blank (check only if analyzed)
- N/A Equipment Blank (check only if analyzed)
- ☑ Method/Other Lab Blanks (check only if analyzed)
- ☑ Interference free
- ☑ CCB 10 sample frequency

**G. INTERFERENCE CHECK SAMPLE (ICS) CRITERIA:**
- ☑ ICS analyzed at beginning of analytical run (80-120% ICSAB Recovery)

**H. MATRIX SPIKE DUPLICATE (MSD) CRITERIA:**

- ☑ All analytes, one MSD or sample duplicate per batch of 20 samples
- ☑ RPD $\leq$ 20 between MS and MSD or sample and duplicate results
- ☑ Recovery 75-125% for MSD

**I. MATRIX SPIKE (MS) CRITERIA:**

- ☑ Recovery of MS analytes within 75-125%
- ☑ All analytes, spiked prior to digestion, one spike per 20 sample batch
- ☑ Post digestion spike if MS/MSD recoveries fail
- ☑ Recovery of post digestion spike analytes within 80-120%

**J. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:**

- ☑ LCS for all target analytes, one LCS per 20 sample batch
- ☑ LCS concentration at approximately mid-point of analytical curve
- ☑ Recovery within 80-120% for all analytes

**K. SERIAL DILUTION (DILUTION TEST) CRITERIA:**

- ☑ Similar matrix
- ☑ <10% Difference (applicable when sample concentration >10X QL)

**L. SAMPLE RESULTS CRITERIA:**

- ☑ Results reported within ICP linear dynamic range
- ☑ Results reported to detection limit

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

## INORGANIC DATA EVALUATION FOR MERCURY BY COLD VAPOR AA SW-846 METHOD 7470A

CompuChem, a Division of Liberty Analytical, Cary, NC; SDGs: 1404171, 1404172
"☑" denotes items were reviewed. See Data Validation Summary for additional comments.

**A. QC DOCUMENTATION CRITERIA:**
- ☑ Specific detection limits/quantitation limit (QLs) for target analyte
- ☑ Standard analyzed at the QL (70-130% Recovery)
- ☑ Passed single blind performance evaluation study within 12 months
- ☑ IDOC for analyst N. Bolton submitted previously

**B. METHOD INFORMATION DOCUMENTATION:**
- ☑ Mercury analyzed by requested method

**C. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:**
- ☑ 28 day holding time
- ☑ Adjust pH <2 w/ $HNO_3$

**D. INSTRUMENT CALIBRATION CRITERIA:**
- ☑ 1 calibration blank and at least 3 standards, correlation coefficient >0.995
- ☑ Instrument calibrated for every analytical sequence for every method

**E. INITIAL / CONTINUING CALIBRATION VERIFICATION CRITERIA:**
- ☑ 10 sample frequency for CCV
- ☑ Recovery within 80-120%

**F. BLANK SAMPLE CRITERIA:**
- NA Trip Blank (check only if analyzed)
- NA Equipment Blank (check only if analyzed)
- ☑ Method/other laboratory blanks (check only if analyzed)
- ☑ Interference free

**G. MATRIX SPIKE DUPLICATE (MSD) SAMPLE CRITERIA:**
- ☑ One MSD or sample duplicate per batch of 20 samples
- ☑ RPD ≤20 between MS and MSD or sample and duplicate results
- ☑ Recovery 75-125% for MSD

**H. MATRIX SPIKE (MS) SAMPLE CRITERIA:**
- ☑ Recovery within 75-125% range
- ☑ One MS per batch of 20 samples
- ☑ MS added prior to digestion

**I. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:**
- ☑ LCS for mercury
- ☑ Recovery within 80-120%
- ☑ Independent source for LCS

**J. SAMPLE RESULTS CRITERIA:**

☑ Results reported within instrument calibration range
☑ Results reported to laboratory detection limit

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

**LIMITATIONS:**

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## SW-846 METHOD 8081B (PESTICIDES) ORGANIC DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive manual review of the analytical results for the April 23-24, 2014 groundwater monitoring event at RFAAP HWMU16. Draper Aden Associates collected the groundwater samples from monitoring wells 16C1, 16MW8, 16MW9, 16WC1A, and 16WC1B, (compliance monitoring wells). Sample 16WDUP was submitted to the laboratory as a blind field sample duplicate for 16WC1A. Groundwater samples were analyzed for nineteen (19) pesticides per USEPA SW-846 Method 8081B. Validation of other required methods presented on separate reports. The following information and attached table summarize the Method 8081B data validation results.

CompuChem, a Division of Liberty Analytical (CompuChem), of Cary, North Carolina, performed the Method 8081B analysis. CompuChem is a VELAP accredited laboratory for the analytes, method and matrix as reported on the certificate of analysis. On behalf of RFAAP, CompuChem submitted results to Draper Aden Associates in a final certificate of analysis, which included sample analytical results as well as relevant documentation to validate and verify the results (SDG 1404171).

The evaluation of the laboratory's compliance with Method 8081B and validation of the results was based on a review of the following items: QC deliverables package, QC history documentation, case narrative, technical holding time and preservation requirements, extraction procedures, instrument calibrations, blank analysis, surrogate spike recoveries, retention time, matrix spike (MS/MSD) analyses, laboratory control samples (LCS), and internal standards requirements, where applicable. A review of transcriptions from instrument data to sample summary sheets was performed. Calculations checks were performed on 10% of the data set, where applicable. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

CompuChem received the samples on ice and in good condition, with custody seals intact. The chain of custody (COC) was appropriately signed and dated by field and laboratory personnel. Technical holding time and preservation criteria were met, except where noted below.

The original certificate of analysis was received on May 21, 2014. The certificate of analysis appeared complete in its presentation and the data were of acceptable quality, except where discussed below. The certificate of analysis demonstrated the ability of the laboratory to achieve the permit required quantitation limit (QL) for each target analyte.

QC history documentation and QC check sample criteria were met. Calibration, DDT/Endrin breakdown, blank, surrogate, retention time, MS/MSD and LCS criteria were met, except where noted below. Sample results were reviewed for transcription errors from the instrument data to the laboratory report and no significant deviations from specific QA/QC criteria were observed.

4,4'-DDT was detected below the QL in the method blank and detected result less than the QL for 4,4'-DDT were attributed to the observed blank contamination and validated as "UN."

4,4'-DDD was reported below the QL in 16WC1B. A split sample for 16WC1B was collected at the time of the original sampling event and the split sample was submitted to Summit Environmental Technologies, Inc. (Summit), of Cuyahoga Falls, OH, for verification analysis using Method 8081B with Selected Ion Monitoring (SIM) GC/MS for confirmation. The verification result was received from Summit on May 16, 2014 (SDG 14042427). Summit did not detect 4,4'-DDD at or above the detection limit (MDL) in 16WC1B. Summit's QL was 0.05 µg/l and the detection limit was 0.005 µg/l. The final result for 4,4'-DDD was reported from Summit as not detected at or above the detection limit or QL and the original reported detection (CompuChem) was considered a false positive. Verification results were evaluated using the criteria noted above which were verified to be met. Summit is a VELAP accredited laboratory for the analyte, method and matrix as reported on the certificate of analysis.

Field duplicate/sample results exhibited acceptable precision, where applicable.

For this Appendix IX groundwater monitoring event, target analytes were reported to at or above the detection limit. The detection limit was based on the laboratory method detection limit study. Results not detected at or above the detection limit and/or quantitation limit were validated and reported as "U", except where noted.

## SW-846 METHOD 8081B (ORGANOCHLORINE PESTICIDES) GC DATA VALIDATION

***Comment:*** *Method 8081B involves the extraction of samples using SW-846 Method 3510C. Target analytes are separated and quantified by GC using electron capture detection (ECD). Florisil cleanup was performed.*

### A. QC DELIVERABLES PACKAGE:

| | | |
|---|---|---|
| 1. | Was the case narrative present/signed by a lab representative? | ☑ YES ☐ NO |
| 2. | Was the Chain of Custody present/signed by a lab representative? | ☑ YES ☐ NO |
| 3. | Were results included for the sample locations? | ☑ YES ☐ NO |
| 4. | Did the laboratory report results for required target analytes? | ☑ YES ☐ NO |
| 5. | Did the QL/DLs reported on sample summary sheets agree with the instrument specific MDL study? | ☑ YES ☐ NO |

**Comments:** QC deliverables requirements were met. Current MDL check data is on file.

### B. INSTRUMENT QC HISTORY DOCUMENTATION CRITERIA:

| | | |
|---|---|---|
| 1. | Was the specific extraction method specified? | ☑ YES ☐ NO |
| 2. | Were instrument specific QLs for the target analytes provided? | ☑ YES ☐ NO |
| 3. | Were instrument specific DLs for the target analytes provided? | ☑ YES ☐ NO |
| 4. | Was the instrument calibration range specified? | ☑ YES ☐ NO |
| 5. | Were sample analysis log sheets provided? | ☑ YES ☐ NO |
| 6. | Were chromatograms and integration reports provided? | ☑ YES ☐ NO |

**Comments:** Instrument QC history criteria were met.

### C. CHECK SAMPLE CRITERIA: *(Initial Demonstration of Capability)*

| | | |
|---|---|---|
| 1. | Did the check sample contain the required target analytes? | ☑ YES ☐ NO |
| 2. | Were the check samples analyzed in quadruplicate? | ☑ YES ☐ NO |
| 3. | Were the average recoveries of each target analyte reported? | ☑ YES ☐ NO |
| 4. | Were the standard deviations for the recoveries of target analytes quadruplicated and reported? | ☑ YES ☐ NO |

**Comments:** Check sample criteria were met.

### D. TECHNICAL HOLDING TIME AND PRESERVATION CRITERIA:

| | | |
|---|---|---|
| 1. | Was the 7-day sample collection to extraction holding time met? | ☑ YES ☐ NO |
| 2. | Was the 40-day extraction to analysis holding time met? | ☑ YES ☐ NO |
| 3. | Were the samples received at $\leq 6^{\circ}C$? | ☑ YES ☐ NO |

**Comments:** Holding time and preservation criteria were met.

## E. INITIAL GC CALIBRATION CRITERIA:

1. Were the target analytes included in the ICAL? ☑ YES ☐ NO
2. Was a mimimum five-point calibration analyzed prior to analysis? ☑ YES ☐ NO
3. Calibration type used by laboratory: *External.*
4. Was the % Relative Standard Deviation (%RSD) for the target analyte CFs <20% over the established working range? ☑ YES ☐ NO
5. State the Quantitation Method used by the laboratory: *Calibration Factor.*
6. Did target analytes and surrogates with % RSDs >/- 20% have a >0.99 correlation coefficient? ☑ NA ☐ YES ☐ NO
7. Was the lowest concentration calibration standard at or below the QL, MCL, regulatory compliance or action limit? ☑ YES ☐ NO
8. Were calibration standards dropped to meet calibration criteria? ☐ YES ☑ NO

**Comments:** Initial calibration criteria were met.

## F. DDT / ENDRIN BREAKDOWN CHECK CRITERIA:

1. Was a 4,4'-DDT and Endrin standard analyzed every 12-hours? ☑ YES ☐ NO
2. For every 12-hours, was 4,4'-DDE, 4,4'-DDD, Endrin Ketone or Endrin Aldehyde present which indicated breakdown? ☑ YES ☐ NO
3. Was the calculated % breakdown less than 15%? ☐ NA ☑ YES ☐ NO
   If no, corrective action must be taken before proceeding with analysis.

**Comments:** DDT/Endrin breakdown criteria were met.

## G. CALIBRATION VERIFICATION (CV) CRITERIA:

1. Was a CV standard performed every 12-hours? ☑ YES ☐ NO
2. Did target analyte responses have a % Difference within ± 20%? ☑ YES ☐ NO
   (For chlordane and toxaphene, qualify only 3 peaks);
   If no, was a new calibration curve prepared? *No.*
3. Was a mid-concentration standard analyzed after each group of 10 samples in the analysis sequence and at the end of the analytical sequence? ☑ YES ☐ NO
4. Were target analytes and surrogates included in the CV? ☑ YES ☐ NO

**Comments:** Calibration verification criteria were met.

## H. BLANK CRITERIA:

1. Was a blank analyzed prior to the batch samples? ☑ YES ☐ NO
2. Was a blank analyzed after 20 batch samples? ☑ YES ☐ NO
3. Was an extraction blank analyzed with the batch samples? ☑ YES ☐ NO

4 Was a trip blank analyzed per analytical batch? Not applicable ☐ YES ☑ NO
5. List target analytes identified in the blanks: 4,4'-DDT

**Comments:** Blank criteria were met except as discussed above.

## I. SURROGATE CRITERIA:

1. Were the samples, standards, blanks, and checks spiked with at least 2 surrogate analytes for dual column analysis? ☑ YES ☐ NO
2. List surrogate used and laboratory's surrogate % recovery range criteria:
   tetrachloro-xylene (TCMX): 40%-130%; decachlorobiphenyl (DCBP): 40%-130%
   4-chloro-3-nitrobenzotrifluoride (CNBT): 40%-130% (not used)
3. List samples whose surrogate % recoveries were not within range:

**Comments:** Surrogate criteria were met.

## J. RETENTION TIME (RT) CRITERIA:

1. Were the daily Retention Time (RT) windows reported? ☑ YES ☐ NO
2. Were surrogate, LCS, MS/MSD RTs within the RT window? ☑ YES ☐ NO

**Comments:** Retention time criteria were met.

## K. MATRIX SPIKE/ MATRIX SPIKE DUPLICATE (MS/MSD) CRITERIA:

1. Was a MS/MSD analyzed per sample batch or every 20 samples, whichever may occur first? ☑ YES ☐ NO
2. Did the MS/MSD contain required target analytes? ☑ YES ☐ NO
3. Was the MS/MSD analyzed on the specific project matrix? ☑ YES ☐ NO
4. MS/MSD acceptance range: *40-130%*
5. Were analytes qualified as estimated due to MS/MSD criteria? ☐ YES ☑ NO
   - If yes, and the LCS for the analyte(s) recovered within control limits, matrix interference is suspected.

**Comments:** MS/MSD criteria were met.

## L. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

1. Was a LCS included in the sample analysis? ☑ YES ☐ NO
2. Did the LCS contain the required target analytes? ☑ YES ☐ NO
3. List the LCS analytes and the recovery range criteria:
   *40-130%; All target analytes except toxaphene and chlordane.*
4. Were analytes qualified as estimated due to LCS criteria? ☐ YES ☑ NO

**Comments:** LCS criteria were met.

## M. TARGET ANALYTE IDENTIFICATION/QUANTITATION:

| | | |
|---|---|---|
| 1. | Were the reported analytes within the RT window? | ☑ YES ☐ NO |
| 2. | Were RT shifts observed when compared with the last CV? | ☐ YES ☑ NO |
| 3. | Were reported analytes confirmed? | See comment |
| 4. | Did the initial analysis of any sample have a concentration of a target analyte which exceeded the instrument calibration range? | ☐ YES ☑ NO |
| 5. | Were sample dilutions required? | ☑ NA ☐ YES ☐ NO |
| 6. | Were analyte concentrations that were recorded on sample quantitation reports accurately transferred to the sample summary sheets? | ☑ YES ☐ NO |
| 7. | RPD>40? | ☑ NA ☐ YES ☐ NO |
| 8. | The laboratory used dual column GC system? | ☑ YES ☐ NO |
| 9. | Data evaluated from both columns? | ☑ YES ☐ NO |

**Comments:** 4,4'-DDD was reported in 16WC1B below the QL but was not confirmed by Summit Laboratories. The Summit result was reported as the final result.

## N. CORRECTIVE ACTION TAKEN AND GENERAL COMMENTS:

**Comments:** The IDOC for analyst B. Lake was submitted previously. No other corrective action was required.

## REFERENCES:

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

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## SW-846 METHOD 8151A (HERBICIDES) ORGANIC DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive manual review of the analytical results for the April 23–24, 2014 monitoring event at HWMU16. The groundwater samples were collected from monitoring wells 16C1, 16MW8, 16MW9, 16WC1A, and 16WC1B. Sample 16WDUP was submitted to the laboratory as a blind sample duplicate for 16WC1A. Samples were analyzed for four herbicides (2,4,5-T; 2,4-D; dinoseb, silvex) per USEPA SW-846 Method 8151A. The following information and attached table summarize the Method 8151A data validation results. Validation of other required methods presented on separate reports.

Draper Aden Associates sent samples to CompuChem (CompuChem), a Division of Liberty Analytical, of Cary, North Carolina, for the 8151A analysis. CompuChem is a VELAP accredited laboratory for the analytes, method and matrix as reported on the certificate of analysis. CompuChem submitted results to Draper Aden Associates in a final certificate of analysis that included sample analytical results as well as relevant QA/QC and method performance criteria documentation to verify and validate the results (SDG 1404171).

The evaluation of the laboratory's compliance with Method 8151A and validation of the results was based on a review of the following items: QC deliverables package, QC history documentation, case narrative, technical holding time and preservation requirements, extraction procedures, instrument calibrations, blank analysis, surrogate spike recoveries, retention time, matrix spike and matrix spike duplicate (MS/MSD) analyses, laboratory control samples (LCS), and internal standards requirements, where applicable. A review of transcriptions from instrument data to sample summary sheets was performed. Calculation verifications were performed on a minimum ten percent of the data set. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

CompuChem received the samples on ice and in good condition, with custody seals intact. The chain of custody was appropriately signed and dated by field and laboratory personnel. Applicable preservation criteria were met for the project samples.

The original certificate of analysis was received on May 21, 2014. The certificate of analysis appeared complete in its presentation and the data were of acceptable quality. The data set demonstrated the laboratory's ability to achieve the reported permit required quantitation limit (QL).

QC history documentation and QC check sample criteria were met. Initial calibration, calibration verification, blank, surrogate, MS/MSD, retention time, and LCS criteria were met, unless noted below. Sample results were reviewed for transcription errors from the instrument data to the laboratory report and no errors were noted. Deviations from specific QA/QC criteria that were identified during the review process are summarized below.

Field duplicate/sample results exhibited acceptable precision, where applicable.

The laboratory's initial demonstration of capability (IDOC) for analyst B. Lake and the current MDL study were submitted previously.

Sample results were reported to at or above the detection limit for this Appendix IX monitoring event. No target analytes were detected at or above the laboratory detection limit or permit QL. Sample results unaffected by the data validation process, and not detected at or above the detection limit and/or QL, were validated and reported as "U." No results were rejected based on the data validation criteria.

## SW-846 METHOD 8151A (CHLORINATED HERBICIDES) GC DATA VALIDATION

***Overview:*** *Method 8151A involves the extraction and esterification of samples with subsequent quantitation using electron capture detection.*

### A. QC DELIVERABLES PACKAGE:

| | | |
|---|---|---|
| 1. | Was case narrative present and signed by a lab representative? | ☑ YES ☐ NO |
| 2. | Was the Chain of Custody present/signed by a lab representative? | ☑ YES ☐ NO |
| 3. | Were sample results included for the sample locations? | ☑ YES ☐ NO |
| 4. | Did the laboratory report the project specific analyte list? | ☑ YES ☐ NO |
| 5. | Did the QLs reported on sample summary sheets agree with the instrument specific MDL study or project QL? | ☑ YES ☐ NO |
| 6. | Were results evaluated to the method detection limit (MDL)? | ☑ YES ☐ NO |

**Comments:** QC deliverables criteria were met. Historical project quantitation limits were maintained and supported by the current MDL study.

### B. INSTRUMENT QC HISTORY DOCUMENTATION CRITERIA:

***For each target analyte:***

| | | |
|---|---|---|
| 1. | Was the specific extraction method specified? | ☑ YES ☐ NO |
| 2. | Were instrument specific detection limits provided? | ☑ YES ☐ NO |
| 3. | Were instrument specific QLs provided? | ☑ YES ☐ NO |
| 4. | Were instrument specific check sample data provided? | ☑ YES ☐ NO |
| 5. | Were instrument specific calibration range provided? | ☑ YES ☐ NO |
| 6. | Were sample analysis log sheets provided? | ☑ YES ☐ NO |
| 7. | Were chromatograms and integration reports provided? | ☑ YES ☐ NO |

**Comments:** Instrument QC history criteria were met.

### C. CHECK SAMPLE CRITERIA:

***(Initial Demonstration of Capability)***

| | | |
|---|---|---|
| 1. | Did the check sample contain the required target analytes? | ☑ YES ☐ NO |
| 2. | Were the check samples analyzed in quadruplicate? | ☑ YES ☐ NO |
| 3. | Were the average recoveries of the target analytes in the check samples reported? | ☑ YES ☐ NO |
| 4. | Were the standard deviations for the recoveries of target analytes quadruplicated and reported? | ☑ YES ☐ NO |

**Comments:** Check sample criteria were met.

## D. TECHNICAL HOLDING TIME AND PRESERVATION CRITERIA:

1. Was the 7-day sample collection to extraction holding time met? ☑ YES ☐ NO
2. Was the 40-day extraction to analysis holding time met? ☑ YES ☐ NO
3. Were the samples received at ≤6°C? ☑ YES ☐ NO

**Comments:** Holding time and preservation criteria were met.

## E. INITIAL GC CALIBRATION CRITERIA:

1. Were the target analytes included in the ICAL? ☑ YES ☐ NO
2. Was a minimum five-point calibration analyzed prior to analyses? ☑ YES ☐ NO
3. State the calibration type used by laboratory: *External.*
4. Was the % Relative Standard Deviation (%RSD) for the target analyte CFs <20% over the established working range? ☑ YES ☐ NO
5. State the Quantitation Method used by the laboratory: *Average Response Factor.*
6. List analytes with a % RSD >20% over the established working range: *None.*
7. Was the lowest concentration calibration standard at or below the QL, MCL, regulatory compliance or action limit? ☑ YES ☐ NO
8. Were calibration standards dropped to meet calibration criteria? ☐ YES ☑ NO

**Comments:** Initial calibration criteria were met.

## F. CALIBRATION VERIFICATION (CV) CRITERIA:

1. Was a CV standard performed once every 12 hours? ☑ YES ☐ NO
2. Did analyte responses have a % Difference (%D) within ± 15%? ☑ YES ☐ NO
   If no, was a new calibration curve prepared?
3. Was a mid-concentration standard analyzed after each group of 10 samples in the analysis sequence and at the end of the analytical sequence? ☑ YES ☐ NO
4. Were the target analytes included in the CV? ☑ YES ☐ NO

**Comments:** Calibration verification criteria were met.

## G. BLANK CRITERIA:

1. Was a blank analyzed prior to any samples? ☑ YES ☐ NO
2. Was a blank analyzed after 20 batch samples? ☑ YES ☐ NO
3. Was an extraction blank analyzed per analytical batch? ☑ YES ☐ NO
4. Was a trip blank analyzed per analytical batch? ☑ NA ☐ YES ☑ NO
5. List target analytes identified in the blanks: *None.*

**Comments:** Blank criteria were met.

## H. SURROGATE CRITERIA:

1. Were samples, standards, blanks, and checks spiked with at least 1 surrogate? ☑ YES ☐ NO
2. List surrogate used and laboratory's surrogate percent recovery range criteria:
   *2,4-dichlorophenylacetic acid (2,4-DCAA): 50-148%*
3. List samples whose surrogate percent recoveries were not within range: None

**Comments:** Surrogate criteria were met.

## I. RETENTION TIME (RT) CRITERIA:

1. Were the daily Retention Time windows reported? ☑ YES ☐ NO
2. Were surrogate, LCS, MS/MSD RTs within the RT window? ☑ YES ☐ NO

**Comments:** Retention time criteria were met.

## J. MATRIX SPIKE/ MATRIX SPIKE DUPLICATE (MS/MSD) CRITERIA:

1. Was a MS/MSD analyzed per sample batch or every 20 samples? ☑ YES ☐ NO
2. Did the MS/MSD contain target analytes? ☑ YES ☐ NO
3. Was the MS/MSD analyzed on the specific project matrix? ☑ YES ☐ NO
4. List the MS % recovery range: *50-150%, Dinoseb: 30-150%; RPD ≤40*
5. Were any analytes qualified as estimated? ☐ YES ☑ NO
   - If yes, and the LCS for the analyte(s) recovered within control limits, matrix interference is suspected.

**Comments:** MS/MSD criteria were met.

## K. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

1. Was a LCS included in the sample analysis? ☑ YES ☐ NO
2. Did the LCS contain the required target analytes? ☑ YES ☐ NO
3. List the LCS recovery range criteria. *50-150%; Dinoseb: 30-150%*
4. Were any analytes flagged as estimated concentrations? ☐ YES ☑ NO

**Comments:** LCS criteria were met.

## L. TARGET ANALYTE IDENTIFICATION:

1. Were the reported analytes within the RT windows? ☑ NA ☐ YES ☐ NO
2. Were RT shifts observed when compared with the last CV? ☑ NA ☐ YES ☐ NO
3. Were the reported analytes confirmed? ☑ NA ☐ YES ☐ NO

3. Did the initial analysis of any sample have a concentration of a target analyte
4. which exceeded the instrument calibration range? ☐ YES ☑ NO
5. Were analyte concentrations that were recorded on the raw sample quantitation reports accurately transferred to the sample summary sheets? ☑ YES ☐ NO

**Comments:** Target analyte identification criteria were met. No target analytes were detected at or above the detection limit in any project sample.

## M. CORRECTIVE ACTION TAKEN AND GENERAL COMMENTS:

**Comments:** No corrective action was required. The initial demonstration of capability for analyst B. Lake and the current MDL study results were previously provided as a revision. Calculation checks were conducted as noted above.

## REFERENCES:

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

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## SW-846 METHOD 8270D SEMIVOLATILE DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive manual review of the analytical results for the April 23–24, 2014 monitoring event at HWMU16. Draper Aden Associates collected groundwater samples from monitoring wells 16C1, 16MW8, 16MW9, 16WC1A, 16WC1B, 16-1, 16-2, 16-3, 16-5, 16WC2B, 16Spring. Groundwater sample 16WDUP was submitted to the laboratory as a blind sample duplicate for 16WC1A.

Samples 16C1, 16MW8, 16MW9, 16WC1A, and 16WC1B (compliance monitoring wells) were analyzed for 114 target analytes. Samples 16-1, 16-2, 16-3, 16-5, 16WC2B, and 16Spring (plume wells) were analyzed for three target analytes per USEPA SW-846 Method 8270D. The following information and attached table summarize the Method 8270D data validation results. Validation of other required methods are presented on separate reports.

Draper Aden Associates sent samples to CompuChem (CompuChem), a Division of Liberty Analytical, of Cary, North Carolina, for the GC/MS semivolatile analysis. CompuChem is a VELAP accredited laboratory for the analytes, method and matrix as reported on the certificates of analysis except for following analytes: a,a-dimethylphenethylamine, aramite, hexachlorophene and kepone. These analytes are pending accreditation from VELAP. The laboratory stated that .information has been submitted to the accrediting body.

CompuChem submitted results to Draper Aden Associates in a final certificate of analysis that included sample analytical results as well as relevant QA/QC and method performance criteria documentation to verify and validate the results (SDGs: 1404171/1404172).

The evaluation of CompuChem's compliance with Method 8270D and validation of the results was based on a review of the following items: QC deliverables package, QC history documentation, case narrative, technical holding time and preservation requirements, instrument performance (tune) check, instrument calibrations, blank analysis, surrogate spike recoveries, matrix spike and matrix spike duplicate (MS/MSD) analyses, laboratory control sample (LCS) data, and internal standard requirements. A review of the transcriptions from instrument data to sample summary sheets was performed. Calculation verifications were performed on ten percent of the data set, where applicable. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

The original certificates of analyses were received on May 19, 2014 and May 21, 2014. The certificates of analysis appeared complete and the data were of acceptable quality, except where noted below. The data set demonstrated the laboratory's ability to achieve the reported permit required quantitation limit (QL).

CompuChem received the samples on ice and in good condition, with custody seals intact. The chain of custody was appropriately signed and dated by field and laboratory personnel. Technical holding time and sample preservation were met.

QC history documentation, instrument performance check (tuning) criteria, calibration, blank, surrogate, MS/MSD, LCS and internal standard requirements were met, except where noted

below. Sample results were reviewed for transcription errors from the instrument data to the laboratory report and no errors were noted. Deviations from specific QA/QC criteria that were identified during the data review process are summarized below.

3,3'-Dimethylbenzidine and phorate exceeded the initial calibration verification standard percent difference/drift requirement (±30%). These analytes were not detected at or above the detection limit or permit QL in any sample. Results for these analytes were validated and qualified "UJ" due to the observed QC deficiency. The remaining ICV standard criteria were met.

3,3'-Dimethylbenzidine did not recover in the MS/MDS. 1,4-Benzenediamine (p-phenylenediamine) recovered low in the LCS. The remaining MS/MSD/LCS criteria were met or no data qualifications were needed. Field duplicate/sample results exhibited acceptable precision, where applicable.

The laboratory's initial demonstration of capability (IDOC) for analyst OWS and the current MDL study were provided as a revision.

For this Appendix IX monitoring event, results for compliance wells (16C1, 16MW8, 16MW9, 16WC1A and 16WC1B) were reported to at or above the detection limit. The detection limit was based on the current laboratory MDL study. For plume wells (16-1, 16-2, 16-3, 16-5, 16WC2B, and 16Spring), results were reported to at or above the permit required QL. The sample results unaffected by the data validation process, and not detected at or above the detection limit and/or QL, were validated and reported as "U." No results were rejected based on the data validation criteria.

## SW-846 METHOD 8270D (GC/MS) SEMIVOLATILE ORGANIC DATA VALIDATION

**Comments:** *Semivolatile (a.k.a, base/neutral and acid extractables) analysis involves sample preparation using SW-846 Method 3510C. The semivolatile extracts are concentrated through evaporation. Target analytes are separated and quantified using a capillary column gas chromatograph (GC)/mass spectrometer (MS).*

### A. QC DELIVERABLES PACKAGE:

1. Was the case narrative present/signed by a lab representative? ☑ YES ☐ NO
2. Was the Chain of Custody present/signed by a lab representative? ☑ YES ☐ NO
3. Were the sample results included for the sample locations? ☑ YES ☐ NO
4. Did the data correspond to the project specific analyte list? ☑ YES ☐ NO
5. Were target analyte QLs reported on sample summary sheets in agreement with the instrument specific MDL study? ☑ YES ☐ NO

**Comments:** QC deliverables package criteria were met.

### B. QC HISTORY DOCUMENTATION CRITERIA:

1. Were instrument specific detection limits provided for the analytes? ☑ YES ☐ NO
2. Were the instrument specific QLs for target analytes provided? ☑ YES ☐ NO
3. Was calibration range specified for the target analytes? ☑ YES ☐ NO

**Comments:** QC history documentation criteria were met.

### C. TECHNICAL HOLDING TIME AND PRESERVATION CRITERIA:

1. Was the 7-day sample collection to extraction holding time met? ☑ YES ☐ NO
2. Was the 40-day extraction to analysis holding time met? ☑ YES ☐ NO
3. Were the samples received at $\leq 6^{\circ}C$? ☑ YES ☐ NO

**Comments:** The sample collection to extraction/analysis holding times and preservation criteria were met.

### D. GC/MS INSTRUMENT PERFORMANCE CHECK CRITERIA:
***(Tuning, Injection Port and Column Performance)***

1. Was analysis of the instrument performance check solution performed at the beginning of each 12-hour period of standard and/or sample analysis? ☑ YES ☐ NO
2. Was there documentation of the injection of 50 ng of DFTPP? ☑ YES ☐ NO
3. Were ion abundance criteria met? ☑ YES ☐ NO
4. Was the injection port inertness verified by analysis of 4,4'-DDT? ☑ YES ☐ NO
5. Was the degradation of DDT to DDE and DDD <20%? ☑ YES ☐ NO
   - If no, does associated data require qualification? ☑ NA ☐ YES ☐ NO
   - Was the injection port inertness check acceptable? ☑ YES ☐ NO

6. Was column performance checked through the analysis of peak tailing (<2 tailing factor) of pentachlorophenol and benzidine? ☑ YES ☐ NO
   - If no, does associated data require qualification? ☑ NA ☐ YES ☐ NO
   - Was column performance check acceptable? ☐ NA ☑ YES ☐ NO

**Comments:** Instrument performance check criteria were met. Laboratory tune criteria windows are within those specified by 8270D.

## E. INITIAL GC/MS CALIBRATION CRITERIA:

***SW-846 Criteria:***

1. Were the initial calibrations (ICAL) and any directly associated blanks and samples analyzed within 12-hours of the associated instrument performance (tune) check? ☑ YES ☐ NO
2. Were quantitation ions, used and listed on data, randomly checked against primary quantitation ions as required by Method 8270D and the RFP? ☑ YES ☐ NO
3. Were target analytes included in the ICAL? ☑ YES ☐ NO
4. Did the ICAL consist of a minimum of 5 calibration levels? ☑ YES ☐ NO
5. Was the lowest concentration calibration standard at or below the associated MCL, regulatory compliance, or action limit? ☑ YES ☐ NO
6. Were calibration standards dropped to meet calibration criteria? ☐ YES ☑ NO
7. Were 8270D minimum RRF criteria met? Relative Response Factor-range (RRF 0.010-0.900) ☑ YES ☐ NO
   **Refer to Table 4 of SW-846 Method 8270D (Rev4 2/07) for specific analyte RRFs*
8. Was each target analyte %RSD ≤ 20%? ☐ YES ☑ NO
9. Was the correlation coefficient or coefficient of determination >0.99 for target analytes with > 20% RSD? ☑ YES ☐ NO
   **System recalibrated if >10% analytes fail above condition*
10. Was an initial calibration verification (ICV) standard analyzed immediately following the ICAL? ☑ YES ☐ NO
11. Was the recovery within 70-130%? ☐ YES ☑ NO
12. Was the ICV standard prepared from a different source from the ICAL ? ☑ YES ☐ NO

***Method Validation Performance Criteria:***

1. Did target analytes and surrogates that have RSDs > 20% have ≥0.99 correlation coefficient or coefficient of determination? ☑ YES ☐ NO
2. For linear regression curves, was the recalculated concentration of the low calibration point within ±30%? ☑ YES ☐ NO
3. For quadratic curves, was a minimum six standards used? ☑ YES ☐ NO

**Comments:** Initial calibration criteria were met except as noted in the summary above.

## F. CALIBRATION VERIFICATION CRITERIA:

***SW-846 Criteria:***

1. Was a calibration verification analyzed at the beginning of each 12-hour period following the analysis of the instrument

performance check and prior to analysis of the method blank and samples? The calibration verification may be part of the ICAL or analyzed independently during another 12-hour analysis period. ☑ YES ☐ NO

2. Were 8260C minimum Relative Response Factor (RRF) criteria met?
*Refer to Table 4- SW-846 Method 8260C (Rev3 2/06) for specific analyte RRFs* ☑ YES ☐ NO
3. Did the target analytes and system monitoring analytes (surrogates) have the % D within ± 20%? ☑ YES ☐ NO
If "NO", list analytes that exceed these criteria:

***Draper Aden Associates Contractual Requirements:***

1. Did the target analytes and system monitoring analytes (surrogates) have % Ds within ± 20%? ☑ YES ☐ NO

**Comments:** The CV standard criteria were met.

## G. BLANK CRITERIA:

1. Was a method/extraction blank analyzed on each GC/MS system used for sample analysis? ☑ YES ☐ NO
2. Was a trip blank analyzed with this sample batch? ☑ NA ☐ YES ☐ NO
3. Were the blank samples interference free? ☑ YES ☐ NO
4. Was the level of blank contamination > 5% of the MCL? ☑ NA ☐ YES ☐ NO
5. List target analytes detected in the blanks: *None*

**Comments:** Blank criteria were met.

## H. SURROGATE CRITERIA:

1. Were the following surrogates used? ☑ YES ☐ NO
   - phenol - $d_6$ (10%-94%)
   - 2-fluorophenol (21%-100%)
   - 2,4,6-tribromophenol (10%-123%)
   - nitrobenzene – $d_5$ (43%-108%)
   - 2-fluorobiphenyl (43%-116%)
   - p-terphenyl - $d_{14}$ (33%-141%)
2. Were recoveries within the specified ranges? ☑ YES ☐ NO
3. Were any two base/neutral or acid surrogates out of specification or did any one base/neutral or acid extractable surrogate have a recovery of less than 10%? ☐ YES ☑ NO
If yes, was a re-extraction and reanalysis performed to confirm that the non-compliance was due to sample matrix effects rather than laboratory deficiencies? ☑ NA ☐ YES ☐ NO

**Comments:** The laboratory made one surrogate substitution (phenol-d5 for phenol-d6) as allowed by the method. Surrogate recovery criteria were met.

## I. MATRIX SPIKE/ MATRIX SPIKE DUPLICATE (MS/MSD) CRITERIA:

(MS/MSD Requirements - CLP Guidelines)

| Analyte | % R Water | % RPD Water |
|---|---|---|
| Phenol | 12-110 | 42 |
| 2-Chlorophenol | 27-123 | 40 |
| N-Nitroso-di-n-propylamine | 41-116 | 38 |
| 4-Chloro-3-methylphenol | 23-97 | 42 |
| Acenaphthene | 46-118 | 31 |
| 4-Nitrophenol | 10-80 | 50 |
| 2,4-Dinitrotoluene | 24-96 | 38 |
| Pyrene | 26-127 | 31 |

1. Was a MS/MSD analyzed per sample batch or every 20 samples, whichever may occur first? ☑ YES ☐ NO
2. Did the MS/MSD spike contain additional target analytes? ☑ YES ☐ NO
3. Was the MS/MSD analyzed on the specific project matrix? ☑ YES ☐ NO
4. List MS/MSD target analytes not within laboratory recovery ranges: *See comment*
5. Was a LCS analyzed to address failed MS spike criteria? ☑ YES ☐ NO
6. Did the LCS for the failed MS analyte(s) fall within the recovery ranges and was the problem identified as matrix interference? *See comment*
7. Were analytes qualified as estimated due to MS/MSD criteria? ☑ YES ☐ NO
   - If yes, and the LCS for the analyte(s) recovered within control limits, matrix interference is suspected.

**Comments:** MS/MSD criteria were met except as noted in the review summary above.

## J. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

1. Was a LCS included in the sample analysis? ☑ YES ☐ NO
2. Did the LCS contain the required target analytes? ☑ YES ☐ NO
3. List the LCS target analytes and laboratory recovery range. *See semivolatile certificate of analysis.*
4. Were any analytes qualified as estimated due to LCS criteria? ☑ YES ☐ NO

**Comments:** LCS criteria were met except as discussed in the review summary above.

## K. INTERNAL STANDARDS CRITERIA:

1. Were the following internal standards (IS) used? ☑ YES ☐ NO
   - 1,4-Dichlorobenzene-$d_4$
   - Naphthalene-$d_8$
   - Acenapththene-$d_{10}$
   - Phenanthrene-$d_{10}$
   - Chrysene-$d_{12}$
   - Perylene-$d_{12}$
2. Were IS areas within ± 50% of last CV? ☑ YES ☐ NO
3. Were IS RTs within ± 30 seconds of last CV? ☑ YES ☐ NO

**Comments:** Internal standard criteria were met.

## L. TARGET ANALYTE IDENTIFICATION:

1. Were the RRTs of the reported analytes within ± 0.06 RRT units of the standard RRT? ☑ YES ☐ NO
2. Check the sample spectra against the laboratory standard spectra to see that the following criteria were met: ☑ YES ☐ NO
   * Did characteristic ions maximize in the same scan or within one scan of each other?
   * Were the characteristic ions present in the standard spectra present in the sample spectra for analytes detected above the QL?
   * Were the relative ion intensities between the standard and sample spectra within ± 30%?
3. Were the reported analytes confirmed? ☑ YES ☐ NO

**Comments:** Target analyte identification criteria were met. No target analytes were detected at or above the detection limit or permit QL (compliance samples) or the permit QL (plume samples) except for diethyl phthalate in 16MW9.

## M. TARGET ANALYTE QUANTITATION:

* If the %RSD of an analyte was 20% or less, then the average relative response factor should have been used for quantitation.
* If the %RSD of an analyte was greater than 20%, then the quantitation should be based on a calibration curve using the first or higher order regression fit of the five calibration points (6 calibration points for 2nd order).

1. List the analytes detected above the QL whose %RSD was >20%: *None*
   a. Was quantitation based on a linear regression fit? ☑ NA ☐ YES ☐ NO
   b. Was the curve forced through the origin? ☑ NA ☐ YES ☐ NO
2. Did the initial analysis of any sample have a concentration of a target analyte that exceeded the initial calibration range? ☐ YES ☑ NO
   -If so, was the sample reanalyzed at a higher dilution? ☑ NA ☐ YES ☐ NO
3. Were the analyte concentrations that were recorded on the raw sample quantitation reports accurately transferred to the sample summary sheets? ☑ YES ☐ NO

**Comments:** Target analyte quantitation criteria were met.

## N. CORRECTIVE ACTION TAKEN AND GENERAL COMMENTS:

**Comments:** Analyst IDOC for OWS was provided as a revision. No other corrective action was required. Library searches were not requested with this data set.

**REFERENCES:**

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

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## SW-846 METHOD 8260C VOLATILE ORGANICS DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive manual review of the analytical results for the April 23-24, 2014 monitoring event at HWMU16. Draper Aden Associates collected groundwater samples from monitoring wells 16C1, 16MW8, 16MW9, 16WC1A, 16WC1B, 16-1, 16-2, 16-3, 16-5, 16WC2B, and 16Spring. Groundwater sample 16WDUP was submitted to the laboratory as a blind field duplicate for 16WC1A.

Samples 16C1, 16MW8, 16MW9, 16WC1A, and 16WC1B (compliance monitoring wells) were analyzed for 93 target analytes and samples 16-1, 16-2, 16-3, 16-5, 16WC2B, and 16Spring (plume wells) were analyzed for 18 target analytes per USEPA SW-846 Method 8260C. The following information and attached table summarize the Method 8260C data validation results.

Draper Aden Associates sent samples to Eurofins Lancaster Laboratories Environmental (Lancaster), of Lancaster, Pennsylvania. Lancaster performed the SW-846 Method 8260C volatile analysis. Lancaster is a VELAP accredited laboratory for the analytes, method and matrix as reported on the certificate of analysis. Hexachloroethane was also reported by CompuChem by Method 8270D. Lancaster submitted results to Draper Aden Associates in a final certificate of analysis, which included sample analytical results as well as relevant documentation to validate and verify the results SDG RAE17).

The evaluation of Lancaster's compliance with Method 8260C and validation of the results were based on a review of the following items: QC deliverables package, QC history documentation, technical holding times and preservation requirements, instrument performance (tune) check, instrument calibration and calibration verification data, blank samples analyses, surrogate spike recoveries, matrix spike and matrix spike duplicate (MS/MSD) analyses, laboratory control sample (LCS) data, internal standards requirements, and/or target analyte identification and quantitation. A review of transcriptions from instrument data to sample summary sheets was performed. Calculation verifications were performed on ten percent of the data set, where applicable. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

Lancaster received the samples on ice and in good condition, with custody seals intact. The chain of custody was appropriately signed and dated by field and laboratory personnel. Technical holding time and preservation criteria were met, except where noted below.

The original certificate of analysis was received on May 20, 2014. The certificate of analysis appeared complete in its presentation and the data were of acceptable quality. The certificates of analysis demonstrated the ability of the laboratory to achieve the quantitation limit (QL) for each target analyte, unless noted below.

QC deliverables package requirements were met. QC history documentation and instrument performance check criteria were met. Tuning, initial calibration, calibration verification,

blanks, surrogates, MS/MSD, LCS and internal standards criteria were met, except where noted below. Sample results were verified and no transcription errors were observed.

Acrolein and 2-chloroethyl vinyl ether were analyzed using a sample aliquot adjusted to pH <2 SU. Acrolein and 2-chloroethyl vinyl ether were not reported as detected in any sample and sample results for these two target analytes were validated and qualified as estimated ("UJ"). Acrolein and 2-chloroethyl vinyl ether are not target analytes for the plume well samples.

Trans-1,4-dichloro-2-butene did not meet one or more continuing calibration verification (CV) standard percent difference/drift requirement (±20%). The sample results for this analyte were validated and qualified "J" or "UJ" due to the observed QC deficiency. The remaining CV standard criteria were met.

2-Chloroethyl vinyl ether did not recover from the acid preserved MS/MSD aliquot and sample results for this analyte were qualified as "UJ." The remaining MS/MSD criteria were met.

Laboratory analysis was performed using a 25 ml purge volume for most analytes. Analysis using a 5 ml purge volume was performed for 2-propanol, ethanol, and ethyl acetate. Ethylene oxide and 1-propanol results were reported by the laboratory as tentatively identified compounds (TICs). Ethylene oxide and 1-propanol were not detected in any sample or method blank and sample results for these analytes were qualified "UJ" to due to reporting as a TIC.

Field duplicate/sample results for 16WC1A exhibited acceptable precision, where applicable. A trip blank was submitted and analyzed for each day of sampling.

For sample 16C1 and 16MW9, the initial results for diethyl ether exceeded the instrument calibration range. These samples were reanalyzed in dilution and results from the dilution analysis were reported for each sample.

1,1-Dichloroethene was reported below the QL in sample 16MW9. A verification event to confirm or refute this result was conducted on June 12, 2014. The verification event result from Lancaster (SDG: RAE23) confirmed the original result and the original result for 1,1-dichloroethene in MW-9 was reported as the final result. Verification results were evaluated using the criteria noted above which were verified to be met.

For compliance well samples 16C1, 16MW8, 16MW9, 16WC1A, 16WDUP, and 16WC1B, results were reported to at or above the permit detection limit for this Appendix IX monitoring event. Where permit MDLs were lower than the laboratory's current MDL study, results were reported to the laboratory MDL. For the remaining samples (plume wells), target analytes were reported to at or above the permit QL.

Target analytes detected at or above the detection limit or QL and/or analytical data that required a data validation qualifier due to quality control deviations noted above are summarized

on the attached table. The reported concentration for target analytes detected less than the QL should be considered estimated.

Results for samples unaffected by the data validation process, and not detected at or above the detection limit and/or QL, were validated and reported as "U." No results were rejected based on the data validation criteria.

## SW-846 METHOD 8260C (GC/MS) VOLATILE ORGANICS DATA VALIDATION

***Comments:*** *Volatile organic analysis uses a purge and trap system to remove volatile organic target analytes from a 5 or 25 ml water sample (SW-846 5030B). Target analytes are separated and quantified using a capillary column gas chromatograph (GC)/mass spectrometer (MS).*

### A. QC DELIVERABLES PACKAGE:

| | | |
|---|---|---|
| 1. | Was the case narrative present/signed by a lab representative? | ☑ YES ☐ NO |
| 2. | Was the Chain of Custody present/signed by a lab representative? | ☑ YES ☐ NO |
| 3. | Were the sample results included for the sample locations? | ☑ YES ☐ NO |
| 4. | Did the results correspond to the project specific analyte list? | ☑ YES ☐ NO |
| 5. | Were the analyte LOQs reported on sample summary sheets in agreement with the MDL study? | See comment |
| 6. | Were sample locations, analytes and QLs in agreement with the electronic deliverable (EDD)? | ☑ YES ☐ NO |

**Comments:** QC deliverables package requirements were met. The Appendix IX monitoring target analyte list was modified per the permit. The MDL study did not contain ethylene oxide or 1-propanol; these analytes were reported by the laboratory as tentatively identified compounds (TICs) and sample results were qualified as estimated.

### B. QC HISTORY DOCUMENTATION CRITERIA:

| | | |
|---|---|---|
| 1. | Was an instrument specific MDL study provided which included DL and QL values for the target analytes? | ☑ YES ☐ NO |
| 2. | Was the instrument calibration range provided? | ☑ YES ☐ NO |
| 3. | Were the instrument specific check sample data provided for the target analytes? | ☑ YES ☐ NO |

**Comments:** Except as noted above, QC history documentation was provided and met criteria. The laboratory analyzed a MDL check sample at 1 µg/l (5 ml purge) and at 0.1 µg/l (25 ml purge) for most target analytes.

### C. TECHNICAL HOLDING TIME AND PRESERVATION CRITERIA:

| | | |
|---|---|---|
| 1. | Was the 14-day sample collection to analysis holding time met? | ☑ YES ☐ NO |
| 2. | Were the samples received at ≤6°C, zero headspace? | ☐ YES ☑ NO |
| 3. | Were the sample pHs adjusted to < 2 with HCl? | ☑ YES ☐ NO |
| 4. | Were the sample pHs adjusted to 4-5 with HCl? (Acrolein only) | ☐ YES ☑ NO |
| 5. | Were the sample analyzed unpreserved (2-Chloroethyl vinyl only) | ☐ YES ☑ NO |

**Comments:** Technical holding time and sample preservation criteria were met except where discussed in the data review summary above.

## D. GC/MS INSTRUMENT PERFORMANCE (TUNING) CHECK CRITERIA:

1. Was analysis of the instrument performance check solution performed at the beginning of each 12-hour period during which standards or samples were analyzed? ☑ YES ☐ NO
2. Was there documentation of the injection of 5-50 ng bromofluorobenzene (BFB)? ☑ YES ☐ NO
3. Were ion abundance criteria met? ☑ YES ☐ NO
4. Were calibration, blank, and sample analyses performed within 12 hours of tuning? ☑ YES ☐ NO

**Comments:** Instrument performance check criteria were met.

## E. INITIAL GC/MS CALIBRATION CRITERIA:

***SW-846 Criteria:***

1. Was the internal standard (IS) which was selected for target analyte RF calculation the IS which had the closest retention time? ☑ YES ☐ NO
2. Were the target analytes included in the ICAL? ☑ YES ☐ NO
3. Were any calibration levels removed from the curve that would negatively influence the data integrity? ☐ YES ☑ NO
4. Did the ICALs consist of a minimum of 5 calibration levels? ☑ YES ☐ NO
5. Was the lowest concentration calibration standard at or below the associated MCL? ☑ YES ☐ NO
6. Was the calibration curve developed using the same purge volume used for sample analysis? ☑ YES ☐ NO
7. Were 8260C minimum Relative Response Factor (RRF) criteria met? *Refer to Table 4- SW-846 Method 8260C (Rev3 2/06) for specific analyte RRFs* ☑ YES ☐ NO
8. Was each target analyte %RSD ≤ 20%? ☑ YES ☐ NO
9. Was the correlation coefficient >0.99 for target analytes with ≥20 % RSD? *(System recalibrated if >10% analytes fail above condition)* ☑ NA ☐ YES ☐ NO
10. Was an initial calibration verification (ICV) standard analyzed immediately following the ICAL? ☑ YES ☐ NO
11. Was the recovery within 70-130%? ☑ YES ☐ NO
12. Was the ICV standard prepared from a different source from the ICAL ? ☑ YES ☐ NO

***Method Validation Performance Criteria:***

1. Did target analytes and surrogates that have RSDs > 20% have ≥0.99 correlation coefficient or coefficient of determination? ☑ NA ☐ YES ☐ NO
2. For linear regression curves, was the recalculated concentration of the low calibration point within ±30%? ☑ NA ☐ YES ☐ NO
3. For quadratic curves, was a minimum six standards used? ☑ NA ☐ YES ☐ NO

**Comments:** Initial calibration criteria were met.

## F. CALIBRATION VERIFICATION CRITERIA:

***SW-846 Criteria:***

1. Was a calibration verification analyzed at the beginning of each 12-hour period following the analysis of the instrument performance check and prior to analysis of the method blank and samples? The calibration verification may be part of the ICAL or analyzed independently during another 12-hour analysis period. ☑ YES ☐ NO
2. Were 8260C minimum Relative Response Factor (RRF) criteria met?
   *Refer to Table 4- SW-846 Method 8260C (Rev3 2/06) for specific analyte RRFs* ☑ YES ☐ NO
3. Did the target analytes and system monitoring analytes (surrogates) have the % D within ± 20%? ☐ YES ☑ NO
   If "NO", list analytes that exceed these criteria:

***Draper Aden Associates Contractual Requirements:***

1. Did the target analytes and system monitoring analytes (surrogates) have % Ds within ± 20%? ☐ YES ☑ NO

**Comments:** The CV standard criteria were met except as noted above.

## G. BLANK CRITERIA:

1. Was a method blank analyzed after the calibration standards, prior to sample analysis, and once for every 12-hour period beginning with the injection of BFB? ☑ YES ☐ NO
2. Was a trip blank analyzed with this sample batch? ☑ YES ☐ NO
3. Were the trip blanks and method blanks interference free? See comment
4. Was the level of blank contamination less than 5% of the regulatory limit associated with an analyte or less than 5% of the sample result for the same analyte, whichever is greater? ☑ NA ☐ YES ☐ NO
5. List target analytes detected in the blanks: *None*
6. Did any result exceed the calibration range? ☑ YES ☐ NO
7. Were one or more blanks analyzed following the high concentration sample to prevent cross contamination? ☐ YES ☑ NO

**Comments:** Blank criteria were met.

## H. SURROGATE CRITERIA:

***SW-846 Criteria:***

1. Were the following surrogates used? ☑ YES ☐ NO
   - dibromofluoromethane ( 80-120%)
   - 4-bromofluorobenzene (80-120%)
   - toluene-d8 (80-120%)
   - 1,2-dichloroethane-d4 (80-120%)
2. Were recoveries within specified ranges? ☑ YES ☐ NO
   If "NO", corrective action is required. Flagging of the data as estimated is not acceptable until corrective action has been attempted

3. Were samples with surrogates outside the QC window reanalyzed as required? ☑ NA ☐ YES ☐ NO

**Comments:** Surrogate criteria were met.

## I. MATRIX SPIKE, MATRIX SPIKE DUPLICATE (MS/MSD) CRITERIA:

(MS/MSD Requirements - CLP Guidelines)

| *Analyte* | *% R Water* | *% RPD Water* |
|---|---|---|
| 1,1-dichloroethene | 61-145 | 14 |
| trichloroethene | 71-120 | 14 |
| benzene | 76-127 | 11 |
| toluene | 76-125 | 13 |
| chlorobenzene | 75-130 | 13 |

1. Was a matrix spike and matrix spike duplicate (MS/MSD) analyzed per sample batch or every 20 samples, whichever may occur first? ☑ YES ☐ NO
2. Did the MS/MSD spike contain additional target analytes? ☑ YES ☐ NO
3. Was the MS/MSD analyzed on the specific project matrix? ☑ YES ☐ NO
4. MS/MSD acceptance range: 75-125%; 70-130% for poor purge analytes; RPD ≤20 if not otherwise specified.
5. Were any analytes qualified as estimated due to MS/MSD criteria? ☑ YES ☐ NO
   - If yes, and the LCS for the analyte(s) recovered within control limits, matrix interference is suspected.

**Comments:** MS/MSD criteria were met except as discussed in review summary above.

## J. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:

1. Was a LCS included in the sample batch analysis? ☑ YES ☐ NO
2. Did the LCS contain the required target analytes? (No TICs) ☑ YES ☐ NO
3. List the LCS acceptance criteria: 80-120%; 70-130% for poor purge analytes
4. Were any analytes qualified as estimated? ☐ YES ☑ NO

**Comments:** LCS criteria were met.

## K. INTERNAL STANDARDS (IS) CRITERIA:

1. Were the following internal standards (IS) used? ☑ YES ☐ NO
   t-butyl alcohol-d10, fluorobenzene, chlorobenzene-$d_5$, 1,4-dichlorobenzene-$d_4$
2. Were IS areas within - 50% to + 100% of the last CV? ☑ YES ☐ NO
3. Were IS RTs within ± 30 seconds of the last CV? ☑ YES ☐ NO
4. Were samples failing Items 2 and/or 3 above reanalyzed as required by the method? ☑ NA ☐ YES ☐ NO

**Comments:** Internal standards criteria were met.

## L. TARGET ANALYTE IDENTIFICATION:

1. Were the RRTs of the reported analytes within ± 0.06 RRT units of the standard RRT? ☑ YES ☐ NO
2. Check the sample spectra against the laboratory standard spectra to see that the following criteria were met:
   * Did characteristic ions maximize in the same scan or within one scan of each other? ☑ YES ☐ NO
   * Were characteristic ions present in the standard spectra and sample spectra for analytes detected above the QL? ☑ YES ☐ NO
   * Were the relative intensities of the ions between the standard and sample spectra within ± 30%? ☑ YES ☐ NO
3. Were the reported analytes confirmed? ☑ YES ☐ NO

**Comments:** See attached table for detected analytes. Identification criteria were met.

## M. TARGET ANALYTE QUANTITATION:

* If the %RSD of an analyte was 20% or less, then the average relative response factor should have been used for quantitation.
* If the %RSD of an analyte was greater than 20%, then the quantitation should have been based on a calibration curve using the first or higher order regression fit of the five calibration points. (6 calibration points for 2nd order).

1. List the detected analytes whose %RSD was > 20%:
   - Was quantitation based on a linear regression fit? ☑ NA ☐ YES ☐ NO
2. Did the initial analysis of any sample have a concentration of an analyte which exceeded the initial calibration range? ☑ YES ☐ NO
   If so, was the sample reanalyzed at a higher dilution? ☑ YES ☐ NO
3. Were the analyte concentrations that were recorded on the raw sample quantitation reports accurately transferred to the sample summary sheets? ☑ YES ☐ NO
4. Were field sample duplicate RPDs <20 where applicable? ☑ YES ☐ NO

**Comments:** Target analyte quantitation criteria were met, where applicable.

## N. CORRECTIVE ACTION TAKEN AND GENERAL COMMENTS:

1,1-Dichloroethene was reported below the QL in sample 16MW9. A verification event to confirm or refute these results was conducted on June 12, 2014. The verification results confirmed the original results and the original results were reported as the final results. The IDOC for analysts L. Pape and K. Legerlotz were submitted as a revision to this data package. TIC information reviewed for ethylene oxide and 1-propanol included TIC report, sample chromatograms and library search printouts, and mass spectra for the closest match, where applicable.

**REFERENCES:**

Draper Aden Associates conducted data validation of the above noted data set using summary tables and raw data provided by the analyzing laboratory. Data validation was conducted in general accordance with SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA, III and subsequent updates) and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999 and USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008, where applicable). Validation of this data set is limited to the items detailed in this report.

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## SW-846 METHODS 9012B, 9034 & 9066 DATA REVIEW SUMMARY

Draper Aden Associates performed a comprehensive manual review of the analytical results for the April 23-24, 2014 monitoring event at RFAAP HWMU16. Draper Aden Associates collected the groundwater samples from monitoring wells 16C1, 16MW8, 16MW9, 16WC1A, and 16WC1B. Sample 16WDUP was submitted to the laboratory as a blind field sample duplicate for 16WC1A.

The samples were analyzed for cyanide by SW-846 Method 9012B, sulfide by SW-846 Method 9034 and total recoverable phenolics by SW-846 Method 9066. The following information and attached table summarize the data validation results.

Draper Aden Associates sent samples to CompuChem (CompuChem), a Division of Liberty Analytical, of Cary, North Carolina, to TestAmerica (TestAmerica) North Canton, of North Canton, Ohio, and to Eurofins Lancaster Laboratories Environmental (Lancaster), of Lancaster, Pennsylvania. CompuChem performed the Methods 9012B analysis, TestAmerica performed the Method 9034 analysis, and Lancaster performed the Method 9066 analysis. Each laboratory submitted results to Draper Aden Associates in a final certificate of analysis, which included sample analytical results as well as relevant documentation to validate and verify the results. Each laboratory is a VELAP accredited laboratory for the above analytes, methods, and matrix reported.

The evaluation of each laboratories' compliance with the analytical methods and validation of results presented here are based upon a limited review of QA/QC information including holding times, preservation procedures and standards, blank samples analyses (method, calibration and other blanks), matrix spike/matrix spike duplicate (MS/MSD) or matrix spike/sample duplicate (MS/DUP), and laboratory control standard (LCS) results. A review of transcriptions from instrument data to sample summary sheets was performed. Calculation checks were performed on a minimum ten percent of the data set. The following information is intended to summarize data review results and any observed significant deviations from method and/or contractual requirements.

CompuChem, TestAmerica, and Lancaster received the samples in good condition with custody seals intact. Technical holding time and preservation criteria were met, unless noted below. Phenolic samples were received at Lancaster with a pH > 4 SU. Additional preservative was added at the laboratory to adjust the pH to <4 SU and no data qualification was needed.

### ***Methods 9012B/9010C***

The original certificate of analysis was received on May 21, 2014. The certificate of analysis appeared complete in its presentation and the data were of acceptable quality. Documentation was provided to demonstrate the ability of the laboratory to achieve the reported quantitation limit (QL) for cyanide.

QC history documentation, holding time, sample preservation, instrument calibration and calibration verification criteria were met. Blank, MS/MSD, and LCS samples were analyzed as required and results were within control limits. The blanks were interference free.

Field duplicate/sample results exhibited acceptable precision, where applicable.

For this Appendix IX monitoring event, cyanide results were reported to at or above the detection limit. Cyanide was not detected at or above the permit defined detection limit or QL in any sample and sample results for cyanide were validated and reported as "U." No results were rejected based on data validation criteria.

***Method 9034/9030B***

The original certificate of analysis was received on May 13, 2014. The certificate of analysis appeared complete in its presentation and the data were of acceptable quality. The laboratory demonstrated the ability to achieve the reported quantitation limit (QL) for sulfide.

QC deliverables package requirements were met. Technical holding time and preservation criteria were met. Titrants were standardized and the normality reported. Sulfide was not reported in any laboratory blank sample. MS/MSD and LCS results for sulfide were within control limits, except as noted.

Sulfide recovered low in the MS/MSD. Sulfide was not detected at or above the MDL or QL in any sample and sample results were validated and qualified "UJ" to note that the MDL and QL were estimated due to the observed low recoveries. The remaining MS/MSD/LCS criteria were met.

Field duplicate/sample results exhibited acceptable precision, where applicable.

The laboratory analyzed MDL check samples at varying concentrations to verify the statistically derived sulfide MDL. Sulfide was not detected in the 1,000 µg/l MDL check sample but was detected in the 2,000 µg/l MDL check sample. The detection limit (MDL) for sulfide was established at 2,000 µg/l.

For this Appendix IX groundwater monitoring event, sample results were reported to at or above the laboratory detection limit. Results were consistent with historical data. Sulfide was not detected at or above the established detection limit or QL in any sample and sample results were validated and reported as "U." No results were rejected based on data validation criteria.

***Method 9066/9065***

The original certificate of analysis was received on May 21, 2013. The certificate of analysis appeared complete in its presentation and the data were of acceptable quality. The

QC history documentation, holding time, sample preservation, instrument calibration and calibration verification criteria were met. Blank, MS/MSD, and LCS samples were analyzed as required and results were within control limits. The blanks were interference free. Sample results were verified and no transcription errors were observed.

Field duplicate/sample results exhibited acceptable precision, where applicable.

For this Appendix IX monitoring event, results for total recoverable phenolics were reported to at or above the laboratory detection limit. Total recoverable phenolics were not reported at or above the detection limit or QL in any sample and sample results were validated and reported as "U." No results for total recoverable phenolics were rejected based on the data validation criteria.

## INORGANIC DATA EVALUATION FOR CYANIDE BY SW-846 METHOD 9012B

CompuChem, a Division of Liberty Analytical, Cary, NC; SDG: 1404171
Preparation Method: 9010C
"☑" denotes items reviewed. See Data Validation Summary for additional comments.

**A. QC DOCUMENTATION CRITERIA:**
- ☑ Specific detection limit for target analyte
- ☑ Specific QLs for target analyte
- ☑ Passed single blind performance evaluation study within 12 months
- ☑ IDOC for analyst N. Bolton submitted previously

**B. METHOD INFORMATION DOCUMENTATION:**
- ☑ Cyanide analyzed by requested method

**C. TECHNICAL HOLDING TIME / PRESERVATION REQUIREMENTS:**
- ☑ 14 day holding time
- ☑ Cool ≤6° C
- ☑ Adjust pH >12 w/ NaOH

**D. INSTRUMENT CALIBRATION CRITERIA:**
- ☑ 1 calibration blank and at least 3 standards; correlation coefficient ≥ 0.995

**E. INITIAL / CONTINUING CALIBRATION VALIDATION CRITERIA:**
- ☑ ICV, 10 sample frequency for CCV
- ☑ Distilled check standards (high/low) per batch of samples (90-110%)
- ☑ CCV Recovery within 85-115%

**F. BLANK SAMPLE CRITERIA:**
- ☑ Interference free
- ☑ ICB, then 10 sample frequency for CCB
- ☑ One preparation blank per sample batch

**G. MATRIX SPIKE DUPLICATE (MSD) SAMPLE CRITERIA:**
- ☑ One MSD or sample duplicate for every 20 samples
- ☑ RPD ≤20 between MS and MSD or sample and duplicate results
- ☑ Recovery 75-125% for MSD

**H. MATRIX SPIKE (MS) SAMPLE CRITERIA:**
- ☑ One MS sample for every 20 samples
- ☑ MS recovered within 75-125%
- ☑ Spike added prior to distillation

**I. LABORATORY CONTROL SAMPLE (LCS) SAMPLE CRITERIA:**

- ☑ One LCS sample for every 20 samples
- ☑ LCS recovered within 80-120%
- ☑ Spike added prior to distillation

**J. SAMPLE RESULTS CRITERIA:**

- ☑ Sample results reported within calibration range
- ☑ Sample results reported to the method detection limit

**REFERENCES:**

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

## DATA EVALUATION FOR SW-846 METHOD 9034 SULFIDE

TestAmerica, North Canton, OH; JN: 240-36528-1
Preparation Method: 9030B
"☑" denotes items reviewed. See Data Validation Summary for additional comments.

**A. QC DOCUMENTATION CRITERIA:**
- ☑ Specific limit of quantitation limit (QL)/ detection limit
- ☑ Specific QL
- ☑ Passed single blind performance evaluation study within 12 months
- ☑ IDOC for analyst J. Burns submitted previously

**B. METHOD INFORMATION DOCUMENTATION:**
- ☑ Sulfide analyzed by requested method

**C. TECHNICAL HOLDING TIME/ PRESERVATION REQUIREMENT:**
- ☑ 7 day holding time
- ☑ Cool ≤6° C
- ☑ Adjust pH >9 w/ NaOH and zinc acetate

**D. TITRANT STANDARDIZATION CRITERIA:**
- ☑ Normality of titrant reported
- ☑ Standardization date provided

**E. BLANK SAMPLE CRITERIA:**
- ☑ Interference free
- ☑ Method blank analysis per analytical batch or every 20 samples

**F. MATRIX SPIKE DUPLICATE (MSD) SAMPLE CRITERIA:**
- ☑ One MSD or sample duplicate for every 20 samples
- ☑ RPD ≤20 between MS and MSD or sample and duplicate results
- ☑ Recovery 75-125% for MSD

**G. MATRIX SPIKE (MS) SAMPLE CRITERIA:**
- ☑ One MS sample for every 20 samples
- ☑ Recovery within 75-125%
- ☑ Spike added prior to distillation

**H. LABORATORY CONTROL SAMPLE (LCS) SAMPLE CRITERIA:**
- ☑ One LCS sample for every 20 samples
- ☑ LCS recovered within 80-120%
- ☑ Spike added prior to distillation

**I. SAMPLE RESULTS CRITERIA:**

☑ Sample dilutions not required
☑ Sample results reported to the method detection limit

**REFERENCES:**

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010, where applicable). Validation of this data set is limited to review of items detailed in this data review report.

## DATA EVALUATION FOR SW-846 METHOD 9066 (TOTAL PHENOLICS)

Eurofins Lancaster Laboratories Environmental, Lancaster, PA; SDG: RAE17
Preparation (distillation) method: 9065
"☑" denotes items reviewed. See Data Validation Summary for additional comments.

**A. QC DOCUMENTATION CRITERIA:**
- ☑ Specific detection limit (DL)
- ☑ Specific quantitation limit (QL)
- ☑ Analyst IDOC for R. Caulfield-James submitted previously

**B. TECHNICAL HOLDING TIMES / PRESERVATION CRITERIA:**
- ☑ 28 days holding time
- ☑ Cool ≤6° C
- ☑ Adjust pH <4 w/ $H_2SO_4$

**C. INSTRUMENT CALIBRATION CRITERIA:**
- ☑ 1 calibration blank and at least 3 standards, $R \geq 0.995$
- ☑ Low concentration standard at or below QL

**D. INITIAL / CONTINUING CALIBRATION VALIDATION CRITERIA:**
- ☑ ICV beginning of run, 10 sample frequency for CCV
- ☑ Recovery within 90-110%

**E. BLANK SAMPLE CRITERIA:**
- ☑ Interference free
- ☑ Preparation blank analysis per batch of samples
- ☑ 10 sample frequency for CCB

**F. MATRIX SPIKE DUPLICATE (MSD) CRITERIA:**
- ☑ One MSD or sample duplicate per batch of 20 samples
- ☑ RPD ≤20 between MS and MSD or sample and duplicate results
- ☑ Recovery 75-125% for MSD

**G. MATRIX SPIKE (MS) SAMPLE CRITERIA:**
- ☑ Recovery within 75-125% range
- ☑ One MS per batch of 20 samples
- ☑ MS added prior to distillation/preparation

**H. LABORATORY CONTROL SAMPLE (LCS) SAMPLE CRITERIA:**
- ☑ One LCS sample for every 20 samples
- ☑ LCS recovered within 80-120%
- ☑ Spike added prior to distillation/preparation

**I. SAMPLE RESULTS CRITERIA:**

- ☑ Results reported within instrument calibration range
- ☑ Results reported to the detection limit
- ☑ Dilution employed, if required

**REFERENCES:**

Draper Aden Associates conducted a limited data validation of the above noted data set using the data package provided by the analyzing laboratory. Data evaluation was conducted using SW-846 (Test Methods for Evaluating Solid Waste-Physical/Chemical Methods, USEPA, SW-846, 3rd Edition-Final Update I, II/IIA, III and subsequent updates) method requirements and CLP data validation guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004 and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, January 2010). Validation of this data set is limited to review of items detailed in this data review report.

**LIMITATIONS:**

Draper Aden Associates prepared this document (which may include drawings, specifications, reports, studies and attachments) in accordance with the agreement between Draper Aden Associates and BAE Systems, Ordnance Systems, Inc.

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Conclusions presented are based upon a review of available information, the results of our field studies, and/or professional judgment. To the best of our knowledge, information provided by others is true and accurate, unless otherwise noted. Draper Aden Associates liability, hereunder, shall be limited to amounts due Draper Aden Associates for services actually rendered, or reimbursable expenses actually incurred. Any reuse or modification of any of the aforementioned documents (whether hard copies or electronic transmittals) prepared by Draper Aden Associates without written verification or adaptation by Draper Aden Associates will be at the sole risk of the individual or entity utilizing said documents and such use is without the authorization of Draper Aden Associates. Draper Aden Associates shall have no legal liability resulting from any and all claims, damages, losses, and expenses, including attorney's fees arising out of the unauthorized reuse or modification of these documents. Client shall indemnify Draper Aden Associates from any claims arising out of unauthorized use or modification of the documents whether hard copy or electronic.

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Draper Aden Associates
Engineering ♦ Surveying ♦ Environmental Services

**This Report has been prepared by:**

Kathy Olsen

Kathy Olsen, Environmental Scientist — Date: 7/30/14
2206 South Main Street, Blacksburg, Virginia 24060
540-552-0444, koslen@daa.com, www.daa.com

**This Report has been subjected to technical and quality review by:**

_____ — Date: _____
Janet C. Frazier, Project Manager
2206 South Main Street, Blacksburg, Virginia 24060
540-552-0444, jfrazier@daa.com, www.daa.com

# COMMONWEALTH of VIRGINIA

*Department of General Services*

*Division of Consolidated Laboratory Services*

*600 North 5th Street*
*Richmond, Virginia 23219-3691*
*(804) 648-4480*
*FAX (804) 692-0416*

05/21/2014

Ken Grzybowski
COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL
501 Madison Avenue
Cary NC 27513

VELAP ID: 460188

Dear Ken Grzybowski:

The request for a change in scope of accreditation has been received by the Division of Consolidated Laboratory Services (DCLS) Virginia Environmental Laboratory Accreditation Program (VELAP). The following lists the change(s) requested:

SEE ENCLOSED LIST

The documentation provided meets the technical requirements of 1VAC30-46-90 B 2. However, in accordance with 1VAC30-46-150 F additional fees are required to complete the request. The fee required to satisfy this request will be $150.00. Refer to 1VAC30-46-150 G to see how fees are determined. Please remit payment to: Attn: Laboratory Certification, DCLS; 600 North 5th Street; Richmond, VA 23219. Checks should be made payable to "Treasurer, Commonwealth of Virginia". Payment by credit card is accepted and may be faxed to (804) 692-0416.

Upon receipt of payment a new certificate will be issued. If you have any questions, please contact Christina Lynchesky, Lead Assessor, at (804)648-4480 x304 or christina.lynchesky@dgs.virginia.gov.

Sincerely yours,

Cathy Westerman
Manager, Virginia Environmental Laboratory Accreditation Program

Enclosures

COMMONWEALTH OF VIRGINIA
DIVISION OF CONSOLIDATED LABORATORY SERVICES
600 North 5th Street
Richmond, VA 23219
804-648-4480

DCLS

Report Date: 05/20/2014

# Virginia Environmental Laboratory Certification Program

**Laboratory Name:** COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL
**EPA Laboratory ID:** NC00028
**VELAP Laboratory ID:** 460188

**Application Type:** Application For Recertification
**Invoice Type:** Change In Scope

**Application Date:** 07/10/2013
**Invoice No.:** 460188.4
**Invoice Date:** 05/20/2014

**Fees Due:**

**CHANGE IN SCOPE BASE FEE**

| | | | | | |
|---|---|---|---|---|---|
| CHARGE APPLIES TO ALL REQUESTS FOR CHANGE IN SCOPE | 1 each | @ | 150.00 : | $ | 150.00 |

Subtotal: $ 150.00

**Total Amount Due This Invoice: $ 150.00**

Method of Payment:

☐ Payment by check payable to "Treasurer, Commonwealth of Virginia" [This invoice must accompany check]
(Mail To: Attn: Laboratory Certification, DCLS; 600 North 5th Street; Richmond, VA 23219)

☐ Payment by credit card - please sign and include the information below
(Mail To: Attn: Laboratory Certification, DCLS; 600 North 5th Street; Richmond, VA 23219 or fax to (804) 692-0416)

Credit Card Type:

☐ Visa

☐ Mastercard

Credit Card Account Number: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiration Date: ☐☐ / ☐☐

3 Digit CSC Code: ☐☐☐

Credit Card Billing Zip Code: ☐☐☐☐☐ — ☐☐☐☐

Cardholder Name (please print)

Cardholder Signature

Date

Daytime Phone

[ DGS Fiscal Use Only: Cost Code: 211 Fund Code: 0501 Revenue Source Code: 02600 ]

# Field of Certification/Accreditation Change in Status

## 1 VAC 30 CHAPTER 46

**460188 COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**

CARY,NC

EPA ID NC00028

**Assessor:** CHRISTINA LYNCHESKY

| Matrix | Method | Method Revision | Method Date | Analyte | Status Change Date | Suspend Date | Revoke Date | Status |
|---|---|---|---|---|---|---|---|---|
| NON-POTABLE WATER | EPA 8270 D | | 2007 | ARAMITE | 05/20/2014 | | | PENDING |
| SOLID AND CHEMICAL MATERIA | EPA 8270 D | | 2007 | ARAMITE | 05/20/2014 | | | PENDING |
| NON-POTABLE WATER | EPA 8270 D | | 2007 | A-A-DIMETHYLPHENETHYLAMINE | 05/20/2014 | | | PENDING |
| SOLID AND CHEMICAL MATERIA | EPA 8270 D | | 2007 | A-A-DIMETHYLPHENETHYLAMINE | 05/20/2014 | | | PENDING |
| NON-POTABLE WATER | EPA 8270 D | | 2007 | KEPONE | 05/20/2014 | | | PENDING |
| SOLID AND CHEMICAL MATERIA | EPA 8270 D | | 2007 | KEPONE | 05/20/2014 | | | PENDING |
| NON-POTABLE WATER | EPA 8270 D | | 2007 | HEXACHLOROPHENE | 05/20/2014 | | | PENDING |
| SOLID AND CHEMICAL MATERIA | EPA 8270 D | | 2007 | HEXACHLOROPHENE | 05/20/2014 | | | PENDING |

# COMMONWEALTH OF VIRGINIA
# DEPARTMENT OF GENERAL SERVICES
# DIVISION OF CONSOLIDATED LABORATORY SERVICES

## Certifies that

## VA Laboratory ID#: 460188
## COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL

501 MADISON AVENUE
CARY, NC 27513

**Owner:** JOSEPH WORTLEY
**Responsible Official:** WILLIAM WARING

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard

is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **February 11, 2014**

Expiration Date: **September 14, 2014**

**Certificate # 2793**

Denise M. Toney

Denise M. Toney, Ph.D.
DCLS Deputy Director

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2793

**COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**
501 MADISON AVENUE
CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1010 A | FLASHPOINT | FL |
| EPA 1664 A | OIL & GREASE | FL |
| EPA 300.0 REV 2.1 | CHLORIDE | FL |
| EPA 300.0 REV 2.1 | NITRATE AS N | FL |
| EPA 300.0 REV 2.1 | NITRITE AS N | FL |
| EPA 300.0 REV 2.1 | SULFATE | FL |
| EPA 335.4 REV 1.0 | CYANIDE | FL |
| EPA 351.2 REV 2 | KJELDAHL NITROGEN - TOTAL | FL |
| EPA 353.2 (AS LACHAT 10-107-04-1-C) | NITRATE/NITRITE | FL |
| EPA 365.4 | PHOSPHORUS, TOTAL | FL |
| EPA 6010 C | ALUMINUM | FL |
| EPA 6010 C | ARSENIC | FL |
| EPA 6010 C | BERYLLIUM | FL |
| EPA 6010 C | CADMIUM | FL |
| EPA 6010 C | CHROMIUM | FL |
| EPA 6010 C | COPPER | FL |
| EPA 6010 C | LEAD | FL |
| EPA 6010 C | MANGANESE | FL |
| EPA 6010 C | NICKEL | FL |
| EPA 6010 C | SELENIUM | FL |
| EPA 6010 C | SODIUM | FL |
| EPA 6010 C | TIN | FL |
| EPA 6010 C | VANADIUM | FL |
| EPA 6020 A | ANTIMONY | FL |
| EPA 6020 A | BARIUM | FL |
| EPA 6020 A | CADMIUM | FL |
| EPA 6020 A | COBALT | FL |
| EPA 6020 A | LEAD | FL |
| EPA 6020 A | NICKEL | FL |
| EPA 6020 A | SILVER | FL |
| EPA 6020 A | VANADIUM | FL |
| EPA 7470 A | MERCURY | FL |
| EPA 8015 C | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8081 B | 4,4'-DDE | FL |
| EPA 8081 B | ALDRIN | FL |
| EPA 130.1 | TOTAL HARDNESS AS CACO3 | FL |
| EPA 1664 A | TOTAL PETROLEUM HYDROCARBONS (TPH) | FL |
| EPA 300.0 REV 2.1 | FLUORIDE | FL |
| EPA 300.0 REV 2.1 | NITRATE/NITRITE | FL |
| EPA 300.0 REV 2.1 | ORTHOPHOSPHATE AS P | FL |
| EPA 310.2 (AS LACHAT 10-303-31-1-A) | ALKALINITY AS CACO3 | FL |
| EPA 350.1 REV 2 | AMMONIA AS N | FL |
| EPA 353.2 (AS LACHAT 10-107-04-1-C) | NITRATE AS N | FL |
| EPA 353.2 (AS LACHAT 10-107-04-1-C) | NITRITE AS N | FL |
| EPA 420.4 REV 1 | TOTAL PHENOLICS | FL |
| EPA 6010 C | ANTIMONY | FL |
| EPA 6010 C | BARIUM | FL |
| EPA 6010 C | BORON | FL |
| EPA 6010 C | CALCIUM | FL |
| EPA 6010 C | COBALT | FL |
| EPA 6010 C | IRON | FL |
| EPA 6010 C | MAGNESIUM | FL |
| EPA 6010 C | MOLYBDENUM | FL |
| EPA 6010 C | POTASSIUM | FL |
| EPA 6010 C | SILVER | FL |
| EPA 6010 C | THALLIUM | FL |
| EPA 6010 C | TITANIUM | FL |
| EPA 6010 C | ZINC | FL |
| EPA 6020 A | ARSENIC | FL |
| EPA 6020 A | BERYLLIUM | FL |
| EPA 6020 A | CHROMIUM | FL |
| EPA 6020 A | COPPER | FL |
| EPA 6020 A | MANGANESE | FL |
| EPA 6020 A | SELENIUM | FL |
| EPA 6020 A | THALLIUM | FL |
| EPA 6020 A | ZINC | FL |
| EPA 8015 C | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8081 B | 4,4'-DDD | FL |
| EPA 8081 B | 4,4'-DDT | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

**Scope of Accreditation**

VELAP Certificate No.: 2793

**COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**
501 MADISON AVENUE
CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL | EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL | EPA 8081 B | CHLORDANE (TECH.) | FL |
| EPA 8081 B | DELTA-BHC | FL | EPA 8081 B | DIELDRIN | FL |
| EPA 8081 B | ENDOSULFAN I | FL | EPA 8081 B | ENDOSULFAN II | FL |
| EPA 8081 B | ENDOSULFAN SULFATE | FL | EPA 8081 B | ENDRIN | FL |
| EPA 8081 B | ENDRIN ALDEHYDE | FL | EPA 8081 B | ENDRIN KETONE | FL |
| EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL | EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 B | HEPTACHLOR | FL | EPA 8081 B | HEPTACHLOR EPOXIDE | FL |
| EPA 8081 B | METHOXYCHLOR | FL | EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 8082 A | AROCLOR-1016 (PCB-1016) | FL | EPA 8082 A | AROCLOR-1221 (PCB-1221) | FL |
| EPA 8082 A | AROCLOR-1232 (PCB-1232) | FL | EPA 8082 A | AROCLOR-1242 (PCB-1242) | FL |
| EPA 8082 A | AROCLOR-1248 (PCB-1248) | FL | EPA 8082 A | AROCLOR-1254 (PCB-1254) | FL |
| EPA 8082 A | AROCLOR-1260 (PCB-1260) | FL | EPA 8151 A | 2,4,5-T | FL |
| EPA 8151 A | 2,4-D | FL | EPA 8151 A | 2,4-DB | FL |
| EPA 8151 A | 4-NITROPHENOL | FL | EPA 8151 A | DALAPON | FL |
| EPA 8151 A | DICAMBA | FL | EPA 8151 A | DICHLOROPROP (DICHLORPROP) | FL |
| EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL | EPA 8151 A | PENTACHLOROPHENOL | FL |
| EPA 8151 A | SILVEX (2,4,5-TP) | FL | EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 B | 1,1,1-TRICHLOROETHANE | FL | EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 B | 1,1,2-TRICHLOROETHANE | FL | EPA 8260 B | 1,1-DICHLOROETHANE | FL |
| EPA 8260 B | 1,1-DICHLOROETHYLENE | FL | EPA 8260 B | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 B | 1,2,3-TRICHLOROBENZENE | FL | EPA 8260 B | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 B | 1,2,4-TRICHLOROBENZENE | FL | EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL | EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 B | 1,2-DICHLOROBENZENE | FL | EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 B | 1,2-DICHLOROPROPANE | FL | EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 B | 1,3-DICHLOROBENZENE | FL | EPA 8260 B | 1,3-DICHLOROPROPANE | FL |
| EPA 8260 B | 1,4-DICHLOROBENZENE | FL | EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL |
| EPA 8260 B | 1-CHLOROHEXANE | FL | EPA 8260 B | 2,2-DICHLOROPROPANE | FL |
| EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL | EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 B | 2-CHLOROTOLUENE | FL | EPA 8260 B | 2-HEXANONE | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2793

**COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**
501 MADISON AVENUE
CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B | 4-CHLOROTOLUENE | FL |
| EPA 8260 B | ACETONE | FL |
| EPA 8260 B | ACROLEIN (PROPENAL) | FL |
| EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 B | BROMOBENZENE | FL |
| EPA 8260 B | BROMODICHLOROMETHANE | FL |
| EPA 8260 B | CARBON DISULFIDE | FL |
| EPA 8260 B | CHLOROBENZENE | FL |
| EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL |
| EPA 8260 B | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B | ETHYL METHACRYLATE | FL |
| EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 B | METHACRYLONITRILE | FL |
| EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8260 B | N-BUTYLBENZENE | FL |
| EPA 8260 B | NAPHTHALENE | FL |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | FL |
| EPA 8260 B | STYRENE | FL |
| EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 B | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | FL |
| EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 B | VINYL CHLORIDE | FL |
| EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | FL |
| EPA 8270 D | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | FL |
| EPA 8270 D | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 B | ACETONITRILE | FL |
| EPA 8260 B | ACRYLONITRILE | FL |
| EPA 8260 B | BENZENE | FL |
| EPA 8260 B | BROMOCHLOROMETHANE | FL |
| EPA 8260 B | BROMOFORM | FL |
| EPA 8260 B | CARBON TETRACHLORIDE | FL |
| EPA 8260 B | CHLORODIBROMOMETHANE | FL |
| EPA 8260 B | CHLOROFORM | FL |
| EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 B | ETHYLBENZENE | FL |
| EPA 8260 B | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 B | ISOPROPYLBENZENE | FL |
| EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B | METHYL METHACRYLATE | FL |
| EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B | N-PROPYLBENZENE | FL |
| EPA 8260 B | PENTACHLOROETHANE | FL |
| EPA 8260 B | SEC-BUTYLBENZENE | FL |
| EPA 8260 B | TERT-BUTYLBENZENE | FL |
| EPA 8260 B | TOLUENE | FL |
| EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 B | VINYL ACETATE | FL |
| EPA 8260 B | XYLENE (TOTAL) | FL |
| EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 D | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

**Scope of Accreditation**

VELAP Certificate No.: 2793

**COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**
501 MADISON AVENUE
CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | FL |
| EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | FL |
| EPA 8270 D | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 D | 2-CHLORONAPHTHALENE | FL |
| EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 8270 D | 2-NITROANILINE | FL |
| EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | FL |
| EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | FL |
| EPA 8270 D | 3-NITROANILINE | FL |
| EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 D | 4-CHLOROANILINE | FL |
| EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | FL |
| EPA 8270 D | 4-NITROPHENOL | FL |
| EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL |
| EPA 8270 D | ACENAPHTHYLENE | FL |
| EPA 8270 D | ANILINE | FL |
| EPA 8270 D | BENZIDINE | FL |
| EPA 8270 D | BENZO(A)PYRENE | FL |
| EPA 8270 D | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 D | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 D | CHRYSENE | FL |
| EPA 8270 D | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 D | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D | DIETHYL PHTHALATE | FL |
| EPA 8270 D | DIMETHYL PHTHALATE | FL |
| EPA 8270 D | ETHYL METHANESULFONATE | FL |
| EPA 8270 D | FLUORANTHENE | FL |
| EPA 8270 D | HEXACHLOROBENZENE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 D | 1-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DINITROPHENOL | FL |
| EPA 8270 D | 2,6-DICHLOROPHENOL | FL |
| EPA 8270 D | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 D | 2-CHLOROPHENOL | FL |
| EPA 8270 D | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D | 2-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2-NITROPHENOL | FL |
| EPA 8270 D | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 D | 4-AMINOBIPHENYL | FL |
| EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D | 4-NITROANILINE | FL |
| EPA 8270 D | 5-NITRO-O-TOLUIDINE | FL |
| EPA 8270 D | ACENAPHTHENE | FL |
| EPA 8270 D | ACETOPHENONE | FL |
| EPA 8270 D | ANTHRACENE | FL |
| EPA 8270 D | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D | BENZOIC ACID | FL |
| EPA 8270 D | BENZYL ALCOHOL | FL |
| EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 D | CHLOROBENZILATE | FL |
| EPA 8270 D | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 D | DIALLATE | FL |
| EPA 8270 D | DIBENZOFURAN | FL |
| EPA 8270 D | DIMETHOATE | FL |
| EPA 8270 D | DISULFOTON | FL |
| EPA 8270 D | FAMPHUR | FL |
| EPA 8270 D | FLUORENE | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D | HEXACHLOROETHANE | FL |
| EPA 8270 D | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D | ISOPHORONE | FL |
| EPA 8270 D | METHAPYRILENE | FL |
| EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | FL |
| EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 D | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | FL |
| EPA 8270 D | N-NITROSOPIPERIDINE | FL |
| EPA 8270 D | NAPHTHALENE | FL |
| EPA 8270 D | NITROQUINOLINE-1-OXIDE | FL |
| EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | FL |
| EPA 8270 D | PENTACHLOROBENZENE | FL |
| EPA 8270 D | PENTACHLOROPHENOL | FL |
| EPA 8270 D | PHENANTHRENE | FL |
| EPA 8270 D | PHORATE | FL |
| EPA 8270 D | PYRENE | FL |
| EPA 8270 D | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8270 D - EXTENDED | 2,2'-OXYBIS(1-CHLOROPROPANE) | FL |
| EPA 8270 D - EXTENDED | CARBAZOLE | FL |
| EPA 8270 D SIM | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D SIM | ACENAPHTHYLENE | FL |
| EPA 8270 D SIM | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D SIM | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D SIM | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D SIM | FLUORENE | FL |
| EPA 8270 D SIM | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D SIM | NAPHTHALENE | FL |
| EPA 8270 D SIM | PHENANTHRENE | FL |
| EPA 8310 | ACENAPHTHENE | FL |
| EPA 8310 | ANTHRACENE | FL |
| EPA 8310 | BENZO(A)PYRENE | FL |
| EPA 8310 | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 D | HEXACHLOROPROPENE | FL |
| EPA 8270 D | ISODRIN | FL |
| EPA 8270 D | ISOSAFROLE | FL |
| EPA 8270 D | METHYL METHANESULFONATE | FL |
| EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | FL |
| EPA 8270 D | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 D | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D | N-NITROSOMORPHOLINE | FL |
| EPA 8270 D | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 D | NITROBENZENE | FL |
| EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 D | PARATHION (PARATHION - ETHYL) | FL |
| EPA 8270 D | PENTACHLORONITROBENZENE | FL |
| EPA 8270 D | PHENACETIN | FL |
| EPA 8270 D | PHENOL | FL |
| EPA 8270 D | PRONAMIDE (KERB) | FL |
| EPA 8270 D | SAFROLE | FL |
| EPA 8270 D | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 D - EXTENDED | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8270 D - EXTENDED | PYRIDINE | FL |
| EPA 8270 D SIM | ACENAPHTHENE | FL |
| EPA 8270 D SIM | ANTHRACENE | FL |
| EPA 8270 D SIM | BENZO(A)PYRENE | FL |
| EPA 8270 D SIM | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D SIM | CHRYSENE | FL |
| EPA 8270 D SIM | FLUORANTHENE | FL |
| EPA 8270 D SIM | HEXACHLOROBENZENE | FL |
| EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D SIM | PENTACHLOROPHENOL | FL |
| EPA 8270 D SIM | PYRENE | FL |
| EPA 8310 | ACENAPHTHYLENE | FL |
| EPA 8310 | BENZO(A)ANTHRACENE | FL |
| EPA 8310 | BENZO(G,H,I)PERYLENE | FL |
| EPA 8310 | BENZO[B]FLUORANTHENE | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8310 | CHRYSENE | FL |
| EPA 8310 | FLUORANTHENE | FL |
| EPA 8310 | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8310 | PHENANTHRENE | FL |
| EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | FL |
| EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8330 A | 2-NITROTOLUENE | FL |
| EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | FL |
| EPA 8330 A | NITROBENZENE | FL |
| EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | FL |
| EPA 8330 B | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8330 B | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8330 B | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | FL |
| EPA 8330 B | 3-NITROTOLUENE | FL |
| EPA 8330 B | 4-NITROTOLUENE | FL |
| EPA 8330 B | OCTAHYDRO-1,3,5,7-TETRANITRO -1,3,5,7-TETRAZOCINE (HMX) | FL |
| EPA 8332 | NITROGLYCERIN | FL |
| EPA 9010 C | PREP: CYANIDE DISTILLATION | FL |
| EPA 9012 A | TOTAL CYANIDE | FL |
| EPA 9012 B | TOTAL CYANIDE | FL |
| EPA 9040 C | PH | FL |
| SM 2540 C-2011 | RESIDUE-FILTERABLE (TDS) | FL |
| SM 3500-CR B-2011 | CHROMIUM VI | FL |
| SM 4500-$S2^-$ F-2011 | SULFIDE | FL |
| EPA 8310 | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8310 | FLUORENE | FL |
| EPA 8310 | NAPHTHALENE | FL |
| EPA 8310 | PYRENE | FL |
| EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | FL |
| EPA 8330 A | 3-NITROTOLUENE | FL |
| EPA 8330 A | 4-NITROTOLUENE | FL |
| EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO -1,3,5,7-TETRAZOCINE (HMX) | FL |
| EPA 8330 B | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8330 B | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | FL |
| EPA 8330 B | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8330 B | 2-NITROTOLUENE | FL |
| EPA 8330 B | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | FL |
| EPA 8330 B | NITROBENZENE | FL |
| EPA 8330 B | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | FL |
| EPA 9010 B | PREP: CYANIDE DISTILLATION | FL |
| EPA 9012 A | AMENABLE CYANIDE | FL |
| EPA 9012 B | AMENABLE CYANIDE | FL |
| EPA 9040 B | PH | FL |
| SM 2540 B-2011 | RESIDUE-TOTAL | FL |
| SM 2540 D-2011 | RESIDUE-NONFILTERABLE (TSS) | FL |
| SM 4500-$CN^-$ G-2011 | AMENABLE CYANIDE | FL |
| SM 5310 B-2011 | TOTAL ORGANIC CARBON | FL |

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1010 A | FLASHPOINT | FL |
| EPA 1312 | PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE | FL |
| EPA 1311 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | FL |

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**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 6010 C | ALUMINUM | FL |
| EPA 6010 C | ARSENIC | FL |
| EPA 6010 C | BERYLLIUM | FL |
| EPA 6010 C | CADMIUM | FL |
| EPA 6010 C | CHROMIUM | FL |
| EPA 6010 C | COPPER | FL |
| EPA 6010 C | LEAD | FL |
| EPA 6010 C | MANGANESE | FL |
| EPA 6010 C | NICKEL | FL |
| EPA 6010 C | SELENIUM | FL |
| EPA 6010 C | SODIUM | FL |
| EPA 6010 C | TIN | FL |
| EPA 6010 C | VANADIUM | FL |
| EPA 6020 A | ANTIMONY | FL |
| EPA 6020 A | BARIUM | FL |
| EPA 6020 A | CADMIUM | FL |
| EPA 6020 A | COBALT | FL |
| EPA 6020 A | LEAD | FL |
| EPA 6020 A | NICKEL | FL |
| EPA 6020 A | SILVER | FL |
| EPA 6020 A | VANADIUM | FL |
| EPA 7.3.3.2 [SW 846 CH 7] | REACTIVE CYANIDE | FL |
| EPA 7196 A | CHROMIUM VI | FL |
| EPA 7471 B | MERCURY | FL |
| EPA 8015 C | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8081 B | 4,4'-DDE | FL |
| EPA 8081 B | ALDRIN | FL |
| EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 8081 B | CHLORDANE (TECH.) | FL |
| EPA 8081 B | DIELDRIN | FL |
| EPA 8081 B | ENDOSULFAN II | FL |
| EPA 8081 B | ENDRIN | FL |
| EPA 8081 B | ENDRIN KETONE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 6010 C | ANTIMONY | FL |
| EPA 6010 C | BARIUM | FL |
| EPA 6010 C | BORON | FL |
| EPA 6010 C | CALCIUM | FL |
| EPA 6010 C | COBALT | FL |
| EPA 6010 C | IRON | FL |
| EPA 6010 C | MAGNESIUM | FL |
| EPA 6010 C | MOLYBDENUM | FL |
| EPA 6010 C | POTASSIUM | FL |
| EPA 6010 C | SILVER | FL |
| EPA 6010 C | THALLIUM | FL |
| EPA 6010 C | TITANIUM | FL |
| EPA 6010 C | ZINC | FL |
| EPA 6020 A | ARSENIC | FL |
| EPA 6020 A | BERYLLIUM | FL |
| EPA 6020 A | CHROMIUM | FL |
| EPA 6020 A | COPPER | FL |
| EPA 6020 A | MANGANESE | FL |
| EPA 6020 A | SELENIUM | FL |
| EPA 6020 A | THALLIUM | FL |
| EPA 6020 A | ZINC | FL |
| EPA 7.3.4.2 [SW 846 CH 7] | REACTIVE SULFIDE | FL |
| EPA 7471 A | MERCURY | FL |
| EPA 8015 C | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8081 B | 4,4'-DDD | FL |
| EPA 8081 B | 4,4'-DDT | FL |
| EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B | DELTA-BHC | FL |
| EPA 8081 B | ENDOSULFAN I | FL |
| EPA 8081 B | ENDOSULFAN SULFATE | FL |
| EPA 8081 B | ENDRIN ALDEHYDE | FL |
| EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |

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|---|---|---|
| EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 B | HEPTACHLOR EPOXIDE | FL |
| EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 8082 A | AROCLOR-1221 (PCB-1221) | FL |
| EPA 8082 A | AROCLOR-1242 (PCB-1242) | FL |
| EPA 8082 A | AROCLOR-1254 (PCB-1254) | FL |
| EPA 8151 A | 2,4,5-T | FL |
| EPA 8151 A | 2,4-DB | FL |
| EPA 8151 A | DALAPON | FL |
| EPA 8151 A | DICHLOROPROP (DICHLORPROP) | FL |
| EPA 8151 A | PENTACHLOROPHENOL | FL |
| EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 B | 1,1-DICHLOROETHANE | FL |
| EPA 8260 B | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 B | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 B | 1,3-DICHLOROPROPANE | FL |
| EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL |
| EPA 8260 B | 2,2-DICHLOROPROPANE | FL |
| EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 B | 2-HEXANONE | FL |
| EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 B | ACETONITRILE | FL |
| EPA 8260 B | ACRYLONITRILE | FL |
| EPA 8260 B | BENZENE | FL |
| EPA 8260 B | BROMOCHLOROMETHANE | FL |
| EPA 8260 B | BROMOFORM | FL |
| EPA 8260 B | CARBON TETRACHLORIDE | FL |
| EPA 8260 B | CHLORODIBROMOMETHANE | FL |
| EPA 8081 B | HEPTACHLOR | FL |
| EPA 8081 B | METHOXYCHLOR | FL |
| EPA 8082 A | AROCLOR-1016 (PCB-1016) | FL |
| EPA 8082 A | AROCLOR-1232 (PCB-1232) | FL |
| EPA 8082 A | AROCLOR-1248 (PCB-1248) | FL |
| EPA 8082 A | AROCLOR-1260 (PCB-1260) | FL |
| EPA 8151 A | 2,4-D | FL |
| EPA 8151 A | 4-NITROPHENOL | FL |
| EPA 8151 A | DICAMBA | FL |
| EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8151 A | SILVEX (2,4,5-TP) | FL |
| EPA 8260 B | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 B | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 B | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 B | 1,2,3-TRICHLOROBENZENE | FL |
| EPA 8260 B | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 B | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 B | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 B | 1-CHLOROHEXANE | FL |
| EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |
| EPA 8260 B | 2-CHLOROTOLUENE | FL |
| EPA 8260 B | 4-CHLOROTOLUENE | FL |
| EPA 8260 B | ACETONE | FL |
| EPA 8260 B | ACROLEIN (PROPENAL) | FL |
| EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 B | BROMOBENZENE | FL |
| EPA 8260 B | BROMODICHLOROMETHANE | FL |
| EPA 8260 B | CARBON DISULFIDE | FL |
| EPA 8260 B | CHLOROBENZENE | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

**Scope of Accreditation**

VELAP Certificate No.: 2793

**COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**
501 MADISON AVENUE
CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL |
| EPA 8260 B | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 B | ETHYLBENZENE | FL |
| EPA 8260 B | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 B | ISOPROPYLBENZENE | FL |
| EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B | METHYL METHACRYLATE | FL |
| EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B | N-PROPYLBENZENE | FL |
| EPA 8260 B | PENTACHLOROETHANE | FL |
| EPA 8260 B | SEC-BUTYLBENZENE | FL |
| EPA 8260 B | TERT-BUTYLBENZENE | FL |
| EPA 8260 B | TOLUENE | FL |
| EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 B | VINYL ACETATE | FL |
| EPA 8260 B | XYLENE (TOTAL) | FL |
| EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 D | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8270 D | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 D | 1-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DINITROPHENOL | FL |
| EPA 8270 D | 2,6-DICHLOROPHENOL | FL |
| EPA 8270 D | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 D | 2-CHLOROPHENOL | FL |
| EPA 8260 B | CHLOROFORM | FL |
| EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 B | ETHYL METHACRYLATE | FL |
| EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 B | METHACRYLONITRILE | FL |
| EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8260 B | N-BUTYLBENZENE | FL |
| EPA 8260 B | NAPHTHALENE | FL |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | FL |
| EPA 8260 B | STYRENE | FL |
| EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 B | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | FL |
| EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 B | VINYL CHLORIDE | FL |
| EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | FL |
| EPA 8270 D | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | FL |
| EPA 8270 D | 1,3-DICHLOROBENZENE | FL |
| EPA 8270 D | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | FL |
| EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | FL |
| EPA 8270 D | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 D | 2-CHLORONAPHTHALENE | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

**Scope of Accreditation**

VELAP Certificate No.: 2793

**COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**
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CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 8270 D | 2-NITROANILINE | FL |
| EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | FL |
| EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | FL |
| EPA 8270 D | 3-NITROANILINE | FL |
| EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 D | 4-CHLOROANILINE | FL |
| EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | FL |
| EPA 8270 D | 4-NITROANILINE | FL |
| EPA 8270 D | 5-NITRO-O-TOLUIDINE | FL |
| EPA 8270 D | ACENAPHTHENE | FL |
| EPA 8270 D | ACETOPHENONE | FL |
| EPA 8270 D | ANTHRACENE | FL |
| EPA 8270 D | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D | BENZOIC ACID | FL |
| EPA 8270 D | BENZYL ALCOHOL | FL |
| EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 D | CHLOROBENZILATE | FL |
| EPA 8270 D | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 D | DIALLATE | FL |
| EPA 8270 D | DIBENZOFURAN | FL |
| EPA 8270 D | DIMETHOATE | FL |
| EPA 8270 D | DISULFOTON | FL |
| EPA 8270 D | FAMPHUR | FL |
| EPA 8270 D | FLUORENE | FL |
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D | HEXACHLOROETHANE | FL |
| EPA 8270 D | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D | ISOPHORONE | FL |
| EPA 8270 D | METHAPYRILENE | FL |
| EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | FL |
| EPA 8270 D | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D | 2-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2-NITROPHENOL | FL |
| EPA 8270 D | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 D | 4-AMINOBIPHENYL | FL |
| EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D | 4-METHYLPHENOL (P-CRESOL) | FL |
| EPA 8270 D | 4-NITROPHENOL | FL |
| EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL |
| EPA 8270 D | ACENAPHTHYLENE | FL |
| EPA 8270 D | ANILINE | FL |
| EPA 8270 D | BENZIDINE | FL |
| EPA 8270 D | BENZO(A)PYRENE | FL |
| EPA 8270 D | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 D | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 D | CHRYSENE | FL |
| EPA 8270 D | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 D | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D | DIETHYL PHTHALATE | FL |
| EPA 8270 D | DIMETHYL PHTHALATE | FL |
| EPA 8270 D | ETHYL METHANESULFONATE | FL |
| EPA 8270 D | FLUORANTHENE | FL |
| EPA 8270 D | HEXACHLOROBENZENE | FL |
| EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 D | HEXACHLOROPROPENE | FL |
| EPA 8270 D | ISODRIN | FL |
| EPA 8270 D | ISOSAFROLE | FL |
| EPA 8270 D | METHYL METHANESULFONATE | FL |
| EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

**Scope of Accreditation**

VELAP Certificate No.: 2793

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CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 D | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | FL |
| EPA 8270 D | N-NITROSOPIPERIDINE | FL |
| EPA 8270 D | NAPHTHALENE | FL |
| EPA 8270 D | NITROQUINOLINE-1-OXIDE | FL |
| EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | FL |
| EPA 8270 D | PENTACHLOROBENZENE | FL |
| EPA 8270 D | PENTACHLOROPHENOL | FL |
| EPA 8270 D | PHENANTHRENE | FL |
| EPA 8270 D | PHORATE | FL |
| EPA 8270 D | PYRENE | FL |
| EPA 8270 D | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8270 D - EXTENDED | 2,2'-OXYBIS(1-CHLOROPROPANE) | FL |
| EPA 8270 D - EXTENDED | CARBAZOLE | FL |
| EPA 8270 D SIM | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D SIM | ACENAPHTHYLENE | FL |
| EPA 8270 D SIM | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D SIM | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D SIM | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D SIM | FLUORENE | FL |
| EPA 8270 D SIM | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D SIM | NAPHTHALENE | FL |
| EPA 8270 D SIM | PHENANTHRENE | FL |
| EPA 8310 | ACENAPHTHENE | FL |
| EPA 8310 | ANTHRACENE | FL |
| EPA 8310 | BENZO(A)PYRENE | FL |
| EPA 8310 | BENZO(K)FLUORANTHENE | FL |
| EPA 8310 | CHRYSENE | FL |
| EPA 8310 | FLUORANTHENE | FL |
| EPA 8310 | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8310 | PHENANTHRENE | FL |
| EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | FL |
| EPA 8270 D | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 D | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D | N-NITROSOMORPHOLINE | FL |
| EPA 8270 D | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 D | NITROBENZENE | FL |
| EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 D | PARATHION (PARATHION - ETHYL) | FL |
| EPA 8270 D | PENTACHLORONITROBENZENE | FL |
| EPA 8270 D | PHENACETIN | FL |
| EPA 8270 D | PHENOL | FL |
| EPA 8270 D | PRONAMIDE (KERB) | FL |
| EPA 8270 D | SAFROLE | FL |
| EPA 8270 D | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 D - EXTENDED | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8270 D - EXTENDED | PYRIDINE | FL |
| EPA 8270 D SIM | ACENAPHTHENE | FL |
| EPA 8270 D SIM | ANTHRACENE | FL |
| EPA 8270 D SIM | BENZO(A)PYRENE | FL |
| EPA 8270 D SIM | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D SIM | CHRYSENE | FL |
| EPA 8270 D SIM | FLUORANTHENE | FL |
| EPA 8270 D SIM | HEXACHLOROBENZENE | FL |
| EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D SIM | PENTACHLOROPHENOL | FL |
| EPA 8270 D SIM | PYRENE | FL |
| EPA 8310 | ACENAPHTHYLENE | FL |
| EPA 8310 | BENZO(A)ANTHRACENE | FL |
| EPA 8310 | BENZO(G,H,I)PERYLENE | FL |
| EPA 8310 | BENZO[B]FLUORANTHENE | FL |
| EPA 8310 | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8310 | FLUORENE | FL |
| EPA 8310 | NAPHTHALENE | FL |
| EPA 8310 | PYRENE | FL |
| EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

**Scope of Accreditation**

VELAP Certificate No.: 2793

**COMPUCHEM, A DIVISION OF LIBERTY ANALYTICAL**
501 MADISON AVENUE
CARY, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: February 11, 2014
Expiration Date: September 14, 2014

**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8330 A | 2-NITROTOLUENE | FL |
| EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | FL |
| EPA 8330 A | NITROBENZENE | FL |
| EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | FL |
| EPA 9010 B | CYANIDE | FL |
| EPA 9010 C | PREP: CYANIDE DISTILLATION | FL |
| EPA 9012 B | TOTAL CYANIDE | FL |
| EPA 9060 A | TOTAL ORGANIC CARBON | FL |
| EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | FL |
| EPA 8330 A | 3-NITROTOLUENE | FL |
| EPA 8330 A | 4-NITROTOLUENE | FL |
| EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO -1,3,5,7-TETRAZOCINE (HMX) | FL |
| EPA 8332 | NITROGLYCERIN | FL |
| EPA 9010 B | PREP: CYANIDE DISTILLATION | FL |
| EPA 9012 A | CYANIDE | FL |
| EPA 9045 C | PH | FL |
| EPA 9071 B | OIL & GREASE | FL |

# COMMONWEALTH OF VIRGINIA
# DEPARTMENT OF GENERAL SERVICES
# DIVISION OF CONSOLIDATED LABORATORY SERVICES

## Certifies that

## VA Laboratory ID#: 460182
## EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC

2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Owner:** EUROFINS SCIENTIFIC
**Operator:** J. WILSON HERSHEY
**Responsible Official:** J. WILSON HERSHEY

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard

is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **January 30, 2014**
Expiration Date: **June 14, 2014**
**Certificate # 2754**

Thomas L. York, Ph.D., HCLD
DGS Deputy Director for Laboratories

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### AIR

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA TO-14A REV 2 | 1,1,1-TRICHLOROETHANE | LA DEQ | EPA TO-14A REV 2 | 1,1,2,2-TETRACHLOROETHANE | LA DEQ |
| EPA TO-14A REV 2 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | LA DEQ | EPA TO-14A REV 2 | 1,1,2-TRICHLOROETHANE | LA DEQ |
| EPA TO-14A REV 2 | 1,1-DICHLOROETHANE | LA DEQ | EPA TO-14A REV 2 | 1,1-DICHLOROETHYLENE | LA DEQ |
| EPA TO-14A REV 2 | 1,2,4-TRICHLOROBENZENE | LA DEQ | EPA TO-14A REV 2 | 1,2,4-TRIMETHYLBENZENE | LA DEQ |
| EPA TO-14A REV 2 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | LA DEQ | EPA TO-14A REV 2 | 1,2-DICHLOROBENZENE | LA DEQ |
| EPA TO-14A REV 2 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | LA DEQ | EPA TO-14A REV 2 | 1,2-DICHLOROPROPANE | LA DEQ |
| EPA TO-14A REV 2 | 1,3,5-TRIMETHYLBENZENE | LA DEQ | EPA TO-14A REV 2 | 1,3-DICHLOROBENZENE | LA DEQ |
| EPA TO-14A REV 2 | 1,4-DICHLOROBENZENE | LA DEQ | EPA TO-14A REV 2 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | LA DEQ |
| EPA TO-14A REV 2 | BENZENE | LA DEQ | EPA TO-14A REV 2 | BROMOFORM | LA DEQ |
| EPA TO-14A REV 2 | CARBON TETRACHLORIDE | LA DEQ | EPA TO-14A REV 2 | CHLOROBENZENE | LA DEQ |
| EPA TO-14A REV 2 | CHLOROETHANE (ETHYL CHLORIDE) | LA DEQ | EPA TO-14A REV 2 | CHLOROFORM | LA DEQ |
| EPA TO-14A REV 2 | CIS-1,2-DICHLOROETHYLENE | LA DEQ | EPA TO-14A REV 2 | CIS-1,3-DICHLOROPROPENE | LA DEQ |
| EPA TO-14A REV 2 | ETHYLBENZENE | LA DEQ | EPA TO-14A REV 2 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | LA DEQ |
| EPA TO-14A REV 2 | M+P-XYLENE | LA DEQ | EPA TO-14A REV 2 | METHYL BROMIDE (BROMOMETHANE) | LA DEQ |
| EPA TO-14A REV 2 | METHYL CHLORIDE (CHLOROMETHANE) | LA DEQ | EPA TO-14A REV 2 | METHYLENE CHLORIDE (DICHLOROMETHANE) | LA DEQ |
| EPA TO-14A REV 2 | O-XYLENE | LA DEQ | EPA TO-14A REV 2 | STYRENE | LA DEQ |
| EPA TO-14A REV 2 | TETRACHLOROETHENE (PERCHLOROETHENE) | LA DEQ | EPA TO-14A REV 2 | TOLUENE | LA DEQ |
| EPA TO-14A REV 2 | TRANS-1,2-DICHLOROETHENE | LA DEQ | EPA TO-14A REV 2 | TRANS-1,3-DICHLOROPROPENE | LA DEQ |
| EPA TO-14A REV 2 | TRICHLOROETHENE (TRICHLOROETHYLENE) | LA DEQ | EPA TO-14A REV 2 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | LA DEQ |
| EPA TO-14A REV 2 | VINYL CHLORIDE | LA DEQ | EPA TO-14A REV 2 - EXTENDED | 4-METHYL-2-PENTANONE (MIBK) | LA DEQ |
| EPA TO-14A REV 2 - EXTENDED | BROMODICHLOROMETHANE | LA DEQ | EPA TO-14A REV 2 - EXTENDED | CARBON DISULFIDE | LA DEQ |
| EPA TO-14A REV 2 - EXTENDED | METHYL TERT-BUTYL ETHER (MTBE) | LA DEQ | EPA TO-14A REV 2 - EXTENDED | XYLENE (TOTAL) | LA DEQ |
| EPA TO-15 | 1,1,1-TRICHLOROETHANE | LA DEQ | EPA TO-15 | 1,1,2,2-TETRACHLOROETHANE | LA DEQ |
| EPA TO-15 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | LA DEQ | EPA TO-15 | 1,1,2-TRICHLOROETHANE | LA DEQ |
| EPA TO-15 | 1,1-DICHLOROETHANE | LA DEQ | EPA TO-15 | 1,1-DICHLOROETHYLENE | LA DEQ |
| EPA TO-15 | 1,2,4-TRICHLOROBENZENE | LA DEQ | EPA TO-15 | 1,2,4-TRIMETHYLBENZENE | LA DEQ |
| EPA TO-15 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | LA DEQ | EPA TO-15 | 1,2-DICHLOROBENZENE | LA DEQ |
| EPA TO-15 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | LA DEQ | EPA TO-15 | 1,2-DICHLOROPROPANE | LA DEQ |
| EPA TO-15 | 1,3,5-TRIMETHYLBENZENE | LA DEQ | EPA TO-15 | 1,3-BUTADIENE | LA DEQ |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
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### AIR

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA TO-15 | 1,3-DICHLOROBENZENE | LA DEQ | EPA TO-15 | 1,4-DICHLOROBENZENE | LA DEQ |
| EPA TO-15 | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | LA DEQ | EPA TO-15 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | LA DEQ |
| EPA TO-15 | 4-METHYL-2-PENTANONE (MIBK) | LA DEQ | EPA TO-15 | ACETONITRILE | LA DEQ |
| EPA TO-15 | ACROLEIN (PROPENAL) | LA DEQ | EPA TO-15 | ACRYLONITRILE | LA DEQ |
| EPA TO-15 | ALLYL CHLORIDE (3-CHLOROPROPENE) | LA DEQ | EPA TO-15 | BENZENE | LA DEQ |
| EPA TO-15 | BROMODICHLOROMETHANE | LA DEQ | EPA TO-15 | BROMOFORM | LA DEQ |
| EPA TO-15 | CARBON DISULFIDE | LA DEQ | EPA TO-15 | CARBON TETRACHLORIDE | LA DEQ |
| EPA TO-15 | CHLOROBENZENE | LA DEQ | EPA TO-15 | CHLOROETHANE (ETHYL CHLORIDE) | LA DEQ |
| EPA TO-15 | CHLOROFORM | LA DEQ | EPA TO-15 | CIS-1,2-DICHLOROETHYLENE | LA DEQ |
| EPA TO-15 | CIS-1,3-DICHLOROPROPENE | LA DEQ | EPA TO-15 | CYCLOHEXANE | LA DEQ |
| EPA TO-15 | ETHYL ACRYLATE | LA DEQ | EPA TO-15 | ETHYLBENZENE | LA DEQ |
| EPA TO-15 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | LA DEQ | EPA TO-15 | HEXACHLOROETHANE | LA DEQ |
| EPA TO-15 | IODOMETHANE (METHYL IODIDE) | LA DEQ | EPA TO-15 | ISOPROPYLBENZENE | LA DEQ |
| EPA TO-15 | M+P-XYLENE | LA DEQ | EPA TO-15 | METHYL BROMIDE (BROMOMETHANE) | LA DEQ |
| EPA TO-15 | METHYL CHLORIDE (CHLOROMETHANE) | LA DEQ | EPA TO-15 | METHYL METHACRYLATE | LA DEQ |
| EPA TO-15 | METHYL TERT-BUTYL ETHER (MTBE) | LA DEQ | EPA TO-15 | METHYLENE CHLORIDE (DICHLOROMETHANE) | LA DEQ |
| EPA TO-15 | O-XYLENE | LA DEQ | EPA TO-15 | PROPYLENE | LA DEQ |
| EPA TO-15 | STYRENE | LA DEQ | EPA TO-15 | TETRACHLOROETHENE (PERCHLOROETHENE) | LA DEQ |
| EPA TO-15 | TOLUENE | LA DEQ | EPA TO-15 | TRANS-1,2-DICHLOROETHENE | LA DEQ |
| EPA TO-15 | TRANS-1,3-DICHLOROPROPENE | LA DEQ | EPA TO-15 | TRICHLOROETHENE (TRICHLOROETHYLENE) | LA DEQ |
| EPA TO-15 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | LA DEQ | EPA TO-15 | VINYL ACETATE | LA DEQ |
| EPA TO-15 | VINYL CHLORIDE | LA DEQ | EPA TO-15 | XYLENE (TOTAL) | LA DEQ |
| EPA TO-15 - EXTENDED | 2-CHLOROTOLUENE | LA DEQ | EPA TO-15 - EXTENDED | 2-HEXANONE | LA DEQ |
| EPA TO-15 - EXTENDED | 4-ETHYLTOLUENE | LA DEQ | EPA TO-15 - EXTENDED | ACETONE | LA DEQ |
| EPA TO-15 - EXTENDED | CHLORODIFLUOROMETHANE (FREON-22) | LA DEQ | EPA TO-15 - EXTENDED | NAPHTHALENE | LA DEQ |
| EPA TO-15 - EXTENDED | TERT-BUTYL ALCOHOL | LA DEQ | | | |

### DRINKING WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 180.1 REV 2 | TURBIDITY | PA | EPA 200.7 REV 4.4 | ALUMINUM | PA |
| EPA 200.7 REV 4.4 | BARIUM | PA | EPA 200.7 REV 4.4 | BERYLLIUM | PA |
| EPA 200.7 REV 4.4 | CADMIUM | PA | EPA 200.7 REV 4.4 | CALCIUM | PA |

## Commonwealth of Virginia

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|---|---|---|---|---|---|
| EPA 200.7 REV 4.4 | CHROMIUM | PA | EPA 200.7 REV 4.4 | COPPER | PA |
| EPA 200.7 REV 4.4 | IRON | PA | EPA 200.7 REV 4.4 | MAGNESIUM | PA |
| EPA 200.7 REV 4.4 | MANGANESE | PA | EPA 200.7 REV 4.4 | NICKEL | PA |
| EPA 200.7 REV 4.4 | SILVER | PA | EPA 200.7 REV 4.4 | SODIUM | PA |
| EPA 200.7 REV 4.4 | ZINC | PA | EPA 200.8 REV 5.4 | ANTIMONY | PA |
| EPA 200.8 REV 5.4 | ARSENIC | PA | EPA 200.8 REV 5.4 | BERYLLIUM | PA |
| EPA 200.8 REV 5.4 | CADMIUM | PA | EPA 200.8 REV 5.4 | CHROMIUM | PA |
| EPA 200.8 REV 5.4 | COPPER | PA | EPA 200.8 REV 5.4 | LEAD | PA |
| EPA 200.8 REV 5.4 | NICKEL | PA | EPA 200.8 REV 5.4 | SELENIUM | PA |
| EPA 200.8 REV 5.4 | THALLIUM | PA | EPA 245.1 REV 3 | MERCURY | PA |
| EPA 300.0 REV 2.1 | CHLORIDE | PA | EPA 300.0 REV 2.1 | FLUORIDE | PA |
| EPA 300.0 REV 2.1 | NITRATE AS N | PA | EPA 300.0 REV 2.1 | NITRITE AS N | PA |
| EPA 300.0 REV 2.1 | SULFATE | PA | EPA 335.4 | CYANIDE | PA |
| EPA 353.2 REV 2 | NITRATE AS N | PA | EPA 353.2 REV 2 | NITRATE/NITRITE | PA |
| EPA 353.2 REV 2 | NITRITE AS N | PA | EPA 504.1 REV 1.1 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA |
| EPA 504.1 REV 1.1 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 507 REV 2.1 | ALACHLOR | PA |
| EPA 507 REV 2.1 | ATRAZINE | PA | EPA 507 REV 2.1 | SIMAZINE | PA |
| EPA 508 REV 3.1 | AROCLOR-1016 (PCB-1016) | PA | EPA 508 REV 3.1 | AROCLOR-1221 (PCB-1221) | PA |
| EPA 508 REV 3.1 | AROCLOR-1232 (PCB-1232) | PA | EPA 508 REV 3.1 | AROCLOR-1242 (PCB-1242) | PA |
| EPA 508 REV 3.1 | AROCLOR-1248 (PCB-1248) | PA | EPA 508 REV 3.1 | AROCLOR-1254 (PCB-1254) | PA |
| EPA 508 REV 3.1 | AROCLOR-1260 (PCB-1260) | PA | EPA 508 REV 3.1 | CHLORDANE (TECH.) | PA |
| EPA 508 REV 3.1 | ENDRIN | PA | EPA 508 REV 3.1 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 508 REV 3.1 | HEPTACHLOR | PA | EPA 508 REV 3.1 | HEPTACHLOR EPOXIDE | PA |
| EPA 508 REV 3.1 | HEXACHLOROBENZENE | PA | EPA 508 REV 3.1 | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 508 REV 3.1 | METHOXYCHLOR | PA | EPA 508 REV 3.1 | TOXAPHENE (CHLORINATED CAMPHENE) | PA |
| EPA 515.1 REV 4 | 2,4-D | PA | EPA 515.1 REV 4 | DALAPON | PA |
| EPA 515.1 REV 4 | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 515.1 REV 4 | PENTACHLOROPHENOL | PA |
| EPA 515.1 REV 4 | PICLORAM | PA | EPA 515.1 REV 4 | SILVEX (2,4,5-TP) | PA |
| EPA 524.2 REV 4.1 | 1,1,1-TRICHLOROETHANE | PA | EPA 524.2 REV 4.1 | 1,1,2-TRICHLOROETHANE | PA |
| EPA 524.2 REV 4.1 | 1,1-DICHLOROETHYLENE | PA | EPA 524.2 REV 4.1 | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 524.2 REV 4.1 | 1,2-DICHLOROBENZENE | PA | EPA 524.2 REV 4.1 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA |
| EPA 524.2 REV 4.1 | 1,2-DICHLOROPROPANE | PA | EPA 524.2 REV 4.1 | 1,4-DICHLOROBENZENE | PA |
| EPA 524.2 REV 4.1 | BENZENE | PA | EPA 524.2 REV 4.1 | BROMODICHLOROMETHANE | PA |
| EPA 524.2 REV 4.1 | BROMOFORM | PA | EPA 524.2 REV 4.1 | CARBON TETRACHLORIDE | PA |

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|---|---|---|---|---|---|
| EPA 524.2 REV 4.1 | CHLOROBENZENE | PA | EPA 524.2 REV 4.1 | CHLORODIBROMOMETHANE | PA |
| EPA 524.2 REV 4.1 | CHLOROFORM | PA | EPA 524.2 REV 4.1 | CIS-1,2-DICHLOROETHYLENE | PA |
| EPA 524.2 REV 4.1 | ETHYLBENZENE | PA | EPA 524.2 REV 4.1 | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA |
| EPA 524.2 REV 4.1 | STYRENE | PA | EPA 524.2 REV 4.1 | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 524.2 REV 4.1 | TOLUENE | PA | EPA 524.2 REV 4.1 | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 524.2 REV 4.1 | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 524.2 REV 4.1 | VINYL CHLORIDE | PA |
| EPA 524.2 REV 4.1 | XYLENE (TOTAL) | PA | EPA 525.2 REV 2 | ALACHLOR | PA |
| EPA 525.2 REV 2 | ATRAZINE | PA | EPA 525.2 REV 2 | BENZO(A)PYRENE | PA |
| EPA 525.2 REV 2 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA | EPA 525.2 REV 2 | BIS(2-ETHYLHEXYL)ADIPATE (DI(2-ETHYLHEXYL)ADIPATE) | PA |
| EPA 525.2 REV 2 | ENDRIN | PA | EPA 525.2 REV 2 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 525.2 REV 2 | HEPTACHLOR | PA | EPA 525.2 REV 2 | HEPTACHLOR EPOXIDE | PA |
| EPA 525.2 REV 2 | HEXACHLOROBENZENE | PA | EPA 525.2 REV 2 | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 525.2 REV 2 | METHOXYCHLOR | PA | EPA 531.1 REV 3.1 | CARBOFURAN (FURADEN) | PA |
| EPA 531.1 REV 3.1 | OXAMYL | PA | SM 2320 B-1997 | ALKALINITY AS CACO3 | PA |
| SM 2510 B-1997 | CONDUCTIVITY | PA | SM 2540 C-1997 | RESIDUE-FILTERABLE (TDS) | PA |
| SM 4500-F⁻ C-1997 | FLUORIDE | PA | SM 4500-H+ B-2000 | PH | PA |
| SM 4500-P E-1999 | ORTHOPHOSPHATE AS P | PA | SM 5540 C-2000 | SURFACTANTS - MBAS | PA |
| SM 9215 B-1994 | HETEROTROPHIC PLATE COUNT | PA | SM 9223 COLILERT P/A | ESCHERICHIA COLI | PA |
| SM 9223 COLILERT P/A | TOTAL COLIFORMS | PA | | | |

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1010 | FLASHPOINT | PA | EPA 1311 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | PA |
| EPA 1312 | PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE | PA | EPA 160.4 | RESIDUE-VOLATILE | PA |
| EPA 1613 B | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | PA | EPA 1613 B | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | PA |
| EPA 1613 B | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | PA | EPA 1613 B | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | PA |
| EPA 1613 B | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | PA | EPA 1613 B | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | PA |
| EPA 1613 B | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | PA | EPA 1613 B | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | PA |
| EPA 1613 B | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | PA | EPA 1613 B | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | PA |

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|---|---|---|---|---|---|
| EPA 1613 B | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | PA | EPA 1613 B | 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN (1,2,3,7,8-PECDD) | PA |
| EPA 1613 B | 1,2,3,7,8-PENTACHLORODIBENZOFURAN (1,2,3,7,8-PECDF) | PA | EPA 1613 B | 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | PA |
| EPA 1613 B | 2,3,4,7,8-PENTACHLORODIBENZOFURAN | PA | EPA 1613 B | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | PA |
| EPA 1613 B | 2,3,7,8-TETRACHLORODIBENZOFURAN | PA | EPA 1631 E | MERCURY | PA |
| EPA 1664 A | OIL & GREASE | PA | EPA 1664 A | TOTAL PETROLEUM HYDROCARBONS (TPH) | PA |
| EPA 1666 A | 4-METHYL-2-PENTANONE (MIBK) | PA | EPA 1666 A | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA |
| EPA 1666 A | ETHYL ACETATE | PA | EPA 1666 A | ISOBUTYRALDEHYDE | PA |
| EPA 1666 A | ISOPROPYL ACETATE | PA | EPA 1666 A | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 1666 A | METHYL FORMATE | PA | EPA 1666 A | N-AMYL ACETATE | PA |
| EPA 1666 A | N-AMYL ALCOHOL | PA | EPA 1666 A | N-BUTYL-ACETATE | PA |
| EPA 1666 A | N-HEPTANE | PA | EPA 1666 A | N-HEXANE | PA |
| EPA 1666 A | TERT-BUTYL ALCOHOL | PA | EPA 1666 A | TETRAHYDROFURAN (THF) | PA |
| EPA 1666 A | XYLENE (TOTAL) | PA | EPA 1668 A | 2,2',3,3',4,4',5,5',6-NONACHLOROBIPHENYL (BZ-206) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,5'-OCTACHLOROBIPHENYL (BZ-194) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6'-OCTACHLOROBIPHENYL (BZ-196) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,6,6'-NONACHLOROBIPHENYL (BZ-207) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6-OCTACHLOROBIPHENYL BZ-195) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL (BZ-170) | PA | EPA 1668 A | 2,2',3,3',4,4',6,6'-OCTACHLOROBIPHENYL (BZ-197) | PA |
| EPA 1668 A | 2,2',3,3',4,4',6-HEPTACHLOROBIPHENYL (BZ-171) | PA | EPA 1668 A | 2,2',3,3',4,4'-HEXACHLOROBIPHENYL (BZ-128) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6'-HEPTACHLOROBIPHENYL (BZ-177) | PA | EPA 1668 A | 2,2',3,3',4,5',6,6'-OCTACHLOROBIPHENYL (BZ-201) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6-HEPTACHLOROBIPHENYL (BZ-175) | PA | EPA 1668 A | 2,2',3,3',4,5'-HEXACHLOROBIPHENYL (BZ-130) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6'-OCTACHLOROBIPHENYL (BZ-199) | PA | EPA 1668 A | 2,2',3,3',4,5,5',6,6'-NONACHLOROBIPHENYL (BZ-208) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6-OCTACHLOROBIPHENYL (BZ-198) | PA | EPA 1668 A | 2,2',3,3',4,5,5'-HEPTACHLOROBIPHENYL (BZ-172) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6'-HEPTACHLOROBIPHENYL (BZ-174) | PA | EPA 1668 A | 2,2',3,3',4,5,6,6'-OCTACHLOROBIPHENYL (BZ-200) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6-HEPTACHLOROBIPHENYL (BZ-173) | PA | EPA 1668 A | 2,2',3,3',4,5-HEXACHLOROBIPHENYL (BZ-129) | PA |
| EPA 1668 A | 2,2',3,3',4,6'-HEXACHLOROBIPHENYL (BZ-132) | PA | EPA 1668 A | 2,2',3,3',4,6,6'-HEPTACHLOROBIPHENYL (BZ-176) | PA |
| EPA 1668 A | 2,2',3,3',4,6-HEXACHLOROBIPHENYL (BZ-131) | PA | EPA 1668 A | 2,2',3,3',4-PENTACHLOROBIPHENYL (BZ-82) | PA |
| EPA 1668 A | 2,2',3,3',5,5',6,6'-OCTACHLOROBIPHENYL (BZ-202) | PA | EPA 1668 A | 2,2',3,3',5,5',6-HEPTACHLOROBIPHENYL (BZ-178) | PA |
| EPA 1668 A | 2,2',3,3',5,5'-HEXACHLOROBIPHENYL (BZ-133) | PA | EPA 1668 A | 2,2',3,3',5,6'-HEXACHLOROBIPHENYL (BZ-135) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,2',3,3',5,6,6'-HEPTACHLOROBIPHENYL (BZ-179) | PA | EPA 1668 A | 2,2',3,3',5,6-HEXACHLOROBIPHENYL (BZ-134) | PA |
| EPA 1668 A | 2,2',3,3',5-PENTACHLOROBIPHENYL (BZ-83) | PA | EPA 1668 A | 2,2',3,3',6,6'-HEXACHLOROBIPHENYL (BZ-136) | PA |
| EPA 1668 A | 2,2',3,3',6-PENTACHLOROBIPHENYL (BZ-84) | PA | EPA 1668 A | 2,2',3,3'-TETRACHLOROBIPHENYL (BZ-40) | PA |
| EPA 1668 A | 2,2',3,4',5',6-HEXACHLOROBIPHENYL (BZ-149) | PA | EPA 1668 A | 2,2',3,4',5'-PENTACHLOROBIPHENYL (BZ-97) | PA |
| EPA 1668 A | 2,2',3,4',5,5',6-HEPTACHLOROBIPHENYL (BZ-187) | PA | EPA 1668 A | 2,2',3,4',5,5'-HEXACHLOROBIPHENYL (BZ-146) | PA |
| EPA 1668 A | 2,2',3,4',5,6'-HEXACHLOROBIPHENYL (BZ-148) | PA | EPA 1668 A | 2,2',3,4',5,6,6'-HEPTACHLOROBIPHENYL (BZ-188) | PA |
| EPA 1668 A | 2,2',3,4',5,6-HEXACHLOROBIPHENYL (BZ-147) | PA | EPA 1668 A | 2,2',3,4',5-PENTACHLOROBIPHENYL (BZ-90) | PA |
| EPA 1668 A | 2,2',3,4',6'-PENTACHLOROBIPHENYL (BZ-98) | PA | EPA 1668 A | 2,2',3,4',6,6'-HEXACHLOROBIPHENYL (BZ-150) | PA |
| EPA 1668 A | 2,2',3,4',6-PENTACHLOROBIPHENYL (BZ-91) | PA | EPA 1668 A | 2,2',3,4'-TETRACHLOROBIPHENYL (BZ-42) | PA |
| EPA 1668 A | 2,2',3,4,4',5',6-HEPTACHLOROBIPHENYL (BZ-183) | PA | EPA 1668 A | 2,2',3,4,4',5'-HEXACHLOROBIPHENYL (BZ-138) | PA |
| EPA 1668 A | 2,2',3,4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-203) | PA | EPA 1668 A | 2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-180) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6'-HEPTACHLOROBIPHENYL (BZ-182) | PA | EPA 1668 A | 2,2',3,4,4',5,6,6'-OCTACHLOROBIPHENYL (BZ-204) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6-HEPTACHLOROBIPHENYL (BZ-181) | PA | EPA 1668 A | 2,2',3,4,4',5-HEXACHLOROBIPHENYL (BZ-137) | PA |
| EPA 1668 A | 2,2',3,4,4',6'-HEXACHLOROBIPHENYL (BZ-140) | PA | EPA 1668 A | 2,2',3,4,4',6,6'-HEPTACHLOROBIPHENYL (BZ-184) | PA |
| EPA 1668 A | 2,2',3,4,4',6-HEXACHLOROBIPHENYL (BZ-139) | PA | EPA 1668 A | 2,2',3,4,4'-PENTACHLOROBIPHENYL (BZ-85) | PA |
| EPA 1668 A | 2,2',3,4,5',6-HEXACHLOROBIPHENYL (BZ-144) | PA | EPA 1668 A | 2,2',3,4,5'-PENTACHLOROBIPHENYL (BZ-87) | PA |
| EPA 1668 A | 2,2',3,4,5,5',6-HEPTACHLOROBIPHENYL (BZ-185) | PA | EPA 1668 A | 2,2',3,4,5,5'-HEXACHLOROBIPHENYL (BZ-141) | PA |
| EPA 1668 A | 2,2',3,4,5,6'-HEXACHLOROBIPHENYL (BZ-143) | PA | EPA 1668 A | 2,2',3,4,5,6,6'-HEPTACHLOROBIPHENYL (BZ-186) | PA |
| EPA 1668 A | 2,2',3,4,5,6-HEXACHLOROBIPHENYL (BZ-142) | PA | EPA 1668 A | 2,2',3,4,5-PENTACHLOROBIPHENYL (BZ-86) | PA |
| EPA 1668 A | 2,2',3,4,6'-PENTACHLOROBIPHENYL (BZ-89) | PA | EPA 1668 A | 2,2',3,4,6,6'-HEXACHLOROBIPHENYL (BZ-145) | PA |
| EPA 1668 A | 2,2',3,4,6-PENTACHLOROBIPHENYL (BZ-88) | PA | EPA 1668 A | 2,2',3,4-TETRACHLOROBIPHENYL (BZ-41) | PA |
| EPA 1668 A | 2,2',3,5',6-PENTACHLOROBIPHENYL (BZ-95) | PA | EPA 1668 A | 2,2',3,5'-TETRACHLOROBIPHENYL (BZ-44) | PA |
| EPA 1668 A | 2,2',3,5,5',6-HEXACHLOROBIPHENYL (BZ-151) | PA | EPA 1668 A | 2,2',3,5,5'-PENTACHLOROBIPHENYL (BZ-92) | PA |
| EPA 1668 A | 2,2',3,5,6'-PENTACHLOROBIPHENYL (BZ-94) | PA | EPA 1668 A | 2,2',3,5,6,6'-HEXACHLOROBIPHENYL (BZ-152) | PA |
| EPA 1668 A | 2,2',3,5,6-PENTACHLOROBIPHENYL (BZ-93) | PA | EPA 1668 A | 2,2',3,5-TETRACHLOROBIPHENYL (BZ-43) | PA |

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Effective Date: January 30, 2014
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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1668 A | 2,2',3,6'-TETRACHLOROBIPHENYL (BZ-46) | PA | EPA 1668 A | 2,2',3,6,6'-PENTACHLOROBIPHENYL (BZ-96) | PA |
| EPA 1668 A | 2,2',3,6-TETRACHLOROBIPHENYL (BZ-45) | PA | EPA 1668 A | 2,2',3-TRICHLOROBIPHENYL (BZ-16) | PA |
| EPA 1668 A | 2,2',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-153) | PA | EPA 1668 A | 2,2',4,4',5,6'-HEXACHLOROBIPHENYL (BZ-154) | PA |
| EPA 1668 A | 2,2',4,4',5-PENTACHLOROBIPHENYL (BZ-99) | PA | EPA 1668 A | 2,2',4,4',6,6'-HEXACHLOROBIPHENYL (BZ-155) | PA |
| EPA 1668 A | 2,2',4,4',6-PENTACHLOROBIPHENYL (BZ-100) | PA | EPA 1668 A | 2,2',4,4'-TETRACHLOROBIPHENYL (BZ-47) | PA |
| EPA 1668 A | 2,2',4,5',6-PENTACHLOROBIPHENYL (BZ-103) | PA | EPA 1668 A | 2,2',4,5'-TETRACHLOROBIPHENYL (BZ-49) | PA |
| EPA 1668 A | 2,2',4,5,5'-PENTACHLOROBIPHENYL (BZ-101) | PA | EPA 1668 A | 2,2',4,5,6'-PENTACHLOROBIPHENYL (BZ-102) | PA |
| EPA 1668 A | 2,2',4,5-TETRACHLOROBIPHENYL (BZ-48) | PA | EPA 1668 A | 2,2',4,6'-TETRACHLOROBIPHENYL (BZ-51) | PA |
| EPA 1668 A | 2,2',4,6,6'-PENTACHLOROBIPHENYL (BZ-104) | PA | EPA 1668 A | 2,2',4,6-TETRACHLOROBIPHENYL (BZ-50) | PA |
| EPA 1668 A | 2,2',4-TRICHLOROBIPHENYL (BZ-17) | PA | EPA 1668 A | 2,2',5,5'-TETRACHLOROBIPHENYL (BZ-52) | PA |
| EPA 1668 A | 2,2',5,6'-TETRACHLOROBIPHENYL (BZ-53) | PA | EPA 1668 A | 2,2',5-TRICHLOROBIPHENYL (BZ-18) | PA |
| EPA 1668 A | 2,2',6,6'-TETRACHLOROBIPHENYL (BZ-54) | PA | EPA 1668 A | 2,2',6-TRICHLOROBIPHENYL (BZ-19) | PA |
| EPA 1668 A | 2,2'-DICHLOROBIPHENYL (BZ-4) | PA | EPA 1668 A | 2,3',4',5,6-PENTACHLOROBIPHENYL (BZ-125) | PA |
| EPA 1668 A | 2,3',4',5'-TETRACHLOROBIPHENYL (BZ-76) | PA | EPA 1668 A | 2,3',4',5,5'-PENTACHLOROBIPHENYL (BZ-124) | PA |
| EPA 1668 A | 2,3',4',5-TETRACHLOROBIPHENYL (BZ-70) | PA | EPA 1668 A | 2,3',4',6-TETRACHLOROBIPHENYL (BZ-71) | PA |
| EPA 1668 A | 2,3',4'-TRICHLOROBIPHENYL (BZ-33) | PA | EPA 1668 A | 2,3',4,4',5',6-HEXACHLOROBIPHENYL (BZ-168) | PA |
| EPA 1668 A | 2,3',4,4',5'-PENTACHLOROBIPHENYL (BZ-123) | PA | EPA 1668 A | 2,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-167) | PA |
| EPA 1668 A | 2,3',4,4',5-PENTACHLOROBIPHENYL (BZ-118) | PA | EPA 1668 A | 2,3',4,4',6-PENTACHLOROBIPHENYL (BZ-119) | PA |
| EPA 1668 A | 2,3',4,4'-TETRACHLOROBIPHENYL (BZ-66) | PA | EPA 1668 A | 2,3',4,5',6-PENTACHLOROBIPHENYL (BZ-121) | PA |
| EPA 1668 A | 2,3',4,5'-TETRACHLOROBIPHENYL (BZ-68) | PA | EPA 1668 A | 2,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-120) | PA |
| EPA 1668 A | 2,3',4,5-TETRACHLOROBIPHENYL (BZ-67) | PA | EPA 1668 A | 2,3',4,6-TETRACHLOROBIPHENYL (BZ-69) | PA |
| EPA 1668 A | 2,3',4-TRICHLOROBIPHENYL (BZ-25) | PA | EPA 1668 A | 2,3',5',6-TETRACHLOROBIPHENYL (BZ-73) | PA |
| EPA 1668 A | 2,3',5'-TRICHLOROBIPHENYL (BZ-34) | PA | EPA 1668 A | 2,3',5,5'-TETRACHLOROBIPHENYL (BZ-72) | PA |
| EPA 1668 A | 2,3',5-TRICHLOROBIPHENYL (BZ-26) | PA | EPA 1668 A | 2,3',6-TRICHLOROBIPHENYL (BZ-27) | PA |
| EPA 1668 A | 2,3'-DICHLOROBIPHENYL (BZ-6) | PA | EPA 1668 A | 2,3,3',4',5',6-HEXACHLOROBIPHENYL (BZ-164) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,3,3',4',5'-PENTACHLOROBIPHENYL (BZ-122) | PA | EPA 1668 A | 2,3,3',4',5,5',6-HEPTACHLOROBIPHENYL (BZ-193) | PA |
| EPA 1668 A | 2,3,3',4',5,5'-HEXACHLOROBIPHENYL (BZ-162) | PA | EPA 1668 A | 2,3,3',4',5,6-HEXACHLOROBIPHENYL (BZ-163) | PA |
| EPA 1668 A | 2,3,3',4',5-PENTACHLOROBIPHENYL (BZ-107) | PA | EPA 1668 A | 2,3,3',4',6-PENTACHLOROBIPHENYL (BZ-110) | PA |
| EPA 1668 A | 2,3,3',4'-TETRACHLOROBIPHENYL (BZ-56) | PA | EPA 1668 A | 2,3,3',4,4',5',6-HEPTACHLOROBIPHENYL (BZ-191) | PA |
| EPA 1668 A | 2,3,3',4,4',5'-HEXACHLOROBIPHENYL (BZ-157) | PA | EPA 1668 A | 2,3,3',4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-205) | PA |
| EPA 1668 A | 2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-189) | PA | EPA 1668 A | 2,3,3',4,4',5,6-HEPTACHLOROBIPHENYL (BZ-190) | PA |
| EPA 1668 A | 2,3,3',4,4',5-HEXACHLOROBIPHENYL (BZ-156) | PA | EPA 1668 A | 2,3,3',4,4',6-HEXACHLOROBIPHENYL (BZ-158) | PA |
| EPA 1668 A | 2,3,3',4,4'-PENTACHLOROBIPHENYL (BZ-105) | PA | EPA 1668 A | 2,3,3',4,5',6-HEXACHLOROBIPHENYL (BZ-161) | PA |
| EPA 1668 A | 2,3,3',4,5'-PENTACHLOROBIPHENYL (BZ-108) | PA | EPA 1668 A | 2,3,3',4,5,5',6-HEPTACHLOROBIPHENYL (BZ-192) | PA |
| EPA 1668 A | 2,3,3',4,5,5'-HEXACHLOROBIPHENYL (BZ-159) | PA | EPA 1668 A | 2,3,3',4,5,6-HEXACHLOROBIPHENYL (BZ-160) | PA |
| EPA 1668 A | 2,3,3',4,5-PENTACHLOROBIPHENYL (BZ-106) | PA | EPA 1668 A | 2,3,3',4,6-PENTACHLOROBIPHENYL (BZ-109) | PA |
| EPA 1668 A | 2,3,3',4-TETRACHLOROBIPHENYL (BZ-55) | PA | EPA 1668 A | 2,3,3',5',6-PENTACHLOROBIPHENYL (BZ-113) | PA |
| EPA 1668 A | 2,3,3',5'-TETRACHLOROBIPHENYL (BZ-58) | PA | EPA 1668 A | 2,3,3',5,5',6-HEXACHLOROBIPHENYL (BZ-165) | PA |
| EPA 1668 A | 2,3,3',5,5'-PENTACHLOROBIPHENYL (BZ-111) | PA | EPA 1668 A | 2,3,3',5,6-PENTACHLOROBIPHENYL (BZ-112) | PA |
| EPA 1668 A | 2,3,3',5-TETRACHLOROBIPHENYL (BZ-57) | PA | EPA 1668 A | 2,3,3',6-TETRACHLOROBIPHENYL (BZ-59) | PA |
| EPA 1668 A | 2,3,3'-TRICHLOROBIPHENYL (BZ-20) | PA | EPA 1668 A | 2,3,4',5,6-PENTACHLOROBIPHENYL (BZ-117) | PA |
| EPA 1668 A | 2,3,4',5-TETRACHLOROBIPHENYL (BZ-63) | PA | EPA 1668 A | 2,3,4',6-TETRACHLOROBIPHENYL (BZ-64) | PA |
| EPA 1668 A | 2,3,4'-TRICHLOROBIPHENYL (BZ-22) | PA | EPA 1668 A | 2,3,4,4',5,6-HEXACHLOROBIPHENYL (BZ-166) | PA |
| EPA 1668 A | 2,3,4,4',5-PENTACHLOROBIPHENYL (BZ-114) | PA | EPA 1668 A | 2,3,4,4',6-PENTACHLOROBIPHENYL (BZ-115) | PA |
| EPA 1668 A | 2,3,4,4'-TETRACHLOROBIPHENYL (BZ-60) | PA | EPA 1668 A | 2,3,4,5,6-PENTACHLOROBIPHENYL (BZ-116) | PA |
| EPA 1668 A | 2,3,4,5-TETRACHLOROBIPHENYL (BZ-61) | PA | EPA 1668 A | 2,3,4,6-TETRACHLOROBIPHENYL (BZ-62) | PA |
| EPA 1668 A | 2,3,4-TRICHLOROBIPHENYL (BZ-21) | PA | EPA 1668 A | 2,3,5,6-TETRACHLOROBIPHENYL (BZ-65) | PA |
| EPA 1668 A | 2,3,5-TRICHLOROBIPHENYL (BZ-23) | PA | EPA 1668 A | 2,3,6-TRICHLOROBIPHENYL (BZ-24) | PA |
| EPA 1668 A | 2,3-DICHLOROBIPHENYL (BZ-5) | PA | EPA 1668 A | 2,4',5-TRICHLOROBIPHENYL (BZ-31) | PA |
| EPA 1668 A | 2,4',6-TRICHLOROBIPHENYL (BZ-32) | PA | EPA 1668 A | 2,4'-DICHLOROBIPHENYL (BZ-8) | PA |

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**Virginia Laboratory ID: 460182**
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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1668 A | 2,4,4',5-TETRACHLOROBIPHENYL (BZ-74) | PA | EPA 1668 A | 2,4,4',6-TETRACHLOROBIPHENYL (BZ-75) | PA |
| EPA 1668 A | 2,4,4'-TRICHLOROBIPHENYL (BZ-28) | PA | EPA 1668 A | 2,4,5-TRICHLOROBIPHENYL (BZ-29) | PA |
| EPA 1668 A | 2,4,6-TRICHLOROBIPHENYL (BZ-30) | PA | EPA 1668 A | 2,4-DICHLOROBIPHENYL (BZ-7) | PA |
| EPA 1668 A | 2,5-DICHLOROBIPHENYL (BZ-9) | PA | EPA 1668 A | 2,6-DICHLOROBIPHENYL (BZ-10) | PA |
| EPA 1668 A | 2-CHLOROBIPHENYL (BZ-1) | PA | EPA 1668 A | 3,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-169) | PA |
| EPA 1668 A | 3,3',4,4',5-PENTACHLOROBIPHENYL (BZ-126) | PA | EPA 1668 A | 3,3',4,4'-TETRACHLOROBIPHENYL (BZ-77) | PA |
| EPA 1668 A | 3,3',4,5'-TETRACHLOROBIPHENYL (BZ-79) | PA | EPA 1668 A | 3,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-127) | PA |
| EPA 1668 A | 3,3',4,5-TETRACHLOROBIPHENYL (BZ-78) | PA | EPA 1668 A | 3,3',4-TRICHLOROBIPHENYL (BZ-35) | PA |
| EPA 1668 A | 3,3',5,5'-TETRACHLOROBIPHENYL (BZ-80) | PA | EPA 1668 A | 3,3',5-TRICHLOROBIPHENYL (BZ-36) | PA |
| EPA 1668 A | 3,3'-DICHLOROBIPHENYL (BZ-11) | PA | EPA 1668 A | 3,4',5-TRICHLOROBIPHENYL (BZ-39) | PA |
| EPA 1668 A | 3,4'-DICHLOROBIPHENYL (BZ-13) | PA | EPA 1668 A | 3,4,4',5-TETRACHLOROBIPHENYL (BZ-81) | PA |
| EPA 1668 A | 3,4,4'-TRICHLOROBIPHENYL (BZ-37) | PA | EPA 1668 A | 3,4,5-TRICHLOROBIPHENYL (BZ-38) | PA |
| EPA 1668 A | 3,4-DICHLOROBIPHENYL (BZ-12) | PA | EPA 1668 A | 3,5-DICHLOROBIPHENYL (BZ-14) | PA |
| EPA 1668 A | 3-CHLOROBIPHENYL (BZ-2) | PA | EPA 1668 A | 4,4'-DICHLOROBIPHENYL (BZ-15) | PA |
| EPA 1668 A | 4-CHLOROBIPHENYL (BZ-3) | PA | EPA 1668 A | DECACHLOROBIPHENYL (BZ-209) | PA |
| EPA 1671 A | ACETONITRILE | PA | EPA 1671 A | DIETHYLAMINE | PA |
| EPA 1671 A | DIMETHYL SULFOXIDE | PA | EPA 1671 A | ETHANOL | PA |
| EPA 1671 A | METHANOL | PA | EPA 1671 A | METHYL CELLOSOLVE | PA |
| EPA 1671 A | N-PROPANOL (1-PROPANOL) | PA | EPA 1671 A | TRIETHYLAMINE | PA |
| EPA 180.1 REV 2 | TURBIDITY | PA | EPA 200.2 REV 2.8 | PREP: SAMPLE PREPARATION PROCEDURE FOR SPECTROCHEMICAL DETERMINATION OF TOTAL RECOVERABLE ELEMENTS | PA |
| EPA 200.7 REV 4.4 | ALUMINUM | PA | EPA 200.7 REV 4.4 | ANTIMONY | PA |
| EPA 200.7 REV 4.4 | ARSENIC | PA | EPA 200.7 REV 4.4 | BARIUM | PA |
| EPA 200.7 REV 4.4 | BERYLLIUM | PA | EPA 200.7 REV 4.4 | BORON | PA |
| EPA 200.7 REV 4.4 | CADMIUM | PA | EPA 200.7 REV 4.4 | CALCIUM | PA |
| EPA 200.7 REV 4.4 | CHROMIUM | PA | EPA 200.7 REV 4.4 | COBALT | PA |
| EPA 200.7 REV 4.4 | COPPER | PA | EPA 200.7 REV 4.4 | IRON | PA |
| EPA 200.7 REV 4.4 | LEAD | PA | EPA 200.7 REV 4.4 | MAGNESIUM | PA |
| EPA 200.7 REV 4.4 | MANGANESE | PA | EPA 200.7 REV 4.4 | MOLYBDENUM | PA |
| EPA 200.7 REV 4.4 | NICKEL | PA | EPA 200.7 REV 4.4 | POTASSIUM | PA |
| EPA 200.7 REV 4.4 | SELENIUM | PA | EPA 200.7 REV 4.4 | SILVER | PA |

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|---|---|---|---|---|---|
| EPA 200.7 REV 4.4 | SODIUM | PA | EPA 200.7 REV 4.4 | THALLIUM | PA |
| EPA 200.7 REV 4.4 | TIN | PA | EPA 200.7 REV 4.4 | TITANIUM | PA |
| EPA 200.7 REV 4.4 | VANADIUM | PA | EPA 200.7 REV 4.4 | ZINC | PA |
| EPA 200.8 REV 5.4 | ALUMINUM | PA | EPA 200.8 REV 5.4 | ANTIMONY | PA |
| EPA 200.8 REV 5.4 | ARSENIC | PA | EPA 200.8 REV 5.4 | BARIUM | PA |
| EPA 200.8 REV 5.4 | BERYLLIUM | PA | EPA 200.8 REV 5.4 | CADMIUM | PA |
| EPA 200.8 REV 5.4 | CHROMIUM | PA | EPA 200.8 REV 5.4 | COBALT | PA |
| EPA 200.8 REV 5.4 | COPPER | PA | EPA 200.8 REV 5.4 | LEAD | PA |
| EPA 200.8 REV 5.4 | MANGANESE | PA | EPA 200.8 REV 5.4 | MOLYBDENUM | PA |
| EPA 200.8 REV 5.4 | NICKEL | PA | EPA 200.8 REV 5.4 | SELENIUM | PA |
| EPA 200.8 REV 5.4 | SILVER | PA | EPA 200.8 REV 5.4 | THALLIUM | PA |
| EPA 200.8 REV 5.4 | VANADIUM | PA | EPA 200.8 REV 5.4 | ZINC | PA |
| EPA 200.8 REV 5.4 - EXTENDED | BORON | PA | EPA 200.8 REV 5.4 - EXTENDED | CALCIUM | PA |
| EPA 200.8 REV 5.4 - EXTENDED | IRON | PA | EPA 200.8 REV 5.4 - EXTENDED | MAGNESIUM | PA |
| EPA 200.8 REV 5.4 - EXTENDED | POTASSIUM | PA | EPA 200.8 REV 5.4 - EXTENDED | SODIUM | PA |
| EPA 200.8 REV 5.4 - EXTENDED | TIN | PA | EPA 200.8 REV 5.4 - EXTENDED | TITANIUM | PA |
| EPA 245.1 REV 3 | MERCURY | PA | EPA 300.0 REV 2.1 | BROMIDE | PA |
| EPA 300.0 REV 2.1 | CHLORIDE | PA | EPA 300.0 REV 2.1 | FLUORIDE | PA |
| EPA 300.0 REV 2.1 | NITRATE AS N | PA | EPA 300.0 REV 2.1 | NITRITE AS N | PA |
| EPA 300.0 REV 2.1 | ORTHOPHOSPHATE AS P | PA | EPA 300.0 REV 2.1 | SULFATE | PA |
| EPA 3005 A | PREP: ACID DIGESTION OF WATERS FOR TOTAL RECOVERABLE OR DISSOLVED METALS | PA | EPA 3010 A | PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS | PA |
| EPA 3020 A | PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS | PA | EPA 335.4 | CYANIDE | PA |
| EPA 351.2 REV 2 | KJELDAHL NITROGEN - TOTAL | PA | EPA 3510 C | PREP: LIQUID-LIQUID EXTRACTION | PA |
| EPA 3511 | PREP: ORGANIC EXTRACTION AND SAMPLE PREPARATION | PA | EPA 3520 C | PREP: CONTINUOUS LIQUID-LIQUID EXTRACTION | PA |
| EPA 353.2 REV 2 | NITRATE AS N | PA | EPA 353.2 REV 2 | NITRATE/NITRITE | PA |
| EPA 353.2 REV 2 | NITRITE AS N | PA | EPA 3620 C | PREP: FLORISIL CLEANUP | PA |
| EPA 3630 C | PREP: SILICA GEL CLEANUP | PA | EPA 365.1 REV 2 | PHOSPHORUS, TOTAL | PA |
| EPA 365.3 | ORTHOPHOSPHATE AS P | PA | EPA 410.4 REV 2 | CHEMICAL OXYGEN DEMAND | PA |
| EPA 420.4 REV 1 | TOTAL PHENOLICS | PA | EPA 5030 | PREP: PURGE AND TRAP FOR AQUEOUS SAMPLES | PA |
| EPA 6010 B | ALUMINUM | PA | EPA 6010 B | ANTIMONY | PA |
| EPA 6010 B | ARSENIC | PA | EPA 6010 B | BARIUM | PA |
| EPA 6010 B | BERYLLIUM | PA | EPA 6010 B | BORON | PA |

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| EPA 6010 B | CHROMIUM | PA | EPA 6010 B | COBALT | PA |
| EPA 6010 B | COPPER | PA | EPA 6010 B | IRON | PA |
| EPA 6010 B | LEAD | PA | EPA 6010 B | LITHIUM | PA |
| EPA 6010 B | MAGNESIUM | PA | EPA 6010 B | MANGANESE | PA |
| EPA 6010 B | MOLYBDENUM | PA | EPA 6010 B | NICKEL | PA |
| EPA 6010 B | POTASSIUM | PA | EPA 6010 B | SELENIUM | PA |
| EPA 6010 B | SILVER | PA | EPA 6010 B | SODIUM | PA |
| EPA 6010 B | STRONTIUM | PA | EPA 6010 B | THALLIUM | PA |
| EPA 6010 B | TIN | PA | EPA 6010 B | TITANIUM | PA |
| EPA 6010 B | VANADIUM | PA | EPA 6010 B | ZINC | PA |
| EPA 6010 C | ALUMINUM | PA | EPA 6010 C | ANTIMONY | PA |
| EPA 6010 C | ARSENIC | PA | EPA 6010 C | BARIUM | PA |
| EPA 6010 C | BERYLLIUM | PA | EPA 6010 C | BORON | PA |
| EPA 6010 C | CADMIUM | PA | EPA 6010 C | CALCIUM | PA |
| EPA 6010 C | CHROMIUM | PA | EPA 6010 C | COBALT | PA |
| EPA 6010 C | COPPER | PA | EPA 6010 C | IRON | PA |
| EPA 6010 C | LEAD | PA | EPA 6010 C | LITHIUM | PA |
| EPA 6010 C | MAGNESIUM | PA | EPA 6010 C | MANGANESE | PA |
| EPA 6010 C | MOLYBDENUM | PA | EPA 6010 C | NICKEL | PA |
| EPA 6010 C | POTASSIUM | PA | EPA 6010 C | SELENIUM | PA |
| EPA 6010 C | SILVER | PA | EPA 6010 C | SODIUM | PA |
| EPA 6010 C | STRONTIUM | PA | EPA 6010 C | THALLIUM | PA |
| EPA 6010 C | TIN | PA | EPA 6010 C | TITANIUM | PA |
| EPA 6010 C | VANADIUM | PA | EPA 6010 C | ZINC | PA |
| EPA 602 | BENZENE | PA | EPA 602 | ETHYLBENZENE | PA |
| EPA 602 | TOLUENE | PA | EPA 602 | XYLENE (TOTAL) | PA |
| EPA 6020 A | ALUMINUM | PA | EPA 6020 A | ANTIMONY | PA |
| EPA 6020 A | ARSENIC | PA | EPA 6020 A | BARIUM | PA |
| EPA 6020 A | BERYLLIUM | PA | EPA 6020 A | CADMIUM | PA |
| EPA 6020 A | CALCIUM | PA | EPA 6020 A | CHROMIUM | PA |
| EPA 6020 A | COBALT | PA | EPA 6020 A | COPPER | PA |
| EPA 6020 A | IRON | PA | EPA 6020 A | LEAD | PA |
| EPA 6020 A | MAGNESIUM | PA | EPA 6020 A | MANGANESE | PA |
| EPA 6020 A | NICKEL | PA | EPA 6020 A | POTASSIUM | PA |
| EPA 6020 A | SELENIUM | PA | EPA 6020 A | SILVER | PA |
| EPA 6020 A | SODIUM | PA | EPA 6020 A | THALLIUM | PA |
| EPA 6020 A | VANADIUM | PA | EPA 6020 A | ZINC | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 6020 A - EXTENDED | BORON | PA | EPA 6020 A - EXTENDED | MOLYBDENUM | PA |
| EPA 6020 A - EXTENDED | STRONTIUM | PA | EPA 6020 A - EXTENDED | TIN | PA |
| EPA 6020 A - EXTENDED | TITANIUM | PA | EPA 608 | 4,4'-DDD | PA |
| EPA 608 | 4,4'-DDE | PA | EPA 608 | 4,4'-DDT | PA |
| EPA 608 | ALDRIN | PA | EPA 608 | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 608 | AROCLOR-1016 (PCB-1016) | PA | EPA 608 | AROCLOR-1221 (PCB-1221) | PA |
| EPA 608 | AROCLOR-1232 (PCB-1232) | PA | EPA 608 | AROCLOR-1242 (PCB-1242) | PA |
| EPA 608 | AROCLOR-1248 (PCB-1248) | PA | EPA 608 | AROCLOR-1254 (PCB-1254) | PA |
| EPA 608 | AROCLOR-1260 (PCB-1260) | PA | EPA 608 | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 608 | CHLORDANE (TECH.) | PA | EPA 608 | DELTA-BHC | PA |
| EPA 608 | DIELDRIN | PA | EPA 608 | ENDOSULFAN I | PA |
| EPA 608 | ENDOSULFAN II | PA | EPA 608 | ENDOSULFAN SULFATE | PA |
| EPA 608 | ENDRIN | PA | EPA 608 | ENDRIN ALDEHYDE | PA |
| EPA 608 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA | EPA 608 | HEPTACHLOR | PA |
| EPA 608 | HEPTACHLOR EPOXIDE | PA | EPA 608 | TOXAPHENE (CHLORINATED CAMPHENE) | PA |
| EPA 610 (HPLC) | ACENAPHTHENE | PA | EPA 610 (HPLC) | ACENAPHTHYLENE | PA |
| EPA 610 (HPLC) | ANTHRACENE | PA | EPA 610 (HPLC) | BENZO(A)ANTHRACENE | PA |
| EPA 610 (HPLC) | BENZO(A)PYRENE | PA | EPA 610 (HPLC) | BENZO(G,H,I)PERYLENE | PA |
| EPA 610 (HPLC) | BENZO(K)FLUORANTHENE | PA | EPA 610 (HPLC) | BENZO[B]FLUORANTHENE | PA |
| EPA 610 (HPLC) | CHRYSENE | PA | EPA 610 (HPLC) | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 610 (HPLC) | FLUORANTHENE | PA | EPA 610 (HPLC) | FLUORENE | PA |
| EPA 610 (HPLC) | INDENO(1,2,3-CD) PYRENE | PA | EPA 610 (HPLC) | NAPHTHALENE | PA |
| EPA 610 (HPLC) | PHENANTHRENE | PA | EPA 610 (HPLC) | PYRENE | PA |
| EPA 622 | AZINPHOS-METHYL (GUTHION) | PA | EPA 622 | BOLSTAR (SULPROFOS) | PA |
| EPA 622 | CHLORPYRIFOS | PA | EPA 622 | DEMETON-O | PA |
| EPA 622 | DEMETON-S | PA | EPA 622 | DIAZINON | PA |
| EPA 622 | DICHLOROVOS (DDVP, DICHLORVOS) | PA | EPA 622 | DISULFOTON | PA |
| EPA 622 | ETHOPROP | PA | EPA 622 | FENSULFOTHION | PA |
| EPA 622 | FENTHION | PA | EPA 622 | MERPHOS | PA |
| EPA 622 | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 622 | MEVINPHOS | PA |
| EPA 622 | NALED | PA | EPA 622 | PHORATE | PA |
| EPA 622 | STIROFOS | PA | EPA 624 | 1,1,1-TRICHLOROETHANE | PA |

**Commonwealth of Virginia**

Department of General Services
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## Scope of Accreditation

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 624 | 1,1,2,2-TETRACHLOROETHANE | PA | EPA 624 | 1,1,2-TRICHLOROETHANE | PA |
| EPA 624 | 1,1-DICHLOROETHANE | PA | EPA 624 | 1,2-DICHLOROBENZENE | PA |
| EPA 624 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA | EPA 624 | 1,2-DICHLOROPROPANE | PA |
| EPA 624 | 1,3-DICHLOROBENZENE | PA | EPA 624 | 1,4-DICHLOROBENZENE | PA |
| EPA 624 | 2-CHLOROETHYL VINYL ETHER | PA | EPA 624 | ACROLEIN (PROPENAL) | PA |
| EPA 624 | ACRYLONITRILE | PA | EPA 624 | BENZENE | PA |
| EPA 624 | BROMODICHLOROMETHANE | PA | EPA 624 | BROMOFORM | PA |
| EPA 624 | CARBON TETRACHLORIDE | PA | EPA 624 | CHLOROBENZENE | PA |
| EPA 624 | CHLORODIBROMOMETHANE | PA | EPA 624 | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 624 | CHLOROFORM | PA | EPA 624 | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 624 | ETHYLBENZENE | PA | EPA 624 | METHYL BROMIDE (BROMOMETHANE) | PA |
| EPA 624 | METHYL CHLORIDE (CHLOROMETHANE) | PA | EPA 624 | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA |
| EPA 624 | TETRACHLOROETHENE (PERCHLOROETHENE) | PA | EPA 624 | TOLUENE | PA |
| EPA 624 | TRANS-1,2-DICHLOROETHENE | PA | EPA 624 | TRANS-1,3-DICHLOROPROPENE | PA |
| EPA 624 | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 624 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 624 | VINYL CHLORIDE | PA | EPA 624 - EXTENDED | 1,1-DICHLOROETHYLENE | PA |
| EPA 625 | 1,2,4-TRICHLOROBENZENE | PA | EPA 625 | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 625 | 2,4-DICHLOROPHENOL | PA | EPA 625 | 2,4-DIMETHYLPHENOL | PA |
| EPA 625 | 2,4-DINITROPHENOL | PA | EPA 625 | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 625 | 2,6-DINITROTOLUENE (2,6-DNT) | PA | EPA 625 | 2-CHLORONAPHTHALENE | PA |
| EPA 625 | 2-CHLOROPHENOL | PA | EPA 625 | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 625 | 2-METHYLPHENOL (O-CRESOL) | PA | EPA 625 | 2-NITROPHENOL | PA |
| EPA 625 | 3,3'-DICHLOROBENZIDINE | PA | EPA 625 | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 625 | 4-CHLORO-3-METHYLPHENOL | PA | EPA 625 | 4-CHLOROPHENYL PHENYLETHER | PA |
| EPA 625 | 4-NITROPHENOL | PA | EPA 625 | ACENAPHTHENE | PA |
| EPA 625 | ACENAPHTHYLENE | PA | EPA 625 | ANTHRACENE | PA |
| EPA 625 | BENZIDINE | PA | EPA 625 | BENZO(A)ANTHRACENE | PA |
| EPA 625 | BENZO(A)PYRENE | PA | EPA 625 | BENZO(G,H,I)PERYLENE | PA |
| EPA 625 | BENZO(K)FLUORANTHENE | PA | EPA 625 | BENZO[B]FLUORANTHENE | PA |
| EPA 625 | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 625 | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 625 | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 625 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 625 | BUTYL BENZYL PHTHALATE | PA | EPA 625 | CHRYSENE | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
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LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 625 | DI-N-BUTYL PHTHALATE | PA | EPA 625 | DI-N-OCTYL PHTHALATE | PA |
| EPA 625 | DIBENZO(A,H) ANTHRACENE | PA | EPA 625 | DIETHYL PHTHALATE | PA |
| EPA 625 | DIMETHYL PHTHALATE | PA | EPA 625 | FLUORANTHENE | PA |
| EPA 625 | FLUORENE | PA | EPA 625 | HEXACHLOROBENZENE | PA |
| EPA 625 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 625 | HEXACHLOROCYCLOPENTADIEN E | PA |
| EPA 625 | HEXACHLOROETHANE | PA | EPA 625 | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 625 | ISOPHORONE | PA | EPA 625 | N-NITROSODI-N-PROPYLAMINE | PA |
| EPA 625 | N-NITROSODIMETHYLAMINE | PA | EPA 625 | N-NITROSODIPHENYLAMINE | PA |
| EPA 625 | NAPHTHALENE | PA | EPA 625 | NITROBENZENE | PA |
| EPA 625 | PENTACHLOROPHENOL | PA | EPA 625 | PHENANTHRENE | PA |
| EPA 625 | PHENOL | PA | EPA 625 | PYRENE | PA |
| EPA 625 - EXTENDED | 1,2-DIPHENYLHYDRAZINE | PA | EPA 625 - EXTENDED | 4-METHYLPHENOL (P-CRESOL) | PA |
| EPA 625 - EXTENDED | ACETOPHENONE | PA | EPA 625 - EXTENDED | ANILINE | PA |
| EPA 625 - EXTENDED | CARBAZOLE | PA | EPA 625 - EXTENDED | N-DECANE | PA |
| EPA 625 - EXTENDED | N-OCTADECANE | PA | EPA 625 - EXTENDED | PYRIDINE | PA |
| EPA 6850 | PERCHLORATE | PA | EPA 7196 A | CHROMIUM VI | PA |
| EPA 7470 A | MERCURY | PA | EPA 8011 | 1,2-DIBROMO-3-CHLOROPROPAN E (DBCP) | PA |
| EPA 8011 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 8015 B | DIESEL RANGE ORGANICS (DRO) | PA |
| EPA 8015 B | ETHANOL | PA | EPA 8015 B | ETHYLENE GLYCOL | PA |
| EPA 8015 B | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8015 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 8015 B | METHANOL | PA | EPA 8015 C | DIESEL RANGE ORGANICS (DRO) | PA |
| EPA 8015 C | ETHANOL | PA | EPA 8015 C | ETHYLENE GLYCOL | PA |
| EPA 8015 C | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8015 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 8015 C | METHANOL | PA | EPA 8015 D - EXTENDED | FORMIC ACID | PA |
| EPA 8021 B | BENZENE | PA | EPA 8021 B | ETHYLBENZENE | PA |
| EPA 8021 B | ISOPROPYLBENZENE | PA | EPA 8021 B | M+P-XYLENE | PA |
| EPA 8021 B | NAPHTHALENE | PA | EPA 8021 B | O-XYLENE | PA |
| EPA 8021 B | TOLUENE | PA | EPA 8021 B | XYLENE (TOTAL) | PA |
| EPA 8021 B - EXTENDED | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8081 A | 4,4'-DDD | PA |
| EPA 8081 A | 4,4'-DDE | PA | EPA 8081 A | 4,4'-DDT | PA |
| EPA 8081 A | ALDRIN | PA | EPA 8081 A | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEX ANE) | PA |
| EPA 8081 A | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 A | BETA-BHC (BETA-HEXACHLOROCYCLOHEXA NE) | PA |
| EPA 8081 A | CHLORDANE (TECH.) | PA | EPA 8081 A | DELTA-BHC | PA |

VELAP Certificate No.: 2754

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**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

## NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8081 A | DIELDRIN | PA | EPA 8081 A | ENDOSULFAN I | PA |
| EPA 8081 A | ENDOSULFAN II | PA | EPA 8081 A | ENDOSULFAN SULFATE | PA |
| EPA 8081 A | ENDRIN | PA | EPA 8081 A | ENDRIN ALDEHYDE | PA |
| EPA 8081 A | ENDRIN KETONE | PA | EPA 8081 A | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 A | HEPTACHLOR | PA |
| EPA 8081 A | HEPTACHLOR EPOXIDE | PA | EPA 8081 A | METHOXYCHLOR | PA |
| EPA 8081 A | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8081 B | 4,4'-DDD | PA |
| EPA 8081 B | 4,4'-DDE | PA | EPA 8081 B | 4,4'-DDT | PA |
| EPA 8081 B | ALDRIN | PA | EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | CHLORDANE (TECH.) | PA | EPA 8081 B | DELTA-BHC | PA |
| EPA 8081 B | DIELDRIN | PA | EPA 8081 B | ENDOSULFAN I | PA |
| EPA 8081 B | ENDOSULFAN II | PA | EPA 8081 B | ENDOSULFAN SULFATE | PA |
| EPA 8081 B | ENDRIN | PA | EPA 8081 B | ENDRIN ALDEHYDE | PA |
| EPA 8081 B | ENDRIN KETONE | PA | EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 B | HEPTACHLOR | PA |
| EPA 8081 B | HEPTACHLOR EPOXIDE | PA | EPA 8081 B | METHOXYCHLOR | PA |
| EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8082 A | AROCLOR-1016 (PCB-1016) | PA |
| EPA 8082 A | AROCLOR-1221 (PCB-1221) | PA | EPA 8082 A | AROCLOR-1232 (PCB-1232) | PA |
| EPA 8082 A | AROCLOR-1242 (PCB-1242) | PA | EPA 8082 A | AROCLOR-1248 (PCB-1248) | PA |
| EPA 8082 A | AROCLOR-1254 (PCB-1254) | PA | EPA 8082 A | AROCLOR-1260 (PCB-1260) | PA |
| EPA 8082 A - EXTENDED | AROCLOR-1262 (PCB-1262) | PA | EPA 8082 A - EXTENDED | AROCLOR-1268 (PCB-1268) | PA |
| EPA 8141 A | ATRAZINE | PA | EPA 8141 A | BOLSTAR (SULPROFOS) | PA |
| EPA 8141 A | CHLORPYRIFOS | PA | EPA 8141 A | COUMAPHOS | PA |
| EPA 8141 A | DEMETON-O | PA | EPA 8141 A | DEMETON-S | PA |
| EPA 8141 A | DIAZINON | PA | EPA 8141 A | DICHLOROVOS (DDVP, DICHLORVOS) | PA |
| EPA 8141 A | DISULFOTON | PA | EPA 8141 A | ETHION | PA |
| EPA 8141 A | ETHOPROP | PA | EPA 8141 A | FAMPHUR | PA |
| EPA 8141 A | FENSULFOTHION | PA | EPA 8141 A | FENTHION | PA |

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| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8141 A | MALATHION | PA | EPA 8141 A | MERPHOS | PA |
| EPA 8141 A | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8141 A | MEVINPHOS | PA |
| EPA 8141 A | NALED | PA | EPA 8141 A | PARATHION (PARATHION - ETHYL) | PA |
| EPA 8141 A | PHORATE | PA | EPA 8141 A | RONNEL | PA |
| EPA 8141 A | SIMAZINE | PA | EPA 8141 A | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA |
| EPA 8141 A | TOKUTHION (PROTHIOPHOS) | PA | EPA 8141 A | TRICHLORONATE | PA |
| EPA 8141 B | ATRAZINE | PA | EPA 8141 B | AZINPHOS-METHYL (GUTHION) | PA |
| EPA 8141 B | BOLSTAR (SULPROFOS) | PA | EPA 8141 B | CHLORPYRIFOS | PA |
| EPA 8141 B | COUMAPHOS | PA | EPA 8141 B | DEMETON-O | PA |
| EPA 8141 B | DEMETON-S | PA | EPA 8141 B | DICHLOROVOS (DDVP, DICHLORVOS) | PA |
| EPA 8141 B | DISULFOTON | PA | EPA 8141 B | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | PA |
| EPA 8141 B | ETHION | PA | EPA 8141 B | ETHOPROP | PA |
| EPA 8141 B | FAMPHUR | PA | EPA 8141 B | FENSULFOTHION | PA |
| EPA 8141 B | FENTHION | PA | EPA 8141 B | MALATHION | PA |
| EPA 8141 B | MERPHOS | PA | EPA 8141 B | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8141 B | MEVINPHOS | PA | EPA 8141 B | NALED | PA |
| EPA 8141 B | PARATHION (PARATHION - ETHYL) | PA | EPA 8141 B | PHORATE | PA |
| EPA 8141 B | RONNEL | PA | EPA 8141 B | SIMAZINE | PA |
| EPA 8141 B | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA | EPA 8141 B | TOKUTHION (PROTHIOPHOS) | PA |
| EPA 8141 B | TRICHLORONATE | PA | EPA 8151 A | 2,4,5-T | PA |
| EPA 8151 A | 2,4-D | PA | EPA 8151 A | 2,4-DB | PA |
| EPA 8151 A | DALAPON | PA | EPA 8151 A | DICAMBA | PA |
| EPA 8151 A | DICHLOROPROP (DICHLORPROP) | PA | EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA |
| EPA 8151 A | MCPA | PA | EPA 8151 A | MCPP | PA |
| EPA 8151 A | PENTACHLOROPHENOL | PA | EPA 8151 A | PICLORAM | PA |
| EPA 8151 A | SILVEX (2,4,5-TP) | PA | EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | PA |
| EPA 8260 B | 1,1,1-TRICHLOROETHANE | PA | EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | PA |
| EPA 8260 B | 1,1,2-TRICHLOROETHANE | PA | EPA 8260 B | 1,1-DICHLOROETHANE | PA |
| EPA 8260 B | 1,1-DICHLOROETHYLENE | PA | EPA 8260 B | 1,1-DICHLOROPROPENE | PA |
| EPA 8260 B | 1,2,3-TRICHLOROBENZENE | PA | EPA 8260 B | 1,2,3-TRICHLOROPROPANE | PA |
| EPA 8260 B | 1,2,4-TRICHLOROBENZENE | PA | EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | PA |

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| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA | EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA |
| EPA 8260 B | 1,2-DICHLOROBENZENE | PA | EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA |
| EPA 8260 B | 1,2-DICHLOROPROPANE | PA | EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | PA |
| EPA 8260 B | 1,3-DICHLOROBENZENE | PA | EPA 8260 B | 1,3-DICHLOROPROPANE | PA |
| EPA 8260 B | 1,4-DICHLOROBENZENE | PA | EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA |
| EPA 8260 B | 1-BUTANOL (N-BUTANOL) | PA | EPA 8260 B | 2,2-DICHLOROPROPANE | PA |
| EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA | EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | PA |
| EPA 8260 B | 2-CHLOROTOLUENE | PA | EPA 8260 B | 2-HEXANONE | PA |
| EPA 8260 B | 2-NITROPROPANE | PA | EPA 8260 B | 4-CHLOROTOLUENE | PA |
| EPA 8260 B | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA | EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | PA |
| EPA 8260 B | ACETONE | PA | EPA 8260 B | ACETONITRILE | PA |
| EPA 8260 B | ACROLEIN (PROPENAL) | PA | EPA 8260 B | ACRYLONITRILE | PA |
| EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA | EPA 8260 B | BENZENE | PA |
| EPA 8260 B | BENZYL CHLORIDE | PA | EPA 8260 B | BROMOBENZENE | PA |
| EPA 8260 B | BROMOCHLOROMETHANE | PA | EPA 8260 B | BROMODICHLOROMETHANE | PA |
| EPA 8260 B | BROMOFORM | PA | EPA 8260 B | CARBON DISULFIDE | PA |
| EPA 8260 B | CARBON TETRACHLORIDE | PA | EPA 8260 B | CHLOROBENZENE | PA |
| EPA 8260 B | CHLORODIBROMOMETHANE | PA | EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 8260 B | CHLOROFORM | PA | EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA |
| EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | PA | EPA 8260 B | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | PA | EPA 8260 B | DICHLORODIFLUOROMETHANE (FREON-12) | PA |
| EPA 8260 B | DIETHYL ETHER | PA | EPA 8260 B | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA |
| EPA 8260 B | ETHANOL | PA | EPA 8260 B | ETHYL ACETATE | PA |
| EPA 8260 B | ETHYL METHACRYLATE | PA | EPA 8260 B | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA |
| EPA 8260 B | ETHYLBENZENE | PA | EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA |
| EPA 8260 B | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 B | ISOPROPYLBENZENE | PA |
| EPA 8260 B | M+P-XYLENE | PA | EPA 8260 B | METHACRYLONITRILE | PA |
| EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | PA | EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | PA |
| EPA 8260 B | METHYL METHACRYLATE | PA | EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | PA |

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| | | | EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA |
| EPA 8260 B | N-BUTYLBENZENE | PA | EPA 8260 B | N-PROPYLAMINE | PA |
| EPA 8260 B | N-PROPYLBENZENE | PA | EPA 8260 B | NAPHTHALENE | PA |
| EPA 8260 B | O-XYLENE | PA | EPA 8260 B | PENTACHLOROETHANE | PA |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | PA | EPA 8260 B | SEC-BUTYLBENZENE | PA |
| EPA 8260 B | STYRENE | PA | EPA 8260 B | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 B | TERT-BUTYLBENZENE | PA | EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 8260 B | TOLUENE | PA | EPA 8260 B | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | PA | EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | PA |
| EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 8260 B | VINYL ACETATE | PA | EPA 8260 B | VINYL CHLORIDE | PA |
| EPA 8260 B | XYLENE (TOTAL) | PA | EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA |
| EPA 8260 B - EXTENDED | 1,3,5-TRICHLOROBENZENE | PA | EPA 8260 B - EXTENDED | CYCLOHEXANE | PA |
| EPA 8260 B - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA | EPA 8260 B - EXTENDED | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA |
| EPA 8260 B - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8260 B - EXTENDED | METHYL ACETATE | PA |
| EPA 8260 B - EXTENDED | METHYLCYCLOHEXANE | PA | EPA 8260 B - EXTENDED | N-HEXANE | PA |
| EPA 8260 B - EXTENDED | T-AMYL ALCOHOL (TAA) | PA | EPA 8260 B - EXTENDED | T-AMYLMETHYLETHER (TAME) | PA |
| EPA 8260 B - EXTENDED | TETRAHYDROFURAN (THF) | PA | EPA 8260 C | 1,1,1,2-TETRACHLOROETHANE | PA |
| EPA 8260 C | 1,1,1-TRICHLOROETHANE | PA | EPA 8260 C | 1,1,2,2-TETRACHLOROETHANE | PA |
| EPA 8260 C | 1,1,2-TRICHLOROETHANE | PA | EPA 8260 C | 1,1-DICHLOROETHANE | PA |
| EPA 8260 C | 1,1-DICHLOROETHYLENE | PA | EPA 8260 C | 1,1-DICHLOROPROPENE | PA |
| EPA 8260 C | 1,2,3-TRICHLOROBENZENE | PA | EPA 8260 C | 1,2,3-TRICHLOROPROPANE | PA |
| EPA 8260 C | 1,2,4-TRICHLOROBENZENE | PA | EPA 8260 C | 1,2,4-TRIMETHYLBENZENE | PA |
| EPA 8260 C | 1,2-DIBROMO-3-CHLOROPROPAN E (DBCP) | PA | EPA 8260 C | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA |
| EPA 8260 C | 1,2-DICHLOROBENZENE | PA | EPA 8260 C | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA |
| EPA 8260 C | 1,2-DICHLOROPROPANE | PA | EPA 8260 C | 1,3,5-TRIMETHYLBENZENE | PA |
| EPA 8260 C | 1,3-DICHLOROBENZENE | PA | EPA 8260 C | 1,3-DICHLOROPROPANE | PA |
| EPA 8260 C | 1,4-DICHLOROBENZENE | PA | EPA 8260 C | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA |
| EPA 8260 C | 1-BUTANOL (N-BUTANOL) | PA | EPA 8260 C | 2,2-DICHLOROPROPANE | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
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LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 C | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA | EPA 8260 C | 2-CHLOROETHYL VINYL ETHER | PA |
| EPA 8260 C | 2-CHLOROTOLUENE | PA | EPA 8260 C | 2-HEXANONE | PA |
| EPA 8260 C | 2-NITROPROPANE | PA | EPA 8260 C | 4-CHLOROTOLUENE | PA |
| EPA 8260 C | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA | EPA 8260 C | 4-METHYL-2-PENTANONE (MIBK) | PA |
| EPA 8260 C | ACETONE | PA | EPA 8260 C | ACETONITRILE | PA |
| EPA 8260 C | ACROLEIN (PROPENAL) | PA | EPA 8260 C | ACRYLONITRILE | PA |
| EPA 8260 C | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA | EPA 8260 C | BENZENE | PA |
| EPA 8260 C | BENZYL CHLORIDE | PA | EPA 8260 C | BROMOBENZENE | PA |
| EPA 8260 C | BROMOCHLOROMETHANE | PA | EPA 8260 C | BROMODICHLOROMETHANE | PA |
| EPA 8260 C | BROMOFORM | PA | EPA 8260 C | CARBON DISULFIDE | PA |
| EPA 8260 C | CARBON TETRACHLORIDE | PA | EPA 8260 C | CHLOROBENZENE | PA |
| EPA 8260 C | CHLORODIBROMOMETHANE | PA | EPA 8260 C | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 8260 C | CHLOROFORM | PA | EPA 8260 C | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA |
| EPA 8260 C | CIS-1,2-DICHLOROETHYLENE | PA | EPA 8260 C | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 C | CYCLOHEXANE | PA | EPA 8260 C | DIBROMOMETHANE (METHYLENE BROMIDE) | PA |
| EPA 8260 C | DICHLORODIFLUOROMETHANE (FREON-12) | PA | EPA 8260 C | DIETHYL ETHER | PA |
| EPA 8260 C | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA | EPA 8260 C | ETHANOL | PA |
| EPA 8260 C | ETHYL ACETATE | PA | EPA 8260 C | ETHYL METHACRYLATE | PA |
| EPA 8260 C | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA | EPA 8260 C | ETHYLBENZENE | PA |
| EPA 8260 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8260 C | HEXACHLOROETHANE | PA |
| EPA 8260 C | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 C | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 C | ISOPROPYLBENZENE | PA |
| EPA 8260 C | METHACRYLONITRILE | PA | EPA 8260 C | METHYL BROMIDE (BROMOMETHANE) | PA |
| EPA 8260 C | METHYL CHLORIDE (CHLOROMETHANE) | PA | EPA 8260 C | METHYL METHACRYLATE | PA |
| EPA 8260 C | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8260 C | METHYLCYCLOHEXANE | PA |
| EPA 8260 C | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA | EPA 8260 C | N-BUTYLBENZENE | PA |
| EPA 8260 C | N-PROPYLBENZENE | PA | EPA 8260 C | NAPHTHALENE | PA |
| EPA 8260 C | PENTACHLOROETHANE | PA | EPA 8260 C | PROPIONITRILE (ETHYL CYANIDE) | PA |
| EPA 8260 C | SEC-BUTYLBENZENE | PA | EPA 8260 C | STYRENE | PA |

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## NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 C | T-AMYLMETHYLETHER (TAME) | PA | EPA 8260 C | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 C | TERT-BUTYLBENZENE | PA | EPA 8260 C | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 8260 C | TOLUENE | PA | EPA 8260 C | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 8260 C | TRANS-1,3-DICHLOROPROPENE | PA | EPA 8260 C | TRANS-1,4-DICHLORO-2-BUTENE | PA |
| EPA 8260 C | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 8260 C | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 8260 C | VINYL ACETATE | PA | EPA 8260 C | VINYL CHLORIDE | PA |
| EPA 8260 C | XYLENE (TOTAL) | PA | EPA 8260 C - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA |
| EPA 8260 C - EXTENDED | CYCLOHEXANONE | PA | EPA 8260 C - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA |
| EPA 8260 C - EXTENDED | DIMETHYL ETHER | PA | EPA 8260 C - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA |
| EPA 8260 C - EXTENDED | METHYL ACETATE | PA | EPA 8260 C - EXTENDED | N-HEPTANE | PA |
| EPA 8260 C - EXTENDED | T-AMYL ALCOHOL (TAA) | PA | EPA 8260 C - EXTENDED | TETRAHYDROFURAN (THF) | PA |
| EPA 8270 C | 1,2,4,5-TETRACHLOROBENZENE | PA | EPA 8270 C | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8270 C | 1,2-DICHLOROBENZENE | PA | EPA 8270 C | 1,2-DIPHENYLHYDRAZINE | PA |
| EPA 8270 C | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8270 C | 1,3-DICHLOROBENZENE | PA |
| EPA 8270 C | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8270 C | 1,4-DICHLOROBENZENE | PA |
| EPA 8270 C | 1,4-DINITROBENZENE | PA | EPA 8270 C | 1,4-NAPHTHOQUINONE | PA |
| EPA 8270 C | 1,4-PHENYLENEDIAMINE | PA | EPA 8270 C | 1-CHLORONAPHTHALENE | PA |
| EPA 8270 C | 1-NAPHTHYLAMINE | PA | EPA 8270 C | 2,3,4,6-TETRACHLOROPHENOL | PA |
| EPA 8270 C | 2,4,5-TRICHLOROPHENOL | PA | EPA 8270 C | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 8270 C | 2,4-DICHLOROPHENOL | PA | EPA 8270 C | 2,4-DIMETHYLPHENOL | PA |
| EPA 8270 C | 2,4-DINITROPHENOL | PA | EPA 8270 C | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8270 C | 2,6-DICHLOROPHENOL | PA | EPA 8270 C | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8270 C | 2-ACETYLAMINOFLUORENE | PA | EPA 8270 C | 2-CHLORONAPHTHALENE | PA |
| EPA 8270 C | 2-CHLOROPHENOL | PA | EPA 8270 C | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 8270 C | 2-METHYLNAPHTHALENE | PA | EPA 8270 C | 2-METHYLPHENOL (O-CRESOL) | PA |
| EPA 8270 C | 2-NAPHTHYLAMINE | PA | EPA 8270 C | 2-NITROANILINE | PA |
| EPA 8270 C | 2-NITROPHENOL | PA | EPA 8270 C | 2-PICOLINE (2-METHYLPYRIDINE) | PA |
| EPA 8270 C | 3,3'-DICHLOROBENZIDINE | PA | EPA 8270 C | 3,3'-DIMETHYLBENZIDINE | PA |
| EPA 8270 C | 3-METHYLCHOLANTHRENE | PA | EPA 8270 C | 3-METHYLPHENOL (M-CRESOL) | PA |
| EPA 8270 C | 3-NITROANILINE | PA | EPA 8270 C | 4,4'-METHYLENEBIS(2-CHLOROAN ILINE) | PA |
| EPA 8270 C | 4-AMINOBIPHENYL | PA | EPA 8270 C | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 8270 C | 4-CHLORO-3-METHYLPHENOL | PA | EPA 8270 C | 4-CHLOROANILINE | PA |

## Scope of Accreditation

VELAP Certificate No.: 2754

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Effective Date: January 30, 2014
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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 C | 4-CHLOROPHENYL PHENYLETHER | PA | EPA 8270 C | 4-DIMETHYL AMINOAZOBENZENE | PA |
| EPA 8270 C | 4-METHYLPHENOL (P-CRESOL) | PA | EPA 8270 C | 4-NITROANILINE | PA |
| EPA 8270 C | 4-NITROPHENOL | PA | EPA 8270 C | 5-NITRO-O-TOLUIDINE | PA |
| EPA 8270 C | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA | EPA 8270 C | A-A-DIMETHYLPHENETHYLAMINE | PA |
| EPA 8270 C | ACENAPHTHENE | PA | EPA 8270 C | ACENAPHTHYLENE | PA |
| EPA 8270 C | ACETOPHENONE | PA | EPA 8270 C | ANILINE | PA |
| EPA 8270 C | ANTHRACENE | PA | EPA 8270 C | ARAMITE | PA |
| EPA 8270 C | BENZIDINE | PA | EPA 8270 C | BENZO(A)ANTHRACENE | PA |
| EPA 8270 C | BENZO(A)PYRENE | PA | EPA 8270 C | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 C | BENZO(K)FLUORANTHENE | PA | EPA 8270 C | BENZOIC ACID | PA |
| EPA 8270 C | BENZO[B]FLUORANTHENE | PA | EPA 8270 C | BENZYL ALCOHOL | PA |
| EPA 8270 C | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 8270 C | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 8270 C | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 8270 C | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 8270 C | BUTYL BENZYL PHTHALATE | PA | EPA 8270 C | CHLOROBENZILATE | PA |
| EPA 8270 C | CHRYSENE | PA | EPA 8270 C | DI-N-BUTYL PHTHALATE | PA |
| EPA 8270 C | DI-N-OCTYL PHTHALATE | PA | EPA 8270 C | DIALLATE | PA |
| EPA 8270 C | DIBENZ(A, J) ACRIDINE | PA | EPA 8270 C | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 C | DIBENZOFURAN | PA | EPA 8270 C | DIETHYL PHTHALATE | PA |
| EPA 8270 C | DIMETHOATE | PA | EPA 8270 C | DIMETHYL PHTHALATE | PA |
| EPA 8270 C | DIPHENYLAMINE | PA | EPA 8270 C | DISULFOTON | PA |
| EPA 8270 C | ETHYL METHANESULFONATE | PA | EPA 8270 C | FAMPHUR | PA |
| EPA 8270 C | FLUORANTHENE | PA | EPA 8270 C | FLUORENE | PA |
| EPA 8270 C | HEXACHLOROBENZENE | PA | EPA 8270 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA |
| EPA 8270 C | HEXACHLOROCYCLOPENTADIEN E | PA | EPA 8270 C | HEXACHLOROETHANE | PA |
| EPA 8270 C | HEXACHLOROPROPENE | PA | EPA 8270 C | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 C | ISODRIN | PA | EPA 8270 C | ISOPHORONE | PA |
| EPA 8270 C | ISOSAFROLE | PA | EPA 8270 C | KEPONE | PA |
| EPA 8270 C | METHAPYRILENE | PA | EPA 8270 C | METHYL METHANESULFONATE | PA |
| EPA 8270 C | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8270 C | N-NITROSO-DI-N-BUTYLAMINE | PA |
| EPA 8270 C | N-NITROSODI-N-PROPYLAMINE | PA | EPA 8270 C | N-NITROSODIETHYLAMINE | PA |
| EPA 8270 C | N-NITROSODIMETHYLAMINE | PA | EPA 8270 C | N-NITROSODIPHENYLAMINE | PA |
| EPA 8270 C | N-NITROSOMETHYLETHYLAMINE | PA | EPA 8270 C | N-NITROSOMORPHOLINE | PA |
| EPA 8270 C | N-NITROSOPIPERIDINE | PA | EPA 8270 C | N-NITROSOPYRROLIDINE | PA |
| EPA 8270 C | NAPHTHALENE | PA | EPA 8270 C | NITROBENZENE | PA |
| EPA 8270 C | NITROQUINOLINE-1-OXIDE | PA | EPA 8270 C | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA |

## Scope of Accreditation

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| | | | EPA 8270 C | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 C | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 C | PENTACHLOROBENZENE | PA |
| EPA 8270 C | PENTACHLORONITROBENZENE | PA | EPA 8270 C | PENTACHLOROPHENOL | PA |
| EPA 8270 C | PHENACETIN | PA | EPA 8270 C | PHENANTHRENE | PA |
| EPA 8270 C | PHENOL | PA | EPA 8270 C | PHORATE | PA |
| EPA 8270 C | PHTHALIC ANHYDRIDE | PA | EPA 8270 C | PRONAMIDE (KERB) | PA |
| EPA 8270 C | PYRENE | PA | EPA 8270 C | PYRIDINE | PA |
| EPA 8270 C | SAFROLE | PA | EPA 8270 C | THIONAZIN (ZINOPHOS) | PA |
| EPA 8270 C | THIOPHENOL (BENZENETHIOL) | PA | EPA 8270 C | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA |
| EPA 8270 C SIM | 2-METHYLNAPHTHALENE | PA | EPA 8270 C SIM | ACENAPHTHENE | PA |
| EPA 8270 C SIM | ACENAPHTHYLENE | PA | EPA 8270 C SIM | ANTHRACENE | PA |
| EPA 8270 C SIM | BENZO(A)ANTHRACENE | PA | EPA 8270 C SIM | BENZO(A)PYRENE | PA |
| EPA 8270 C SIM | BENZO(G,H,I)PERYLENE | PA | EPA 8270 C SIM | BENZO(K)FLUORANTHENE | PA |
| EPA 8270 C SIM | BENZO[B]FLUORANTHENE | PA | EPA 8270 C SIM | CHRYSENE | PA |
| EPA 8270 C SIM | DIBENZO(A,H) ANTHRACENE | PA | EPA 8270 C SIM | FLUORANTHENE | PA |
| EPA 8270 C SIM | FLUORENE | PA | EPA 8270 C SIM | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 C SIM | NAPHTHALENE | PA | EPA 8270 C SIM | PHENANTHRENE | PA |
| EPA 8270 C SIM | PYRENE | PA | EPA 8270 C SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | PA | EPA 8270 D | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8270 D | 1,2-DICHLOROBENZENE | PA | EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | PA |
| EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8270 D | 1,3-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8270 D | 1,4-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,4-DINITROBENZENE | PA | EPA 8270 D | 1,4-NAPHTHOQUINONE | PA |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | PA | EPA 8270 D | 1-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 1-NAPHTHYLAMINE | PA | EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | PA |
| EPA 8270 D | 2,4,5-TRICHLOROPHENOL | PA | EPA 8270 D | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 8270 D | 2,4-DICHLOROPHENOL | PA | EPA 8270 D | 2,4-DIMETHYLPHENOL | PA |
| EPA 8270 D | 2,4-DINITROPHENOL | PA | EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8270 D | 2,6-DICHLOROPHENOL | PA | EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8270 D | 2-ACETYLAMINOFLUORENE | PA | EPA 8270 D | 2-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 2-CHLOROPHENOL | PA | EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 8270 D | 2-METHYLNAPHTHALENE | PA | EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | PA |
| EPA 8270 D | 2-NAPHTHYLAMINE | PA | EPA 8270 D | 2-NITROANILINE | PA |
| EPA 8270 D | 2-NITROPHENOL | PA | EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | PA |
| EPA 8270 D | 3,3'-DICHLOROBENZIDINE | PA | EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | PA |
| EPA 8270 D | 3-METHYLCHOLANTHRENE | PA | EPA 8270 D | 3-METHYLPHENOL (M-CRESOL) | PA |

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## NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | 3-NITROANILINE | PA | EPA 8270 D | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | PA |
| EPA 8270 D | 4-AMINOBIPHENYL | PA | EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | PA | EPA 8270 D | 4-CHLOROANILINE | PA |
| EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | PA | EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | PA |
| EPA 8270 D | 4-METHYLPHENOL (P-CRESOL) | PA | EPA 8270 D | 4-NITROANILINE | PA |
| EPA 8270 D | 4-NITROPHENOL | PA | EPA 8270 D | 5-NITRO-O-TOLUIDINE | PA |
| EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA | EPA 8270 D | A-A-DIMETHYLPHENETHYLAMINE | PA |
| EPA 8270 D | ACENAPHTHENE | PA | EPA 8270 D | ACENAPHTHYLENE | PA |
| EPA 8270 D | ACETOPHENONE | PA | EPA 8270 D | ANILINE | PA |
| EPA 8270 D | ANTHRACENE | PA | EPA 8270 D | ARAMITE | PA |
| EPA 8270 D | BENZIDINE | PA | EPA 8270 D | BENZO(A)ANTHRACENE | PA |
| EPA 8270 D | BENZO(A)PYRENE | PA | EPA 8270 D | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 D | BENZO(K)FLUORANTHENE | PA | EPA 8270 D | BENZOIC ACID | PA |
| EPA 8270 D | BENZO[B]FLUORANTHENE | PA | EPA 8270 D | BENZYL ALCOHOL | PA |
| EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 8270 D | BUTYL BENZYL PHTHALATE | PA | EPA 8270 D | CHLOROBENZILATE | PA |
| EPA 8270 D | CHRYSENE | PA | EPA 8270 D | DI-N-BUTYL PHTHALATE | PA |
| EPA 8270 D | DI-N-OCTYL PHTHALATE | PA | EPA 8270 D | DIALLATE | PA |
| EPA 8270 D | DIBENZ(A, J) ACRIDINE | PA | EPA 8270 D | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 D | DIBENZOFURAN | PA | EPA 8270 D | DIETHYL PHTHALATE | PA |
| EPA 8270 D | DIMETHOATE | PA | EPA 8270 D | DIMETHYL PHTHALATE | PA |
| EPA 8270 D | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8270 D | DIPHENYLAMINE | PA |
| EPA 8270 D | DISULFOTON | PA | EPA 8270 D | ETHYL METHANESULFONATE | PA |
| EPA 8270 D | FAMPHUR | PA | EPA 8270 D | FLUORANTHENE | PA |
| EPA 8270 D | FLUORENE | PA | EPA 8270 D | HEXACHLOROBENZENE | PA |
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 8270 D | HEXACHLOROETHANE | PA | EPA 8270 D | HEXACHLOROPROPENE | PA |
| EPA 8270 D | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 D | ISODRIN | PA |
| EPA 8270 D | ISOPHORONE | PA | EPA 8270 D | ISOSAFROLE | PA |
| EPA 8270 D | KEPONE | PA | EPA 8270 D | METHAPYRILENE | PA |
| EPA 8270 D | METHYL METHANESULFONATE | PA | EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | PA | EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | PA |

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|---|---|---|---|---|---|
| EPA 8270 D | N-NITROSODIETHYLAMINE | PA | EPA 8270 D | N-NITROSODIMETHYLAMINE | PA |
| EPA 8270 D | N-NITROSODIPHENYLAMINE | PA | EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | PA |
| EPA 8270 D | N-NITROSOMORPHOLINE | PA | EPA 8270 D | N-NITROSOPIPERIDINE | PA |
| EPA 8270 D | N-NITROSOPYRROLIDINE | PA | EPA 8270 D | NAPHTHALENE | PA |
| EPA 8270 D | NITROBENZENE | PA | EPA 8270 D | NITROQUINOLINE-1-OXIDE | PA |
| EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA | EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 D | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 D | PENTACHLOROBENZENE | PA |
| EPA 8270 D | PENTACHLORONITROBENZENE | PA | EPA 8270 D | PENTACHLOROPHENOL | PA |
| EPA 8270 D | PHENACETIN | PA | EPA 8270 D | PHENANTHRENE | PA |
| EPA 8270 D | PHENOL | PA | EPA 8270 D | PHORATE | PA |
| EPA 8270 D | PHTHALIC ANHYDRIDE | PA | EPA 8270 D | PRONAMIDE (KERB) | PA |
| EPA 8270 D | PYRENE | PA | EPA 8270 D | SAFROLE | PA |
| EPA 8270 D | THIONAZIN (ZINOPHOS) | PA | EPA 8270 D | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA |
| EPA 8270 D - EXTENDED | 1,1-BIPHENYL | PA | EPA 8270 D - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D - EXTENDED | ATRAZINE | PA | EPA 8270 D - EXTENDED | BENZALDEHYDE | PA |
| EPA 8270 D - EXTENDED | CAPROLACTAM | PA | EPA 8270 D - EXTENDED | CARBAZOLE | PA |
| EPA 8270 D - EXTENDED | PYRIDINE | PA | EPA 8270 D SIM | 2-METHYLNAPHTHALENE | PA |
| EPA 8270 D SIM | ACENAPHTHENE | PA | EPA 8270 D SIM | ACENAPHTHYLENE | PA |
| EPA 8270 D SIM | ANTHRACENE | PA | EPA 8270 D SIM | BENZO(A)ANTHRACENE | PA |
| EPA 8270 D SIM | BENZO(A)PYRENE | PA | EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 D SIM | BENZO(K)FLUORANTHENE | PA | EPA 8270 D SIM | BENZO[B]FLUORANTHENE | PA |
| EPA 8270 D SIM | CHRYSENE | PA | EPA 8270 D SIM | FLUORANTHENE | PA |
| EPA 8270 D SIM | FLUORENE | PA | EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 D SIM | NAPHTHALENE | PA | EPA 8270 D SIM | PHENANTHRENE | PA |
| EPA 8270 D SIM | PYRENE | PA | EPA 8270 D SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D SIM - EXTENDED | DIBENZO(A, H) PYRENE | PA | EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | PA |
| EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | PA | EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | PA |
| EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | PA | EPA 8290 A | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | PA |
| EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | PA | EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | PA |
| EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | PA | EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | PA |
| EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | PA | EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | PA |

## Commonwealth of Virginia

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### NON-POTABLE WATER

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|---|---|---|---|---|---|
| EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZO -P-DIOXIN (1,2,3,7,8-PECDD) | PA | EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZO FURAN (1,2,3,7,8-PECDF) | PA |
| EPA 8290 A | 2,3,4,6,7,8-HEXACHLORODIBENZO FURAN | PA | EPA 8290 A | 2,3,4,7,8-PENTACHLORODIBENZO FURAN | PA |
| EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | PA | EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZOF URAN | PA |
| EPA 8315 A | ACETALDEHYDE | PA | EPA 8315 A | ACROLEIN (PROPENAL) | PA |
| EPA 8315 A | BENZALDEHYDE | PA | EPA 8315 A | BUTYLALDEHYDE (BUTANAL) | PA |
| EPA 8315 A | CROTONALDEHYDE | PA | EPA 8315 A | FORMALDEHYDE | PA |
| EPA 8315 A | HEXANALDEHYDE (HEXANAL) | PA | EPA 8315 A | ISOVALERALDEHYDE | PA |
| EPA 8315 A | M-TOLUALDEHYDE (1,3-TOLUALDEHYDE) | PA | EPA 8315 A | O-TOLUALDEHYDE (1,2-TOLUALDEHYDE) | PA |
| EPA 8315 A | P-TOLUALDEHYDE (1,4-TOLUALDEHYDE) | PA | EPA 8315 A | PENTANAL (VALERALDEHYDE) | PA |
| EPA 8315 A | PROPIONALDEHYDE (PROPANAL) | PA | EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA |
| EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | PA |
| EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | PA | EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | PA | EPA 8330 A | 2-NITROTOLUENE | PA |
| EPA 8330 A | 3-NITROTOLUENE | PA | EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | PA |
| EPA 8330 A | 4-NITROTOLUENE | PA | EPA 8330 A | METHYL-2,4,6-TRINITROPHENYLN ITRAMINE (TETRYL) | PA |
| EPA 8330 A | NITROBENZENE | PA | EPA 8330 A | NITROGLYCERIN | PA |
| EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO -1,3,5,7-TETRAZOCINE (HMX) | PA | EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3, 5-TRIAZINE) | PA |
| EPA 9012 A | TOTAL CYANIDE | PA | EPA 9012 B | TOTAL CYANIDE | PA |
| EPA 9040 C | PH | PA | EPA 9050 A | CONDUCTIVITY | PA |
| EPA 9056 A | BROMIDE | PA | EPA 9056 A | CHLORIDE | PA |
| EPA 9056 A | FLUORIDE | PA | EPA 9056 A | NITRATE AS N | PA |
| EPA 9056 A | NITRITE | PA | EPA 9056 A | ORTHOPHOSPHATE AS P | PA |
| EPA 9056 A | SULFATE | PA | EPA 9066 | TOTAL PHENOLICS | PA |
| EPA 9095 B | FREE LIQUID | PA | RSK-175 | ETHANE | PA |
| RSK-175 | ETHENE | PA | RSK-175 | METHANE | PA |
| SM 2120 B-2001 | COLOR | PA | SM 2310 B-1997 | ACIDITY, AS CACO3 | PA |
| SM 2320 B-1997 | ALKALINITY AS CACO3 | PA | SM 2340 B-1997 | TOTAL HARDNESS AS CACO3 | PA |
| SM 2340 C-1997 | TOTAL HARDNESS AS CACO3 | PA | SM 2510 B-1997 | CONDUCTIVITY | PA |
| SM 2540 B-1997 | RESIDUE-TOTAL | PA | SM 2540 C-1997 | RESIDUE-FILTERABLE (TDS) | PA |
| SM 2540 D-1997 | RESIDUE-NONFILTERABLE (TSS) | PA | SM 2540 F-1997 | RESIDUE-SETTLEABLE | PA |
| SM 3500-CR B-2009 | CHROMIUM VI | PA | SM 4500-$CN^-$ C-1999 | CYANIDE | PA |
| SM 4500-$CN^-$ E-1999 | CYANIDE | PA | SM 4500-$F^-$ B-1997 | FLUORIDE | PA |

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|---|---|---|---|---|---|
| SM 4500-F⁻ C-1997 | FLUORIDE | PA | SM 4500-NH3 B-1997 | AMMONIA AS N | PA |
| SM 4500-NH3 D-1997 | AMMONIA AS N | PA | SM 4500-P E-1999 | ORTHOPHOSPHATE AS P | PA |
| SM 4500-P F-1999 | PHOSPHORUS, TOTAL | PA | SM 4500-S2⁻ D-2000 | SULFIDE | PA |
| SM 4500-SIO2 C-1997 | SILICA AS SIO2 | PA | SM 5210 B-2001 | BIOCHEMICAL OXYGEN DEMAND | PA |
| SM 5210 B-2001 | CARBONACEOUS BOD, CBOD | PA | SM 5310 C-2000 | TOTAL ORGANIC CARBON | PA |
| SM 5540 C-2000 | SURFACTANTS - MBAS | PA | SM 9222 D-1997 | FECAL COLIFORMS | PA |

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1010 A | FLASHPOINT | PA | EPA 1311 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | PA |
| EPA 1312 | PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE | PA | EPA 1668 A | 2,2',3,3',4,4',5,5',6-NONACHLOROBIPHENYL (BZ-206) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,5'-OCTACHLOROBIPHENYL (BZ-194) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6'-OCTACHLOROBIPHENYL (BZ-196) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,6,6'-NONACHLOROBIPHENYL (BZ-207) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6-OCTACHLOROBIPHENYL BZ-195) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL (BZ-170) | PA | EPA 1668 A | 2,2',3,3',4,4',6,6'-OCTACHLOROBIPHENYL (BZ-197) | PA |
| EPA 1668 A | 2,2',3,3',4,4',6-HEPTACHLOROBIPHENYL (BZ-171) | PA | EPA 1668 A | 2,2',3,3',4,4'-HEXACHLOROBIPHENYL (BZ-128) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6'-HEPTACHLOROBIPHENYL (BZ-177) | PA | EPA 1668 A | 2,2',3,3',4,5',6,6'-OCTACHLOROBIPHENYL (BZ-201) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6-HEPTACHLOROBIPHENYL (BZ-175) | PA | EPA 1668 A | 2,2',3,3',4,5'-HEXACHLOROBIPHENYL (BZ-130) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6'-OCTACHLOROBIPHENYL (BZ-199) | PA | EPA 1668 A | 2,2',3,3',4,5,5',6,6'-NONACHLOROBIPHENYL (BZ-208) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6-OCTACHLOROBIPHENYL (BZ-198) | PA | EPA 1668 A | 2,2',3,3',4,5,5'-HEPTACHLOROBIPHENYL (BZ-172) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6'-HEPTACHLOROBIPHENYL (BZ-174) | PA | EPA 1668 A | 2,2',3,3',4,5,6,6'-OCTACHLOROBIPHENYL (BZ-200) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6-HEPTACHLOROBIPHENYL (BZ-173) | PA | EPA 1668 A | 2,2',3,3',4,5-HEXACHLOROBIPHENYL (BZ-129) | PA |
| EPA 1668 A | 2,2',3,3',4,6'-HEXACHLOROBIPHENYL (BZ-132) | PA | EPA 1668 A | 2,2',3,3',4,6,6'-HEPTACHLOROBIPHENYL (BZ-176) | PA |
| EPA 1668 A | 2,2',3,3',4,6-HEXACHLOROBIPHENYL (BZ-131) | PA | EPA 1668 A | 2,2',3,3',4-PENTACHLOROBIPHENYL (BZ-82) | PA |
| EPA 1668 A | 2,2',3,3',5,5',6,6'-OCTACHLOROBIPHENYL (BZ-202) | PA | EPA 1668 A | 2,2',3,3',5,5',6-HEPTACHLOROBIPHENYL (BZ-178) | PA |
| EPA 1668 A | 2,2',3,3',5,5'-HEXACHLOROBIPHENYL (BZ-133) | PA | EPA 1668 A | 2,2',3,3',5,6'-HEXACHLOROBIPHENYL (BZ-135) | PA |
| EPA 1668 A | 2,2',3,3',5,6,6'-HEPTACHLOROBIPHENYL (BZ-179) | PA | EPA 1668 A | 2,2',3,3',5,6-HEXACHLOROBIPHENYL (BZ-134) | PA |
| EPA 1668 A | 2,2',3,3',5-PENTACHLOROBIPHENYL (BZ-83) | PA | EPA 1668 A | 2,2',3,3',6,6'-HEXACHLOROBIPHENYL (BZ-136) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,2',3,3',6-PENTACHLOROBIPHENYL (BZ-84) | PA | EPA 1668 A | 2,2',3,3'-TETRACHLOROBIPHENYL (BZ-40) | PA |
| EPA 1668 A | 2,2',3,4',5',6-HEXACHLOROBIPHENYL (BZ-149) | PA | EPA 1668 A | 2,2',3,4',5'-PENTACHLOROBIPHENYL (BZ-97) | PA |
| EPA 1668 A | 2,2',3,4',5,5',6-HEPTACHLOROBIPHENYL (BZ-187) | PA | EPA 1668 A | 2,2',3,4',5,5'-HEXACHLOROBIPHENYL (BZ-146) | PA |
| EPA 1668 A | 2,2',3,4',5,6'-HEXACHLOROBIPHENYL (BZ-148) | PA | EPA 1668 A | 2,2',3,4',5,6,6'-HEPTACHLOROBIPHENYL (BZ-188) | PA |
| EPA 1668 A | 2,2',3,4',5,6-HEXACHLOROBIPHENYL (BZ-147) | PA | EPA 1668 A | 2,2',3,4',5-PENTACHLOROBIPHENYL (BZ-90) | PA |
| EPA 1668 A | 2,2',3,4',6'-PENTACHLOROBIPHENYL (BZ-98) | PA | EPA 1668 A | 2,2',3,4',6,6'-HEXACHLOROBIPHENYL (BZ-150) | PA |
| EPA 1668 A | 2,2',3,4',6-PENTACHLOROBIPHENYL (BZ-91) | PA | EPA 1668 A | 2,2',3,4'-TETRACHLOROBIPHENYL (BZ-42) | PA |
| EPA 1668 A | 2,2',3,4,4',5',6-HEPTACHLOROBIPHENYL (BZ-183) | PA | EPA 1668 A | 2,2',3,4,4',5'-HEXACHLOROBIPHENYL (BZ-138) | PA |
| EPA 1668 A | 2,2',3,4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-203) | PA | EPA 1668 A | 2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-180) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6'-HEPTACHLOROBIPHENYL (BZ-182) | PA | EPA 1668 A | 2,2',3,4,4',5,6,6'-OCTACHLOROBIPHENYL (BZ-204) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6-HEPTACHLOROBIPHENYL (BZ-181) | PA | EPA 1668 A | 2,2',3,4,4',5-HEXACHLOROBIPHENYL (BZ-137) | PA |
| EPA 1668 A | 2,2',3,4,4',6'-HEXACHLOROBIPHENYL (BZ-140) | PA | EPA 1668 A | 2,2',3,4,4',6,6'-HEPTACHLOROBIPHENYL (BZ-184) | PA |
| EPA 1668 A | 2,2',3,4,4',6-HEXACHLOROBIPHENYL (BZ-139) | PA | EPA 1668 A | 2,2',3,4,4'-PENTACHLOROBIPHENYL (BZ-85) | PA |
| EPA 1668 A | 2,2',3,4,5',6-HEXACHLOROBIPHENYL (BZ-144) | PA | EPA 1668 A | 2,2',3,4,5'-PENTACHLOROBIPHENYL (BZ-87) | PA |
| EPA 1668 A | 2,2',3,4,5,5',6-HEPTACHLOROBIPHENYL (BZ-185) | PA | EPA 1668 A | 2,2',3,4,5,5'-HEXACHLOROBIPHENYL (BZ-141) | PA |
| EPA 1668 A | 2,2',3,4,5,6'-HEXACHLOROBIPHENYL (BZ-143) | PA | EPA 1668 A | 2,2',3,4,5,6,6'-HEPTACHLOROBIPHENYL (BZ-186) | PA |
| EPA 1668 A | 2,2',3,4,5,6-HEXACHLOROBIPHENYL (BZ-142) | PA | EPA 1668 A | 2,2',3,4,5-PENTACHLOROBIPHENYL (BZ-86) | PA |
| EPA 1668 A | 2,2',3,4,6'-PENTACHLOROBIPHENYL (BZ-89) | PA | EPA 1668 A | 2,2',3,4,6,6'-HEXACHLOROBIPHENYL (BZ-145) | PA |
| EPA 1668 A | 2,2',3,4,6-PENTACHLOROBIPHENYL (BZ-88) | PA | EPA 1668 A | 2,2',3,4-TETRACHLOROBIPHENYL (BZ-41) | PA |
| EPA 1668 A | 2,2',3,5',6-PENTACHLOROBIPHENYL (BZ-95) | PA | EPA 1668 A | 2,2',3,5'-TETRACHLOROBIPHENYL (BZ-44) | PA |
| EPA 1668 A | 2,2',3,5,5',6-HEXACHLOROBIPHENYL (BZ-151) | PA | EPA 1668 A | 2,2',3,5,5'-PENTACHLOROBIPHENYL (BZ-92) | PA |
| EPA 1668 A | 2,2',3,5,6'-PENTACHLOROBIPHENYL (BZ-94) | PA | EPA 1668 A | 2,2',3,5,6,6'-HEXACHLOROBIPHENYL (BZ-152) | PA |
| EPA 1668 A | 2,2',3,5,6-PENTACHLOROBIPHENYL (BZ-93) | PA | EPA 1668 A | 2,2',3,5-TETRACHLOROBIPHENYL (BZ-43) | PA |
| EPA 1668 A | 2,2',3,6'-TETRACHLOROBIPHENYL (BZ-46) | PA | EPA 1668 A | 2,2',3,6,6'-PENTACHLOROBIPHENYL (BZ-96) | PA |
| EPA 1668 A | 2,2',3,6-TETRACHLOROBIPHENYL (BZ-45) | PA | EPA 1668 A | 2,2',3-TRICHLOROBIPHENYL (BZ-16) | PA |

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**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1668 A | 2,2',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-153) | PA | EPA 1668 A | 2,2',4,4',5,6'-HEXACHLOROBIPHENYL (BZ-154) | PA |
| EPA 1668 A | 2,2',4,4',5-PENTACHLOROBIPHENYL (BZ-99) | PA | EPA 1668 A | 2,2',4,4',6,6'-HEXACHLOROBIPHENYL (BZ-155) | PA |
| EPA 1668 A | 2,2',4,4',6-PENTACHLOROBIPHENYL (BZ-100) | PA | EPA 1668 A | 2,2',4,4'-TETRACHLOROBIPHENYL (BZ-47) | PA |
| EPA 1668 A | 2,2',4,5',6-PENTACHLOROBIPHENYL (BZ-103) | PA | EPA 1668 A | 2,2',4,5'-TETRACHLOROBIPHENYL (BZ-49) | PA |
| EPA 1668 A | 2,2',4,5,5'-PENTACHLOROBIPHENYL (BZ-101) | PA | EPA 1668 A | 2,2',4,5,6'-PENTACHLOROBIPHENYL (BZ-102) | PA |
| EPA 1668 A | 2,2',4,5-TETRACHLOROBIPHENYL (BZ-48) | PA | EPA 1668 A | 2,2',4,6'-TETRACHLOROBIPHENYL (BZ-51) | PA |
| EPA 1668 A | 2,2',4,6,6'-PENTACHLOROBIPHENYL (BZ-104) | PA | EPA 1668 A | 2,2',4,6-TETRACHLOROBIPHENYL (BZ-50) | PA |
| EPA 1668 A | 2,2',4-TRICHLOROBIPHENYL (BZ-17) | PA | EPA 1668 A | 2,2',5,5'-TETRACHLOROBIPHENYL (BZ-52) | PA |
| EPA 1668 A | 2,2',5,6'-TETRACHLOROBIPHENYL (BZ-53) | PA | EPA 1668 A | 2,2',5-TRICHLOROBIPHENYL (BZ-18) | PA |
| EPA 1668 A | 2,2',6,6'-TETRACHLOROBIPHENYL (BZ-54) | PA | EPA 1668 A | 2,2',6-TRICHLOROBIPHENYL (BZ-19) | PA |
| EPA 1668 A | 2,2'-DICHLOROBIPHENYL (BZ-4) | PA | EPA 1668 A | 2,3',4',5',6-PENTACHLOROBIPHENYL (BZ-125) | PA |
| EPA 1668 A | 2,3',4',5'-TETRACHLOROBIPHENYL (BZ-76) | PA | EPA 1668 A | 2,3',4',5,5'-PENTACHLOROBIPHENYL (BZ-124) | PA |
| EPA 1668 A | 2,3',4',5-TETRACHLOROBIPHENYL (BZ-70) | PA | EPA 1668 A | 2,3',4',6-TETRACHLOROBIPHENYL (BZ-71) | PA |
| EPA 1668 A | 2,3',4'-TRICHLOROBIPHENYL (BZ-33) | PA | EPA 1668 A | 2,3',4,4',5',6-HEXACHLOROBIPHENYL (BZ-168) | PA |
| EPA 1668 A | 2,3',4,4',5'-PENTACHLOROBIPHENYL (BZ-123) | PA | EPA 1668 A | 2,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-167) | PA |
| EPA 1668 A | 2,3',4,4',5-PENTACHLOROBIPHENYL (BZ-118) | PA | EPA 1668 A | 2,3',4,4',6-PENTACHLOROBIPHENYL (BZ-119) | PA |
| EPA 1668 A | 2,3',4,4'-TETRACHLOROBIPHENYL (BZ-66) | PA | EPA 1668 A | 2,3',4,5',6-PENTACHLOROBIPHENYL (BZ-121) | PA |
| EPA 1668 A | 2,3',4,5'-TETRACHLOROBIPHENYL (BZ-68) | PA | EPA 1668 A | 2,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-120) | PA |
| EPA 1668 A | 2,3',4,5-TETRACHLOROBIPHENYL (BZ-67) | PA | EPA 1668 A | 2,3',4,6-TETRACHLOROBIPHENYL (BZ-69) | PA |
| EPA 1668 A | 2,3',4-TRICHLOROBIPHENYL (BZ-25) | PA | EPA 1668 A | 2,3',5',6-TETRACHLOROBIPHENYL (BZ-73) | PA |
| EPA 1668 A | 2,3',5'-TRICHLOROBIPHENYL (BZ-34) | PA | EPA 1668 A | 2,3',5,5'-TETRACHLOROBIPHENYL (BZ-72) | PA |
| EPA 1668 A | 2,3',5-TRICHLOROBIPHENYL (BZ-26) | PA | EPA 1668 A | 2,3',6-TRICHLOROBIPHENYL (BZ-27) | PA |
| EPA 1668 A | 2,3'-DICHLOROBIPHENYL (BZ-6) | PA | EPA 1668 A | 2,3,3',4',5',6-HEXACHLOROBIPHENYL (BZ-164) | PA |
| EPA 1668 A | 2,3,3',4',5'-PENTACHLOROBIPHENYL (BZ-122) | PA | EPA 1668 A | 2,3,3',4',5,5',6-HEPTACHLOROBIPHENYL (BZ-193) | PA |
| EPA 1668 A | 2,3,3',4',5,5'-HEXACHLOROBIPHENYL (BZ-162) | PA | EPA 1668 A | 2,3,3',4',5,6-HEXACHLOROBIPHENYL (BZ-163) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,3,3',4',5-PENTACHLOROBIPHENYL (BZ-107) | PA | EPA 1668 A | 2,3,3',4',6-PENTACHLOROBIPHENYL (BZ-110) | PA |
| EPA 1668 A | 2,3,3',4'-TETRACHLOROBIPHENYL (BZ-56) | PA | EPA 1668 A | 2,3,3',4,4',5',6-HEPTACHLOROBIPHENYL (BZ-191) | PA |
| EPA 1668 A | 2,3,3',4,4',5'-HEXACHLOROBIPHENYL (BZ-157) | PA | EPA 1668 A | 2,3,3',4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-205) | PA |
| EPA 1668 A | 2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-189) | PA | EPA 1668 A | 2,3,3',4,4',5,6-HEPTACHLOROBIPHENYL (BZ-190) | PA |
| EPA 1668 A | 2,3,3',4,4',5-HEXACHLOROBIPHENYL (BZ-156) | PA | EPA 1668 A | 2,3,3',4,4',6-HEXACHLOROBIPHENYL (BZ-158) | PA |
| EPA 1668 A | 2,3,3',4,4'-PENTACHLOROBIPHENYL (BZ-105) | PA | EPA 1668 A | 2,3,3',4,5',6-HEXACHLOROBIPHENYL (BZ-161) | PA |
| EPA 1668 A | 2,3,3',4,5'-PENTACHLOROBIPHENYL (BZ-108) | PA | EPA 1668 A | 2,3,3',4,5,5',6-HEPTACHLOROBIPHENYL (BZ-192) | PA |
| EPA 1668 A | 2,3,3',4,5,5'-HEXACHLOROBIPHENYL (BZ-159) | PA | EPA 1668 A | 2,3,3',4,5,6-HEXACHLOROBIPHENYL (BZ-160) | PA |
| EPA 1668 A | 2,3,3',4,5-PENTACHLOROBIPHENYL (BZ-106) | PA | EPA 1668 A | 2,3,3',4,6-PENTACHLOROBIPHENYL (BZ-109) | PA |
| EPA 1668 A | 2,3,3',4-TETRACHLOROBIPHENYL (BZ-55) | PA | EPA 1668 A | 2,3,3',5',6-PENTACHLOROBIPHENYL (BZ-113) | PA |
| EPA 1668 A | 2,3,3',5'-TETRACHLOROBIPHENYL (BZ-58) | PA | EPA 1668 A | 2,3,3',5,5',6-HEXACHLOROBIPHENYL (BZ-165) | PA |
| EPA 1668 A | 2,3,3',5,5'-PENTACHLOROBIPHENYL (BZ-111) | PA | EPA 1668 A | 2,3,3',5,6-PENTACHLOROBIPHENYL (BZ-112) | PA |
| EPA 1668 A | 2,3,3',5-TETRACHLOROBIPHENYL (BZ-57) | PA | EPA 1668 A | 2,3,3',6-TETRACHLOROBIPHENYL (BZ-59) | PA |
| EPA 1668 A | 2,3,3'-TRICHLOROBIPHENYL (BZ-20) | PA | EPA 1668 A | 2,3,4',5,6-PENTACHLOROBIPHENYL (BZ-117) | PA |
| EPA 1668 A | 2,3,4',5-TETRACHLOROBIPHENYL (BZ-63) | PA | EPA 1668 A | 2,3,4',6-TETRACHLOROBIPHENYL (BZ-64) | PA |
| EPA 1668 A | 2,3,4'-TRICHLOROBIPHENYL (BZ-22) | PA | EPA 1668 A | 2,3,4,4',5,6-HEXACHLOROBIPHENYL (BZ-166) | PA |
| EPA 1668 A | 2,3,4,4',5-PENTACHLOROBIPHENYL (BZ-114) | PA | EPA 1668 A | 2,3,4,4',6-PENTACHLOROBIPHENYL (BZ-115) | PA |
| EPA 1668 A | 2,3,4,4'-TETRACHLOROBIPHENYL (BZ-60) | PA | EPA 1668 A | 2,3,4,5,6-PENTACHLOROBIPHENYL (BZ-116) | PA |
| EPA 1668 A | 2,3,4,5-TETRACHLOROBIPHENYL (BZ-61) | PA | EPA 1668 A | 2,3,4,6-TETRACHLOROBIPHENYL (BZ-62) | PA |
| EPA 1668 A | 2,3,4-TRICHLOROBIPHENYL (BZ-21) | PA | EPA 1668 A | 2,3,5,6-TETRACHLOROBIPHENYL (BZ-65) | PA |
| EPA 1668 A | 2,3,5-TRICHLOROBIPHENYL (BZ-23) | PA | EPA 1668 A | 2,3,6-TRICHLOROBIPHENYL (BZ-24) | PA |
| EPA 1668 A | 2,3-DICHLOROBIPHENYL (BZ-5) | PA | EPA 1668 A | 2,4',5-TRICHLOROBIPHENYL (BZ-31) | PA |
| EPA 1668 A | 2,4',6-TRICHLOROBIPHENYL (BZ-32) | PA | EPA 1668 A | 2,4'-DICHLOROBIPHENYL (BZ-8) | PA |
| EPA 1668 A | 2,4,4',5-TETRACHLOROBIPHENYL (BZ-74) | PA | EPA 1668 A | 2,4,4',6-TETRACHLOROBIPHENYL (BZ-75) | PA |
| EPA 1668 A | 2,4,4'-TRICHLOROBIPHENYL (BZ-28) | PA | EPA 1668 A | 2,4,5-TRICHLOROBIPHENYL (BZ-29) | PA |

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| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1668 A | 2,4,6-TRICHLOROBIPHENYL (BZ-30) | PA | EPA 1668 A | 2,4-DICHLOROBIPHENYL (BZ-7) | PA |
| EPA 1668 A | 2,5-DICHLOROBIPHENYL (BZ-9) | PA | EPA 1668 A | 2,6-DICHLOROBIPHENYL (BZ-10) | PA |
| EPA 1668 A | 2-CHLOROBIPHENYL (BZ-1) | PA | EPA 1668 A | 3,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-169) | PA |
| EPA 1668 A | 3,3',4,4',5-PENTACHLOROBIPHENYL (BZ-126) | PA | EPA 1668 A | 3,3',4,4'-TETRACHLOROBIPHENYL (BZ-77) | PA |
| EPA 1668 A | 3,3',4,5'-TETRACHLOROBIPHENYL (BZ-79) | PA | EPA 1668 A | 3,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-127) | PA |
| EPA 1668 A | 3,3',4,5-TETRACHLOROBIPHENYL (BZ-78) | PA | EPA 1668 A | 3,3',4-TRICHLOROBIPHENYL (BZ-35) | PA |
| EPA 1668 A | 3,3',5,5'-TETRACHLOROBIPHENYL (BZ-80) | PA | EPA 1668 A | 3,3',5-TRICHLOROBIPHENYL (BZ-36) | PA |
| EPA 1668 A | 3,3'-DICHLOROBIPHENYL (BZ-11) | PA | EPA 1668 A | 3,4',5-TRICHLOROBIPHENYL (BZ-39) | PA |
| EPA 1668 A | 3,4'-DICHLOROBIPHENYL (BZ-13) | PA | EPA 1668 A | 3,4,4',5-TETRACHLOROBIPHENYL (BZ-81) | PA |
| EPA 1668 A | 3,4,4'-TRICHLOROBIPHENYL (BZ-37) | PA | EPA 1668 A | 3,4,5-TRICHLOROBIPHENYL (BZ-38) | PA |
| EPA 1668 A | 3,4-DICHLOROBIPHENYL (BZ-12) | PA | EPA 1668 A | 3,5-DICHLOROBIPHENYL (BZ-14) | PA |
| EPA 1668 A | 3-CHLOROBIPHENYL (BZ-2) | PA | EPA 1668 A | 4,4'-DICHLOROBIPHENYL (BZ-15) | PA |
| EPA 1668 A | 4-CHLOROBIPHENYL (BZ-3) | PA | EPA 1668 A | DECACHLOROBIPHENYL (BZ-209) | PA |
| EPA 3010 A | PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS | PA | EPA 3050 B | PREP: ACID DIGESTION OF SEDIMENTS, SLUDGES, AND SOILS | PA |
| EPA 3540 C | PREP: SOXHLET EXTRACTION | PA | EPA 3546 | PREP: MICROWAVE EXTRACTION | PA |
| EPA 3550 B | PREP: ULTRASONIC EXTRACTION | PA | EPA 3620 B | PREP: FLORISIL CLEANUP | PA |
| EPA 3630 C | PREP: SILICA GEL CLEANUP | PA | EPA 3640 A | PREP: GEL PERMEATION CLEANUP | PA |
| EPA 3660 B | PREP: SULFUR CLEANUP | PA | EPA 3665 A | SULFURIC ACID/PERMANGANATE CLEAN-UP | PA |
| EPA 5030 B | PREP: PURGE AND TRAP FOR AQUEOUS SAMPLES | PA | EPA 5035 | PREP: CLOSED-SYSTEM PURGE AND TRAP AND EXTRACTION | PA |
| EPA 6010 B | ALUMINUM | PA | EPA 6010 B | ANTIMONY | PA |
| EPA 6010 B | ARSENIC | PA | EPA 6010 B | BARIUM | PA |
| EPA 6010 B | BERYLLIUM | PA | EPA 6010 B | BORON | PA |
| EPA 6010 B | CADMIUM | PA | EPA 6010 B | CALCIUM | PA |
| EPA 6010 B | CHROMIUM | PA | EPA 6010 B | COBALT | PA |
| EPA 6010 B | COPPER | PA | EPA 6010 B | IRON | PA |
| EPA 6010 B | LEAD | PA | EPA 6010 B | MAGNESIUM | PA |
| EPA 6010 B | MANGANESE | PA | EPA 6010 B | MOLYBDENUM | PA |
| EPA 6010 B | NICKEL | PA | EPA 6010 B | POTASSIUM | PA |
| EPA 6010 B | SELENIUM | PA | EPA 6010 B | SILVER | PA |
| EPA 6010 B | SODIUM | PA | EPA 6010 B | STRONTIUM | PA |
| EPA 6010 B | THALLIUM | PA | EPA 6010 B | TIN | PA |

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|---|---|---|---|---|---|
| EPA 6010 B | TITANIUM | PA | EPA 6010 B | VANADIUM | PA |
| EPA 6010 B | ZINC | PA | EPA 6010 C | ALUMINUM | PA |
| EPA 6010 C | ANTIMONY | PA | EPA 6010 C | ARSENIC | PA |
| EPA 6010 C | BARIUM | PA | EPA 6010 C | BERYLLIUM | PA |
| EPA 6010 C | BORON | PA | EPA 6010 C | CADMIUM | PA |
| EPA 6010 C | CALCIUM | PA | EPA 6010 C | CHROMIUM | PA |
| EPA 6010 C | COBALT | PA | EPA 6010 C | COPPER | PA |
| EPA 6010 C | IRON | PA | EPA 6010 C | LEAD | PA |
| EPA 6010 C | MAGNESIUM | PA | EPA 6010 C | MANGANESE | PA |
| EPA 6010 C | MOLYBDENUM | PA | EPA 6010 C | NICKEL | PA |
| EPA 6010 C | POTASSIUM | PA | EPA 6010 C | SELENIUM | PA |
| EPA 6010 C | SILVER | PA | EPA 6010 C | SODIUM | PA |
| EPA 6010 C | STRONTIUM | PA | EPA 6010 C | THALLIUM | PA |
| EPA 6010 C | TIN | PA | EPA 6010 C | TITANIUM | PA |
| EPA 6010 C | VANADIUM | PA | EPA 6010 C | ZINC | PA |
| EPA 6020 A | ALUMINUM | PA | EPA 6020 A | ANTIMONY | PA |
| EPA 6020 A | ARSENIC | PA | EPA 6020 A | BERYLLIUM | PA |
| EPA 6020 A | CADMIUM | PA | EPA 6020 A | CALCIUM | PA |
| EPA 6020 A | CHROMIUM | PA | EPA 6020 A | COBALT | PA |
| EPA 6020 A | COPPER | PA | EPA 6020 A | IRON | PA |
| EPA 6020 A | LEAD | PA | EPA 6020 A | MAGNESIUM | PA |
| EPA 6020 A | MANGANESE | PA | EPA 6020 A | NICKEL | PA |
| EPA 6020 A | POTASSIUM | PA | EPA 6020 A | SELENIUM | PA |
| EPA 6020 A | SILVER | PA | EPA 6020 A | SODIUM | PA |
| EPA 6020 A | THALLIUM | PA | EPA 6020 A | VANADIUM | PA |
| EPA 6020 A | ZINC | PA | EPA 6020 A - EXTENDED | BORON | PA |
| EPA 6020 A - EXTENDED | STRONTIUM | PA | EPA 6020 A - EXTENDED | TIN | PA |
| EPA 6020 A - EXTENDED | TITANIUM | PA | EPA 6850 | PERCHLORATE | PA |
| EPA 7196 A | CHROMIUM VI | PA | EPA 7471 A | MERCURY | PA |
| EPA 7471 B | MERCURY | PA | EPA 8015 B | DIESEL RANGE ORGANICS (DRO) | PA |
| EPA 8015 B | ETHANOL | PA | EPA 8015 B | ETHYLENE GLYCOL | PA |
| EPA 8015 B | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8015 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 8015 B | METHANOL | PA | EPA 8015 B | TERT-BUTYL ALCOHOL | PA |
| EPA 8015 C | ETHANOL | PA | EPA 8015 C | ETHYLENE GLYCOL | PA |
| EPA 8015 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8015 C | METHANOL | PA |
| EPA 8015 C | TERT-BUTYL ALCOHOL | PA | EPA 8015 D - EXTENDED | FORMIC ACID | PA |

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| EPA 8021 B | BENZENE | PA | EPA 8021 B | ETHYLBENZENE | PA |
| EPA 8021 B | ISOPROPYLBENZENE | PA | EPA 8021 B | M+P-XYLENE | PA |
| EPA 8021 B | NAPHTHALENE | PA | EPA 8021 B | O-XYLENE | PA |
| EPA 8021 B | TOLUENE | PA | EPA 8021 B | XYLENE (TOTAL) | PA |
| EPA 8021 B - EXTENDED | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8081 A | 4,4'-DDD | PA |
| EPA 8081 A | 4,4'-DDE | PA | EPA 8081 A | 4,4'-DDT | PA |
| EPA 8081 A | ALDRIN | PA | EPA 8081 A | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 A | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | CHLORDANE (TECH.) | PA | EPA 8081 A | DELTA-BHC | PA |
| EPA 8081 A | DIELDRIN | PA | EPA 8081 A | ENDOSULFAN I | PA |
| EPA 8081 A | ENDOSULFAN II | PA | EPA 8081 A | ENDOSULFAN SULFATE | PA |
| EPA 8081 A | ENDRIN | PA | EPA 8081 A | ENDRIN ALDEHYDE | PA |
| EPA 8081 A | ENDRIN KETONE | PA | EPA 8081 A | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 A | HEPTACHLOR | PA |
| EPA 8081 A | HEPTACHLOR EPOXIDE | PA | EPA 8081 A | METHOXYCHLOR | PA |
| EPA 8081 A | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8081 B | 4,4'-DDD | PA |
| EPA 8081 B | 4,4'-DDE | PA | EPA 8081 B | 4,4'-DDT | PA |
| EPA 8081 B | ALDRIN | PA | EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | CHLORDANE (TECH.) | PA | EPA 8081 B | DELTA-BHC | PA |
| EPA 8081 B | DIELDRIN | PA | EPA 8081 B | ENDOSULFAN I | PA |
| EPA 8081 B | ENDOSULFAN II | PA | EPA 8081 B | ENDOSULFAN SULFATE | PA |
| EPA 8081 B | ENDRIN | PA | EPA 8081 B | ENDRIN ALDEHYDE | PA |
| EPA 8081 B | ENDRIN KETONE | PA | EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 B | HEPTACHLOR | PA |
| EPA 8081 B | HEPTACHLOR EPOXIDE | PA | EPA 8081 B | METHOXYCHLOR | PA |
| EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8081 B - EXTENDED | KEPONE | PA |

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8081 B - EXTENDED | MIREX | PA | EPA 8082 - OIL A | AROCLOR-1016 (PCB-1016) | PA |
| EPA 8082 - OIL A | AROCLOR-1221 (PCB-1221) | PA | EPA 8082 - OIL A | AROCLOR-1232 (PCB-1232) | PA |
| EPA 8082 - OIL A | AROCLOR-1242 (PCB-1242) | PA | EPA 8082 - OIL A | AROCLOR-1248 (PCB-1248) | PA |
| EPA 8082 - OIL A | AROCLOR-1254 (PCB-1254) | PA | EPA 8082 - OIL A | AROCLOR-1260 (PCB-1260) | PA |
| EPA 8082 A | AROCLOR-1016 (PCB-1016) | PA | EPA 8082 A | AROCLOR-1221 (PCB-1221) | PA |
| EPA 8082 A | AROCLOR-1232 (PCB-1232) | PA | EPA 8082 A | AROCLOR-1242 (PCB-1242) | PA |
| EPA 8082 A | AROCLOR-1248 (PCB-1248) | PA | EPA 8082 A | AROCLOR-1254 (PCB-1254) | PA |
| EPA 8082 A | AROCLOR-1260 (PCB-1260) | PA | EPA 8082 A - EXTENDED | AROCLOR-1262 (PCB-1262) | PA |
| EPA 8082 A - EXTENDED | AROCLOR-1268 (PCB-1268) | PA | EPA 8141 A | ATRAZINE | PA |
| EPA 8141 A | BOLSTAR (SULPROFOS) | PA | EPA 8141 A | CHLORPYRIFOS | PA |
| EPA 8141 A | COUMAPHOS | PA | EPA 8141 A | DEMETON-O | PA |
| EPA 8141 A | DEMETON-S | PA | EPA 8141 A | DIAZINON | PA |
| EPA 8141 A | DICHLOROVOS (DDVP, DICHLORVOS) | PA | EPA 8141 A | DISULFOTON | PA |
| EPA 8141 A | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | PA | EPA 8141 A | ETHION | PA |
| EPA 8141 A | ETHOPROP | PA | EPA 8141 A | FAMPHUR | PA |
| EPA 8141 A | FENSULFOTHION | PA | EPA 8141 A | FENTHION | PA |
| EPA 8141 A | MALATHION | PA | EPA 8141 A | MERPHOS | PA |
| EPA 8141 A | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8141 A | MEVINPHOS | PA |
| EPA 8141 A | NALED | PA | EPA 8141 A | PARATHION (PARATHION - ETHYL) | PA |
| EPA 8141 A | PHORATE | PA | EPA 8141 A | RONNEL | PA |
| EPA 8141 A | SIMAZINE | PA | EPA 8141 A | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA |
| EPA 8141 A | TOKUTHION (PROTHIOPHOS) | PA | EPA 8141 A | TRICHLORONATE | PA |
| EPA 8141 B | ATRAZINE | PA | EPA 8141 B | BOLSTAR (SULPROFOS) | PA |
| EPA 8141 B | COUMAPHOS | PA | EPA 8141 B | DEMETON-O | PA |
| EPA 8141 B | DEMETON-S | PA | EPA 8141 B | DIAZINON | PA |
| EPA 8141 B | DICHLOROVOS (DDVP, DICHLORVOS) | PA | EPA 8141 B | DISULFOTON | PA |
| EPA 8141 B | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | PA | EPA 8141 B | ETHION | PA |
| EPA 8141 B | ETHOPROP | PA | EPA 8141 B | FAMPHUR | PA |
| EPA 8141 B | FENSULFOTHION | PA | EPA 8141 B | FENTHION | PA |
| EPA 8141 B | MALATHION | PA | EPA 8141 B | MERPHOS | PA |
| EPA 8141 B | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8141 B | MEVINPHOS | PA |

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## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8141 B | NALED | PA | EPA 8141 B | PARATHION (PARATHION - ETHYL) | PA |
| EPA 8141 B | PHORATE | PA | EPA 8141 B | RONNEL | PA |
| EPA 8141 B | SIMAZINE | PA | EPA 8141 B | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA |
| EPA 8141 B | TOKUTHION (PROTHIOPHOS) | PA | EPA 8141 B | TRICHLORONATE | PA |
| EPA 8151 A | 2,4,5-T | PA | EPA 8151 A | 2,4-D | PA |
| EPA 8151 A | 2,4-DB | PA | EPA 8151 A | DALAPON | PA |
| EPA 8151 A | DICAMBA | PA | EPA 8151 A | DICHLOROPROP (DICHLORPROP) | PA |
| EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8151 A | MCPA | PA |
| EPA 8151 A | MCPP | PA | EPA 8151 A | PENTACHLOROPHENOL | PA |
| EPA 8151 A | PICLORAM | PA | EPA 8151 A | SILVEX (2,4,5-TP) | PA |
| EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | PA | EPA 8260 B | 1,1,1-TRICHLOROETHANE | PA |
| EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | PA | EPA 8260 B | 1,1,2-TRICHLOROETHANE | PA |
| EPA 8260 B | 1,1-DICHLOROETHANE | PA | EPA 8260 B | 1,1-DICHLOROETHYLENE | PA |
| EPA 8260 B | 1,1-DICHLOROPROPENE | PA | EPA 8260 B | 1,2,3-TRICHLOROBENZENE | PA |
| EPA 8260 B | 1,2,3-TRICHLOROPROPANE | PA | EPA 8260 B | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | PA | EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA |
| EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 8260 B | 1,2-DICHLOROBENZENE | PA |
| EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA | EPA 8260 B | 1,2-DICHLOROPROPANE | PA |
| EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | PA | EPA 8260 B | 1,3-DICHLOROBENZENE | PA |
| EPA 8260 B | 1,3-DICHLOROPROPANE | PA | EPA 8260 B | 1,4-DICHLOROBENZENE | PA |
| EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA | EPA 8260 B | 1-BUTANOL (N-BUTANOL) | PA |
| EPA 8260 B | 2,2-DICHLOROPROPANE | PA | EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA |
| EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | PA | EPA 8260 B | 2-CHLOROTOLUENE | PA |
| EPA 8260 B | 2-HEXANONE | PA | EPA 8260 B | 4-CHLOROTOLUENE | PA |
| EPA 8260 B | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA | EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | PA |
| EPA 8260 B | ACETONE | PA | EPA 8260 B | ACETONITRILE | PA |
| EPA 8260 B | ACROLEIN (PROPENAL) | PA | EPA 8260 B | ACRYLONITRILE | PA |
| EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA | EPA 8260 B | BENZENE | PA |
| EPA 8260 B | BENZYL CHLORIDE | PA | EPA 8260 B | BROMOBENZENE | PA |
| EPA 8260 B | BROMOCHLOROMETHANE | PA | EPA 8260 B | BROMODICHLOROMETHANE | PA |
| EPA 8260 B | BROMOFORM | PA | EPA 8260 B | CARBON DISULFIDE | PA |
| EPA 8260 B | CARBON TETRACHLORIDE | PA | EPA 8260 B | CHLOROBENZENE | PA |

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## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 B | CHLORODIBROMOMETHANE | PA | EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 8260 B | CHLOROFORM | PA | EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA |
| EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | PA | EPA 8260 B | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | PA | EPA 8260 B | DICHLORODIFLUOROMETHANE (FREON-12) | PA |
| EPA 8260 B | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA | EPA 8260 B | ETHANOL | PA |
| EPA 8260 B | ETHYL ACETATE | PA | EPA 8260 B | ETHYL METHACRYLATE | PA |
| EPA 8260 B | ETHYLBENZENE | PA | EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA |
| EPA 8260 B | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 B | ISOPROPYLBENZENE | PA |
| EPA 8260 B | M+P-XYLENE | PA | EPA 8260 B | METHACRYLONITRILE | PA |
| EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | PA | EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | PA |
| EPA 8260 B | METHYL METHACRYLATE | PA | EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | PA |
| EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA | EPA 8260 B | N-BUTYLBENZENE | PA |
| EPA 8260 B | N-PROPYLBENZENE | PA | EPA 8260 B | NAPHTHALENE | PA |
| EPA 8260 B | O-XYLENE | PA | EPA 8260 B | PENTACHLOROETHANE | PA |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | PA | EPA 8260 B | SEC-BUTYLBENZENE | PA |
| EPA 8260 B | STYRENE | PA | EPA 8260 B | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 B | TERT-BUTYLBENZENE | PA | EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 8260 B | TOLUENE | PA | EPA 8260 B | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | PA | EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | PA |
| EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 8260 B | VINYL ACETATE | PA | EPA 8260 B | VINYL CHLORIDE | PA |
| EPA 8260 B | XYLENE (TOTAL) | PA | EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA |
| EPA 8260 B - EXTENDED | CYCLOHEXANE | PA | EPA 8260 B - EXTENDED | CYCLOHEXANONE | PA |
| EPA 8260 B - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA | EPA 8260 B - EXTENDED | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA |
| EPA 8260 B - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8260 B - EXTENDED | METHYL ACETATE | PA |
| EPA 8260 B - EXTENDED | METHYLCYCLOHEXANE | PA | EPA 8260 B - EXTENDED | T-AMYL ALCOHOL (TAA) | PA |

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
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Effective Date: January 30, 2014
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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 B - EXTENDED | T-AMYLMETHYLETHER (TAME) | PA | EPA 8260 B - EXTENDED | TETRAHYDROFURAN (THF) | PA |
| EPA 8260 C | 1,1,1,2-TETRACHLOROETHANE | PA | EPA 8260 C | 1,1,1-TRICHLOROETHANE | PA |
| EPA 8260 C | 1,1,2,2-TETRACHLOROETHANE | PA | EPA 8260 C | 1,1,2-TRICHLOROETHANE | PA |
| EPA 8260 C | 1,1-DICHLOROETHANE | PA | EPA 8260 C | 1,1-DICHLOROETHYLENE | PA |
| EPA 8260 C | 1,1-DICHLOROPROPENE | PA | EPA 8260 C | 1,2,3-TRICHLOROBENZENE | PA |
| EPA 8260 C | 1,2,3-TRICHLOROPROPANE | PA | EPA 8260 C | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8260 C | 1,2,4-TRIMETHYLBENZENE | PA | EPA 8260 C | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA |
| EPA 8260 C | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 8260 C | 1,2-DICHLOROBENZENE | PA |
| EPA 8260 C | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA | EPA 8260 C | 1,2-DICHLOROPROPANE | PA |
| EPA 8260 C | 1,3,5-TRIMETHYLBENZENE | PA | EPA 8260 C | 1,3-DICHLOROBENZENE | PA |
| EPA 8260 C | 1,3-DICHLOROPROPANE | PA | EPA 8260 C | 1,4-DICHLOROBENZENE | PA |
| EPA 8260 C | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA | EPA 8260 C | 2,2-DICHLOROPROPANE | PA |
| EPA 8260 C | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA | EPA 8260 C | 2-CHLOROETHYL VINYL ETHER | PA |
| EPA 8260 C | 2-CHLOROTOLUENE | PA | EPA 8260 C | 2-HEXANONE | PA |
| EPA 8260 C | 4-CHLOROTOLUENE | PA | EPA 8260 C | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA |
| EPA 8260 C | 4-METHYL-2-PENTANONE (MIBK) | PA | EPA 8260 C | ACETONE | PA |
| EPA 8260 C | ACETONITRILE | PA | EPA 8260 C | ACROLEIN (PROPENAL) | PA |
| EPA 8260 C | ACRYLONITRILE | PA | EPA 8260 C | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA |
| EPA 8260 C | BENZENE | PA | EPA 8260 C | BENZYL CHLORIDE | PA |
| EPA 8260 C | BROMOBENZENE | PA | EPA 8260 C | BROMOCHLOROMETHANE | PA |
| EPA 8260 C | BROMODICHLOROMETHANE | PA | EPA 8260 C | BROMOFORM | PA |
| EPA 8260 C | CARBON DISULFIDE | PA | EPA 8260 C | CARBON TETRACHLORIDE | PA |
| EPA 8260 C | CHLOROBENZENE | PA | EPA 8260 C | CHLORODIBROMOMETHANE | PA |
| EPA 8260 C | CHLOROETHANE (ETHYL CHLORIDE) | PA | EPA 8260 C | CHLOROFORM | PA |
| EPA 8260 C | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA | EPA 8260 C | CIS-1,2-DICHLOROETHYLENE | PA |
| EPA 8260 C | CIS-1,3-DICHLOROPROPENE | PA | EPA 8260 C | CYCLOHEXANE | PA |
| EPA 8260 C | DIBROMOMETHANE (METHYLENE BROMIDE) | PA | EPA 8260 C | DICHLORODIFLUOROMETHANE (FREON-12) | PA |
| EPA 8260 C | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA | EPA 8260 C | ETHANOL | PA |
| EPA 8260 C | ETHYL ACETATE | PA | EPA 8260 C | ETHYL METHACRYLATE | PA |
| EPA 8260 C | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA | EPA 8260 C | ETHYLBENZENE | PA |
| EPA 8260 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8260 C | HEXACHLOROETHANE | PA |

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## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 C | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 C | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 C | ISOPROPYLBENZENE | PA |
| EPA 8260 C | METHACRYLONITRILE | PA | EPA 8260 C | METHYL BROMIDE (BROMOMETHANE) | PA |
| EPA 8260 C | METHYL CHLORIDE (CHLOROMETHANE) | PA | EPA 8260 C | METHYL METHACRYLATE | PA |
| EPA 8260 C | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8260 C | METHYLCYCLOHEXANE | PA |
| EPA 8260 C | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA | EPA 8260 C | N-BUTYLBENZENE | PA |
| EPA 8260 C | N-PROPYLBENZENE | PA | EPA 8260 C | NAPHTHALENE | PA |
| EPA 8260 C | PENTACHLOROETHANE | PA | EPA 8260 C | PROPIONITRILE (ETHYL CYANIDE) | PA |
| EPA 8260 C | SEC-BUTYLBENZENE | PA | EPA 8260 C | STYRENE | PA |
| EPA 8260 C | T-AMYLMETHYLETHER (TAME) | PA | EPA 8260 C | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 C | TETRACHLOROETHENE (PERCHLOROETHENE) | PA | EPA 8260 C | TOLUENE | PA |
| EPA 8260 C | TRANS-1,2-DICHLOROETHENE | PA | EPA 8260 C | TRANS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 C | TRANS-1,4-DICHLORO-2-BUTENE | PA | EPA 8260 C | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA |
| EPA 8260 C | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA | EPA 8260 C | VINYL ACETATE | PA |
| EPA 8260 C | VINYL CHLORIDE | PA | EPA 8260 C | XYLENE (TOTAL) | PA |
| EPA 8260 C - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA | EPA 8260 C - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA |
| EPA 8260 C - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8260 C - EXTENDED | METHYL ACETATE | PA |
| EPA 8260 C - EXTENDED | T-AMYL ALCOHOL (TAA) | PA | EPA 8260 C - EXTENDED | TETRAHYDROFURAN (THF) | PA |
| EPA 8270 C | 1,2,4,5-TETRACHLOROBENZENE | PA | EPA 8270 C | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8270 C | 1,2-DICHLOROBENZENE | PA | EPA 8270 C | 1,2-DINITROBENZENE | PA |
| EPA 8270 C | 1,2-DIPHENYLHYDRAZINE | PA | EPA 8270 C | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA |
| EPA 8270 C | 1,3-DICHLOROBENZENE | PA | EPA 8270 C | 1,3-DINITROBENZENE (1,3-DNB) | PA |
| EPA 8270 C | 1,4-DICHLOROBENZENE | PA | EPA 8270 C | 1,4-DINITROBENZENE | PA |
| EPA 8270 C | 1,4-NAPHTHOQUINONE | PA | EPA 8270 C | 1,4-PHENYLENEDIAMINE | PA |
| EPA 8270 C | 1-CHLORONAPHTHALENE | PA | EPA 8270 C | 1-NAPHTHYLAMINE | PA |
| EPA 8270 C | 2,3,4,6-TETRACHLOROPHENOL | PA | EPA 8270 C | 2,4,5-TRICHLOROPHENOL | PA |
| EPA 8270 C | 2,4,6-TRICHLOROPHENOL | PA | EPA 8270 C | 2,4-DICHLOROPHENOL | PA |
| EPA 8270 C | 2,4-DIMETHYLPHENOL | PA | EPA 8270 C | 2,4-DINITROPHENOL | PA |
| EPA 8270 C | 2,4-DINITROTOLUENE (2,4-DNT) | PA | EPA 8270 C | 2,6-DICHLOROPHENOL | PA |
| EPA 8270 C | 2,6-DINITROTOLUENE (2,6-DNT) | PA | EPA 8270 C | 2-ACETYLAMINOFLUORENE | PA |
| EPA 8270 C | 2-CHLORONAPHTHALENE | PA | EPA 8270 C | 2-CHLOROPHENOL | PA |

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## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 C | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA | EPA 8270 C | 2-METHYLNAPHTHALENE | PA |
| EPA 8270 C | 2-METHYLPHENOL (O-CRESOL) | PA | EPA 8270 C | 2-NAPHTHYLAMINE | PA |
| EPA 8270 C | 2-NITROANILINE | PA | EPA 8270 C | 2-NITROPHENOL | PA |
| EPA 8270 C | 2-PICOLINE (2-METHYLPYRIDINE) | PA | EPA 8270 C | 3,3'-DICHLOROBENZIDINE | PA |
| EPA 8270 C | 3,3'-DIMETHOXYBENZIDINE | PA | EPA 8270 C | 3,3'-DIMETHYLBENZIDINE | PA |
| EPA 8270 C | 3-METHYLCHOLANTHRENE | PA | EPA 8270 C | 3-METHYLPHENOL (M-CRESOL) | PA |
| EPA 8270 C | 3-NITROANILINE | PA | EPA 8270 C | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | PA |
| EPA 8270 C | 4-AMINOBIPHENYL | PA | EPA 8270 C | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 8270 C | 4-CHLORO-3-METHYLPHENOL | PA | EPA 8270 C | 4-CHLOROANILINE | PA |
| EPA 8270 C | 4-CHLOROPHENYL PHENYLETHER | PA | EPA 8270 C | 4-DIMETHYL AMINOAZOBENZENE | PA |
| EPA 8270 C | 4-METHYLPHENOL (P-CRESOL) | PA | EPA 8270 C | 4-NITROANILINE | PA |
| EPA 8270 C | 4-NITROPHENOL | PA | EPA 8270 C | 5-NITRO-O-TOLUIDINE | PA |
| EPA 8270 C | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA | EPA 8270 C | A-A-DIMETHYLPHENETHYLAMINE | PA |
| EPA 8270 C | ACENAPHTHENE | PA | EPA 8270 C | ACENAPHTHYLENE | PA |
| EPA 8270 C | ACETOPHENONE | PA | EPA 8270 C | ANILINE | PA |
| EPA 8270 C | ANTHRACENE | PA | EPA 8270 C | ARAMITE | PA |
| EPA 8270 C | BENZIDINE | PA | EPA 8270 C | BENZO(A)ANTHRACENE | PA |
| EPA 8270 C | BENZO(A)PYRENE | PA | EPA 8270 C | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 C | BENZO(K)FLUORANTHENE | PA | EPA 8270 C | BENZOIC ACID | PA |
| EPA 8270 C | BENZO[B]FLUORANTHENE | PA | EPA 8270 C | BENZYL ALCOHOL | PA |
| EPA 8270 C | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 8270 C | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 8270 C | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 8270 C | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 8270 C | BUTYL BENZYL PHTHALATE | PA | EPA 8270 C | CHLOROBENZILATE | PA |
| EPA 8270 C | CHRYSENE | PA | EPA 8270 C | DI-N-BUTYL PHTHALATE | PA |
| EPA 8270 C | DI-N-OCTYL PHTHALATE | PA | EPA 8270 C | DIALLATE | PA |
| EPA 8270 C | DIBENZ(A, J) ACRIDINE | PA | EPA 8270 C | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 C | DIBENZOFURAN | PA | EPA 8270 C | DIETHYL PHTHALATE | PA |
| EPA 8270 C | DIMETHOATE | PA | EPA 8270 C | DIMETHYL PHTHALATE | PA |
| EPA 8270 C | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8270 C | DIPHENYLAMINE | PA |
| EPA 8270 C | DISULFOTON | PA | EPA 8270 C | ETHYL METHANESULFONATE | PA |
| EPA 8270 C | FAMPHUR | PA | EPA 8270 C | FLUORANTHENE | PA |
| EPA 8270 C | FLUORENE | PA | EPA 8270 C | HEXACHLOROBENZENE | PA |
| EPA 8270 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8270 C | HEXACHLOROCYCLOPENTADIENE | PA |

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 C | HEXACHLOROETHANE | PA | EPA 8270 C | HEXACHLOROPROPENE | PA |
| EPA 8270 C | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 C | ISODRIN | PA |
| EPA 8270 C | ISOPHORONE | PA | EPA 8270 C | ISOSAFROLE | PA |
| EPA 8270 C | KEPONE | PA | EPA 8270 C | METHAPYRILENE | PA |
| EPA 8270 C | METHYL METHANESULFONATE | PA | EPA 8270 C | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8270 C | N-NITROSO-DI-N-BUTYLAMINE | PA | EPA 8270 C | N-NITROSODI-N-PROPYLAMINE | PA |
| EPA 8270 C | N-NITROSODIETHYLAMINE | PA | EPA 8270 C | N-NITROSODIMETHYLAMINE | PA |
| EPA 8270 C | N-NITROSODIPHENYLAMINE | PA | EPA 8270 C | N-NITROSOMETHYLETHYLAMINE | PA |
| EPA 8270 C | N-NITROSOMORPHOLINE | PA | EPA 8270 C | N-NITROSOPIPERIDINE | PA |
| EPA 8270 C | N-NITROSOPYRROLIDINE | PA | EPA 8270 C | NAPHTHALENE | PA |
| EPA 8270 C | NITROBENZENE | PA | EPA 8270 C | NITROQUINOLINE-1-OXIDE | PA |
| EPA 8270 C | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA | EPA 8270 C | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 C | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 C | PENTACHLOROBENZENE | PA |
| EPA 8270 C | PENTACHLORONITROBENZENE | PA | EPA 8270 C | PENTACHLOROPHENOL | PA |
| EPA 8270 C | PHENACETIN | PA | EPA 8270 C | PHENANTHRENE | PA |
| EPA 8270 C | PHENOL | PA | EPA 8270 C | PHORATE | PA |
| EPA 8270 C | PHTHALIC ANHYDRIDE | PA | EPA 8270 C | PRONAMIDE (KERB) | PA |
| EPA 8270 C | PYRENE | PA | EPA 8270 C | PYRIDINE | PA |
| EPA 8270 C | SAFROLE | PA | EPA 8270 C | THIONAZIN (ZINOPHOS) | PA |
| EPA 8270 C | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA | EPA 8270 C SIM | 2-METHYLNAPHTHALENE | PA |
| EPA 8270 C SIM | ACENAPHTHENE | PA | EPA 8270 C SIM | ACENAPHTHYLENE | PA |
| EPA 8270 C SIM | ANTHRACENE | PA | EPA 8270 C SIM | BENZO(A)ANTHRACENE | PA |
| EPA 8270 C SIM | BENZO(A)PYRENE | PA | EPA 8270 C SIM | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 C SIM | BENZO(K)FLUORANTHENE | PA | EPA 8270 C SIM | BENZO[B]FLUORANTHENE | PA |
| EPA 8270 C SIM | CHRYSENE | PA | EPA 8270 C SIM | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 C SIM | FLUORANTHENE | PA | EPA 8270 C SIM | FLUORENE | PA |
| EPA 8270 C SIM | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 C SIM | NAPHTHALENE | PA |
| EPA 8270 C SIM | PHENANTHRENE | PA | EPA 8270 C SIM | PYRENE | PA |
| EPA 8270 C SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA | EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | PA |
| EPA 8270 D | 1,2,4-TRICHLOROBENZENE | PA | EPA 8270 D | 1,2-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,2-DINITROBENZENE | PA | EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | PA |
| EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8270 D | 1,3-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8270 D | 1,4-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,4-DINITROBENZENE | PA | EPA 8270 D | 1,4-NAPHTHOQUINONE | PA |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | PA | EPA 8270 D | 1-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 1-NAPHTHYLAMINE | PA | EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | PA |

## Scope of Accreditation

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2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | 2,4,5-TRICHLOROPHENOL | PA | EPA 8270 D | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 8270 D | 2,4-DICHLOROPHENOL | PA | EPA 8270 D | 2,4-DIMETHYLPHENOL | PA |
| EPA 8270 D | 2,4-DINITROPHENOL | PA | EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8270 D | 2,6-DICHLOROPHENOL | PA | EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8270 D | 2-ACETYLAMINOFLUORENE | PA | EPA 8270 D | 2-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 2-CHLOROPHENOL | PA | EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 8270 D | 2-METHYLNAPHTHALENE | PA | EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | PA |
| EPA 8270 D | 2-NAPHTHYLAMINE | PA | EPA 8270 D | 2-NITROANILINE | PA |
| EPA 8270 D | 2-NITROPHENOL | PA | EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | PA |
| EPA 8270 D | 3,3'-DICHLOROBENZIDINE | PA | EPA 8270 D | 3,3'-DIMETHOXYBENZIDINE | PA |
| EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | PA | EPA 8270 D | 3-METHYLCHOLANTHRENE | PA |
| EPA 8270 D | 3-METHYLPHENOL (M-CRESOL) | PA | EPA 8270 D | 3-NITROANILINE | PA |
| EPA 8270 D | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | PA | EPA 8270 D | 4-AMINOBIPHENYL | PA |
| EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | PA | EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | PA |
| EPA 8270 D | 4-CHLOROANILINE | PA | EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | PA |
| EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | PA | EPA 8270 D | 4-METHYLPHENOL (P-CRESOL) | PA |
| EPA 8270 D | 4-NITROANILINE | PA | EPA 8270 D | 4-NITROPHENOL | PA |
| EPA 8270 D | 5-NITRO-O-TOLUIDINE | PA | EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA |
| EPA 8270 D | A-A-DIMETHYLPHENETHYLAMINE | PA | EPA 8270 D | ACENAPHTHENE | PA |
| EPA 8270 D | ACENAPHTHYLENE | PA | EPA 8270 D | ACETOPHENONE | PA |
| EPA 8270 D | ANILINE | PA | EPA 8270 D | ANTHRACENE | PA |
| EPA 8270 D | ARAMITE | PA | EPA 8270 D | BENZIDINE | PA |
| EPA 8270 D | BENZO(A)ANTHRACENE | PA | EPA 8270 D | BENZO(A)PYRENE | PA |
| EPA 8270 D | BENZO(G,H,I)PERYLENE | PA | EPA 8270 D | BENZO(K)FLUORANTHENE | PA |
| EPA 8270 D | BENZOIC ACID | PA | EPA 8270 D | BENZO[B]FLUORANTHENE | PA |
| EPA 8270 D | BENZYL ALCOHOL | PA | EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | PA |
| EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | PA | EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | PA |
| EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA | EPA 8270 D | BUTYL BENZYL PHTHALATE | PA |
| EPA 8270 D | CHLOROBENZILATE | PA | EPA 8270 D | CHRYSENE | PA |
| EPA 8270 D | DI-N-BUTYL PHTHALATE | PA | EPA 8270 D | DI-N-OCTYL PHTHALATE | PA |
| EPA 8270 D | DIALLATE | PA | EPA 8270 D | DIBENZ(A, J) ACRIDINE | PA |
| EPA 8270 D | DIBENZO(A,H) ANTHRACENE | PA | EPA 8270 D | DIBENZOFURAN | PA |
| EPA 8270 D | DIETHYL PHTHALATE | PA | EPA 8270 D | DIMETHOATE | PA |
| EPA 8270 D | DIMETHYL PHTHALATE | PA | | | |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
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**Virginia Laboratory ID: 460182**
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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8270 D | DIPHENYLAMINE | PA |
| EPA 8270 D | DISULFOTON | PA | EPA 8270 D | ETHYL METHANESULFONATE | PA |
| EPA 8270 D | FAMPHUR | PA | EPA 8270 D | FLUORANTHENE | PA |
| EPA 8270 D | FLUORENE | PA | EPA 8270 D | HEXACHLOROBENZENE | PA |
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 8270 D | HEXACHLOROETHANE | PA | EPA 8270 D | HEXACHLOROPROPENE | PA |
| EPA 8270 D | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 D | ISODRIN | PA |
| EPA 8270 D | ISOPHORONE | PA | EPA 8270 D | ISOSAFROLE | PA |
| EPA 8270 D | KEPONE | PA | EPA 8270 D | METHAPYRILENE | PA |
| EPA 8270 D | METHYL METHANESULFONATE | PA | EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | PA | EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | PA |
| EPA 8270 D | N-NITROSODIETHYLAMINE | PA | EPA 8270 D | N-NITROSODIMETHYLAMINE | PA |
| EPA 8270 D | N-NITROSODIPHENYLAMINE | PA | EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | PA |
| EPA 8270 D | N-NITROSOMORPHOLINE | PA | EPA 8270 D | N-NITROSOPIPERIDINE | PA |
| EPA 8270 D | N-NITROSOPYRROLIDINE | PA | EPA 8270 D | NAPHTHALENE | PA |
| EPA 8270 D | NITROBENZENE | PA | EPA 8270 D | NITROQUINOLINE-1-OXIDE | PA |
| EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA | EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 D | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 D | PENTACHLOROBENZENE | PA |
| EPA 8270 D | PENTACHLORONITROBENZENE | PA | EPA 8270 D | PENTACHLOROPHENOL | PA |
| EPA 8270 D | PHENACETIN | PA | EPA 8270 D | PHENANTHRENE | PA |
| EPA 8270 D | PHENOL | PA | EPA 8270 D | PHORATE | PA |
| EPA 8270 D | PHTHALIC ANHYDRIDE | PA | EPA 8270 D | PRONAMIDE (KERB) | PA |
| EPA 8270 D | PYRENE | PA | EPA 8270 D | SAFROLE | PA |
| EPA 8270 D | THIONAZIN (ZINOPHOS) | PA | EPA 8270 D | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA |
| EPA 8270 D - EXTENDED | 1,1-BIPHENYL | PA | EPA 8270 D - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D - EXTENDED | ATRAZINE | PA | EPA 8270 D - EXTENDED | BENZALDEHYDE | PA |
| EPA 8270 D - EXTENDED | BIS(2-ETHYLHEXYL)ADIPATE (DI(2-ETHYLHEXYL)ADIPATE) | PA | EPA 8270 D - EXTENDED | CAPROLACTAM | PA |
| EPA 8270 D - EXTENDED | CARBAZOLE | PA | EPA 8270 D - EXTENDED | PYRIDINE | PA |
| EPA 8270 D SIM | 2-METHYLNAPHTHALENE | PA | EPA 8270 D SIM | ACENAPHTHENE | PA |
| EPA 8270 D SIM | ACENAPHTHYLENE | PA | EPA 8270 D SIM | ANTHRACENE | PA |
| EPA 8270 D SIM | BENZO(A)ANTHRACENE | PA | EPA 8270 D SIM | BENZO(A)PYRENE | PA |
| EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | PA | EPA 8270 D SIM | BENZO(K)FLUORANTHENE | PA |
| EPA 8270 D SIM | BENZO[B]FLUORANTHENE | PA | EPA 8270 D SIM | CHRYSENE | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

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**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D SIM | DIBENZO(A,H) ANTHRACENE | PA | EPA 8270 D SIM | FLUORANTHENE | PA |
| EPA 8270 D SIM | FLUORENE | PA | EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 D SIM | NAPHTHALENE | PA | EPA 8270 D SIM | PHENANTHRENE | PA |
| EPA 8270 D SIM | PYRENE | PA | EPA 8270 D SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | PA | EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | PA |
| EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | PA | EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | PA |
| EPA 8290 A | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | PA | EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | PA |
| EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | PA | EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | PA |
| EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | PA | EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | PA |
| EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | PA | EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN (1,2,3,7,8-PECDD) | PA |
| EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZOFURAN (1,2,3,7,8-PECDF) | PA | EPA 8290 A | 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | PA |
| EPA 8290 A | 2,3,4,7,8-PENTACHLORODIBENZOFURAN | PA | EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | PA |
| EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZOFURAN | PA | EPA 8315 A | 2,5-DIMETHYLBENZALDEHYDE | PA |
| EPA 8315 A | ACETALDEHYDE | PA | EPA 8315 A | ACROLEIN (PROPENAL) | PA |
| EPA 8315 A | BENZALDEHYDE | PA | EPA 8315 A | BUTYLALDEHYDE (BUTANAL) | PA |
| EPA 8315 A | CROTONALDEHYDE | PA | EPA 8315 A | FORMALDEHYDE | PA |
| EPA 8315 A | HEXANALDEHYDE (HEXANAL) | PA | EPA 8315 A | ISOVALERALDEHYDE | PA |
| EPA 8315 A | M-TOLUALDEHYDE (1,3-TOLUALDEHYDE) | PA | EPA 8315 A | O-TOLUALDEHYDE (1,2-TOLUALDEHYDE) | PA |
| EPA 8315 A | P-TOLUALDEHYDE (1,4-TOLUALDEHYDE) | PA | EPA 8315 A | PENTANAL (VALERALDEHYDE) | PA |
| EPA 8315 A | PROPIONALDEHYDE (PROPANAL) | PA | EPA 8330 | NITROGLYCERIN | PA |
| EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | PA |
| EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | PA | EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | PA | EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | PA |
| EPA 8330 A | 2-NITROTOLUENE | PA | EPA 8330 A | 3-NITROTOLUENE | PA |
| EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | PA | EPA 8330 A | 4-NITROTOLUENE | PA |
| EPA 8330 A | METHYL-2,4,6-TRINITROPHENYLNITRAMINE (TETRYL) | PA | EPA 8330 A | NITROBENZENE | PA |
| EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX) | PA | EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | PA |
| EPA 9012 A | CYANIDE | PA | EPA 9040 B | PH | PA |
| EPA 9045 C | PH | PA | | | |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2754

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**Virginia Laboratory ID: 460182**
Effective Date: January 30, 2014
Expiration Date: June 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 9045 D | PH | PA | EPA 9050 A | CONDUCTIVITY | PA |
| EPA 9060 | TOTAL ORGANIC CARBON | PA | EPA 9066 | TOTAL PHENOLICS | PA |
| EPA 9071 B | OIL & GREASE | PA | EPA 9081 | CATION EXCHANGE CAPACITY | PA |
| EPA 9095 B | FREE LIQUID | PA | | | |

# COMMONWEALTH OF VIRGINIA
# DEPARTMENT OF GENERAL SERVICES
# DIVISION OF CONSOLIDATED LABORATORY SERVICES

## Certifies that

## VA Laboratory ID#: 460141
## SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC.

3310 WIN STREET
CUYAHOGA FALLS, OH 44223

**Owner:** DR. MO OSMAN
**Responsible Official:** DR. MO OSMAN

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard

is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **June 15, 2013**
Expiration Date: **June 14, 2014**
**Certificate # 2128**

Thomas L. York, Ph.D., HCLD
DGS Deputy Director for Laboratories

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

# Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2128

**SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC.**
3310 WIN STREET
CUYAHOGA FALLS, OH 44223

**Virginia Laboratory ID: 460141**
Effective Date: June 15, 2013
Expiration Date: June 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1010 (9/86) | FLASHPOINT | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,7,8-PENTACHLORODIBENZOFURAN (1,2,3,7,8-PECDF) | FL |
| EPA 1613 B 1994 | 2,3,4,7,8-PENTACHLORODIBENZOFURAN | FL |
| EPA 1613 B 1994 | 2,3,7,8-TETRACHLORODIBENZOFURAN | FL |
| EPA 1664 A 1999 | OIL & GREASE | FL |
| EPA 200.7 1994 4.4 | ANTIMONY | FL |
| EPA 200.7 1994 4.4 | BARIUM | FL |
| EPA 200.7 1994 4.4 | BORON | FL |
| EPA 200.7 1994 4.4 | CALCIUM | FL |
| EPA 200.7 1994 4.4 | COBALT | FL |
| EPA 200.7 1994 4.4 | IRON | FL |
| EPA 200.7 1994 4.4 | MAGNESIUM | FL |
| EPA 200.7 1994 4.4 | MOLYBDENUM | FL |
| EPA 200.7 1994 4.4 | POTASSIUM | FL |
| EPA 200.7 1994 4.4 | SILICA AS SIO2 | FL |
| EPA 200.7 1994 4.4 | SODIUM | FL |
| EPA 200.7 1994 4.4 | TIN | FL |
| EPA 200.7 1994 4.4 | ZINC | FL |
| EPA 200.8 1994 5.4 | ANTIMONY | FL |
| EPA 200.8 1994 5.4 | BARIUM | FL |
| EPA 200.8 1994 5.4 | CADMIUM | FL |
| EPA 200.8 1994 5.4 | COBALT | FL |
| EPA 200.8 1994 5.4 | LEAD | FL |
| EPA 200.8 1994 5.4 | MOLYBDENUM | FL |
| EPA 200.8 1994 5.4 | SELENIUM | FL |
| EPA 200.8 1994 5.4 | THALLIUM | FL |
| EPA 200.8 1994 5.4 | ZINC | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 160.4 1971 | RESIDUE-VOLATILE | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN (1,2,3,7,8-PECDD) | FL |
| EPA 1613 B 1994 | 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | FL |
| EPA 1613 B 1994 | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | FL |
| EPA 1631 E 2002 | MERCURY | FL |
| EPA 200.7 1994 4.4 | ALUMINUM | FL |
| EPA 200.7 1994 4.4 | ARSENIC | FL |
| EPA 200.7 1994 4.4 | BERYLLIUM | FL |
| EPA 200.7 1994 4.4 | CADMIUM | FL |
| EPA 200.7 1994 4.4 | CHROMIUM | FL |
| EPA 200.7 1994 4.4 | COPPER | FL |
| EPA 200.7 1994 4.4 | LEAD | FL |
| EPA 200.7 1994 4.4 | MANGANESE | FL |
| EPA 200.7 1994 4.4 | NICKEL | FL |
| EPA 200.7 1994 4.4 | SELENIUM | FL |
| EPA 200.7 1994 4.4 | SILVER | FL |
| EPA 200.7 1994 4.4 | THALLIUM | FL |
| EPA 200.7 1994 4.4 | VANADIUM | FL |
| EPA 200.8 1994 5.4 | ALUMINUM | FL |
| EPA 200.8 1994 5.4 | ARSENIC | FL |
| EPA 200.8 1994 5.4 | BERYLLIUM | FL |
| EPA 200.8 1994 5.4 | CHROMIUM | FL |
| EPA 200.8 1994 5.4 | COPPER | FL |
| EPA 200.8 1994 5.4 | MANGANESE | FL |
| EPA 200.8 1994 5.4 | NICKEL | FL |
| EPA 200.8 1994 5.4 | SILVER | FL |
| EPA 200.8 1994 5.4 | VANADIUM | FL |
| EPA 300.0 1993 2.1 | BROMIDE | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 300.0 1993 2.1 | CHLORIDE | FL |
| EPA 300.0 1993 2.1 | NITRATE AS N | FL |
| EPA 300.0 1993 2.1 | ORTHOPHOSPHATE AS P | FL |
| EPA 410.4 1993 2 | CHEMICAL OXYGEN DEMAND | FL |
| EPA 6010 C (2/07) | ANTIMONY | FL |
| EPA 6010 C (2/07) | BARIUM | FL |
| EPA 6010 C (2/07) | BORON | FL |
| EPA 6010 C (2/07) | CALCIUM | FL |
| EPA 6010 C (2/07) | COBALT | FL |
| EPA 6010 C (2/07) | IRON | FL |
| EPA 6010 C (2/07) | MAGNESIUM | FL |
| EPA 6010 C (2/07) | MOLYBDENUM | FL |
| EPA 6010 C (2/07) | PHOSPHORUS, TOTAL | FL |
| EPA 6010 C (2/07) | SELENIUM | FL |
| EPA 6010 C (2/07) | SODIUM | FL |
| EPA 6010 C (2/07) | TIN | FL |
| EPA 6010 C (2/07) | VANADIUM | FL |
| EPA 6020 A (2/07) | ALUMINUM | FL |
| EPA 6020 A (2/07) | ARSENIC | FL |
| EPA 6020 A (2/07) | BERYLLIUM | FL |
| EPA 6020 A (2/07) | CHROMIUM | FL |
| EPA 6020 A (2/07) | COPPER | FL |
| EPA 6020 A (2/07) | MANGANESE | FL |
| EPA 6020 A (2/07) | SELENIUM | FL |
| EPA 6020 A (2/07) | THALLIUM | FL |
| EPA 6020 A (2/07) | ZINC | FL |
| EPA 6020 A - EXTENDED (2/07) | MOLYBDENUM | FL |
| EPA 608 | 4,4'-DDD | FL |
| EPA 608 | 4,4'-DDT | FL |
| EPA 608 | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 608 | AROCLOR-1221 (PCB-1221) | FL |
| EPA 608 | AROCLOR-1242 (PCB-1242) | FL |
| EPA 608 | AROCLOR-1254 (PCB-1254) | FL |
| EPA 608 | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 608 | DELTA-BHC | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 300.0 1993 2.1 | FLUORIDE | FL |
| EPA 300.0 1993 2.1 | NITRITE AS N | FL |
| EPA 300.0 1993 2.1 | SULFATE | FL |
| EPA 6010 C (2/07) | ALUMINUM | FL |
| EPA 6010 C (2/07) | ARSENIC | FL |
| EPA 6010 C (2/07) | BERYLLIUM | FL |
| EPA 6010 C (2/07) | CADMIUM | FL |
| EPA 6010 C (2/07) | CHROMIUM | FL |
| EPA 6010 C (2/07) | COPPER | FL |
| EPA 6010 C (2/07) | LEAD | FL |
| EPA 6010 C (2/07) | MANGANESE | FL |
| EPA 6010 C (2/07) | NICKEL | FL |
| EPA 6010 C (2/07) | POTASSIUM | FL |
| EPA 6010 C (2/07) | SILVER | FL |
| EPA 6010 C (2/07) | THALLIUM | FL |
| EPA 6010 C (2/07) | TITANIUM | FL |
| EPA 6010 C (2/07) | ZINC | FL |
| EPA 6020 A (2/07) | ANTIMONY | FL |
| EPA 6020 A (2/07) | BARIUM | FL |
| EPA 6020 A (2/07) | CADMIUM | FL |
| EPA 6020 A (2/07) | COBALT | FL |
| EPA 6020 A (2/07) | LEAD | FL |
| EPA 6020 A (2/07) | NICKEL | FL |
| EPA 6020 A (2/07) | SILVER | FL |
| EPA 6020 A (2/07) | VANADIUM | FL |
| EPA 6020 A - EXTENDED (2/07) | BORON | FL |
| EPA 6020 A - EXTENDED (2/07) | STRONTIUM | FL |
| EPA 608 | 4,4'-DDE | FL |
| EPA 608 | ALDRIN | FL |
| EPA 608 | AROCLOR-1016 (PCB-1016) | FL |
| EPA 608 | AROCLOR-1232 (PCB-1232) | FL |
| EPA 608 | AROCLOR-1248 (PCB-1248) | FL |
| EPA 608 | AROCLOR-1260 (PCB-1260) | FL |
| EPA 608 | CHLORDANE (TECH.) | FL |
| EPA 608 | DIELDRIN | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 608 | ENDOSULFAN I | FL |
| EPA 608 | ENDOSULFAN SULFATE | FL |
| EPA 608 | ENDRIN ALDEHYDE | FL |
| EPA 608 | HEPTACHLOR | FL |
| EPA 608 | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 622 | CHLORPYRIFOS | FL |
| EPA 624 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 624 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 624 | 1,2-DICHLOROBENZENE | FL |
| EPA 624 | 1,2-DICHLOROPROPANE | FL |
| EPA 624 | 1,4-DICHLOROBENZENE | FL |
| EPA 624 | BROMODICHLOROMETHANE | FL |
| EPA 624 | CARBON TETRACHLORIDE | FL |
| EPA 624 | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 624 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 624 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 624 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 624 | TOLUENE | FL |
| EPA 624 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 624 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 624 - EXTENDED | 1,1-DICHLOROETHYLENE | FL |
| EPA 625 1982 | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 625 1982 | 2,4-DIMETHYLPHENOL | FL |
| EPA 625 1982 | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 625 1982 | 2-CHLORONAPHTHALENE | FL |
| EPA 625 1982 | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 625 1982 | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 625 1982 | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 625 1982 | 4-NITROPHENOL | FL |
| EPA 625 1982 | ACENAPHTHYLENE | FL |
| EPA 625 1982 | BENZIDINE | FL |
| EPA 625 1982 | BENZO(A)PYRENE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 608 | ENDOSULFAN II | FL |
| EPA 608 | ENDRIN | FL |
| EPA 608 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 608 | HEPTACHLOR EPOXIDE | FL |
| EPA 622 | AZINPHOS-METHYL (GUTHION) | FL |
| EPA 622 | DIAZINON | FL |
| EPA 624 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 624 | 1,1-DICHLOROETHANE | FL |
| EPA 624 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 624 | 1,3-DICHLOROBENZENE | FL |
| EPA 624 | BENZENE | FL |
| EPA 624 | BROMOFORM | FL |
| EPA 624 | CHLOROBENZENE | FL |
| EPA 624 | CHLOROFORM | FL |
| EPA 624 | ETHYLBENZENE | FL |
| EPA 624 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 624 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 624 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 624 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 624 | VINYL CHLORIDE | FL |
| EPA 625 1982 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 625 1982 | 2,4-DICHLOROPHENOL | FL |
| EPA 625 1982 | 2,4-DINITROPHENOL | FL |
| EPA 625 1982 | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 625 1982 | 2-CHLOROPHENOL | FL |
| EPA 625 1982 | 2-NITROPHENOL | FL |
| EPA 625 1982 | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 625 1982 | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 625 1982 | ACENAPHTHENE | FL |
| EPA 625 1982 | ANTHRACENE | FL |
| EPA 625 1982 | BENZO(A)ANTHRACENE | FL |

## Commonwealth of Virginia

Department of General Services
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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 625 1982 | BENZO(G,H,I)PERYLENE | FL |
| EPA 625 1982 | BENZO[B]FLUORANTHENE | FL |
| EPA 625 1982 | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 625 1982 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 625 1982 | CHRYSENE | FL |
| EPA 625 1982 | DI-N-OCTYL PHTHALATE | FL |
| EPA 625 1982 | DIETHYL PHTHALATE | FL |
| EPA 625 1982 | FLUORANTHENE | FL |
| EPA 625 1982 | HEXACHLOROBENZENE | FL |
| EPA 625 1982 | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 625 1982 | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 625 1982 | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 625 1982 | N-NITROSODIPHENYLAMINE | FL |
| EPA 625 1982 | NITROBENZENE | FL |
| EPA 625 1982 | PHENANTHRENE | FL |
| EPA 625 1982 | PYRENE | FL |
| EPA 8015 C 2000 | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8021 B 1996 | BENZENE | FL |
| EPA 8021 B 1996 | TOLUENE | FL |
| EPA 8021 B - EXTENDED 1996 | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8081 B (2/07) | 4,4'-DDE | FL |
| EPA 8081 B (2/07) | ALDRIN | FL |
| EPA 8081 B (2/07) | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 8081 B (2/07) | CHLORDANE (TECH.) | FL |
| EPA 8081 B (2/07) | DIELDRIN | FL |
| EPA 8081 B (2/07) | ENDOSULFAN II | FL |
| EPA 8081 B (2/07) | ENDRIN | FL |
| EPA 8081 B (2/07) | ENDRIN KETONE | FL |
| EPA 8081 B (2/07) | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 B (2/07) | HEPTACHLOR EPOXIDE | FL |
| EPA 625 1982 | BENZO(K)FLUORANTHENE | FL |
| EPA 625 1982 | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 625 1982 | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 625 1982 | BUTYL BENZYL PHTHALATE | FL |
| EPA 625 1982 | DI-N-BUTYL PHTHALATE | FL |
| EPA 625 1982 | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 625 1982 | DIMETHYL PHTHALATE | FL |
| EPA 625 1982 | FLUORENE | FL |
| EPA 625 1982 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 625 1982 | HEXACHLOROETHANE | FL |
| EPA 625 1982 | ISOPHORONE | FL |
| EPA 625 1982 | N-NITROSODIMETHYLAMINE | FL |
| EPA 625 1982 | NAPHTHALENE | FL |
| EPA 625 1982 | PENTACHLOROPHENOL | FL |
| EPA 625 1982 | PHENOL | FL |
| EPA 7470 A 1994 | MERCURY | FL |
| EPA 8015 C 2000 | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8021 B 1996 | ETHYLBENZENE | FL |
| EPA 8021 B 1996 | XYLENE (TOTAL) | FL |
| EPA 8081 B (2/07) | 4,4'-DDD | FL |
| EPA 8081 B (2/07) | 4,4'-DDT | FL |
| EPA 8081 B (2/07) | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | DELTA-BHC | FL |
| EPA 8081 B (2/07) | ENDOSULFAN I | FL |
| EPA 8081 B (2/07) | ENDOSULFAN SULFATE | FL |
| EPA 8081 B (2/07) | ENDRIN ALDEHYDE | FL |
| EPA 8081 B (2/07) | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | HEPTACHLOR | FL |
| EPA 8081 B (2/07) | METHOXYCHLOR | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8081 B (2/07) | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 8082 A (2/07) | AROCLOR-1221 (PCB-1221) | FL |
| EPA 8082 A (2/07) | AROCLOR-1242 (PCB-1242) | FL |
| EPA 8082 A (2/07) | AROCLOR-1254 (PCB-1254) | FL |
| EPA 8141 B 2007 | AZINPHOS-METHYL (GUTHION) | FL |
| EPA 8141 B 2007 | CHLORPYRIFOS | FL |
| EPA 8141 B 2007 | DEMETON-O | FL |
| EPA 8141 B 2007 | DIAZINON | FL |
| EPA 8141 B 2007 | DIMETHOATE | FL |
| EPA 8141 B 2007 | DISULFOTON | FL |
| EPA 8141 B 2007 | ETHOPROP | FL |
| EPA 8141 B 2007 | FENSULFOTHION | FL |
| EPA 8141 B 2007 | FONOPHOS (FONOFOS) | FL |
| EPA 8141 B 2007 | MALATHION | FL |
| EPA 8141 B 2007 | METHYL PARATHION (PARATHION, METHYL) | FL |
| EPA 8141 B 2007 | MONOCROTOPHOS | FL |
| EPA 8141 B 2007 | PARATHION (PARATHION - ETHYL) | FL |
| EPA 8141 B 2007 | RONNEL | FL |
| EPA 8141 B 2007 | TETRAETHYL PYROPHOSPHATE (TEPP) | FL |
| EPA 8141 B 2007 | TOKUTHION (PROTHIOPHOS) | FL |
| EPA 8151 A (12/96) | 2,4,5-T | FL |
| EPA 8151 A (12/96) | 2,4-DB | FL |
| EPA 8151 A (12/96) | DICHLOROPROP (DICHLORPROP) | FL |
| EPA 8260 B 1996 | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 B 1996 | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROPROPANE | FL |
| EPA 8082 A (2/07) | AROCLOR-1016 (PCB-1016) | FL |
| EPA 8082 A (2/07) | AROCLOR-1232 (PCB-1232) | FL |
| EPA 8082 A (2/07) | AROCLOR-1248 (PCB-1248) | FL |
| EPA 8082 A (2/07) | AROCLOR-1260 (PCB-1260) | FL |
| EPA 8141 B 2007 | BOLSTAR (SULPROFOS) | FL |
| EPA 8141 B 2007 | COUMAPHOS | FL |
| EPA 8141 B 2007 | DEMETON-S | FL |
| EPA 8141 B 2007 | DICHLOROVOS (DDVP, DICHLORVOS) | FL |
| EPA 8141 B 2007 | DIOXATHION | FL |
| EPA 8141 B 2007 | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | FL |
| EPA 8141 B 2007 | FAMPHUR | FL |
| EPA 8141 B 2007 | FENTHION | FL |
| EPA 8141 B 2007 | LEPTOPHOS | FL |
| EPA 8141 B 2007 | MERPHOS | FL |
| EPA 8141 B 2007 | MEVINPHOS | FL |
| EPA 8141 B 2007 | NALED | FL |
| EPA 8141 B 2007 | PHORATE | FL |
| EPA 8141 B 2007 | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8141 B 2007 | THIONAZIN (ZINOPHOS) | FL |
| EPA 8141 B 2007 | TRICHLORONATE | FL |
| EPA 8151 A (12/96) | 2,4-D | FL |
| EPA 8151 A (12/96) | DICAMBA | FL |
| EPA 8151 A (12/96) | SILVEX (2,4,5-TP) | FL |
| EPA 8260 B 1996 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 B 1996 | 1,2,3-TRICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,4-DICHLOROBENZENE | FL |

**Commonwealth of Virginia**

Department of General Services
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## Scope of Accreditation

VELAP Certificate No.: 2128

**SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC.**
3310 WIN STREET
CUYAHOGA FALLS, OH 44223

**Virginia Laboratory ID: 460141**
Effective Date: June 15, 2013
Expiration Date: June 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B 1996 | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL |
| EPA 8260 B 1996 | 2,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 B 1996 | 2-HEXANONE | FL |
| EPA 8260 B 1996 | 4-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | ACETONE | FL |
| EPA 8260 B 1996 | ACROLEIN (PROPENAL) | FL |
| EPA 8260 B 1996 | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 B 1996 | BENZYL CHLORIDE | FL |
| EPA 8260 B 1996 | BROMOCHLOROMETHANE | FL |
| EPA 8260 B 1996 | BROMOFORM | FL |
| EPA 8260 B 1996 | CARBON TETRACHLORIDE | FL |
| EPA 8260 B 1996 | CHLOROBENZENE | FL |
| EPA 8260 B 1996 | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 B 1996 | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 B 1996 | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 B 1996 | DIETHYL ETHER | FL |
| EPA 8260 B 1996 | ETHYL ACETATE | FL |
| EPA 8260 B 1996 | ETHYLBENZENE | FL |
| EPA 8260 B 1996 | HEXACHLOROETHANE | FL |
| EPA 8260 B 1996 | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 B 1996 | ISOPROPYLBENZENE | FL |
| EPA 8260 B 1996 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B 1996 | METHYL METHACRYLATE | FL |
| EPA 8260 B 1996 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B 1996 | NAPHTHALENE | FL |
| EPA 8260 B 1996 | PENTACHLOROETHANE | FL |
| EPA 8260 B 1996 | TERT-BUTYL ALCOHOL | FL |
| EPA 8260 B 1996 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 B 1996 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 B 1996 | TRANS-1,4-DICHLORO-2-BUTENE | FL |
| EPA 8260 B 1996 | 1-CHLOROBUTANE | FL |
| EPA 8260 B 1996 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |
| EPA 8260 B 1996 | 2-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | 2-NITROPROPANE | FL |
| EPA 8260 B 1996 | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 B 1996 | ACETONITRILE | FL |
| EPA 8260 B 1996 | ACRYLONITRILE | FL |
| EPA 8260 B 1996 | BENZENE | FL |
| EPA 8260 B 1996 | BROMOBENZENE | FL |
| EPA 8260 B 1996 | BROMODICHLOROMETHANE | FL |
| EPA 8260 B 1996 | CARBON DISULFIDE | FL |
| EPA 8260 B 1996 | CHLOROACETONITRILE | FL |
| EPA 8260 B 1996 | CHLORODIBROMOMETHANE | FL |
| EPA 8260 B 1996 | CHLOROFORM | FL |
| EPA 8260 B 1996 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 B 1996 | ETHANOL | FL |
| EPA 8260 B 1996 | ETHYL METHACRYLATE | FL |
| EPA 8260 B 1996 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8260 B 1996 | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 B 1996 | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | FL |
| EPA 8260 B 1996 | METHACRYLONITRILE | FL |
| EPA 8260 B 1996 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 B 1996 | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8260 B 1996 | N-PROPYLBENZENE | FL |
| EPA 8260 B 1996 | O-XYLENE | FL |
| EPA 8260 B 1996 | STYRENE | FL |
| EPA 8260 B 1996 | TERT-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | TOLUENE | FL |
| EPA 8260 B 1996 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |

## Commonwealth of Virginia

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B 1996 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 B 1996 | VINYL CHLORIDE | FL |
| EPA 8260 B - EXTENDED 1996 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | FL |
| EPA 8270 D (2/07) | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,3-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROPHENOL | FL |
| EPA 8270 D (2/07) | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 D (2/07) | 2-CHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 8270 D (2/07) | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D (2/07) | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 D (2/07) | 4-METHYLPHENOL (P-CRESOL) | FL |
| EPA 8270 D (2/07) | ACENAPHTHENE | FL |
| EPA 8270 D (2/07) | ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D (2/07) | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 D (2/07) | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 D (2/07) | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D (2/07) | DIMETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | FLUORENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D (2/07) | HEXACHLOROETHANE | FL |
| EPA 8270 D (2/07) | ISOPHORONE | FL |
| EPA 8270 D (2/07) | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 D (2/07) | NAPHTHALENE | FL |
| EPA 8270 D (2/07) | PENTACHLOROPHENOL | FL |
| EPA 8270 D (2/07) | PYRENE | FL |
| EPA 8260 B 1996 | VINYL ACETATE | FL |
| EPA 8260 B 1996 | XYLENE (TOTAL) | FL |
| EPA 8260 B - EXTENDED 1996 | CYCLOHEXANE | FL |
| EPA 8270 D (2/07) | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 D (2/07) | 2-CHLORONAPHTHALENE | FL |
| EPA 8270 D (2/07) | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 D (2/07) | 2-NITROPHENOL | FL |
| EPA 8270 D (2/07) | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 D (2/07) | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D (2/07) | 4-NITROPHENOL | FL |
| EPA 8270 D (2/07) | ACENAPHTHYLENE | FL |
| EPA 8270 D (2/07) | BENZIDINE | FL |
| EPA 8270 D (2/07) | BENZO(A)PYRENE | FL |
| EPA 8270 D (2/07) | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 D (2/07) | CHRYSENE | FL |
| EPA 8270 D (2/07) | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | FLUORANTHENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBENZENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROCYCLOPENTADIEN E | FL |
| EPA 8270 D (2/07) | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D (2/07) | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D (2/07) | NITROBENZENE | FL |
| EPA 8270 D (2/07) | PHENOL | FL |
| EPA 8270 D - EXTENDED (2/07) | PYRIDINE | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8290 A 2007 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8-PENTACHLORODIBENZOFURAN (1,2,3,7,8-PECDF) | FL |
| EPA 8290 A 2007 | 2,3,4,7,8-PENTACHLORODIBENZOFURAN | FL |
| EPA 8290 A 2007 | 2,3,7,8-TETRACHLORODIBENZOFURAN | FL |
| EPA 9056 A 2/07 | BROMIDE | FL |
| EPA 9056 A 2/07 | FLUORIDE | FL |
| EPA 9056 A 2/07 | NITRITE | FL |
| EPA 9056 A 2/07 | SULFATE | FL |
| EPA 9310 (9/86) | GROSS ALPHA | FL |
| EPA 9320 (9/86) | RADIUM-228 | FL |
| SM 4500-CN⁻ E 1998 20th ED | CYANIDE | FL |
| SM 5310 B 1998 20th ED | TOTAL ORGANIC CARBON | FL |
| EPA 8290 A 2007 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN (1,2,3,7,8-PECDD) | FL |
| EPA 8290 A 2007 | 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN | FL |
| EPA 8290 A 2007 | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | FL |
| EPA 9020 B 1994 | TOTAL ORGANIC HALIDES (TOX) | FL |
| EPA 9056 A 2/07 | CHLORIDE | FL |
| EPA 9056 A 2/07 | NITRATE AS N | FL |
| EPA 9056 A 2/07 | ORTHOPHOSPHATE AS P | FL |
| EPA 9065 1986 | TOTAL PHENOLICS | FL |
| EPA 9310 (9/86) | GROSS BETA | FL |
| SM 2510 B 1998 20th ED | CONDUCTIVITY | FL |
| SM 4500-P E 1998 20th ED | PHOSPHORUS, TOTAL | FL |

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1010 A 2002 | FLASHPOINT | FL |
| EPA 160.4 1971 | RESIDUE-VOLATILE | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | FL |
| EPA 1311 1992 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | FL |
| EPA 1613 B 1994 | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | FL |
| EPA 1613 B 1994 | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | FL |

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1613 B 1994 | 1,2,3,7,8-PENTACHLORODIBENZO -P-DIOXIN (1,2,3,7,8-PECDD) | FL |
| EPA 1613 B 1994 | 2,3,4,6,7,8-HEXACHLORODIBENZO FURAN | FL |
| EPA 1613 B 1994 | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | FL |
| EPA 6010 C (2/07) | ALUMINUM | FL |
| EPA 6010 C (2/07) | ARSENIC | FL |
| EPA 6010 C (2/07) | BERYLLIUM | FL |
| EPA 6010 C (2/07) | CALCIUM | FL |
| EPA 6010 C (2/07) | COBALT | FL |
| EPA 6010 C (2/07) | IRON | FL |
| EPA 6010 C (2/07) | MAGNESIUM | FL |
| EPA 6010 C (2/07) | MOLYBDENUM | FL |
| EPA 6010 C (2/07) | PHOSPHORUS, TOTAL | FL |
| EPA 6010 C (2/07) | SELENIUM | FL |
| EPA 6010 C (2/07) | SODIUM | FL |
| EPA 6010 C (2/07) | TIN | FL |
| EPA 6010 C (2/07) | VANADIUM | FL |
| EPA 6020 A (2/07) | ANTIMONY | FL |
| EPA 6020 A (2/07) | BARIUM | FL |
| EPA 6020 A (2/07) | CADMIUM | FL |
| EPA 6020 A (2/07) | COBALT | FL |
| EPA 6020 A (2/07) | LEAD | FL |
| EPA 6020 A (2/07) | NICKEL | FL |
| EPA 6020 A (2/07) | SILVER | FL |
| EPA 6020 A (2/07) | VANADIUM | FL |
| EPA 6020 A - EXTENDED (2/07) | MOLYBDENUM | FL |
| EPA 7196 A 1992 | CHROMIUM VI | FL |
| EPA 7471 B (2/07) | MERCURY | FL |
| EPA 8015 D 2003 | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8021 B 1996 | BENZENE | FL |
| EPA 8021 B 1996 | TOLUENE | FL |
| EPA 8021 B - EXTENDED 1996 | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8081 B (2/07) | 4,4'-DDE | FL |
| EPA 8081 B (2/07) | ALDRIN | FL |
| EPA 8081 B (2/07) | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 1613 B 1994 | 1,2,3,7,8-PENTACHLORODIBENZO FURAN (1,2,3,7,8-PECDF) | FL |
| EPA 1613 B 1994 | 2,3,4,7,8-PENTACHLORODIBENZO FURAN | FL |
| EPA 1613 B 1994 | 2,3,7,8-TETRACHLORODIBENZOF URAN | FL |
| EPA 6010 C (2/07) | ANTIMONY | FL |
| EPA 6010 C (2/07) | BARIUM | FL |
| EPA 6010 C (2/07) | CADMIUM | FL |
| EPA 6010 C (2/07) | CHROMIUM | FL |
| EPA 6010 C (2/07) | COPPER | FL |
| EPA 6010 C (2/07) | LEAD | FL |
| EPA 6010 C (2/07) | MANGANESE | FL |
| EPA 6010 C (2/07) | NICKEL | FL |
| EPA 6010 C (2/07) | POTASSIUM | FL |
| EPA 6010 C (2/07) | SILVER | FL |
| EPA 6010 C (2/07) | THALLIUM | FL |
| EPA 6010 C (2/07) | TITANIUM | FL |
| EPA 6010 C (2/07) | ZINC | FL |
| EPA 6020 A (2/07) | ARSENIC | FL |
| EPA 6020 A (2/07) | BERYLLIUM | FL |
| EPA 6020 A (2/07) | CHROMIUM | FL |
| EPA 6020 A (2/07) | COPPER | FL |
| EPA 6020 A (2/07) | MANGANESE | FL |
| EPA 6020 A (2/07) | SELENIUM | FL |
| EPA 6020 A (2/07) | THALLIUM | FL |
| EPA 6020 A (2/07) | ZINC | FL |
| EPA 6020 A - EXTENDED (2/07) | STRONTIUM | FL |
| EPA 7470 A 1994 | MERCURY | FL |
| EPA 8015 D 2003 | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8015 D 2003 | METHANOL | FL |
| EPA 8021 B 1996 | ETHYLBENZENE | FL |
| EPA 8021 B 1996 | XYLENE (TOTAL) | FL |
| EPA 8081 B (2/07) | 4,4'-DDD | FL |
| EPA 8081 B (2/07) | 4,4'-DDT | FL |
| EPA 8081 B (2/07) | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEX ANE) | FL |

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8081 B (2/07) | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | DELTA-BHC | FL |
| EPA 8081 B (2/07) | ENDOSULFAN I | FL |
| EPA 8081 B (2/07) | ENDOSULFAN SULFATE | FL |
| EPA 8081 B (2/07) | ENDRIN ALDEHYDE | FL |
| EPA 8081 B (2/07) | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | HEPTACHLOR | FL |
| EPA 8081 B (2/07) | METHOXYCHLOR | FL |
| EPA 8082 A (2/07) | AROCLOR-1016 (PCB-1016) | FL |
| EPA 8082 A (2/07) | AROCLOR-1232 (PCB-1232) | FL |
| EPA 8082 A (2/07) | AROCLOR-1248 (PCB-1248) | FL |
| EPA 8082 A (2/07) | AROCLOR-1260 (PCB-1260) | FL |
| EPA 8141 B 2007 | BOLSTAR (SULPROFOS) | FL |
| EPA 8141 B 2007 | COUMAPHOS | FL |
| EPA 8141 B 2007 | DEMETON-S | FL |
| EPA 8141 B 2007 | DICHLOROVOS (DDVP, DICHLORVOS) | FL |
| EPA 8141 B 2007 | DISULFOTON | FL |
| EPA 8141 B 2007 | ETHOPROP | FL |
| EPA 8141 B 2007 | FENITROTHION | FL |
| EPA 8141 B 2007 | MALATHION | FL |
| EPA 8141 B 2007 | METHYL PARATHION (PARATHION, METHYL) | FL |
| EPA 8141 B 2007 | MONOCROTOPHOS | FL |
| EPA 8141 B 2007 | PARATHION (PARATHION - ETHYL) | FL |
| EPA 8141 B 2007 | RONNEL | FL |
| EPA 8141 B 2007 | TETRAETHYL PYROPHOSPHATE (TEPP) | FL |
| EPA 8141 B 2007 | TOKUTHION (PROTHIOPHOS) | FL |
| EPA 8151 A (12/96) | 2,4,5-T | FL |
| EPA 8151 A (12/96) | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8260 B 1996 | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHANE | FL |
| EPA 8081 B (2/07) | CHLORDANE (TECH.) | FL |
| EPA 8081 B (2/07) | DIELDRIN | FL |
| EPA 8081 B (2/07) | ENDOSULFAN II | FL |
| EPA 8081 B (2/07) | ENDRIN | FL |
| EPA 8081 B (2/07) | ENDRIN KETONE | FL |
| EPA 8081 B (2/07) | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 B (2/07) | HEPTACHLOR EPOXIDE | FL |
| EPA 8081 B (2/07) | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 8082 A (2/07) | AROCLOR-1221 (PCB-1221) | FL |
| EPA 8082 A (2/07) | AROCLOR-1242 (PCB-1242) | FL |
| EPA 8082 A (2/07) | AROCLOR-1254 (PCB-1254) | FL |
| EPA 8141 B 2007 | AZINPHOS-METHYL (GUTHION) | FL |
| EPA 8141 B 2007 | CHLORPYRIFOS | FL |
| EPA 8141 B 2007 | DEMETON-O | FL |
| EPA 8141 B 2007 | DIAZINON | FL |
| EPA 8141 B 2007 | DIMETHOATE | FL |
| EPA 8141 B 2007 | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | FL |
| EPA 8141 B 2007 | FAMPHUR | FL |
| EPA 8141 B 2007 | FENSULFOTHION | FL |
| EPA 8141 B 2007 | MERPHOS | FL |
| EPA 8141 B 2007 | MEVINPHOS | FL |
| EPA 8141 B 2007 | NALED | FL |
| EPA 8141 B 2007 | PHORATE | FL |
| EPA 8141 B 2007 | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8141 B 2007 | THIONAZIN (ZINOPHOS) | FL |
| EPA 8141 B 2007 | TRICHLORONATE | FL |
| EPA 8151 A (12/96) | 2,4-D | FL |
| EPA 8151 A (12/96) | SILVEX (2,4,5-TP) | FL |
| EPA 8260 B 1996 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHYLENE | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2128

**SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC.**
3310 WIN STREET
CUYAHOGA FALLS, OH 44223

**Virginia Laboratory ID: 460141**
Effective Date: June 15, 2013
Expiration Date: June 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B 1996 | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 B 1996 | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 2,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 B 1996 | 2-HEXANONE | FL |
| EPA 8260 B 1996 | 4-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | ACETONE | FL |
| EPA 8260 B 1996 | ACRYLONITRILE | FL |
| EPA 8260 B 1996 | BROMOBENZENE | FL |
| EPA 8260 B 1996 | BROMODICHLOROMETHANE | FL |
| EPA 8260 B 1996 | CARBON DISULFIDE | FL |
| EPA 8260 B 1996 | CHLOROBENZENE | FL |
| EPA 8260 B 1996 | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 B 1996 | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 B 1996 | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 B 1996 | DIETHYL ETHER | FL |
| EPA 8260 B 1996 | ETHYLBENZENE | FL |
| EPA 8260 B 1996 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B 1996 | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8260 B 1996 | N-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | NAPHTHALENE | FL |
| EPA 8260 B 1996 | STYRENE | FL |
| EPA 8260 B 1996 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 B 1996 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 B 1996 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 B 1996 | VINYL ACETATE | FL |
| EPA 8260 B 1996 | XYLENE (TOTAL) | FL |
| EPA 8260 B 1996 | 1,2,3-TRICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |
| EPA 8260 B 1996 | 2-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | 2-NITROPROPANE | FL |
| EPA 8260 B 1996 | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 B 1996 | ACROLEIN (PROPENAL) | FL |
| EPA 8260 B 1996 | BENZENE | FL |
| EPA 8260 B 1996 | BROMOCHLOROMETHANE | FL |
| EPA 8260 B 1996 | BROMOFORM | FL |
| EPA 8260 B 1996 | CARBON TETRACHLORIDE | FL |
| EPA 8260 B 1996 | CHLORODIBROMOMETHANE | FL |
| EPA 8260 B 1996 | CHLOROFORM | FL |
| EPA 8260 B 1996 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 B 1996 | ETHYL ACETATE | FL |
| EPA 8260 B 1996 | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 B 1996 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 B 1996 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B 1996 | N-PROPYLBENZENE | FL |
| EPA 8260 B 1996 | SEC-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | TERT-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | TOLUENE | FL |
| EPA 8260 B 1996 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 B 1996 | VINYL CHLORIDE | FL |
| EPA 8270 D (2/07) | 1,2,4-TRICHLOROBENZENE | FL |

## Commonwealth of Virginia

Department of General Services
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## Scope of Accreditation

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CUYAHOGA FALLS, OH 44223

**Virginia Laboratory ID: 460141**
Effective Date: June 15, 2013
Expiration Date: June 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D (2/07) | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 D (2/07) | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 D (2/07) | 2-NITROPHENOL | FL |
| EPA 8270 D (2/07) | 3-METHYLPHENOL (M-CRESOL) | FL |
| EPA 8270 D (2/07) | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 D (2/07) | 4-METHYLPHENOL (P-CRESOL) | FL |
| EPA 8270 D (2/07) | ACENAPHTHENE | FL |
| EPA 8270 D (2/07) | ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D (2/07) | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 D (2/07) | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 D (2/07) | CHRYSENE | FL |
| EPA 8270 D (2/07) | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | FLUORANTHENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBENZENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 D (2/07) | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D (2/07) | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D (2/07) | NITROBENZENE | FL |
| EPA 8270 D (2/07) | PHENOL | FL |
| EPA 8270 D - EXTENDED (2/07) | PYRIDINE | FL |
| EPA 8290 A 2007 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D (2/07) | 1,3-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROPHENOL | FL |
| EPA 8270 D (2/07) | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 D (2/07) | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 8270 D (2/07) | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D (2/07) | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 D (2/07) | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D (2/07) | 4-NITROPHENOL | FL |
| EPA 8270 D (2/07) | ACENAPHTHYLENE | FL |
| EPA 8270 D (2/07) | BENZIDINE | FL |
| EPA 8270 D (2/07) | BENZO(A)PYRENE | FL |
| EPA 8270 D (2/07) | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 D (2/07) | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D (2/07) | DIMETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | FLUORENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D (2/07) | HEXACHLOROETHANE | FL |
| EPA 8270 D (2/07) | ISOPHORONE | FL |
| EPA 8270 D (2/07) | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 D (2/07) | NAPHTHALENE | FL |
| EPA 8270 D (2/07) | PENTACHLOROPHENOL | FL |
| EPA 8270 D (2/07) | PYRENE | FL |
| EPA 8290 A 2007 | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | FL |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2128

**SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC.**
3310 WIN STREET
CUYAHOGA FALLS, OH 44223

**Virginia Laboratory ID: 460141**
Effective Date: June 15, 2013
Expiration Date: June 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8290 A 2007 | 1,2,3,6,7,8-HEXACHLORODIBENZO -P-DIOXIN(1,2,3,6,7,8-HXCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8,9-HEXACHLORODIBENZO -P-DIOXIN (1,2,3,7,8,9-HXCDD) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8-PENTACHLORODIBENZO -P-DIOXIN (1,2,3,7,8-PECDD) | FL |
| EPA 8290 A 2007 | 2,3,4,6,7,8-HEXACHLORODIBENZO FURAN | FL |
| EPA 8290 A 2007 | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | FL |
| EPA 9020 B 1994 | TOTAL ORGANIC HALIDES (TOX) | FL |
| EPA 9034 1996 | TOTAL SULFIDES | FL |
| EPA 9045 D 2004 | PH | FL |
| EPA 9056 A 2/07 | CHLORIDE | FL |
| EPA 9056 A 2/07 | NITRATE AS N | FL |
| EPA 9056 A 2/07 | ORTHOPHOSPHATE AS P | FL |
| EPA 9071 B (4/98) | OIL & GREASE | FL |
| EPA 9310 (9/86) | GROSS ALPHA | FL |
| EPA 9320 (9/86) | RADIUM-228 | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8290 A 2007 | 1,2,3,6,7,8-HEXACHLORODIBENZO FURAN (1,2,3,6,7,8-HXCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8,9-HEXACHLORODIBENZO FURAN (1,2,3,7,8,9-HXCDF) | FL |
| EPA 8290 A 2007 | 1,2,3,7,8-PENTACHLORODIBENZO FURAN (1,2,3,7,8-PECDF) | FL |
| EPA 8290 A 2007 | 2,3,4,7,8-PENTACHLORODIBENZO FURAN | FL |
| EPA 8290 A 2007 | 2,3,7,8-TETRACHLORODIBENZOF URAN | FL |
| EPA 9023 1996 | EXTRACTABLE ORGANIC HALIDES (EOX) | FL |
| EPA 9040 B (1/95) | PH | FL |
| EPA 9056 A 2/07 | BROMIDE | FL |
| EPA 9056 A 2/07 | FLUORIDE | FL |
| EPA 9056 A 2/07 | NITRITE | FL |
| EPA 9056 A 2/07 | SULFATE | FL |
| EPA 9095 B 2004 | FREE LIQUID | FL |
| EPA 9310 (9/86) | GROSS BETA | FL |

# COMMONWEALTH OF VIRGINIA
# DEPARTMENT OF GENERAL SERVICES
# DIVISION OF CONSOLIDATED LABORATORY SERVICES

## Certifies that

## VA Laboratory ID#: 460175
## TESTAMERICA LABORATORIES, INC.

4101 SHUFFEL STREET NW
NORTH CANTON, OH 44720

**Owner:** TESTAMERICA HOLDINGS, INC.
**Operator:** RACHEL BRYDON JANNETTA
**Responsible Official:** DANIEL PITTMAN

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard

is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **September 15, 2013**
Expiration Date: **September 14, 2014**
**Certificate # 2472**

Thomas L. York, Ph.D., HCLD
DGS Deputy Director for Laboratories

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2472

**TESTAMERICA LABORATORIES, INC.**
4101 SHUFFEL STREET NW
NORTH CANTON, OH 44720

**Virginia Laboratory ID: 460175**
Effective Date: September 15, 2013
Expiration Date: September 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1010 (9/86) | FLASHPOINT | FL |
| EPA 1631 E 2002 | MERCURY | FL |
| EPA 1664 A 1999 | TOTAL PETROLEUM HYDROCARBONS (TPH) | FL |
| EPA 200.7 1994 4.4 | ALUMINUM | FL |
| EPA 200.7 1994 4.4 | ARSENIC | FL |
| EPA 200.7 1994 4.4 | BERYLLIUM | FL |
| EPA 200.7 1994 4.4 | CADMIUM | FL |
| EPA 200.7 1994 4.4 | CHROMIUM | FL |
| EPA 200.7 1994 4.4 | COPPER | FL |
| EPA 200.7 1994 4.4 | LEAD | FL |
| EPA 200.7 1994 4.4 | MANGANESE | FL |
| EPA 200.7 1994 4.4 | NICKEL | FL |
| EPA 200.7 1994 4.4 | SELENIUM | FL |
| EPA 200.7 1994 4.4 | SODIUM | FL |
| EPA 200.7 1994 4.4 | TIN | FL |
| EPA 200.7 1994 4.4 | VANADIUM | FL |
| EPA 200.8 1994 5.4 | ALUMINUM | FL |
| EPA 200.8 1994 5.4 | ARSENIC | FL |
| EPA 200.8 1994 5.4 | BERYLLIUM | FL |
| EPA 200.8 1994 5.4 | CHROMIUM | FL |
| EPA 200.8 1994 5.4 | COPPER | FL |
| EPA 200.8 1994 5.4 | MANGANESE | FL |
| EPA 200.8 1994 5.4 | NICKEL | FL |
| EPA 200.8 1994 5.4 | SILVER | FL |
| EPA 200.8 1994 5.4 | VANADIUM | FL |
| EPA 200.8 - EXTENDED 1994 5.4 | TIN | FL |
| EPA 300.0 1993 2.1 | BROMIDE | FL |
| EPA 300.0 1993 2.1 | FLUORIDE | FL |
| EPA 300.0 1993 2.1 | NITRITE AS N | FL |
| EPA 300.0 1993 2.1 | SULFATE | FL |
| EPA 365.1 1993 2 | ORTHOPHOSPHATE AS P | FL |
| EPA 410.4 1993 2 | CHEMICAL OXYGEN DEMAND | FL |
| EPA 6010 B 1996 | ALUMINUM | FL |
| EPA 6010 B 1996 | ARSENIC | FL |
| EPA 6010 B 1996 | BERYLLIUM | FL |
| EPA 6010 B 1996 | CADMIUM | FL |
| EPA 6010 B 1996 | CHROMIUM | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 120.1 1982 | CONDUCTIVITY | FL |
| EPA 1664 A 1999 | OIL & GREASE | FL |
| EPA 180.1 (AS HACH 8195) | TURBIDITY | FL |
| EPA 200.7 1994 4.4 | ANTIMONY | FL |
| EPA 200.7 1994 4.4 | BARIUM | FL |
| EPA 200.7 1994 4.4 | BORON | FL |
| EPA 200.7 1994 4.4 | CALCIUM | FL |
| EPA 200.7 1994 4.4 | COBALT | FL |
| EPA 200.7 1994 4.4 | IRON | FL |
| EPA 200.7 1994 4.4 | MAGNESIUM | FL |
| EPA 200.7 1994 4.4 | MOLYBDENUM | FL |
| EPA 200.7 1994 4.4 | POTASSIUM | FL |
| EPA 200.7 1994 4.4 | SILVER | FL |
| EPA 200.7 1994 4.4 | THALLIUM | FL |
| EPA 200.7 1994 4.4 | TITANIUM | FL |
| EPA 200.7 1994 4.4 | ZINC | FL |
| EPA 200.8 1994 5.4 | ANTIMONY | FL |
| EPA 200.8 1994 5.4 | BARIUM | FL |
| EPA 200.8 1994 5.4 | CADMIUM | FL |
| EPA 200.8 1994 5.4 | COBALT | FL |
| EPA 200.8 1994 5.4 | LEAD | FL |
| EPA 200.8 1994 5.4 | MOLYBDENUM | FL |
| EPA 200.8 1994 5.4 | SELENIUM | FL |
| EPA 200.8 1994 5.4 | THALLIUM | FL |
| EPA 200.8 1994 5.4 | ZINC | FL |
| EPA 245.1 1994 3 | MERCURY | FL |
| EPA 300.0 1993 2.1 | CHLORIDE | FL |
| EPA 300.0 1993 2.1 | NITRATE AS N | FL |
| EPA 300.0 1993 2.1 | ORTHOPHOSPHATE AS P | FL |
| EPA 335.4 1993 | CYANIDE | FL |
| EPA 365.1 1993 2 | PHOSPHORUS, TOTAL | FL |
| EPA 420.1 (AS HACH 8047) | TOTAL PHENOLICS | FL |
| EPA 6010 B 1996 | ANTIMONY | FL |
| EPA 6010 B 1996 | BARIUM | FL |
| EPA 6010 B 1996 | BORON | FL |
| EPA 6010 B 1996 | CALCIUM | FL |
| EPA 6010 B 1996 | COBALT | FL |

**Commonwealth of Virginia**

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## Scope of Accreditation

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**TESTAMERICA LABORATORIES, INC.**
4101 SHUFFEL STREET NW
NORTH CANTON, OH 44720

**Virginia Laboratory ID: 460175**
Effective Date: September 15, 2013
Expiration Date: September 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 6010 B 1996 | COPPER | FL |
| EPA 6010 B 1996 | LEAD | FL |
| EPA 6010 B 1996 | MANGANESE | FL |
| EPA 6010 B 1996 | NICKEL | FL |
| EPA 6010 B 1996 | SELENIUM | FL |
| EPA 6010 B 1996 | SODIUM | FL |
| EPA 6010 B 1996 | TIN | FL |
| EPA 6010 B 1996 | VANADIUM | FL |
| EPA 6010 C 2007 | ALUMINUM | FL |
| EPA 6010 C 2007 | ARSENIC | FL |
| EPA 6010 C 2007 | BERYLLIUM | FL |
| EPA 6010 C 2007 | CADMIUM | FL |
| EPA 6010 C 2007 | CHROMIUM | FL |
| EPA 6010 C 2007 | COPPER | FL |
| EPA 6010 C 2007 | LEAD | FL |
| EPA 6010 C 2007 | MANGANESE | FL |
| EPA 6010 C 2007 | NICKEL | FL |
| EPA 6010 C 2007 | SELENIUM | FL |
| EPA 6010 C 2007 | SODIUM | FL |
| EPA 6010 C 2007 | TIN | FL |
| EPA 6010 C 2007 | VANADIUM | FL |
| EPA 6020 (9/94) | ALUMINUM | FL |
| EPA 6020 (9/94) | ARSENIC | FL |
| EPA 6020 (9/94) | BERYLLIUM | FL |
| EPA 6020 (9/94) | CHROMIUM | FL |
| EPA 6020 (9/94) | COPPER | FL |
| EPA 6020 (9/94) | MANGANESE | FL |
| EPA 6020 (9/94) | SILVER | FL |
| EPA 6020 (9/94) | ZINC | FL |
| EPA 6020 - EXTENDED (9/94) | CALCIUM | FL |
| EPA 6020 - EXTENDED (9/94) | MAGNESIUM | FL |
| EPA 6020 - EXTENDED (9/94) | SELENIUM | FL |
| EPA 6020 - EXTENDED (9/94) | STRONTIUM | FL |
| EPA 6020 - EXTENDED (9/94) | TITANIUM | FL |
| EPA 6020 A (2/07) | ALUMINUM | FL |
| EPA 6020 A (2/07) | ARSENIC | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 6010 B 1996 | IRON | FL |
| EPA 6010 B 1996 | MAGNESIUM | FL |
| EPA 6010 B 1996 | MOLYBDENUM | FL |
| EPA 6010 B 1996 | POTASSIUM | FL |
| EPA 6010 B 1996 | SILVER | FL |
| EPA 6010 B 1996 | THALLIUM | FL |
| EPA 6010 B 1996 | TITANIUM | FL |
| EPA 6010 B 1996 | ZINC | FL |
| EPA 6010 C 2007 | ANTIMONY | FL |
| EPA 6010 C 2007 | BARIUM | FL |
| EPA 6010 C 2007 | BORON | FL |
| EPA 6010 C 2007 | CALCIUM | FL |
| EPA 6010 C 2007 | COBALT | FL |
| EPA 6010 C 2007 | IRON | FL |
| EPA 6010 C 2007 | MAGNESIUM | FL |
| EPA 6010 C 2007 | MOLYBDENUM | FL |
| EPA 6010 C 2007 | POTASSIUM | FL |
| EPA 6010 C 2007 | SILVER | FL |
| EPA 6010 C 2007 | THALLIUM | FL |
| EPA 6010 C 2007 | TITANIUM | FL |
| EPA 6010 C 2007 | ZINC | FL |
| EPA 6020 (9/94) | ANTIMONY | FL |
| EPA 6020 (9/94) | BARIUM | FL |
| EPA 6020 (9/94) | CADMIUM | FL |
| EPA 6020 (9/94) | COBALT | FL |
| EPA 6020 (9/94) | LEAD | FL |
| EPA 6020 (9/94) | NICKEL | FL |
| EPA 6020 (9/94) | THALLIUM | FL |
| EPA 6020 - EXTENDED (9/94) | BORON | FL |
| EPA 6020 - EXTENDED (9/94) | IRON | FL |
| EPA 6020 - EXTENDED (9/94) | MOLYBDENUM | FL |
| EPA 6020 - EXTENDED (9/94) | SODIUM | FL |
| EPA 6020 - EXTENDED (9/94) | TIN | FL |
| EPA 6020 - EXTENDED (9/94) | VANADIUM | FL |
| EPA 6020 A (2/07) | ANTIMONY | FL |
| EPA 6020 A (2/07) | BARIUM | FL |

**Commonwealth of Virginia**

Department of General Services
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## Scope of Accreditation

VELAP Certificate No.: 2472

**TESTAMERICA LABORATORIES, INC.**
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NORTH CANTON, OH 44720

**Virginia Laboratory ID: 460175**
Effective Date: September 15, 2013
Expiration Date: September 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 6020 A (2/07) | BERYLLIUM | FL |
| EPA 6020 A (2/07) | CALCIUM | FL |
| EPA 6020 A (2/07) | COBALT | FL |
| EPA 6020 A (2/07) | IRON | FL |
| EPA 6020 A (2/07) | MAGNESIUM | FL |
| EPA 6020 A (2/07) | NICKEL | FL |
| EPA 6020 A (2/07) | SILVER | FL |
| EPA 6020 A (2/07) | THALLIUM | FL |
| EPA 6020 A (2/07) | ZINC | FL |
| EPA 6020 A - EXTENDED (2/07) | MOLYBDENUM | FL |
| EPA 6020 A - EXTENDED (2/07) | TIN | FL |
| EPA 608 | 4,4'-DDD | FL |
| EPA 608 | 4,4'-DDT | FL |
| EPA 608 | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 608 | AROCLOR-1221 (PCB-1221) | FL |
| EPA 608 | AROCLOR-1242 (PCB-1242) | FL |
| EPA 608 | AROCLOR-1254 (PCB-1254) | FL |
| EPA 608 | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 608 | DELTA-BHC | FL |
| EPA 608 | ENDOSULFAN I | FL |
| EPA 608 | ENDOSULFAN SULFATE | FL |
| EPA 608 | ENDRIN ALDEHYDE | FL |
| EPA 608 | HEPTACHLOR | FL |
| EPA 608 | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 624 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 624 | 1,1-DICHLOROETHANE | FL |
| EPA 624 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 624 | 1,3-DICHLOROBENZENE | FL |
| EPA 624 | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 624 | ACRYLONITRILE | FL |
| EPA 624 | BROMODICHLOROMETHANE | FL |
| EPA 624 | CARBON TETRACHLORIDE | FL |
| EPA 624 | CHLORODIBROMOMETHANE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 6020 A (2/07) | CADMIUM | FL |
| EPA 6020 A (2/07) | CHROMIUM | FL |
| EPA 6020 A (2/07) | COPPER | FL |
| EPA 6020 A (2/07) | LEAD | FL |
| EPA 6020 A (2/07) | MANGANESE | FL |
| EPA 6020 A (2/07) | SELENIUM | FL |
| EPA 6020 A (2/07) | SODIUM | FL |
| EPA 6020 A (2/07) | VANADIUM | FL |
| EPA 6020 A - EXTENDED (2/07) | BORON | FL |
| EPA 6020 A - EXTENDED (2/07) | STRONTIUM | FL |
| EPA 6020 A - EXTENDED (2/07) | TITANIUM | FL |
| EPA 608 | 4,4'-DDE | FL |
| EPA 608 | ALDRIN | FL |
| EPA 608 | AROCLOR-1016 (PCB-1016) | FL |
| EPA 608 | AROCLOR-1232 (PCB-1232) | FL |
| EPA 608 | AROCLOR-1248 (PCB-1248) | FL |
| EPA 608 | AROCLOR-1260 (PCB-1260) | FL |
| EPA 608 | CHLORDANE (TECH.) | FL |
| EPA 608 | DIELDRIN | FL |
| EPA 608 | ENDOSULFAN II | FL |
| EPA 608 | ENDRIN | FL |
| EPA 608 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 608 | HEPTACHLOR EPOXIDE | FL |
| EPA 624 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 624 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 624 | 1,2-DICHLOROBENZENE | FL |
| EPA 624 | 1,2-DICHLOROPROPANE | FL |
| EPA 624 | 1,4-DICHLOROBENZENE | FL |
| EPA 624 | ACROLEIN (PROPENAL) | FL |
| EPA 624 | BENZENE | FL |
| EPA 624 | BROMOFORM | FL |
| EPA 624 | CHLOROBENZENE | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 624 | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 624 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 624 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 624 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 624 | TOLUENE | FL |
| EPA 624 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 624 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 624 - EXTENDED | 1,1-DICHLOROETHYLENE | FL |
| EPA 625 1982 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 625 1982 | 2,4-DICHLOROPHENOL | FL |
| EPA 625 1982 | 2,4-DINITROPHENOL | FL |
| EPA 625 1982 | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 625 1982 | 2-CHLOROPHENOL | FL |
| EPA 625 1982 | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 625 1982 | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 625 1982 | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 625 1982 | 4-NITROPHENOL | FL |
| EPA 625 1982 | ACENAPHTHYLENE | FL |
| EPA 625 1982 | BENZIDINE | FL |
| EPA 625 1982 | BENZO(A)PYRENE | FL |
| EPA 625 1982 | BENZO(K)FLUORANTHENE | FL |
| EPA 625 1982 | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 625 1982 | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 625 1982 | BUTYL BENZYL PHTHALATE | FL |
| EPA 625 1982 | DI-N-BUTYL PHTHALATE | FL |
| EPA 625 1982 | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 625 1982 | DIMETHYL PHTHALATE | FL |
| EPA 625 1982 | FLUORENE | FL |
| EPA 625 1982 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 625 1982 | HEXACHLOROETHANE | FL |
| EPA 625 1982 | ISOPHORONE | FL |
| EPA 625 1982 | N-NITROSODIMETHYLAMINE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 624 | CHLOROFORM | FL |
| EPA 624 | ETHYLBENZENE | FL |
| EPA 624 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 624 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 624 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 624 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 624 | VINYL CHLORIDE | FL |
| EPA 624 - EXTENDED | XYLENE (TOTAL) | FL |
| EPA 625 1982 | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 625 1982 | 2,4-DIMETHYLPHENOL | FL |
| EPA 625 1982 | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 625 1982 | 2-CHLORONAPHTHALENE | FL |
| EPA 625 1982 | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 625 1982 | 2-NITROPHENOL | FL |
| EPA 625 1982 | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 625 1982 | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 625 1982 | ACENAPHTHENE | FL |
| EPA 625 1982 | ANTHRACENE | FL |
| EPA 625 1982 | BENZO(A)ANTHRACENE | FL |
| EPA 625 1982 | BENZO(G,H,I)PERYLENE | FL |
| EPA 625 1982 | BENZO[B]FLUORANTHENE | FL |
| EPA 625 1982 | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 625 1982 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 625 1982 | CHRYSENE | FL |
| EPA 625 1982 | DI-N-OCTYL PHTHALATE | FL |
| EPA 625 1982 | DIETHYL PHTHALATE | FL |
| EPA 625 1982 | FLUORANTHENE | FL |
| EPA 625 1982 | HEXACHLOROBENZENE | FL |
| EPA 625 1982 | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 625 1982 | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 625 1982 | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 625 1982 | N-NITROSODIPHENYLAMINE | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 625 1982 | NAPHTHALENE | FL |
| EPA 625 1982 | PENTACHLOROPHENOL | FL |
| EPA 625 1982 | PHENOL | FL |
| EPA 625 - EXTENDED 1982 | ACETOPHENONE | FL |
| EPA 625 - EXTENDED 1982 | CARBAZOLE | FL |
| EPA 7470 A 1994 | MERCURY | FL |
| EPA 8015 B 1996 | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8015 C 2000 | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8081 A 1996 | 4,4'-DDE | FL |
| EPA 8081 A 1996 | ALDRIN | FL |
| EPA 8081 A 1996 | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 8081 A 1996 | CHLORDANE (TECH.) | FL |
| EPA 8081 A 1996 | DELTA-BHC | FL |
| EPA 8081 A 1996 | DIELDRIN | FL |
| EPA 8081 A 1996 | ENDOSULFAN II | FL |
| EPA 8081 A 1996 | ENDRIN | FL |
| EPA 8081 A 1996 | ENDRIN KETONE | FL |
| EPA 8081 A 1996 | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 A 1996 | HEPTACHLOR EPOXIDE | FL |
| EPA 8081 A 1996 | METHOXYCHLOR | FL |
| EPA 8081 B (2/07) | 4,4'-DDD | FL |
| EPA 8081 B (2/07) | 4,4'-DDT | FL |
| EPA 8081 B (2/07) | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | CHLOROBENZILATE | FL |
| EPA 8081 B (2/07) | DIALLATE | FL |
| EPA 8081 B (2/07) | ENDOSULFAN I | FL |
| EPA 8081 B (2/07) | ENDOSULFAN SULFATE | FL |
| EPA 8081 B (2/07) | ENDRIN ALDEHYDE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 625 1982 | NITROBENZENE | FL |
| EPA 625 1982 | PHENANTHRENE | FL |
| EPA 625 1982 | PYRENE | FL |
| EPA 625 - EXTENDED 1982 | ANILINE | FL |
| EPA 7196 A 1992 | CHROMIUM VI | FL |
| EPA 8015 B 1996 | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8015 C 2000 | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8081 A 1996 | 4,4'-DDD | FL |
| EPA 8081 A 1996 | 4,4'-DDT | FL |
| EPA 8081 A 1996 | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 A 1996 | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 A 1996 | CHLOROBENZILATE | FL |
| EPA 8081 A 1996 | DIALLATE | FL |
| EPA 8081 A 1996 | ENDOSULFAN I | FL |
| EPA 8081 A 1996 | ENDOSULFAN SULFATE | FL |
| EPA 8081 A 1996 | ENDRIN ALDEHYDE | FL |
| EPA 8081 A 1996 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 A 1996 | HEPTACHLOR | FL |
| EPA 8081 A 1996 | ISODRIN | FL |
| EPA 8081 A 1996 | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 8081 B (2/07) | 4,4'-DDE | FL |
| EPA 8081 B (2/07) | ALDRIN | FL |
| EPA 8081 B (2/07) | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 8081 B (2/07) | CHLORDANE (TECH.) | FL |
| EPA 8081 B (2/07) | DELTA-BHC | FL |
| EPA 8081 B (2/07) | DIELDRIN | FL |
| EPA 8081 B (2/07) | ENDOSULFAN II | FL |
| EPA 8081 B (2/07) | ENDRIN | FL |
| EPA 8081 B (2/07) | ENDRIN KETONE | FL |

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**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8081 B (2/07) | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | HEPTACHLOR | FL |
| EPA 8081 B (2/07) | ISODRIN | FL |
| EPA 8081 B (2/07) | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 8082 A (2/07) | AROCLOR-1016 (PCB-1016) | FL |
| EPA 8082 A (2/07) | AROCLOR-1232 (PCB-1232) | FL |
| EPA 8082 A (2/07) | AROCLOR-1248 (PCB-1248) | FL |
| EPA 8082 A (2/07) | AROCLOR-1260 (PCB-1260) | FL |
| EPA 8151 A (12/96) | 2,4-D | FL |
| EPA 8151 A (12/96) | DALAPON | FL |
| EPA 8151 A (12/96) | DICHLOROPROP (DICHLORPROP) | FL |
| EPA 8151 A (12/96) | MCPA | FL |
| EPA 8151 A (12/96) | SILVEX (2,4,5-TP) | FL |
| EPA 8260 B 1996 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 B 1996 | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 B 1996 | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL |
| EPA 8260 B 1996 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |
| EPA 8260 B 1996 | 2-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | 4-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 B 1996 | ACETONITRILE | FL |
| EPA 8260 B 1996 | ACRYLONITRILE | FL |
| EPA 8260 B 1996 | BENZENE | FL |
| EPA 8260 B 1996 | BROMOCHLOROMETHANE | FL |
| EPA 8260 B 1996 | BROMOFORM | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8081 B (2/07) | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 B (2/07) | HEPTACHLOR EPOXIDE | FL |
| EPA 8081 B (2/07) | METHOXYCHLOR | FL |
| EPA 8081 B - EXTENDED (2/07) | KEPONE | FL |
| EPA 8082 A (2/07) | AROCLOR-1221 (PCB-1221) | FL |
| EPA 8082 A (2/07) | AROCLOR-1242 (PCB-1242) | FL |
| EPA 8082 A (2/07) | AROCLOR-1254 (PCB-1254) | FL |
| EPA 8151 A (12/96) | 2,4,5-T | FL |
| EPA 8151 A (12/96) | 2,4-DB | FL |
| EPA 8151 A (12/96) | DICAMBA | FL |
| EPA 8151 A (12/96) | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8151 A (12/96) | MCPP | FL |
| EPA 8260 B 1996 | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 2,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 B 1996 | 2-HEXANONE | FL |
| EPA 8260 B 1996 | 4-ISOPROPYLTOLUENE (P-CYMENE) | FL |
| EPA 8260 B 1996 | ACETONE | FL |
| EPA 8260 B 1996 | ACROLEIN (PROPENAL) | FL |
| EPA 8260 B 1996 | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 B 1996 | BROMOBENZENE | FL |
| EPA 8260 B 1996 | BROMODICHLOROMETHANE | FL |
| EPA 8260 B 1996 | CARBON DISULFIDE | FL |

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**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B 1996 | CARBON TETRACHLORIDE | FL |
| EPA 8260 B 1996 | CHLORODIBROMOMETHANE | FL |
| EPA 8260 B 1996 | CHLOROFORM | FL |
| EPA 8260 B 1996 | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 B 1996 | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 B 1996 | ETHYL METHACRYLATE | FL |
| EPA 8260 B 1996 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8260 B 1996 | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 B 1996 | METHACRYLONITRILE | FL |
| EPA 8260 B 1996 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 B 1996 | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8260 B 1996 | N-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | NAPHTHALENE | FL |
| EPA 8260 B 1996 | SEC-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | TERT-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | TOLUENE | FL |
| EPA 8260 B 1996 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 B 1996 | VINYL ACETATE | FL |
| EPA 8260 B 1996 | XYLENE (TOTAL) | FL |
| EPA 8260 C 2006 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 C 2006 | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 C 2006 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 C 2006 | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 C 2006 | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 2,2-DICHLOROPROPANE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B 1996 | CHLOROBENZENE | FL |
| EPA 8260 B 1996 | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 B 1996 | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL |
| EPA 8260 B 1996 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 B 1996 | ETHYLBENZENE | FL |
| EPA 8260 B 1996 | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 B 1996 | ISOPROPYLBENZENE | FL |
| EPA 8260 B 1996 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B 1996 | METHYL METHACRYLATE | FL |
| EPA 8260 B 1996 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B 1996 | N-PROPYLBENZENE | FL |
| EPA 8260 B 1996 | PROPIONITRILE (ETHYL CYANIDE) | FL |
| EPA 8260 B 1996 | STYRENE | FL |
| EPA 8260 B 1996 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 B 1996 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 B 1996 | TRANS-1,4-DICHLORO-2-BUTENE | FL |
| EPA 8260 B 1996 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 B 1996 | VINYL CHLORIDE | FL |
| EPA 8260 C 2006 | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1-DICHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 C 2006 | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 C 2006 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 C 2006 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 C 2006 | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 C 2006 | 1,3-DICHLOROPROPANE | FL |
| EPA 8260 C 2006 | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL |
| EPA 8260 C 2006 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2472

**TESTAMERICA LABORATORIES, INC.**
4101 SHUFFEL STREET NW
NORTH CANTON, OH 44720

**Virginia Laboratory ID: 460175**
Effective Date: September 15, 2013
Expiration Date: September 14, 2014

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 C 2006 | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 C 2006 | 2-HEXANONE | FL |
| EPA 8260 C 2006 | 4-ISOPROPYLTOLUENE (P-CYMENE) | FL |
| EPA 8260 C 2006 | ACETONE | FL |
| EPA 8260 C 2006 | ACROLEIN (PROPENAL) | FL |
| EPA 8260 C 2006 | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 C 2006 | BROMOBENZENE | FL |
| EPA 8260 C 2006 | BROMODICHLOROMETHANE | FL |
| EPA 8260 C 2006 | CARBON DISULFIDE | FL |
| EPA 8260 C 2006 | CHLOROBENZENE | FL |
| EPA 8260 C 2006 | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 C 2006 | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL |
| EPA 8260 C 2006 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 C 2006 | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 C 2006 | ETHYLBENZENE | FL |
| EPA 8260 C 2006 | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 C 2006 | ISOPROPYLBENZENE | FL |
| EPA 8260 C 2006 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 C 2006 | METHYL METHACRYLATE | FL |
| EPA 8260 C 2006 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 C 2006 | N-PROPYLBENZENE | FL |
| EPA 8260 C 2006 | PROPIONITRILE (ETHYL CYANIDE) | FL |
| EPA 8260 C 2006 | STYRENE | FL |
| EPA 8260 C 2006 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 C 2006 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 C 2006 | TRANS-1,4-DICHLORO-2-BUTENE | FL |
| EPA 8260 C 2006 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 C 2006 | VINYL CHLORIDE | FL |
| EPA 8270 C 1996 | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 2-CHLOROTOLUENE | FL |
| EPA 8260 C 2006 | 4-CHLOROTOLUENE | FL |
| EPA 8260 C 2006 | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 C 2006 | ACETONITRILE | FL |
| EPA 8260 C 2006 | ACRYLONITRILE | FL |
| EPA 8260 C 2006 | BENZENE | FL |
| EPA 8260 C 2006 | BROMOCHLOROMETHANE | FL |
| EPA 8260 C 2006 | BROMOFORM | FL |
| EPA 8260 C 2006 | CARBON TETRACHLORIDE | FL |
| EPA 8260 C 2006 | CHLORODIBROMOMETHANE | FL |
| EPA 8260 C 2006 | CHLOROFORM | FL |
| EPA 8260 C 2006 | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 C 2006 | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 C 2006 | ETHYL METHACRYLATE | FL |
| EPA 8260 C 2006 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8260 C 2006 | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 C 2006 | METHACRYLONITRILE | FL |
| EPA 8260 C 2006 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 C 2006 | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8260 C 2006 | N-BUTYLBENZENE | FL |
| EPA 8260 C 2006 | NAPHTHALENE | FL |
| EPA 8260 C 2006 | SEC-BUTYLBENZENE | FL |
| EPA 8260 C 2006 | TERT-BUTYLBENZENE | FL |
| EPA 8260 C 2006 | TOLUENE | FL |
| EPA 8260 C 2006 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 C 2006 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 C 2006 | VINYL ACETATE | FL |
| EPA 8260 C 2006 | XYLENE (TOTAL) | FL |
| EPA 8270 C 1996 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,2-DINITROBENZENE | FL |

**Commonwealth of Virginia**

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**Virginia Laboratory ID: 460175**
Effective Date: September 15, 2013
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**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 C 1996 | 1,2-DIPHENYLHYDRAZINE | FL |
| EPA 8270 C 1996 | 1,3-DICHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,4-DINITROBENZENE | FL |
| EPA 8270 C 1996 | 1,4-PHENYLENEDIAMINE | FL |
| EPA 8270 C 1996 | 2,3,4,6-TETRACHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 C 1996 | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 C 1996 | 2-CHLORONAPHTHALENE | FL |
| EPA 8270 C 1996 | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 C 1996 | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 8270 C 1996 | 2-NITROANILINE | FL |
| EPA 8270 C 1996 | 2-PICOLINE (2-METHYLPYRIDINE) | FL |
| EPA 8270 C 1996 | 3,3'-DIMETHYLBENZIDINE | FL |
| EPA 8270 C 1996 | 3-NITROANILINE | FL |
| EPA 8270 C 1996 | 4-AMINOBIPHENYL | FL |
| EPA 8270 C 1996 | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 C 1996 | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 C 1996 | 4-NITROANILINE | FL |
| EPA 8270 C 1996 | 5-NITRO-O-TOLUIDINE | FL |
| EPA 8270 C 1996 | A-A-DIMETHYLPHENETHYLAMINE | FL |
| EPA 8270 C 1996 | ACENAPHTHYLENE | FL |
| EPA 8270 C 1996 | ANILINE | FL |
| EPA 8270 C 1996 | ARAMITE | FL |
| EPA 8270 C 1996 | BENZO(A)ANTHRACENE | FL |
| EPA 8270 C 1996 | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 C 1996 | BENZOIC ACID | FL |
| EPA 8270 C 1996 | BENZYL ALCOHOL | FL |
| EPA 8270 C 1996 | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 C 1996 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 C 1996 | CHLOROBENZILATE | FL |
| EPA 8270 C 1996 | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIALLATE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 C 1996 | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 C 1996 | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 C 1996 | 1-NAPHTHYLAMINE | FL |
| EPA 8270 C 1996 | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DINITROPHENOL | FL |
| EPA 8270 C 1996 | 2,6-DICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 C 1996 | 2-CHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 C 1996 | 2-NAPHTHYLAMINE | FL |
| EPA 8270 C 1996 | 2-NITROPHENOL | FL |
| EPA 8270 C 1996 | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 C 1996 | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 C 1996 | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | FL |
| EPA 8270 C 1996 | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 C 1996 | 4-CHLOROANILINE | FL |
| EPA 8270 C 1996 | 4-DIMETHYL AMINOAZOBENZENE | FL |
| EPA 8270 C 1996 | 4-NITROPHENOL | FL |
| EPA 8270 C 1996 | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL |
| EPA 8270 C 1996 | ACENAPHTHENE | FL |
| EPA 8270 C 1996 | ACETOPHENONE | FL |
| EPA 8270 C 1996 | ANTHRACENE | FL |
| EPA 8270 C 1996 | BENZIDINE | FL |
| EPA 8270 C 1996 | BENZO(A)PYRENE | FL |
| EPA 8270 C 1996 | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 C 1996 | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 C 1996 | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 C 1996 | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 C 1996 | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 C 1996 | CHRYSENE | FL |
| EPA 8270 C 1996 | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIBENZO(A,H) ANTHRACENE | FL |

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**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 C 1996 | DIBENZOFURAN | FL |
| EPA 8270 C 1996 | DIMETHOATE | FL |
| EPA 8270 C 1996 | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8270 C 1996 | DISULFOTON | FL |
| EPA 8270 C 1996 | FAMPHUR | FL |
| EPA 8270 C 1996 | FLUORENE | FL |
| EPA 8270 C 1996 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 C 1996 | HEXACHLOROETHANE | FL |
| EPA 8270 C 1996 | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 C 1996 | ISOSAFROLE | FL |
| EPA 8270 C 1996 | METHYL METHANESULFONATE | FL |
| EPA 8270 C 1996 | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSOMETHYLETHYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSOPIPERIDINE | FL |
| EPA 8270 C 1996 | NAPHTHALENE | FL |
| EPA 8270 C 1996 | NITROQUINOLINE-1-OXIDE | FL |
| EPA 8270 C 1996 | O-TOLUIDINE (2-METHYLANILINE) | FL |
| EPA 8270 C 1996 | PENTACHLORONITROBENZENE | FL |
| EPA 8270 C 1996 | PHENACETIN | FL |
| EPA 8270 C 1996 | PHENOL | FL |
| EPA 8270 C 1996 | PRONAMIDE (KERB) | FL |
| EPA 8270 C 1996 | PYRIDINE | FL |
| EPA 8270 C 1996 | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8270 C - EXTENDED 1996 | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8270 D (2/07) | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,2-DIPHENYLHYDRAZINE | FL |
| EPA 8270 D (2/07) | 1,3-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-DINITROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-PHENYLENEDIAMINE | FL |
| EPA 8270 D (2/07) | 2,3,4,6-TETRACHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 C 1996 | DIETHYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIMETHYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIPHENYLAMINE | FL |
| EPA 8270 C 1996 | ETHYL METHANESULFONATE | FL |
| EPA 8270 C 1996 | FLUORANTHENE | FL |
| EPA 8270 C 1996 | HEXACHLOROBENZENE | FL |
| EPA 8270 C 1996 | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 C 1996 | HEXACHLOROPROPENE | FL |
| EPA 8270 C 1996 | ISOPHORONE | FL |
| EPA 8270 C 1996 | METHAPYRILENE | FL |
| EPA 8270 C 1996 | N-NITROSO-DI-N-BUTYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSOMORPHOLINE | FL |
| EPA 8270 C 1996 | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 C 1996 | NITROBENZENE | FL |
| EPA 8270 C 1996 | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 C 1996 | PENTACHLOROBENZENE | FL |
| EPA 8270 C 1996 | PENTACHLOROPHENOL | FL |
| EPA 8270 C 1996 | PHENANTHRENE | FL |
| EPA 8270 C 1996 | PHORATE | FL |
| EPA 8270 C 1996 | PYRENE | FL |
| EPA 8270 C 1996 | SAFROLE | FL |
| EPA 8270 C 1996 | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 C - EXTENDED 1996 | CARBAZOLE | FL |
| EPA 8270 D (2/07) | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,2-DINITROBENZENE | FL |
| EPA 8270 D (2/07) | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 D (2/07) | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 D (2/07) | 1-NAPHTHYLAMINE | FL |
| EPA 8270 D (2/07) | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROPHENOL | FL |
| EPA 8270 D (2/07) | 2,6-DICHLOROPHENOL | FL |

**Commonwealth of Virginia**

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## Scope of Accreditation

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D (2/07) | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 D (2/07) | 2-CHLORONAPHTHALENE | FL |
| EPA 8270 D (2/07) | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 D (2/07) | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 8270 D (2/07) | 2-NITROANILINE | FL |
| EPA 8270 D (2/07) | 2-PICOLINE (2-METHYLPYRIDINE) | FL |
| EPA 8270 D (2/07) | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 D (2/07) | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | FL |
| EPA 8270 D (2/07) | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 D (2/07) | 4-CHLOROANILINE | FL |
| EPA 8270 D (2/07) | 4-DIMETHYL AMINOAZOBENZENE | FL |
| EPA 8270 D (2/07) | 4-NITROPHENOL | FL |
| EPA 8270 D (2/07) | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL |
| EPA 8270 D (2/07) | ACENAPHTHENE | FL |
| EPA 8270 D (2/07) | ACETOPHENONE | FL |
| EPA 8270 D (2/07) | ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZIDINE | FL |
| EPA 8270 D (2/07) | BENZO(A)PYRENE | FL |
| EPA 8270 D (2/07) | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 D (2/07) | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 D (2/07) | CHRYSENE | FL |
| EPA 8270 D (2/07) | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D (2/07) | DIETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIMETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIPHENYLAMINE | FL |
| EPA 8270 D (2/07) | ETHYL METHANESULFONATE | FL |
| EPA 8270 D (2/07) | FLUORANTHENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBENZENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 D (2/07) | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 D (2/07) | 2-CHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D (2/07) | 2-NAPHTHYLAMINE | FL |
| EPA 8270 D (2/07) | 2-NITROPHENOL | FL |
| EPA 8270 D (2/07) | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D (2/07) | 3-NITROANILINE | FL |
| EPA 8270 D (2/07) | 4-AMINOBIPHENYL | FL |
| EPA 8270 D (2/07) | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 D (2/07) | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D (2/07) | 4-NITROANILINE | FL |
| EPA 8270 D (2/07) | 5-NITRO-O-TOLUIDINE | FL |
| EPA 8270 D (2/07) | A-A-DIMETHYLPHENETHYLAMINE | FL |
| EPA 8270 D (2/07) | ACENAPHTHYLENE | FL |
| EPA 8270 D (2/07) | ANILINE | FL |
| EPA 8270 D (2/07) | ARAMITE | FL |
| EPA 8270 D (2/07) | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D (2/07) | BENZOIC ACID | FL |
| EPA 8270 D (2/07) | BENZYL ALCOHOL | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 D (2/07) | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 D (2/07) | CHLOROBENZILATE | FL |
| EPA 8270 D (2/07) | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIALLATE | FL |
| EPA 8270 D (2/07) | DIBENZOFURAN | FL |
| EPA 8270 D (2/07) | DIMETHOATE | FL |
| EPA 8270 D (2/07) | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8270 D (2/07) | DISULFOTON | FL |
| EPA 8270 D (2/07) | FAMPHUR | FL |
| EPA 8270 D (2/07) | FLUORENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D (2/07) | HEXACHLOROETHANE | FL |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D (2/07) | HEXACHLOROPROPENE | FL |
| EPA 8270 D (2/07) | ISOPHORONE | FL |
| EPA 8270 D (2/07) | METHAPYRILENE | FL |
| EPA 8270 D (2/07) | N-NITROSO-DI-N-BUTYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSOMORPHOLINE | FL |
| EPA 8270 D (2/07) | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 D (2/07) | NITROBENZENE | FL |
| EPA 8270 D (2/07) | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 D (2/07) | PENTACHLOROBENZENE | FL |
| EPA 8270 D (2/07) | PENTACHLOROPHENOL | FL |
| EPA 8270 D (2/07) | PHENANTHRENE | FL |
| EPA 8270 D (2/07) | PHORATE | FL |
| EPA 8270 D (2/07) | PYRENE | FL |
| EPA 8270 D (2/07) | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8270 D - EXTENDED (2/07) | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8315 A 1996 | FORMALDEHYDE | FL |
| EPA 9012 A 1996 | TOTAL CYANIDE | FL |
| EPA 9034 1996 | TOTAL SULFIDES | FL |
| EPA 9050 A 1996 | CONDUCTIVITY | FL |
| EPA 9056 A 2/07 | CHLORIDE | FL |
| EPA 9056 A 2/07 | NITRATE AS N | FL |
| EPA 9056 A 2/07 | ORTHOPHOSPHATE AS P | FL |
| EPA 9060 (9/86) | TOTAL ORGANIC CARBON | FL |
| EPA 9251 (9/86) | CHLORIDE | FL |
| RSK-175 1998 | ETHENE | FL |
| SM 2320 B 1992 18th ED | ALKALINITY AS CACO3 | FL |
| SM 2510 B 1992 18th ED | CONDUCTIVITY | FL |
| SM 2540 C 1992 18th ED | RESIDUE-FILTERABLE (TDS) | FL |
| SM 3500-CR D 1992 18th ED | CHROMIUM VI | FL |
| SM 4500-CN⁻ E 1992 18th ED | CYANIDE | FL |
| SM 4500-NH3 E 1992 18th ED | AMMONIA AS N | FL |
| SM 4500-NH3 F 1992 18th ED | AMMONIA AS N | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D (2/07) | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D (2/07) | ISOSAFROLE | FL |
| EPA 8270 D (2/07) | METHYL METHANESULFONATE | FL |
| EPA 8270 D (2/07) | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSOMETHYLETHYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSOPIPERIDINE | FL |
| EPA 8270 D (2/07) | NAPHTHALENE | FL |
| EPA 8270 D (2/07) | NITROQUINOLINE-1-OXIDE | FL |
| EPA 8270 D (2/07) | O-TOLUIDINE (2-METHYLANILINE) | FL |
| EPA 8270 D (2/07) | PENTACHLORONITROBENZENE | FL |
| EPA 8270 D (2/07) | PHENACETIN | FL |
| EPA 8270 D (2/07) | PHENOL | FL |
| EPA 8270 D (2/07) | PRONAMIDE (KERB) | FL |
| EPA 8270 D (2/07) | SAFROLE | FL |
| EPA 8270 D (2/07) | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 D - EXTENDED (2/07) | PYRIDINE | FL |
| EPA 9012 A 1996 | AMENABLE CYANIDE | FL |
| EPA 9030 B (12/96) | PREP: SULFIDE | FL |
| EPA 9040 C (11/04) | PH | FL |
| EPA 9056 A 2/07 | BROMIDE | FL |
| EPA 9056 A 2/07 | FLUORIDE | FL |
| EPA 9056 A 2/07 | NITRITE | FL |
| EPA 9056 A 2/07 | SULFATE | FL |
| EPA 9065 1986 | TOTAL PHENOLICS | FL |
| RSK-175 1998 | ETHANE | FL |
| RSK-175 1998 | METHANE | FL |
| SM 2340 C 1992 18th ED | TOTAL HARDNESS AS CACO3 | FL |
| SM 2540 B 1992 18th ED | RESIDUE-TOTAL | FL |
| SM 2540 D 1992 18th ED | RESIDUE-NONFILTERABLE (TSS) | FL |
| SM 4500-CL⁻ E 1992 18th ED | CHLORIDE | FL |
| SM 4500-CN⁻ G 21st ED | AMENABLE CYANIDE | FL |
| SM 4500-NH3 E 1992 18th ED | KJELDAHL NITROGEN - TOTAL | FL |

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## NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| SM 4500-P E 1992 18th ED | ORTHOPHOSPHATE AS P | FL |
| SM 4500-S2⁻ E 1992 18th ED | SULFIDE | FL |
| SM 5210 B 1992 18th ED | CARBONACEOUS BOD, CBOD | FL |
| SM 5310 C 1992 18th ED | TOTAL ORGANIC CARBON | FL |
| SM 4500-P E 1992 18th ED | PHOSPHORUS, TOTAL | FL |
| SM 5210 B 1992 18th ED | BIOCHEMICAL OXYGEN DEMAND | FL |
| SM 5220 D 1992 18th ED | CHEMICAL OXYGEN DEMAND | FL |

## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1010 A 2002 | FLASHPOINT | FL |
| EPA 1312 1994 | PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE | FL |
| EPA 6010 B 1996 | ANTIMONY | FL |
| EPA 6010 B 1996 | BARIUM | FL |
| EPA 6010 B 1996 | BORON | FL |
| EPA 6010 B 1996 | CALCIUM | FL |
| EPA 6010 B 1996 | COBALT | FL |
| EPA 6010 B 1996 | IRON | FL |
| EPA 6010 B 1996 | MAGNESIUM | FL |
| EPA 6010 B 1996 | MOLYBDENUM | FL |
| EPA 6010 B 1996 | POTASSIUM | FL |
| EPA 6010 B 1996 | SILVER | FL |
| EPA 6010 B 1996 | THALLIUM | FL |
| EPA 6010 B 1996 | TITANIUM | FL |
| EPA 6010 B 1996 | ZINC | FL |
| EPA 6010 C 2007 | ANTIMONY | FL |
| EPA 6010 C 2007 | BARIUM | FL |
| EPA 6010 C 2007 | BORON | FL |
| EPA 6010 C 2007 | CALCIUM | FL |
| EPA 6010 C 2007 | COBALT | FL |
| EPA 6010 C 2007 | IRON | FL |
| EPA 6010 C 2007 | MAGNESIUM | FL |
| EPA 6010 C 2007 | MOLYBDENUM | FL |
| EPA 6010 C 2007 | POTASSIUM | FL |
| EPA 6010 C 2007 | SILVER | FL |
| EPA 6010 C 2007 | THALLIUM | FL |
| EPA 6010 C 2007 | TITANIUM | FL |
| EPA 1311 1992 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | FL |
| EPA 6010 B 1996 | ALUMINUM | FL |
| EPA 6010 B 1996 | ARSENIC | FL |
| EPA 6010 B 1996 | BERYLLIUM | FL |
| EPA 6010 B 1996 | CADMIUM | FL |
| EPA 6010 B 1996 | CHROMIUM | FL |
| EPA 6010 B 1996 | COPPER | FL |
| EPA 6010 B 1996 | LEAD | FL |
| EPA 6010 B 1996 | MANGANESE | FL |
| EPA 6010 B 1996 | NICKEL | FL |
| EPA 6010 B 1996 | SELENIUM | FL |
| EPA 6010 B 1996 | SODIUM | FL |
| EPA 6010 B 1996 | TIN | FL |
| EPA 6010 B 1996 | VANADIUM | FL |
| EPA 6010 C 2007 | ALUMINUM | FL |
| EPA 6010 C 2007 | ARSENIC | FL |
| EPA 6010 C 2007 | BERYLLIUM | FL |
| EPA 6010 C 2007 | CADMIUM | FL |
| EPA 6010 C 2007 | CHROMIUM | FL |
| EPA 6010 C 2007 | COPPER | FL |
| EPA 6010 C 2007 | LEAD | FL |
| EPA 6010 C 2007 | MANGANESE | FL |
| EPA 6010 C 2007 | NICKEL | FL |
| EPA 6010 C 2007 | SELENIUM | FL |
| EPA 6010 C 2007 | SODIUM | FL |
| EPA 6010 C 2007 | TIN | FL |
| EPA 6010 C 2007 | VANADIUM | FL |

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## SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 6010 C 2007 | ZINC | FL |
| EPA 6020 (9/94) | ANTIMONY | FL |
| EPA 6020 (9/94) | BARIUM | FL |
| EPA 6020 (9/94) | CADMIUM | FL |
| EPA 6020 (9/94) | COBALT | FL |
| EPA 6020 (9/94) | LEAD | FL |
| EPA 6020 (9/94) | NICKEL | FL |
| EPA 6020 (9/94) | THALLIUM | FL |
| EPA 6020 - EXTENDED (9/94) | BORON | FL |
| EPA 6020 - EXTENDED (9/94) | MAGNESIUM | FL |
| EPA 6020 - EXTENDED (9/94) | SELENIUM | FL |
| EPA 6020 - EXTENDED (9/94) | STRONTIUM | FL |
| EPA 6020 - EXTENDED (9/94) | TITANIUM | FL |
| EPA 6020 A (2/07) | ALUMINUM | FL |
| EPA 6020 A (2/07) | ARSENIC | FL |
| EPA 6020 A (2/07) | BERYLLIUM | FL |
| EPA 6020 A (2/07) | CHROMIUM | FL |
| EPA 6020 A (2/07) | COPPER | FL |
| EPA 6020 A (2/07) | LEAD | FL |
| EPA 6020 A (2/07) | MANGANESE | FL |
| EPA 6020 A (2/07) | SELENIUM | FL |
| EPA 6020 A (2/07) | SODIUM | FL |
| EPA 6020 A (2/07) | VANADIUM | FL |
| EPA 6020 A - EXTENDED (2/07) | BORON | FL |
| EPA 6020 A - EXTENDED (2/07) | STRONTIUM | FL |
| EPA 6020 A - EXTENDED (2/07) | TITANIUM | FL |
| EPA 7471 A 1994 | MERCURY | FL |
| EPA 8015 B 1996 | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8015 C 2000 | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8081 A 1996 | 4,4'-DDE | FL |
| EPA 8081 A 1996 | ALDRIN | FL |
| EPA 8081 A 1996 | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 6020 (9/94) | ALUMINUM | FL |
| EPA 6020 (9/94) | ARSENIC | FL |
| EPA 6020 (9/94) | BERYLLIUM | FL |
| EPA 6020 (9/94) | CHROMIUM | FL |
| EPA 6020 (9/94) | COPPER | FL |
| EPA 6020 (9/94) | MANGANESE | FL |
| EPA 6020 (9/94) | SILVER | FL |
| EPA 6020 (9/94) | ZINC | FL |
| EPA 6020 - EXTENDED (9/94) | IRON | FL |
| EPA 6020 - EXTENDED (9/94) | MOLYBDENUM | FL |
| EPA 6020 - EXTENDED (9/94) | SODIUM | FL |
| EPA 6020 - EXTENDED (9/94) | TIN | FL |
| EPA 6020 - EXTENDED (9/94) | VANADIUM | FL |
| EPA 6020 A (2/07) | ANTIMONY | FL |
| EPA 6020 A (2/07) | BARIUM | FL |
| EPA 6020 A (2/07) | CADMIUM | FL |
| EPA 6020 A (2/07) | COBALT | FL |
| EPA 6020 A (2/07) | IRON | FL |
| EPA 6020 A (2/07) | MAGNESIUM | FL |
| EPA 6020 A (2/07) | NICKEL | FL |
| EPA 6020 A (2/07) | SILVER | FL |
| EPA 6020 A (2/07) | THALLIUM | FL |
| EPA 6020 A (2/07) | ZINC | FL |
| EPA 6020 A - EXTENDED (2/07) | MOLYBDENUM | FL |
| EPA 6020 A - EXTENDED (2/07) | TIN | FL |
| EPA 7196 A 1992 | CHROMIUM VI | FL |
| EPA 8015 B 1996 | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8015 C 2000 | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8081 A 1996 | 4,4'-DDD | FL |
| EPA 8081 A 1996 | 4,4'-DDT | FL |
| EPA 8081 A 1996 | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |

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**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8081 A 1996 | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 A 1996 | CHLOROBENZILATE | FL |
| EPA 8081 A 1996 | DIALLATE | FL |
| EPA 8081 A 1996 | ENDOSULFAN I | FL |
| EPA 8081 A 1996 | ENDOSULFAN SULFATE | FL |
| EPA 8081 A 1996 | ENDRIN ALDEHYDE | FL |
| EPA 8081 A 1996 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 A 1996 | HEPTACHLOR | FL |
| EPA 8081 A 1996 | ISODRIN | FL |
| EPA 8081 A 1996 | TOXAPHENE (CHLORINATED CAMPHENE) | FL |
| EPA 8081 B (2/07) | 4,4'-DDD | FL |
| EPA 8081 B (2/07) | 4,4'-DDT | FL |
| EPA 8081 B (2/07) | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | CHLOROBENZILATE | FL |
| EPA 8081 B (2/07) | DIALLATE | FL |
| EPA 8081 B (2/07) | ENDOSULFAN I | FL |
| EPA 8081 B (2/07) | ENDOSULFAN SULFATE | FL |
| EPA 8081 B (2/07) | ENDRIN ALDEHYDE | FL |
| EPA 8081 B (2/07) | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B (2/07) | HEPTACHLOR | FL |
| EPA 8081 B (2/07) | ISODRIN | FL |
| EPA 8081 B - EXTENDED (2/07) | KEPONE | FL |
| EPA 8082 A (2/07) | AROCLOR-1221 (PCB-1221) | FL |
| EPA 8082 A (2/07) | AROCLOR-1242 (PCB-1242) | FL |
| EPA 8082 A (2/07) | AROCLOR-1254 (PCB-1254) | FL |
| EPA 8151 A (12/96) | 2,4,5-T | FL |
| EPA 8151 A (12/96) | 2,4-DB | FL |
| EPA 8151 A (12/96) | DICAMBA | FL |
| EPA 8151 A (12/96) | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8081 A 1996 | CHLORDANE (TECH.) | FL |
| EPA 8081 A 1996 | DELTA-BHC | FL |
| EPA 8081 A 1996 | DIELDRIN | FL |
| EPA 8081 A 1996 | ENDOSULFAN II | FL |
| EPA 8081 A 1996 | ENDRIN | FL |
| EPA 8081 A 1996 | ENDRIN KETONE | FL |
| EPA 8081 A 1996 | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 A 1996 | HEPTACHLOR EPOXIDE | FL |
| EPA 8081 A 1996 | METHOXYCHLOR | FL |
| EPA 8081 A - EXTENDED 1996 | KEPONE | FL |
| EPA 8081 B (2/07) | 4,4'-DDE | FL |
| EPA 8081 B (2/07) | ALDRIN | FL |
| EPA 8081 B (2/07) | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL |
| EPA 8081 B (2/07) | CHLORDANE (TECH.) | FL |
| EPA 8081 B (2/07) | DELTA-BHC | FL |
| EPA 8081 B (2/07) | DIELDRIN | FL |
| EPA 8081 B (2/07) | ENDOSULFAN II | FL |
| EPA 8081 B (2/07) | ENDRIN | FL |
| EPA 8081 B (2/07) | ENDRIN KETONE | FL |
| EPA 8081 B (2/07) | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL |
| EPA 8081 B (2/07) | HEPTACHLOR EPOXIDE | FL |
| EPA 8081 B (2/07) | METHOXYCHLOR | FL |
| EPA 8082 A (2/07) | AROCLOR-1016 (PCB-1016) | FL |
| EPA 8082 A (2/07) | AROCLOR-1232 (PCB-1232) | FL |
| EPA 8082 A (2/07) | AROCLOR-1248 (PCB-1248) | FL |
| EPA 8082 A (2/07) | AROCLOR-1260 (PCB-1260) | FL |
| EPA 8151 A (12/96) | 2,4-D | FL |
| EPA 8151 A (12/96) | DALAPON | FL |
| EPA 8151 A (12/96) | DICHLOROPROP (DICHLORPROP) | FL |
| EPA 8151 A (12/96) | MCPA | FL |

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8151 A (12/96) | MCPP | FL |
| EPA 8260 B 1996 | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 B 1996 | 2,2-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 B 1996 | 2-HEXANONE | FL |
| EPA 8260 B 1996 | 4-ISOPROPYLTOLUENE (P-CYMENE) | FL |
| EPA 8260 B 1996 | ACETONE | FL |
| EPA 8260 B 1996 | ACROLEIN (PROPENAL) | FL |
| EPA 8260 B 1996 | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 B 1996 | BROMOBENZENE | FL |
| EPA 8260 B 1996 | BROMODICHLOROMETHANE | FL |
| EPA 8260 B 1996 | CARBON DISULFIDE | FL |
| EPA 8260 B 1996 | CHLOROBENZENE | FL |
| EPA 8260 B 1996 | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 B 1996 | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL |
| EPA 8260 B 1996 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 B 1996 | ETHYLBENZENE | FL |
| EPA 8260 B 1996 | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 B 1996 | ISOPROPYLBENZENE | FL |
| EPA 8260 B 1996 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B 1996 | METHYL METHACRYLATE | FL |
| EPA 8151 A (12/96) | SILVEX (2,4,5-TP) | FL |
| EPA 8260 B 1996 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 B 1996 | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 B 1996 | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 B 1996 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 B 1996 | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 B 1996 | 1,3-DICHLOROPROPANE | FL |
| EPA 8260 B 1996 | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL |
| EPA 8260 B 1996 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |
| EPA 8260 B 1996 | 2-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | 4-CHLOROTOLUENE | FL |
| EPA 8260 B 1996 | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 B 1996 | ACETONITRILE | FL |
| EPA 8260 B 1996 | ACRYLONITRILE | FL |
| EPA 8260 B 1996 | BENZENE | FL |
| EPA 8260 B 1996 | BROMOCHLOROMETHANE | FL |
| EPA 8260 B 1996 | BROMOFORM | FL |
| EPA 8260 B 1996 | CARBON TETRACHLORIDE | FL |
| EPA 8260 B 1996 | CHLORODIBROMOMETHANE | FL |
| EPA 8260 B 1996 | CHLOROFORM | FL |
| EPA 8260 B 1996 | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 B 1996 | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 B 1996 | ETHYL METHACRYLATE | FL |
| EPA 8260 B 1996 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8260 B 1996 | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 B 1996 | METHACRYLONITRILE | FL |
| EPA 8260 B 1996 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 B 1996 | METHYL TERT-BUTYL ETHER (MTBE) | FL |

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**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B 1996 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B 1996 | N-PROPYLBENZENE | FL |
| EPA 8260 B 1996 | PROPIONITRILE (ETHYL CYANIDE) | FL |
| EPA 8260 B 1996 | STYRENE | FL |
| EPA 8260 B 1996 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 B 1996 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 B 1996 | TRANS-1,4-DICHLORO-2-BUTENE | FL |
| EPA 8260 B 1996 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 B 1996 | VINYL CHLORIDE | FL |
| EPA 8260 C 2006 | 1,1,1,2-TETRACHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1,2,2-TETRACHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1-DICHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1-DICHLOROPROPENE | FL |
| EPA 8260 C 2006 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 C 2006 | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 C 2006 | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 C 2006 | 2,2-DICHLOROPROPANE | FL |
| EPA 8260 C 2006 | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 C 2006 | 2-HEXANONE | FL |
| EPA 8260 C 2006 | 4-ISOPROPYLTOLUENE (P-CYMENE) | FL |
| EPA 8260 C 2006 | ACETONE | FL |
| EPA 8260 C 2006 | ACROLEIN (PROPENAL) | FL |
| EPA 8260 C 2006 | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 C 2006 | BROMOBENZENE | FL |
| EPA 8260 C 2006 | BROMODICHLOROMETHANE | FL |
| EPA 8260 C 2006 | CARBON DISULFIDE | FL |
| EPA 8260 C 2006 | CHLOROBENZENE | FL |
| EPA 8260 C 2006 | CHLOROETHANE (ETHYL CHLORIDE) | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 B 1996 | N-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | NAPHTHALENE | FL |
| EPA 8260 B 1996 | SEC-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | TERT-BUTYLBENZENE | FL |
| EPA 8260 B 1996 | TOLUENE | FL |
| EPA 8260 B 1996 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B 1996 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 B 1996 | VINYL ACETATE | FL |
| EPA 8260 B 1996 | XYLENE (TOTAL) | FL |
| EPA 8260 C 2006 | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 C 2006 | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 C 2006 | 1,2,3-TRICHLOROPROPANE | FL |
| EPA 8260 C 2006 | 1,2,4-TRIMETHYLBENZENE | FL |
| EPA 8260 C 2006 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL |
| EPA 8260 C 2006 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL |
| EPA 8260 C 2006 | 1,3,5-TRIMETHYLBENZENE | FL |
| EPA 8260 C 2006 | 1,3-DICHLOROPROPANE | FL |
| EPA 8260 C 2006 | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL |
| EPA 8260 C 2006 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |
| EPA 8260 C 2006 | 2-CHLOROTOLUENE | FL |
| EPA 8260 C 2006 | 4-CHLOROTOLUENE | FL |
| EPA 8260 C 2006 | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 C 2006 | ACETONITRILE | FL |
| EPA 8260 C 2006 | ACRYLONITRILE | FL |
| EPA 8260 C 2006 | BENZENE | FL |
| EPA 8260 C 2006 | BROMOCHLOROMETHANE | FL |
| EPA 8260 C 2006 | BROMOFORM | FL |
| EPA 8260 C 2006 | CARBON TETRACHLORIDE | FL |
| EPA 8260 C 2006 | CHLORODIBROMOMETHANE | FL |
| EPA 8260 C 2006 | CHLOROFORM | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2472

**TESTAMERICA LABORATORIES, INC.**
4101 SHUFFEL STREET NW
NORTH CANTON, OH 44720

**Virginia Laboratory ID: 460175**
Effective Date: September 15, 2013
Expiration Date: September 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 C 2006 | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL |
| EPA 8260 C 2006 | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 C 2006 | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 C 2006 | ETHYLBENZENE | FL |
| EPA 8260 C 2006 | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 C 2006 | ISOPROPYLBENZENE | FL |
| EPA 8260 C 2006 | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 C 2006 | METHYL METHACRYLATE | FL |
| EPA 8260 C 2006 | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 C 2006 | N-PROPYLBENZENE | FL |
| EPA 8260 C 2006 | PROPIONITRILE (ETHYL CYANIDE) | FL |
| EPA 8260 C 2006 | STYRENE | FL |
| EPA 8260 C 2006 | TETRACHLOROETHENE (PERCHLOROETHENE) | FL |
| EPA 8260 C 2006 | TRANS-1,2-DICHLOROETHENE | FL |
| EPA 8260 C 2006 | TRANS-1,4-DICHLORO-2-BUTENE | FL |
| EPA 8260 C 2006 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL |
| EPA 8260 C 2006 | VINYL CHLORIDE | FL |
| EPA 8270 C 1996 | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,2-DIPHENYLHYDRAZINE | FL |
| EPA 8270 C 1996 | 1,3-DICHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 C 1996 | 1-NAPHTHYLAMINE | FL |
| EPA 8270 C 1996 | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DINITROPHENOL | FL |
| EPA 8270 C 1996 | 2,6-DICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 C 1996 | 2-CHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2-METHYLNAPHTHALENE | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8260 C 2006 | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 C 2006 | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 C 2006 | ETHYL METHACRYLATE | FL |
| EPA 8260 C 2006 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8260 C 2006 | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL |
| EPA 8260 C 2006 | METHACRYLONITRILE | FL |
| EPA 8260 C 2006 | METHYL CHLORIDE (CHLOROMETHANE) | FL |
| EPA 8260 C 2006 | METHYL TERT-BUTYL ETHER (MTBE) | FL |
| EPA 8260 C 2006 | N-BUTYLBENZENE | FL |
| EPA 8260 C 2006 | NAPHTHALENE | FL |
| EPA 8260 C 2006 | SEC-BUTYLBENZENE | FL |
| EPA 8260 C 2006 | TERT-BUTYLBENZENE | FL |
| EPA 8260 C 2006 | TOLUENE | FL |
| EPA 8260 C 2006 | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 C 2006 | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 C 2006 | VINYL ACETATE | FL |
| EPA 8260 C 2006 | XYLENE (TOTAL) | FL |
| EPA 8270 C 1996 | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8270 C 1996 | 1,2-DINITROBENZENE | FL |
| EPA 8270 C 1996 | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 C 1996 | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8270 C 1996 | 1,4-DINITROBENZENE | FL |
| EPA 8270 C 1996 | 1,4-PHENYLENEDIAMINE | FL |
| EPA 8270 C 1996 | 2,3,4,6-TETRACHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 C 1996 | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 C 1996 | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 C 1996 | 2-CHLORONAPHTHALENE | FL |
| EPA 8270 C 1996 | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 C 1996 | 2-METHYLPHENOL (O-CRESOL) | FL |

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**Virginia Laboratory ID: 460175**
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**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 C 1996 | 2-NAPHTHYLAMINE | FL |
| EPA 8270 C 1996 | 2-NITROPHENOL | FL |
| EPA 8270 C 1996 | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 C 1996 | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 C 1996 | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | FL |
| EPA 8270 C 1996 | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 C 1996 | 4-CHLOROANILINE | FL |
| EPA 8270 C 1996 | 4-DIMETHYL AMINOAZOBENZENE | FL |
| EPA 8270 C 1996 | 4-NITROPHENOL | FL |
| EPA 8270 C 1996 | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL |
| EPA 8270 C 1996 | ACENAPHTHENE | FL |
| EPA 8270 C 1996 | ACETOPHENONE | FL |
| EPA 8270 C 1996 | ANTHRACENE | FL |
| EPA 8270 C 1996 | BENZIDINE | FL |
| EPA 8270 C 1996 | BENZO(A)PYRENE | FL |
| EPA 8270 C 1996 | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 C 1996 | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 C 1996 | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 C 1996 | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 C 1996 | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 C 1996 | CHRYSENE | FL |
| EPA 8270 C 1996 | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 C 1996 | DIETHYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIMETHYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIPHENYLAMINE | FL |
| EPA 8270 C 1996 | ETHYL METHANESULFONATE | FL |
| EPA 8270 C 1996 | FLUORANTHENE | FL |
| EPA 8270 C 1996 | HEXACHLOROBENZENE | FL |
| EPA 8270 C 1996 | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 C 1996 | HEXACHLOROPROPENE | FL |
| EPA 8270 C 1996 | ISOPHORONE | FL |
| EPA 8270 C 1996 | METHAPYRILENE | FL |
| EPA 8270 C 1996 | 2-NITROANILINE | FL |
| EPA 8270 C 1996 | 2-PICOLINE (2-METHYLPYRIDINE) | FL |
| EPA 8270 C 1996 | 3,3'-DIMETHYLBENZIDINE | FL |
| EPA 8270 C 1996 | 3-NITROANILINE | FL |
| EPA 8270 C 1996 | 4-AMINOBIPHENYL | FL |
| EPA 8270 C 1996 | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 C 1996 | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 C 1996 | 4-NITROANILINE | FL |
| EPA 8270 C 1996 | 5-NITRO-O-TOLUIDINE | FL |
| EPA 8270 C 1996 | A-A-DIMETHYLPHENETHYLAMINE | FL |
| EPA 8270 C 1996 | ACENAPHTHYLENE | FL |
| EPA 8270 C 1996 | ANILINE | FL |
| EPA 8270 C 1996 | ARAMITE | FL |
| EPA 8270 C 1996 | BENZO(A)ANTHRACENE | FL |
| EPA 8270 C 1996 | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 C 1996 | BENZOIC ACID | FL |
| EPA 8270 C 1996 | BENZYL ALCOHOL | FL |
| EPA 8270 C 1996 | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 C 1996 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 C 1996 | CHLOROBENZILATE | FL |
| EPA 8270 C 1996 | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 C 1996 | DIALLATE | FL |
| EPA 8270 C 1996 | DIBENZOFURAN | FL |
| EPA 8270 C 1996 | DIMETHOATE | FL |
| EPA 8270 C 1996 | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8270 C 1996 | DISULFOTON | FL |
| EPA 8270 C 1996 | FAMPHUR | FL |
| EPA 8270 C 1996 | FLUORENE | FL |
| EPA 8270 C 1996 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 C 1996 | HEXACHLOROETHANE | FL |
| EPA 8270 C 1996 | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 C 1996 | ISOSAFROLE | FL |
| EPA 8270 C 1996 | METHYL METHANESULFONATE | FL |

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**Virginia Laboratory ID: 460175**
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Expiration Date: September 14, 2014

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 C 1996 | N-NITROSO-DI-N-BUTYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSOMORPHOLINE | FL |
| EPA 8270 C 1996 | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 C 1996 | NITROBENZENE | FL |
| EPA 8270 C 1996 | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 C 1996 | PENTACHLOROBENZENE | FL |
| EPA 8270 C 1996 | PENTACHLOROPHENOL | FL |
| EPA 8270 C 1996 | PHENANTHRENE | FL |
| EPA 8270 C 1996 | PHORATE | FL |
| EPA 8270 C 1996 | PYRENE | FL |
| EPA 8270 C 1996 | SAFROLE | FL |
| EPA 8270 C 1996 | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 C - EXTENDED 1996 | CARBAZOLE | FL |
| EPA 8270 D (2/07) | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,2-DINITROBENZENE | FL |
| EPA 8270 D (2/07) | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 D (2/07) | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8270 D (2/07) | 1,4-DINITROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-PHENYLENEDIAMINE | FL |
| EPA 8270 D (2/07) | 2,3,4,6-TETRACHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4,6-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DIMETHYLPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8270 D (2/07) | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8270 D (2/07) | 2-CHLORONAPHTHALENE | FL |
| EPA 8270 D (2/07) | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL |
| EPA 8270 D (2/07) | 2-METHYLPHENOL (O-CRESOL) | FL |
| EPA 8270 D (2/07) | 2-NITROANILINE | FL |
| EPA 8270 D (2/07) | 2-PICOLINE (2-METHYLPYRIDINE) | FL |
| EPA 8270 D (2/07) | 3,3'-DIMETHYLBENZIDINE | FL |
| EPA 8270 D (2/07) | 3-NITROANILINE | FL |
| EPA 8270 D (2/07) | 4-AMINOBIPHENYL | FL |
| EPA 8270 D (2/07) | 4-CHLORO-3-METHYLPHENOL | FL |

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 C 1996 | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSOMETHYLETHYLAMINE | FL |
| EPA 8270 C 1996 | N-NITROSOPIPERIDINE | FL |
| EPA 8270 C 1996 | NAPHTHALENE | FL |
| EPA 8270 C 1996 | NITROQUINOLINE-1-OXIDE | FL |
| EPA 8270 C 1996 | O-TOLUIDINE (2-METHYLANILINE) | FL |
| EPA 8270 C 1996 | PENTACHLORONITROBENZENE | FL |
| EPA 8270 C 1996 | PHENACETIN | FL |
| EPA 8270 C 1996 | PHENOL | FL |
| EPA 8270 C 1996 | PRONAMIDE (KERB) | FL |
| EPA 8270 C 1996 | PYRIDINE | FL |
| EPA 8270 C 1996 | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8270 C - EXTENDED 1996 | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8270 D (2/07) | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,2-DIPHENYLHYDRAZINE | FL |
| EPA 8270 D (2/07) | 1,3-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-DICHLOROBENZENE | FL |
| EPA 8270 D (2/07) | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 D (2/07) | 1-NAPHTHYLAMINE | FL |
| EPA 8270 D (2/07) | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2,4-DINITROPHENOL | FL |
| EPA 8270 D (2/07) | 2,6-DICHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 D (2/07) | 2-CHLOROPHENOL | FL |
| EPA 8270 D (2/07) | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D (2/07) | 2-NAPHTHYLAMINE | FL |
| EPA 8270 D (2/07) | 2-NITROPHENOL | FL |
| EPA 8270 D (2/07) | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D (2/07) | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 D (2/07) | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | FL |
| EPA 8270 D (2/07) | 4-BROMOPHENYL PHENYL ETHER | FL |
| EPA 8270 D (2/07) | 4-CHLOROANILINE | FL |

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**SOLID AND CHEMICAL MATERIALS**

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D (2/07) | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D (2/07) | 4-NITROANILINE | FL |
| EPA 8270 D (2/07) | 5-NITRO-O-TOLUIDINE | FL |
| EPA 8270 D (2/07) | A-A-DIMETHYLPHENETHYLAMINE | FL |
| EPA 8270 D (2/07) | ACENAPHTHYLENE | FL |
| EPA 8270 D (2/07) | ANILINE | FL |
| EPA 8270 D (2/07) | ARAMITE | FL |
| EPA 8270 D (2/07) | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D (2/07) | BENZOIC ACID | FL |
| EPA 8270 D (2/07) | BENZYL ALCOHOL | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 D (2/07) | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 D (2/07) | CHLOROBENZILATE | FL |
| EPA 8270 D (2/07) | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIALLATE | FL |
| EPA 8270 D (2/07) | DIBENZOFURAN | FL |
| EPA 8270 D (2/07) | DIMETHOATE | FL |
| EPA 8270 D (2/07) | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8270 D (2/07) | DISULFOTON | FL |
| EPA 8270 D (2/07) | FAMPHUR | FL |
| EPA 8270 D (2/07) | FLUORENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D (2/07) | HEXACHLOROETHANE | FL |
| EPA 8270 D (2/07) | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D (2/07) | ISOSAFROLE | FL |
| EPA 8270 D (2/07) | METHYL METHANESULFONATE | FL |
| EPA 8270 D (2/07) | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSOMETHYLETHYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSOPIPERIDINE | FL |
| EPA 8270 D (2/07) | NAPHTHALENE | FL |
| EPA 8270 D (2/07) | NITROQUINOLINE-1-OXIDE | FL |
| EPA 8270 D (2/07) | O-TOLUIDINE (2-METHYLANILINE) | FL |
| EPA 8270 D (2/07) | 4-DIMETHYL AMINOAZOBENZENE | FL |
| EPA 8270 D (2/07) | 4-NITROPHENOL | FL |
| EPA 8270 D (2/07) | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL |
| EPA 8270 D (2/07) | ACENAPHTHENE | FL |
| EPA 8270 D (2/07) | ACETOPHENONE | FL |
| EPA 8270 D (2/07) | ANTHRACENE | FL |
| EPA 8270 D (2/07) | BENZIDINE | FL |
| EPA 8270 D (2/07) | BENZO(A)PYRENE | FL |
| EPA 8270 D (2/07) | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BENZO[B]FLUORANTHENE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 D (2/07) | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 D (2/07) | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 D (2/07) | CHRYSENE | FL |
| EPA 8270 D (2/07) | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D (2/07) | DIETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIMETHYL PHTHALATE | FL |
| EPA 8270 D (2/07) | DIPHENYLAMINE | FL |
| EPA 8270 D (2/07) | ETHYL METHANESULFONATE | FL |
| EPA 8270 D (2/07) | FLUORANTHENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROBENZENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 D (2/07) | HEXACHLOROPROPENE | FL |
| EPA 8270 D (2/07) | ISOPHORONE | FL |
| EPA 8270 D (2/07) | METHAPYRILENE | FL |
| EPA 8270 D (2/07) | N-NITROSO-DI-N-BUTYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D (2/07) | N-NITROSOMORPHOLINE | FL |
| EPA 8270 D (2/07) | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 D (2/07) | NITROBENZENE | FL |
| EPA 8270 D (2/07) | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 D (2/07) | PENTACHLOROBENZENE | FL |

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| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D (2/07) | PENTACHLORONITROBENZENE | FL |
| EPA 8270 D (2/07) | PHENACETIN | FL |
| EPA 8270 D (2/07) | PHENOL | FL |
| EPA 8270 D (2/07) | PRONAMIDE (KERB) | FL |
| EPA 8270 D (2/07) | SAFROLE | FL |
| EPA 8270 D (2/07) | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 D - EXTENDED (2/07) | CARBAZOLE | FL |
| EPA 8315 A 1996 | FORMALDEHYDE | FL |
| EPA 9030 A (7/92) | TOTAL SULFIDES | FL |
| EPA 9040 B (1/95) | PH | FL |
| EPA 9056 A 2/07 | BROMIDE | FL |
| EPA 9056 A 2/07 | FLUORIDE | FL |
| EPA 9056 A 2/07 | NITRITE | FL |
| EPA 9056 A 2/07 | SULFATE | FL |
| EPA 8270 D (2/07) | PENTACHLOROPHENOL | FL |
| EPA 8270 D (2/07) | PHENANTHRENE | FL |
| EPA 8270 D (2/07) | PHORATE | FL |
| EPA 8270 D (2/07) | PYRENE | FL |
| EPA 8270 D (2/07) | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8270 D - EXTENDED (2/07) | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8270 D - EXTENDED (2/07) | PYRIDINE | FL |
| EPA 9012 A 1996 | CYANIDE | FL |
| EPA 9034 1996 | TOTAL SULFIDES | FL |
| EPA 9045 C 1995 | PH | FL |
| EPA 9056 A 2/07 | CHLORIDE | FL |
| EPA 9056 A 2/07 | NITRATE AS N | FL |
| EPA 9056 A 2/07 | ORTHOPHOSPHATE AS P | FL |
| EPA 9065 1986 | TOTAL PHENOLICS | FL |

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# Type I Data Package

Abridged data package.

**Prepared for:**

**Draper Aden Associates, Inc.**
2206 South Main Street
Blacksburg VA 24060

Project: RAAP - Radford, VA - HWMU-5
Groundwater and Water Samples
Collected on 10/14/14-10/15/14

## SDG# RAE26

| GROUP | SAMPLE NUMBERS |
|---|---|
| 1511912 | 7641750-7641761 |

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

**Authorized by:** Dana M Kauffman **Date:** **10/27/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

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## Sample Reference List for SDG Number RAE26
## with a Data Package Type of I

**11200 - Draper Aden Associates, Inc.**

Project: RAAP - Radford, VA - HWMU-5

| Lab Sample Number | Lab Sample Code | Client Sample Description |
|---|---|---|
| 7641750 | R258B | 5W8B Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641751 | R255B | 5W5B Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641752 | R257B | 5W7B Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641753 | R257B | 5W7B Matrix Spike Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641754 | R257B | 5W7B Matrix Spike Dup Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641755 | R2521 | 5WC21 Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641756 | R25DP | 5WDUP Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641757 | R2522 | 5WC22 Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641758 | R2523 | 5WC23 Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641759 | R2512 | 5W12A Grab Groundwater 2014-2nd Semiannual Corrective Action Monitoring |
| 7641760 | R25T1 | Trip Blank 1 Water 2014-2nd Semiannual Corrective Action Monitoring |
| 7641761 | R25T2 | Trip Blank 2 Water 2014-2nd Semiannual Corrective Action Monitoring |

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# Sample pH Log

**SDG: RAE26**

| LLI Sample Number | Bottle Code | Actual pH | Exp. pH | pH Check Code | Adj. pH | Adjusted Date | Adjusted Time | Preservative Added | Preservative Lot # | LLI Supplied Bottle? | Sulfide Present? | Corrective Substance | CS Lot # | Res. Cl. Present? | Corrective Substance | CS Lot # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7641750 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641751 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641752 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641753 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641754 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641755 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641756 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641757 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641758 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641759 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641760 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7641761 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |

| Check Code Key |
|---|
| **PK** = Original container checked - pH is within the correct range. (No preservative was added) |
| **PA** = Original container checked - pH adjusted to correct range. (Preservative was added) |
| **PV** = Volatile container checked |
| **PC** = pH checked (unpreserved container) |
| **SPK** = Subsampled from an original container. Original container checked - pH is within correct range |
| **SPA** = Subsampled from an original container. Subsample container checked - pH adjusted to correct range. |
| **SPC** = Subsampled from an original container. pH checked (unpreserved container). |
| **SUP** = Subsampled from original container. Unable to be preserved due to the matrix of the sample. |
| **UP** = Unable to preserve due to matrix of the sample. |
| **NA** = Not applicable |

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### 01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030C, May 2003.

---

### 11996 VOCs- 25ml Water by 8260C

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

# Analysis Reports / Field Chain of Custody

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

October 22, 2014

Project: RAAP - Radford, VA - HWMU-5

Submittal Date: 10/17/2014
Group Number: 1511912
SDG: RAE26
State of Sample Origin: VA

| Client Sample Description | Lancaster Labs (LL) # |
|---|---|
| 5W8B Grab Groundwater | 7641750 |
| 5W5B Grab Groundwater | 7641751 |
| 5W7B Grab Groundwater | 7641752 |
| 5W7B Matrix Spike Grab Groundwater | 7641753 |
| 5W7B Matrix Spike Dup Grab Groundwater | 7641754 |
| 5WC21 Grab Groundwater | 7641755 |
| 5WDUP Grab Groundwater | 7641756 |
| 5WC22 Grab Groundwater | 7641757 |
| 5WC23 Grab Groundwater | 7641758 |
| 5W12A Grab Groundwater | 7641759 |
| Trip Blank 1 Water | 7641760 |
| Trip Blank 2 Water | 7641761 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU-5
LL Group #: 1511912

**General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

**Analysis Specific Comments:**

No additional comments are necessary.

**Sample Description: 5W8B Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641750**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/14/2014 09:45 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R258B SDG#: RAE26-01

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 17:29 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 17:29 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W5B Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641751**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/14/2014 10:45 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R255B SDG#: RAE26-02

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 17:50 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 17:50 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W7B Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641752**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/14/2014 12:00 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R257B SDG#: RAE26-03BKG

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 16:25 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 16:25 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W7B Matrix Spike Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641753**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/14/2014 12:00 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R257B SDG#: RAE26-03MS

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 5.2 | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | 5.3 | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | 5.4 | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.5 | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | 5.6 | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 16:46 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 16:46 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W7B Matrix Spike Dup Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641754**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/14/2014 12:00 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R257B SDG#: RAE26-03MSD

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 5.3 | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | 5.3 | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | 5.5 | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.5 | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | 5.7 | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 17:07 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 17:07 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WC21 Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641755**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/15/2014 09:55 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R2521 SDG#: RAE26-04

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 3.9 | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 18:11 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 18:11 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WDUP Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641756**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/15/2014 10:05 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R25DP SDG#: RAE26-05FD

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 4.0 | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 18:32 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 18:32 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WC22 Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641757**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/15/2014 11:10 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R2522 SDG#: RAE26-06

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 4.2 | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 18:53 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 18:53 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5WC23 Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641758**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/15/2014 12:00 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R2523 SDG#: RAE26-07

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.2 | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 19:14 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 19:14 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: 5W12A Grab Groundwater**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641759**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/15/2014 12:50 by KC

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R2512 SDG#: RAE26-08

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | **ug/l** | **ug/l** | **ug/l** | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 19:35 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 19:35 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: Trip Blank 1 Water**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641760**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/13/2014

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R25T1 SDG#: RAE26-09TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 15:43 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 15:43 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

**Sample Description: Trip Blank 2 Water**
**2014-2nd Semiannual Corrective Action Monitoring**
**RAAP - Radford, VA - HWMU-5**

**LL Sample # WW 7641761**
**LL Group # 1511912**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU-5**

Collected: 10/13/2014

Submitted: 10/17/2014 09:40
Reported: 10/22/2014 19:13

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R25T2 SDG#: RAE26-10TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Method Detection Limit* | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | ug/l | |
| 11996 | 1,1-Dichloroethene | 75-35-4 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | cis-1,2-Dichloroethene | 156-59-2 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | trans-1,2-Dichloroethene | 156-60-5 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Trichloroethene | 79-01-6 | N.D. | 0.1 | 0.5 | 1 |
| 11996 | Vinyl Chloride | 75-01-4 | N.D. | 0.1 | 0.5 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | RAAP Unit 5 "J" list | SW-846 8260C | 1 | H142941AA | 10/21/2014 16:04 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142941AA | 10/21/2014 16:04 | Kerri E Legerlotz | 1 |

*=This limit was used in the evaluation of the final result

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1511912
Reported: 10/22/14 at 07:13 PM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank MDL** | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: H142941AA | Sample number(s): 7641750-7641761 | | | | | | | | |
| 1,1-Dichloroethene | N.D. | 0.1 | 0.5 | ug/l | 100 | | 80-123 | | |
| cis-1,2-Dichloroethene | N.D. | 0.1 | 0.5 | ug/l | 101 | | 80-120 | | |
| trans-1,2-Dichloroethene | N.D. | 0.1 | 0.5 | ug/l | 104 | | 80-120 | | |
| Trichloroethene | N.D. | 0.1 | 0.5 | ug/l | 103 | | 80-120 | | |
| Vinyl Chloride | N.D. | 0.1 | 0.5 | ug/l | 103 | | 59-124 | | |

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: H142941AA | Sample number(s): 7641750-7641761 UNSPK: 7641752 | | | | | | | | |
| 1,1-Dichloroethene | 105 | 106 | 86-132 | 1 | 30 | | | | |
| cis-1,2-Dichloroethene | 107 | 106 | 82-129 | 0 | 30 | | | | |
| trans-1,2-Dichloroethene | 108 | 109 | 88-127 | 1 | 30 | | | | |
| Trichloroethene | 111 | 111 | 85-131 | 0 | 30 | | | | |
| Vinyl Chloride | 111 | 113 | 62-135 | 2 | 30 | | | | |

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: RAAP Unit 5 "J" list
Batch number: H142941AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7641750 | 100 | 102 | 99 | 91 |
| 7641751 | 100 | 107 | 99 | 91 |
| 7641752 | 100 | 106 | 99 | 91 |
| 7641753 | 99 | 103 | 101 | 94 |
| 7641754 | 98 | 105 | 99 | 95 |
| 7641755 | 100 | 107 | 99 | 92 |
| 7641756 | 99 | 102 | 99 | 91 |
| 7641757 | 100 | 104 | 99 | 91 |
| 7641758 | 100 | 107 | 98 | 90 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1511912
Reported: 10/22/14 at 07:13 PM

## Surrogate Quality Control

| | | | | |
|---|---|---|---|---|
| 7641759 | 100 | 107 | 99 | 91 |
| 7641760 | 100 | 105 | 99 | 91 |
| 7641761 | 99 | 103 | 99 | 90 |
| Blank | 99 | 106 | 99 | 91 |
| LCS | 98 | 104 | 101 | 95 |
| MS | 99 | 103 | 101 | 94 |
| MSD | 98 | 105 | 99 | 95 |
| Limits: | 77-114 | 74-113 | 77-110 | 78-110 |

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

11200/~~1511712~~ 1511912/ 7641750 61
the 10/17/14 @

# CHAIN OF CUSTODY RECORD

JUK 12/17

**Laboratory:** Eurofins Lancaster Laboratories Environmental LLC, 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Weyandt, Manager

| | | | | | |
|---|---|---|---|---|---|
| **Client:** Draper Aden Associates | **Consultant:** Draper Aden Associates | **Sample Site:** RAAP, Radford, Virginia | **Project Specific (PS) or Batch (B) QC:** |
| **Attn:** 0 | **Attn:** Janet C. Frazier | | **Sample Collection for Project Complete?** YES |
| **Address:** 0 | **Address:** 2206 South Main Street | **Location:** HWMU5 | UPS: |
| 0 | Blacksburg, Virginia 24060 | 2014 - 2nd Semiannual Corrective Action Annual Monitoring | **Carrier:** 1Z754-02X-YO-4250-4566 |
| **Phone:** 0 | **Phone:** (540) 552-0444 | **Event:** Event | **Tracking Number:** |
| **Fax:** 0 | **Fax:** (540) 552-0291 | **DAA JN:** B03204-12 | |
| **Fax:** 0 | | **Lab JN:** | |

| Box 1: Matrix | | Box 2: Preservative | | Box 3: Filtered/Unfiltered | Box 4: Sample Type | Invoice |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | Preserved and shipped on ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | | | | | | |
| **Required pH of Sample** | | | | | <2 | | | | | | |
| **Box 2 - Preservative** | | | | | A | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 3-40ml V | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | 8260C/5030C 25 ml purge Appendix J Analyte List | | | | | | |
| 5W8B | 10/14 | 0945 | GW | 3 | X | | | | | | |
| 5W5B | 10/14 | 1045 | GW | 3 | X | | | | | | |
| 5W7B | 10/14 | 1200 | GW | 9 | X | | | | | | |
| 5WC21 | 10/15 | 0955 | GW | 3 | X | | | | | | |
| 5WDUP | 10/15 | 1005 | GW | 3 | X | | | | | | |
| 5WC22 | 10/15 | 1110 | GW | 3 | X | | | | | | |
| 5WC23 | 10/15 | 1200 | GW | 3 | X | | | | | | |
| 5W12A | 10/15 | 1250 | GW | 3 | X | | | | | | |
| Trip Blank 1 | 10/13 | — | T | 2 | X | | | | | | |
| Trip Blank 2 | 10/13 | — | T | 2 | X | | | | | | |

**GENERAL NOTES:**

1. See attached analyte list.
2. Report Results to MDL with "J" Flags. 3. 1 trip blank per day of sampling.

Delete Trip blank 2 if not required.

USE FOR QC

RA-26 Page 24 of 359
Page 18 of 21

**Clients Special Instructions: level 1 with edd.**

Received by lab in Good Condition X Yes ____ No Custody Seal Intact X Yes ____ No Temperature upon arrival 0.9 Received on Ice X Yes ____ No

Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 10/14/14 | #1 Relinquished by (Signature): | Date: 10/16/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0730 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): Tyler Emery | Date: 10/14/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 10/17/14 | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0732 | Company Name: | Time: | Company Name: ELLE | Time: 940 | |

Y/2
JUK 14/2/14

GRA 151912



ANALYTICAL METHOD: 8260C/5030B
TYPE METHOD: GCMS
CLASS: VOLATILE

# Appendix – J Target Analyte List

| No. | ANALYTE | CAS RN | Required QL (µg/l) | Required MDL* |
|---|---|---|---|---|
| 1. | Trichloroethene | 79-01-6 | 1 | 0.177 |
| 2. | 1,1-Dichloroethene | 75-35-4 | 1 | 0.44 |
| 3. | Cis-1,2-Dichloroethene | 156-59-2 | 1 | 0.1 |
| 4. | Trans-1,2-Dichloroethene | 156-60-5 | 1 | 0.8 |
| 5. | Vinyl Chloride | 75-01-4 | 1 | 0.1 |

Note: *Report current lab MDL if higher.

**25 ml purge volume**

eurofins | Lancaster Laboratories Environmental

# Sample Administration Receipt Documentation Log

Doc Log ID: 35157

Group Number(s): 157191a

Client: Draper Aden

## HWMU5

### Delivery and Receipt Information

| | | | |
|---|---|---|---|
| Delivery Method: | UPS | Arrival Timestamp: | 10/17/2014 9:40 |
| Number of Packages: | 1 | Number of Projects: | 1 |
| State/Province of Origin: | VA | | |

### Arrival Condition Summary

| | | | |
|---|---|---|---|
| Shipping Container Sealed: | Yes | Sample IDs on COC match Containers: | Yes |
| Custody Seal Present: | Yes | Sample Date/Times match COC: | No |
| Custody Seal Intact: | Yes | VOA Vial Headspace ≥ 6mm: | No |
| Samples Chilled: | Yes | Total Trip Blank Qty: | 4 |
| Paperwork Enclosed: | Yes | Trip Blank Type: | HCl |
| Samples Intact: | Yes | Air Quality Samples Present: | No |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |

*Unpacked by Wesley Miller (2308) at 14:27 on 10/17/2014*

### Samples Chilled Details: HWMU5

*Thermometer Types:* *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

| Cooler # | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Elevated Temp? |
|---|---|---|---|---|---|---|---|
| 1 | DT131 | 0.9 | DT | Wet | Y | Bagged | N |

### Sample Date/Time Discrepancy Details: HWMU5

| Sample ID on COC | Date/Time on Label | Comments |
|---|---|---|
| Trip Blank 1 | 10/14/2014 -- | |
| Trip Blank 2 | 10/14/2014 -- | |



2425 New Holland Pike
Lancaster, PA 17601-2455
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.co

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# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **RL** | Reporting Limit | **BMQL** | Below Minimum Quantitation Level |
| **N.D.** | none detected | **MPN** | Most Probable Number |
| **TNTC** | Too Numerous To Count | **CP Units** | cobalt-chloroplatinate units |
| **IU** | International Units | **NTU** | nephelometric turbidity units |
| **umhos/cm** | micromhos/cm | **ng** | nanogram(s) |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **meq** | milliequivalents | **lb.** | pound(s) |
| **g** | gram(s) | **kg** | kilogram(s) |
| **µg** | microgram(s) | **mg** | milligram(s) |
| **mL** | milliliter(s) | **L** | liter(s) |
| **m3** | cubic meter(s) | **µL** | microliter(s) |
| | | **pg/L** | picogram/liter |

**<** less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*Data Qualifiers:*

**C –** result confirmed by reanalysis.

**J -** estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

*U.S. EPA CLP Data Qualifiers:*

| Organic Qualifiers | | Inorganic Qualifiers | |
|---|---|---|---|
| **A** | TIC is a possible aldol-condensation product | **B** | Value is <CRDL, but ≥IDL |
| **B** | Analyte was also detected in the blank | **E** | Estimated due to interference |
| **C** | Pesticide result confirmed by GC/MS | **M** | Duplicate injection precision not met |
| **D** | Compound quantitated on a diluted sample | **N** | Spike sample not within control limits |
| **E** | Concentration exceeds the calibration range of the instrument | **S** | Method of standard additions (MSA) used for calculation |
| **N** | Presumptive evidence of a compound (TICs only) | **U** | Compound was not detected |
| **P** | Concentration difference between primary and confirmation columns >25% | **W** | Post digestion spike out of control limits |
| **U** | Compound was not detected | ***** | Duplicate analysis not within control limits |
| **X,Y,Z** | Defined in case narrative | **+** | Correlation coefficient for MSA <0.995 |

**Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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CompuChem
A Division Of
Liberty Analytical Corp.

10/27/2014

Abridged data package.

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP UNIT 5/2014 Co ONLY

WorkOrder: 1410123

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1410123

**Project:** RAAP UNIT 5/2014 Co ONLY **Sdg:** 1410123

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1410123-01 | 5W7B | Water | 10/14/2014 12:00 | 10/17/2014 09:17 |
| 1410123-02 | 5W8B | Water | 10/14/2014 09:45 | 10/17/2014 09:17 |
| 1410123-03 | 5W5B | Water | 10/14/2014 10:45 | 10/17/2014 09:17 |
| 1410123-04 | 5WC21 | Water | 10/15/2014 09:55 | 10/17/2014 09:17 |
| 1410123-05 | 5WDUP | Water | 10/15/2014 10:05 | 10/17/2014 09:17 |
| 1410123-06 | 5WC22 | Water | 10/15/2014 11:10 | 10/17/2014 09:17 |
| 1410123-07 | 5WC23 | Water | 10/15/2014 12:00 | 10/17/2014 09:17 |
| 1410123-08 | 5W12A | Water | 10/15/2014 12:50 | 10/17/2014 09:17 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP UNIT 5/2014 Co ONLY

**Laboratory:** COMPUCHEM

**SDG:** 1410123

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 5W7B | EPA 6020A | 1410123-01 |
| 5W8B | EPA 6020A | 1410123-02 |
| 5W5B | EPA 6020A | 1410123-03 |
| 5WC21 | EPA 6020A | 1410123-04 |
| 5WDUP | EPA 6020A | 1410123-05 |
| 5WC22 | EPA 6020A | 1410123-06 |
| 5WC23 | EPA 6020A | 1410123-07 |
| 5W12A | EPA 6020A | 1410123-08 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions addressed in the narrative. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 10/23/2014

Title: Chemist III

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501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

# I. SAMPLE DATA PACKAGE

The Sample Data Summary Package shall contain data for all samples in one Work Order/Sample Delivery Group (SDG), as follows:

**A. SDG Narrative**

**B. Chain of Custody Records**

**C. Sample Preparation and Analysis Holding Time Data**
(HOLDING TIME SUMMARY)

**D. MDL**
(MDL SUMMARY)

**E. Laboratory Control Sample Results**
(LCS/LCS DUPLICATE RECOVERY)

**F. Matrix Spike Results**
(MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY)

**G. Serial Dilution Results**– if applicable
(SERIAL DILUTION)

**H. Post Digestion Spike Sample Recovery Results**– if applicable
(POST DIGEST SPIKE SAMPLE RECOVERY)

**I. Duplicate Results**
(DUPLICATES)

**J. Batch Summary**
(PREPARATION BATCH SUMMARY)

**K. Analysis Sequence Summary**
(ANALYSIS SEQUENCE SUMMARY)

**L. Target Element Results**
(ANALYSIS DATA SHEET)

**M. Low Level Initial and Continuing Calibration Check Results**– if applicable
(LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK)

**N. Initial and Continuing Calibration Results**
(INITIAL CALIBRATION DATA)
(INITIAL AND CONTINUING CALIBRATION CHECK)

**O. Low Range Standard Results**– if applicable
(LOW RANGE STANDARD)

**P. High Range Standard**– if applicable
(HIGH RANGE STANDARD)

**Q. ICP-AES and ICP-MS Instrument Results -** if applicable
(ICP INTERFERENCE CHECK SAMPLE)
(ICP-AES AND ICP-MS LINEAR RANGES)
(ICP-AES INTERELEMENT CORRECTION FACTORS)
(ICP-MS TUNE)
(ICPMS Internal Standards Relative Intensity Summary)

**R. Method and Instrument Blank Results**
(BLANKS)

**S. Run Logs/Raw Data**

**T. Digestion and Distillation Logs**

**U. Standard Info / Internal Coc Documents**

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501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1410123
# Client: DRAPER
# Project: RAAP UNIT 5/2014 Co ONLY

The indicated Sample Delivery Group (SDG) consisting of eight (8) water samples was received into the laboratory information management system (LIMS) on October 17, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 2.8 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6020A methodology for the requested metal cobalt.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Cobalt for sample 5W7B

$$\frac{3.17633\ \mu g/L\ (C) \times 0.05\ L\ (F)}{0.05\ L\ (I)} = 3.176\ \mu g/L \text{ reported as } 3.18\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

The ICP/MS sample matrix spike, CCN = 4102011-MS1 (5W7BS) was found to be inside control limits.

The ICP/MS sample matrix duplicate spike, CCN = 4102011-MSD1 (5W7BSD) was found to be inside control limits.

The ICP/MS sample duplicate, CCN = 4102011-DUP1 (5W7BD) was found to be inside control limits.

A five-fold serial dilution of sample, CCN = SDI1410123-01 (5W7BL) was performed in accordance with SW-846 requirements for ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP/MS sample post digestion spike, CCN =4102011-PS1 (5W7BA) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W. Bass
Senior Chemist
October 23, 2014

# CHAIN OF CUSTODY RECORD

JUR 10/2/2014

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** Draper Aden Associates<br>**Attn:** 0<br>**Address:** 0<br>0<br>0<br>**Phone:**<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU5<br>2014-2nd Semiannual Groundwater Corrective Action<br>**Event:** Monitoring Event<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>UPS:<br>**Carrier:** 1Z 237 301 01 9305 8897<br>**Tracking Number:** | | |

| Box 1: Matrix | | Box 2: Preservative | | Box 3: Filtered/Unfiltered | Box 4: Sample Type | Invoice |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | Preserved and shipped on ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA<br>AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 4 - Sample Type | | | | | G | | | | | | | |
| Box 3 - Filtered/Unfiltered | | | | | U | | | | | | | |
| Required pH of Sample | | | | | <2 | | | | | | | |
| Box 2 - Preservative | | | | | B | | | | | | | |
| Box 5 - Sample Container Type | | | | | 1-500ml P | | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **Cobalt only-Total 6020A /3005A** | **metals pH** | | | | | | |
| 5W8B | 10/14 | 0945 | GW | 1 | X | <2 | | 1410123-02 | | | | |
| 5W5B | 10/14 | 1045 | GW | 1 | X | <2 | | -03 | | | | |
| 5W7B | 10/14 | 1200 | GW | 3 | X | <2 | | -01 | | | | USE FOR QC |
| 5WC21 | 10/15 | 0955 | GW | 1 | X | <2 | | -04 | | | | |
| 5WDUP | | 1005 | GW | 1 | X | <2 | | -05 | | | | |
| 5WC22 | | 1110 | GW | 1 | X | <2 | | -06 | | | | |
| 5WC23 | | 1200 | GW | 1 | X | <2 | | -07 | | | | |
| 5W12A | | 1250 | GW | 1 | X | <2 | | -08 | | | | |

**GENERAL NOTES:**

1. Level 4 - report estimated results. 2. ERIS deivlerable required. 3. LOQ 5 ug/l, LOD 1 ug/l.

**Clients Special Instructions: level 4 with edd.**

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival 2.8°C Received on Ice ✓ Yes ____ No

Describe problems, if any:

| | | | | | | |
|---|---|---|---|---|---|---|
| Sampler Name (Print): KEN CODDINGTON | Date: 10/14/14 | #1 Relinquished by (Signature): | Date: 10/16/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0730 | Company Name: DAA | Time: 1500 | Company Name: | Time: | |
| Sampler Name (Print): Tyler Emery | Date: 10/14/14 | #1 Received by (Signature): | Date: 10/17/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0730 | Company Name: CompuChem | Time: 0917 | Company Name: | Time: | |

1/1 JUR 10-2-2014

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# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP UNIT 5/2014 Co ONLY

SDG: 1410123

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 5W7B | 10/14/14 | 10/17/14 | 10/20/14 | 10/23/14 | 9.0 | 180 | |
| 5W8B | 10/14/14 | 10/17/14 | 10/20/14 | 10/23/14 | 9.1 | 180 | |
| 5W5B | 10/14/14 | 10/17/14 | 10/20/14 | 10/23/14 | 9.1 | 180 | |
| 5WC21 | 10/15/14 | 10/17/14 | 10/20/14 | 10/23/14 | 8.1 | 180 | |
| 5WDUP | 10/15/14 | 10/17/14 | 10/20/14 | 10/23/14 | 8.1 | 180 | |
| 5WC22 | 10/15/14 | 10/17/14 | 10/20/14 | 10/23/14 | 8.1 | 180 | |
| 5WC23 | 10/15/14 | 10/17/14 | 10/20/14 | 10/23/14 | 8.0 | 180 | |
| 5W12A | 10/15/14 | 10/17/14 | 10/20/14 | 10/23/14 | 8.0 | 180 | |

# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1410123

**Client:** DRAPER **Project:** RAAP UNIT 5/2014 Co ONLY

**Matrix:** Water **Instrument:** PEMS

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Cobalt | 1 | 5.00 | ug/L | EPA 6020A |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4102011-BS1 Matrix: Water Client ID: MLCSKC Batch: 4102011

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Cobalt | 110.0 | 108 | 98.5 | | 80 - 120 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**5W7BS**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4102011-MS1 % Solid: NA Matrix: Water Lab Source ID: 1410123-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Cobalt | 110.0 | 3.18 J | 111 | 98.1 | | 75 - 125 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**5W7BSD**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4102011-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1410123-01 Source Sample: 5W7B

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Cobalt | 110.0 | 113 | 100 | 2.16 | | 20 | 75 - 125 |

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# SERIAL DILUTION

*EPA 6020A*

**5W7BL**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4J23001-SRD2 Matrix: Water Lab Source ID: 1410123-01 Source Sample: 5W7B

Sequence: 4J23001 Dilution: 5 Report to MDL: YES

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Cobalt | 3.18 J | 25.00 U | 5.00 | | | EPA 6020A | 10 |

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# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**5W7BA**

Laboratory: COMPUCHEM

Client: DRAPER

Matrix: Water

SDG: 1410123

Project: RAAP UNIT 5/2014 Co ONLY

Laboratory ID: 4102011-PS1

Lab Source ID: 1410123-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Cobalt | 13.2 | 3.18 J | 10.00 | 100 | 75 - 125 |

# DUPLICATES

*EPA 6020A*

**5W7BD**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 4102011-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1410123-01 Source Sample: 5W7B

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Cobalt | 20 | *3.18 J* | 3.13 J | 1.53 | | EPA 6020A |

# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Batch: 4102011 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 5W7B | 1410123-01 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5W8B | 1410123-02 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5W5B | 1410123-03 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5WC21 | 1410123-04 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5WDUP | 1410123-05 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5WC22 | 1410123-06 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5WC23 | 1410123-07 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5W12A | 1410123-08 | 10/20/14 10:25 | 50.0 | 50.0 |
| PBWKC | 4102011-BLK1 | 10/20/14 10:25 | 50.0 | 50.0 |
| MLCSKC | 4102011-BS1 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5W7BD | 4102011-DUP1 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5W7BS | 4102011-MS1 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5W7BSD | 4102011-MSD1 | 10/20/14 10:25 | 50.0 | 50.0 |
| 5W7BA | 4102011-PS1 | 10/20/14 10:25 | 50.0 | 50.0 |

# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4J23001 Calibration: 4102302 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUNE | 4J23001-TUN1 | 4J23001_P-001 | 10/23/14 09:13:20 |
| S0 | 4J23001-CAL1 | 4J23001_P-002 | 10/23/14 10:09:01 |
| S 6020-MS1 | 4J23001-CAL2 | 4J23001_P-003 | 10/23/14 10:11:09 |
| S 6020-MS2 | 4J23001-CAL3 | 4J23001_P-004 | 10/23/14 10:13:16 |
| S 6020-MS3 | 4J23001-CAL4 | 4J23001_P-005 | 10/23/14 10:15:22 |
| S 6020-MS4 | 4J23001-CAL5 | 4J23001_P-006 | 10/23/14 10:17:29 |
| S 6020-MS5 | 4J23001-CAL6 | 4J23001_P-007 | 10/23/14 10:19:36 |
| LLICV | 4J23001-CRL1 | 4J23001_P-008 | 10/23/14 10:23:24 |
| ICV | 4J23001-ICV1 | 4J23001_P-009 | 10/23/14 10:25:32 |
| ICB | 4J23001-ICB1 | 4J23001_P-010 | 10/23/14 10:27:40 |
| ICSA | 4J23001-IFA1 | 4J23001_P-011 | 10/23/14 10:29:47 |
| ICSAB | 4J23001-IFB1 | 4J23001_P-012 | 10/23/14 10:31:54 |
| LLCCV | 4J23001-CRL2 | 4J23001_P-013 | 10/23/14 10:34:02 |
| CCV | 4J23001-CCV1 | 4J23001_P-014 | 10/23/14 10:36:10 |
| CCB | 4J23001-CCB1 | 4J23001_P-015 | 10/23/14 10:38:17 |
| CCV | 4J23001-CCV2 | 4J23001_P-026 | 10/23/14 11:13:41 |
| CCB | 4J23001-CCB2 | 4J23001_P-027 | 10/23/14 11:15:48 |
| LLCCV | 4J23001-CRL3 | 4J23001_P-037 | 10/23/14 11:36:59 |
| CCV | 4J23001-CCV3 | 4J23001_P-038 | 10/23/14 11:39:07 |
| CCB | 4J23001-CCB3 | 4J23001_P-039 | 10/23/14 11:41:14 |
| PBWKC | 4102011-BLK1 | 4J23001_P-041 | 10/23/14 11:58:41 |
| MLCSKC | 4102011-BS1 | 4J23001_P-042 | 10/23/14 12:00:48 |
| 5W7B | 1410123-01 | 4J23001_P-043 | 10/23/14 12:02:54 |
| 5W7BD | 4102011-DUP1 | 4J23001_P-044 | 10/23/14 12:05:01 |
| 5W7BS | 4102011-MS1 | 4J23001_P-045 | 10/23/14 12:07:08 |
| 5W7BSD | 4102011-MSD1 | 4J23001_P-046 | 10/23/14 12:09:15 |
| 5W7BL | 4J23001-SRD2 | 4J23001_P-047 | 10/23/14 12:11:22 |
| 5W7BA | 4102011-PS1 | 4J23001_P-048 | 10/23/14 12:13:28 |
| 5W8B | 1410123-02 | 4J23001_P-049 | 10/23/14 12:15:34 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4J23001 Calibration: 4102302 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| CCV | 4J23001-CCV4 | 4J23001_P-050 | 10/23/14 12:17:42 |
| CCB | 4J23001-CCB4 | 4J23001_P-051 | 10/23/14 12:19:49 |
| 5W5B | 1410123-03 | 4J23001_P-052 | 10/23/14 12:21:57 |
| 5WC21 | 1410123-04 | 4J23001_P-053 | 10/23/14 12:24:04 |
| 5WDUP | 1410123-05 | 4J23001_P-054 | 10/23/14 12:26:11 |
| 5WC22 | 1410123-06 | 4J23001_P-055 | 10/23/14 12:28:17 |
| 5WC23 | 1410123-07 | 4J23001_P-056 | 10/23/14 12:30:24 |
| 5W12A | 1410123-08 | 4J23001_P-057 | 10/23/14 12:32:31 |
| LLCCV | 4J23001-CRL4 | 4J23001_P-061 | 10/23/14 12:40:59 |
| CCV | 4J23001-CCV5 | 4J23001_P-062 | 10/23/14 12:43:07 |
| CCB | 4J23001-CCB5 | 4J23001_P-063 | 10/23/14 12:45:13 |

# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**5W7B**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-01 % Solid: Matrix: Water Sampled: 10/14/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | 3.18 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4J23001 | 10/23/14 12:02 |

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# ANALYSIS DATA SHEET

**5W8B**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-02 % Solid: Matrix: Water Sampled: 10/14/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4J23001 | 10/23/14 12:15 |

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# ANALYSIS DATA SHEET

**5W5B**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-03 % Solid: Matrix: Water Sampled: 10/14/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4J23001 | 10/23/14 12:21 |

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# ANALYSIS DATA SHEET

**5WC21**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-04 % Solid: Matrix: Water Sampled: 10/15/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | 63.0 | 1.00 | 5.00 | 1 | | EPA 6020A | 4J23001 | 10/23/14 12:24 |

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# ANALYSIS DATA SHEET

**5WDUP**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-05 % Solid: Matrix: Water Sampled: 10/15/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | 64.1 | 1.00 | 5.00 | 1 | | EPA 6020A | 4J23001 | 10/23/14 12:26 |

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# ANALYSIS DATA SHEET

**5WC22**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-06 % Solid: Matrix: Water Sampled: 10/15/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | 4.26 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4J23001 | 10/23/14 12:28 |

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# ANALYSIS DATA SHEET

**5WC23**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-07 % Solid: Matrix: Water Sampled: 10/15/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | 2.00 | 1.00 | 5.00 | 1 | J | EPA 6020A | 4J23001 | 10/23/14 12:30 |

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# ANALYSIS DATA SHEET

**5W12A**

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Lab ID: 1410123-08 % Solid: Matrix: Water Sampled: 10/15/14 Received: 10/17/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-48-4 | Cobalt | | 1.00 | 5.00 | 1 | U | EPA 6020A | 4J23001 | 10/23/14 12:32 |

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# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4J23001 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4J23001-CRL1 | Cobalt | 1.000 | 1.05 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4J23001-CRL2 | Cobalt | 1.000 | 1.01 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4J23001-CRL3 | Cobalt | 1.000 | 0.972 | 97 | ug/L | U | 70 - 130 |
| LLCCV | 4J23001-CRL4 | Cobalt | 1.000 | 0.962 | 96 | ug/L | U | 70 - 130 |

# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1410123

Project: RAAP UNIT 5/2014 Co ONLY

Calibration: 4102302 Instrument: PEMS

Calibration Date: 10/23/2014 9:13:47

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Cobalt | CAL1 | S0 | 35 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 7072.502 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 14566.16 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 894829.8 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 1724362 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 3492606 | 500 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1410123

Project: RAAP UNIT 5/2014 Co ONLY

Calibration: 4102302 Instrument: PEMS

Calibration Date: 10/23/2014 9:13:47

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Cobalt | 0.007889 | 0 | 0.9999 | 0.998 | |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4J23001 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4J23001-ICV1 | Cobalt | 110.0 | 105 | 95 | ug/L | | +/-10 |
| CCV | 4J23001-CCV1 | Cobalt | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J23001-CCV2 | Cobalt | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J23001-CCV3 | Cobalt | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J23001-CCV4 | Cobalt | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J23001-CCV5 | Cobalt | 300.0 | 299 | 100 | ug/L | | +/-10 |

# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4J23001 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4J23001-IFA1 | Cobalt | | 0.00 | 10 | ug/L |
| ICSAB | 4J23001-IFB1 | Cobalt | 50.00 | 49.76 | 100 | ug/L |

* The absence of an entry in the "True" column denotes the lack of a true value for that analyte. The entry in the "%R" column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

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# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1410123

Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4J23001 Date: 10/23/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 9.025 | 0.747 | 10 | 1.658 |
| Mg - 24 | 24.025 | 0.732 | 10 | 0.917 |
| Mg - 25 | 25.025 | 0.741 | 10 | 1.129 |
| Mg - 26 | 26.075 | 0.729 | 10 | 1.52 |
| Co - 59 | 58.925 | 0.702 | 10 | 1.011 |
| In - 113 | 112.875 | 0.687 | 10 | 1.062 |
| In - 115 | 114.925 | 0.697 | 10 | 0.875 |
| Pb - 206 | 206.025 | 0.684 | 10 | 0.966 |
| Pb - 207 | 206.975 | 0.688 | 10 | 1.006 |
| Pb - 208 | 207.975 | 0.703 | 10 | 0.504 |

Comments:

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1410123

Sequence: 4J23001

Project: RAAP UNIT 5/2014 Co ONLY

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 10/23/14 10:09 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 10/23/14 10:11 | 100 | 99 | 101 | 101 | 99 |
| S 6020-MS2 | 10/23/14 10:13 | 103 | 101 | 102 | 102 | 101 |
| S 6020-MS3 | 10/23/14 10:15 | 100 | 101 | 100 | 101 | 98 |
| S 6020-MS4 | 10/23/14 10:17 | 99 | 101 | 101 | 101 | 99 |
| S 6020-MS5 | 10/23/14 10:19 | 97 | 99 | 99 | 101 | 98 |
| LLICV | 10/23/14 10:23 | 97 | 97 | 98 | 98 | 97 |
| ICV | 10/23/14 10:25 | 99 | 101 | 98 | 98 | 97 |
| ICB | 10/23/14 10:27 | 99 | 101 | 99 | 99 | 98 |
| ICSA | 10/23/14 10:29 | 102 | 103 | 99 | 101 | 99 |
| ICSAB | 10/23/14 10:31 | 101 | 102 | 100 | 103 | 98 |
| LLCCV | 10/23/14 10:34 | 100 | 98 | 98 | 98 | 98 |
| CCV | 10/23/14 10:36 | 99 | 99 | 100 | 101 | 99 |
| CCB | 10/23/14 10:38 | 99 | 97 | 98 | 99 | 99 |
| CCV | 10/23/14 11:13 | 96 | 98 | 99 | 100 | 97 |
| CCB | 10/23/14 11:15 | 98 | 99 | 98 | 98 | 96 |
| LLCCV | 10/23/14 11:36 | 103 | 95 | 95 | 95 | 98 |
| CCV | 10/23/14 11:39 | 98 | 96 | 94 | 98 | 96 |
| CCB | 10/23/14 11:41 | 99 | 96 | 96 | 95 | 95 |
| PBWKC | 10/23/14 11:58 | 101 | 94 | 96 | 96 | 98 |
| MLCSKC | 10/23/14 12:00 | 100 | 94 | 97 | 98 | 100 |
| 5W7B | 10/23/14 12:02 | 94 | 89 | 87 | 90 | 92 |
| 5W7BD | 10/23/14 12:05 | 94 | 86 | 87 | 92 | 94 |
| 5W7BS | 10/23/14 12:07 | 95 | 85 | 89 | 90 | 94 |
| 5W7BSD | 10/23/14 12:09 | 94 | 85 | 86 | 91 | 93 |
| 5W7BL | 10/23/14 12:11 | 96 | 84 | 89 | 91 | 96 |
| 5W7BA | 10/23/14 12:13 | 93 | 82 | 84 | 87 | 91 |
| 5W8B | 10/23/14 12:15 | 93 | 82 | 86 | 89 | 92 |
| CCV | 10/23/14 12:17 | 93 | 87 | 92 | 94 | 95 |

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1410123

Sequence: 4J23001

Project: RAAP UNIT 5/2014 Co ONLY

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| CCB | 10/23/14 12:19 | 98 | 90 | 92 | 96 | 100 |
| 5W5B | 10/23/14 12:21 | 88 | 82 | 86 | 88 | 90 |
| 5WC21 | 10/23/14 12:24 | 84 | 86 | 83 | 87 | 86 |
| 5WDUP | 10/23/14 12:26 | 84 | 86 | 82 | 88 | 87 |
| 5WC22 | 10/23/14 12:28 | 88 | 83 | 87 | 89 | 89 |
| 5WC23 | 10/23/14 12:30 | 92 | 86 | 88 | 93 | 90 |
| 5W12A | 10/23/14 12:32 | 99 | 89 | 93 | 94 | 95 |
| LLCCV | 10/23/14 12:40 | 108 | 96 | 100 | 99 | 99 |
| CCV | 10/23/14 12:43 | 105 | 98 | 99 | 100 | 98 |
| CCB | 10/23/14 12:45 | 106 | 96 | 100 | 101 | 99 |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1410123 Project: RAAP UNIT 5/2014 Co ONLY

Sequence: 4J23001 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4J23001-ICB1 | Cobalt | 0.00358 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J23001-CCB1 | Cobalt | 0.00881 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J23001-CCB2 | Cobalt | 0.00554 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J23001-CCB3 | Cobalt | 0.00717 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| PBWKC | 4102011-BLK1 | Cobalt | | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J23001-CCB4 | Cobalt | 0.00818 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J23001-CCB5 | Cobalt | 0.00745 | 1.00 | 5.00 | ug/L | *U* | EPA 6020A |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 10-20-14
Preparation Time: 1025
Batch Number: 4102011
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4102011-BLK1 | PBWKC | MB | 50 | 50 | | | CJ / CL | CJ / CL | N/A |
| 4102011-BS1 | MLCSKC | LCS | 50 | 50 | | | CJ / CL | CJ / CL | N/A |
| 4102011-DUP1 | 5W7BD | DUP | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 4102011-DUP2 | 74MW4D | DUP | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 4102011-MS1 | 5W7BS | MS | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 4102011-MS2 | 74MW4S | MS | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 4102011-MSD1 | 5W7BSD | MSD | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 4102011-MSD2 | 74MW4SD | MSD | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410123-01 | 5W7B | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410123-02 | 5W8B | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410123-03 | 5W5B | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410123-04 | 5WC21 | SAMPLE | 50 | 50 | | | BR / CY | BR / CY | <2 |
| 1410123-05 | 5WDUP | SAMPLE | 50 | 50 | | | BR / CY | BR / CY | <2 |
| 1410123-06 | 5WC22 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410123-07 | 5WC23 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410123-08 | 5W12A | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-01 | 74MW4 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-02 | 74MW1 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-03 | 74MW2 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-04 | 74MW3 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-05 | 74MWDUP | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-06 | 74MW5 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-07 | 74MW6 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| 1410126-08 | 74MW7 | SAMPLE | 50 | 50 | | | CJ / CL | CJ / CL | <2 |
| | | | | | | | | | |
| | | | | | | | | | |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | | |
|---|---|---|
| Hot Block Temp In: | 95 | C |
| Hot Block Temp Out: | 95 | C |
| Hot Block Identifier | HGTBLOCK#1 | |
| Time Hg in water bath: | | |
| Time Hg out water bath: | | |
| Water Bath Temp In: | | C |
| Water Bath Temp Out: | | C |
| Water Bath Identifier | | |

**MS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GO1014
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 1.0mL 100ppb Hg
Ref#

**LCS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GO1014
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 1.0 mL of ICCV-5
Ref#

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Bolton
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

*Reviewed By:* Quentisha Jones
*Date:* 10-20-14

111611 JCF

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# Type I Data Package

**Prepared for:**

Abridged Data Package

**Draper Aden Associates, Inc.**
2206 South Main Street
Blacksburg VA 24060

Project: RAAP - Radford, VA - HWMU16
Water Samples
Collected on 10/20/14-10/22/14

## SDG# RAE30

| GROUP | SAMPLE NUMBERS |
|---|---|
| 1513270 | 7648020-7648035 |

PA Cert. # 36-00037
NY Cert. # 10670
NJ Cert. # PA011
NC Cert. # 521
TX Cert. # T104704194-13-10
AZ Cert. # AZ0780

Through our technical processes and second person review of data, we have established that our data/deliverables are in compliance with the methods and project requirements unless otherwise noted or previously resolved with the client.

**Authorized by:** Dana M Kauffman **Date: 11/04/2014**

Dana M. Kauffman
Manager

Any questions or concerns you might have regarding this data package should be directed to your client representative, Barbara Weyandt at (717) 556-7264.

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## Sample Reference List for SDG Number RAE30
## with a Data Package Type of I

**11200 - Draper Aden Associates, Inc.**

Project: RAAP - Radford, VA - HWMU16

| Lab Sample Number | Lab Sample Code | Client Sample Description |
|---|---|---|
| 7648020 | R16C1 | 16C1 Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648021 | 16MW8 | 16MW8 Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648022 | 16MW9 | 16MW9 Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648023 | 16C1A | 16WC1A Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648024 | 16C1A | 16WC1A MS Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648025 | 16C1A | 16WC1A MSD Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648026 | 16DUP | 16WDUP Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648027 | 16C18 | 16WC1B Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648028 | R16-2 | 16-2 Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648029 | R16-3 | 16-3 Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648030 | R16-5 | 16-5 Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648031 | 16C2B | 16WC2B Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648032 | 16SPG | 16SPRING Grab Water 2014-2nd Semiannual Monitoring Event |
| 7648033 | RTB-1 | Trip Blank_1 Water 2014-2nd Semiannual Monitoring Event |
| 7648034 | RTB-2 | Trip Blank_2 Water 2014-2nd Semiannual Monitoring Event |
| 7648035 | RTB-3 | Trip Blank_3 Water 2014-2nd Semiannual Monitoring Event |

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# Sample pH Log

**SDG: RAE30**

| LLI Sample Number | Bottle Code | Actual pH | Exp. pH | pH Check Code | Adj. pH | Adjusted Date | Adjusted Time | Preservative Added | Preservative Lot # | LLI Supplied Bottle? | Sulfide Present? | Corrective Substance | CS Lot # | Res. Cl. Present? | Corrective Substance | CS Lot # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7648020 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648020 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648021 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648022 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648022 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648023 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648024 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648024 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648025 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648025 | 038B | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648026 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648027 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648028 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648029 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648030 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648031 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648032 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648033 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648034 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |
| 7648035 | 038A | <2 | <2 | NA | NA | NA | NA | NA | NA | Y | NA | NA | NA | NA | NA | NA |

| Check Code Key |
|---|
| **PK** = Original container checked - pH is within the correct range. (No preservative was added) |
| **PA** = Original container checked - pH adjusted to correct range. (Preservative was added) |
| **PV** = Volatile container checked |
| **PC** = pH checked (unpreserved container) |
| **SPK** = Subsampled from an original container. Original container checked - pH is within correct range |
| **SPA** = Subsampled from an original container. Subsample container checked - pH adjusted to correct range. |
| **SPC** = Subsampled from an original container. pH checked (unpreserved container). |
| **SUP** = Subsampled from original container. Unable to be preserved due to the matrix of the sample. |
| **UP** = Unable to preserve due to matrix of the sample. |
| **NA** = Not applicable |

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### 01163 GC/MS VOA Water Prep

An undiluted aliquot of the water sample or a dilution of the sample is purged with an inert gas and the volatiles are collected on an adsorbent trap that is subsequently desorbed onto a gas chromatographic column.

Reference: Test Methods for Evaluating Solid Wastes, SW-846 Method 5030C, May 2003.

---

### 11996 VOCs- 25ml Water by 8260C

The water sample is purged and the volatile compounds are collected on a sorbent trap that is subsequently desorbed onto the GC/MS system for chromatographic and mass spectral analysis.

Reference: Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS), SW-846 Method 8260C, August 2006.

# Analysis Reports / Field Chain of Custody

REVISED

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

November 04, 2014

Project: RAAP - Radford, VA - HWMU16

Submittal Date: 10/23/2014
Group Number: 1513270
SDG: RAE30
State of Sample Origin: VA

| Client Sample Description | Lancaster Labs (LL) # |
|---|---|
| 16C1 Grab Water | 7648020 |
| 16MW8 Grab Water | 7648021 |
| 16MW9 Grab Water | 7648022 |
| 16WC1A Grab Water | 7648023 |
| 16WC1A MS Grab Water | 7648024 |
| 16WC1A MSD Grab Water | 7648025 |
| 16WDUP Grab Water | 7648026 |
| 16WC1B Grab Water | 7648027 |
| 16-2 Grab Water | 7648028 |
| 16-3 Grab Water | 7648029 |
| 16-5 Grab Water | 7648030 |
| 16WC2B Grab Water | 7648031 |
| 16SPRING Grab Water | 7648032 |
| Trip Blank_1 Water | 7648033 |
| Trip Blank_2 Water | 7648034 |
| Trip Blank_3 Water | 7648035 |

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC COPY TO Draper Aden Associates, Inc. Attn: Janet Frazier

REVISED

Respectfully Submitted,

Barbara Weyandt

Barbara A. Weyandt
Specialist

(717) 556-7264

Project Name: RAAP - Radford, VA - HWMU16
LL Group #: 1513270

**General Comments:**

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

**Analysis Specific Comments:**

No additional comments are necessary.

REVISED

**Sample Description: 16C1 Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648020**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/22/2014 12:35 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R16C1 SDG#: RAE30-01

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 4.6 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 8.2 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 130 | 130 | 10 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 3.4 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 17:31 | Kerri E Legerlotz | 1 |
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 17:52 | Kerri E Legerlotz | 10 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 17:31 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | H142991AA | 10/26/2014 17:52 | Kerri E Legerlotz | 10 |

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# Analysis Report

REVISED

**Sample Description: 16MW8 Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648021**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/21/2014 13:20 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW8 SDG#: RAE30-02

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 14:43 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 14:43 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16MW9 Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648022**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/22/2014 09:10 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16MW9 SDG#: RAE30-03

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 2.4 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 7.3 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 130 | 130 | 10 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 18:13 | Kerri E Legerlotz | 1 |
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 18:34 | Kerri E Legerlotz | 10 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 18:13 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | H142991AA | 10/26/2014 18:34 | Kerri E Legerlotz | 10 |

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# Analysis Report

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**Sample Description: 16WC1A Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648023**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/22/2014 10:05 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE30-04BKG

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 1.7 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 12:37 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 12:37 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16WC1A MS Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648024**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/22/2014 10:05 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE30-04MS

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | 5.1 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | 46 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | 5.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 5.9 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | 5.8 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | 6.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 6.5 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 4.9 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 15 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | 5.2 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | 4.6 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 4.9 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | 5.5 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | 5.2 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | 4.7 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.1 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | 5.4 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | 16 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 13:19 | Kerri E Legerlotz | 1 |
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 14:01 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 13:19 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | H142991AA | 10/26/2014 14:01 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16WC1A MSD Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648025**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/22/2014 10:05 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C1A SDG#: RAE30-04MSD

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | 5.2 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | 50 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | 5.1 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | 5.8 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | 5.8 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | 5.8 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 6.5 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | 5.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | 15 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | 5.3 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | 4.7 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | 5.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | 5.7 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | 5.4 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | 4.7 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | 5.3 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | 5.4 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | 17 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 13:40 | Kerri E Legerlotz | 1 |
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 14:22 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 13:40 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 2 | H142991AA | 10/26/2014 14:22 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16WDUP Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648026**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/22/2014 10:20 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16DUP SDG#: RAE30-05FD

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | 1.5 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 15:03 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 15:03 | Kerri E Legerlotz | 1 |

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# Analysis Report

REVISED

**Sample Description: 16WC1B Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648027**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/22/2014 11:45 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C18 SDG#: RAE30-06

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 15:24 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 15:24 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16-2 Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648028**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/21/2014 09:55 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R16-2 SDG#: RAE30-07

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 15:45 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 15:45 | Kerri E Legerlotz | 1 |

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# Analysis Report

REVISED

**Sample Description: 16-3 Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648029**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/20/2014 14:00 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R16-3 SDG#: RAE30-08

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 16:06 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 16:06 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16-5 Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648030**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/21/2014 11:00 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

R16-5 SDG#: RAE30-09

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 16:27 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 16:27 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16WC2B Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648031**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/21/2014 12:20 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16C2B SDG#: RAE30-10

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 16:48 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 16:48 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: 16SPRING Grab Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648032**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/21/2014 11:25 by TE

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

16SPG SDG#: RAE30-11

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 17:10 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 17:10 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: Trip Blank_1 Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648033**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/13/2014

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

RTB-1 SDG#: RAE30-12TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 11:34 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 11:34 | Kerri E Legerlotz | 1 |

REVISED

**Sample Description: Trip Blank_2 Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648034**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/13/2014

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

RTB-2 SDG#: RAE30-13TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 11:55 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 11:55 | Kerri E Legerlotz | 1 |

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# Analysis Report

REVISED

**Sample Description: Trip Blank_3 Water**
**2014-2nd Semiannual Monitoring Event**
**RAAP - Radford, VA - HWMU16**

**LL Sample # WW 7648035**
**LL Group # 1513270**
**Account # 11200**

**Project Name: RAAP - Radford, VA - HWMU16**

Collected: 10/13/2014

Submitted: 10/23/2014 09:40
Reported: 11/04/2014 11:46

Draper Aden Associates, Inc.
2206 South Main Street
Blacksburg VA 24060

RTB-3 SDG#: RAE30-14TB

| CAT No. | Analysis Name | CAS Number | As Received Result | As Received Limit of Quantitation | Dilution Factor |
|---|---|---|---|---|---|
| **GC/MS Volatiles** | **SW-846 8260C** | | ug/l | ug/l | |
| 11996 | Benzene | 71-43-2 | < 1.0 | 1.0 | 1 |
| 11996 | 2-Butanone | 78-93-3 | < 10 | 10 | 1 |
| 11996 | Carbon Tetrachloride | 56-23-5 | < 1.0 | 1.0 | 1 |
| 11996 | Chloroethane | 75-00-3 | < 1.0 | 1.0 | 1 |
| 11996 | Chloromethane | 74-87-3 | < 1.0 | 1.0 | 1 |
| 11996 | Dichlorodifluoromethane | 75-71-8 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethane | 75-34-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1-Dichloroethene | 75-35-4 | < 1.0 | 1.0 | 1 |
| 11996 | Dimethyl ether | 115-10-6 | < 13 | 13 | 1 |
| 11996 | Ethyl ether | 60-29-7 | < 13 | 13 | 1 |
| 11996 | Ethylbenzene | 100-41-4 | < 1.0 | 1.0 | 1 |
| 11996 | Freon 113 | 76-13-1 | < 1.0 | 1.0 | 1 |
| 11996 | Methylene Chloride | 75-09-2 | < 1.0 | 1.0 | 1 |
| 11996 | Tetrachloroethene | 127-18-4 | < 1.0 | 1.0 | 1 |
| 11996 | Toluene | 108-88-3 | < 1.0 | 1.0 | 1 |
| 11996 | 1,1,1-Trichloroethane | 71-55-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichloroethene | 79-01-6 | < 1.0 | 1.0 | 1 |
| 11996 | Trichlorofluoromethane | 75-69-4 | < 1.0 | 1.0 | 1 |
| 11996 | Xylene (Total) | 1330-20-7 | < 3.0 | 3.0 | 1 |

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 11996 | 18 RAAP compounds | SW-846 8260C | 1 | H142991AA | 10/26/2014 12:16 | Kerri E Legerlotz | 1 |
| 01163 | GC/MS VOA Water Prep | SW-846 5030C | 1 | H142991AA | 10/26/2014 12:16 | Kerri E Legerlotz | 1 |

REVISED

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1513270
Reported: 11/04/14 at 11:46 AM

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Batch number: H142991AA | Sample number(s): 7648020-7648035 | | | | | | | |
| Benzene | < 1.0 | 1.0 | ug/l | 101 | | 80-120 | | |
| 2-Butanone | < 10 | 10. | ug/l | 123 | | 63-137 | | |
| Carbon Tetrachloride | < 1.0 | 1.0 | ug/l | 98 | | 80-135 | | |
| Chloroethane | < 1.0 | 1.0 | ug/l | 101 | | 68-120 | | |
| Chloromethane | < 1.0 | 1.0 | ug/l | 109 | | 55-120 | | |
| Dichlorodifluoromethane | < 1.0 | 1.0 | ug/l | 106 | | 35-142 | | |
| 1,1-Dichloroethane | < 1.0 | 1.0 | ug/l | 98 | | 80-120 | | |
| 1,1-Dichloroethene | < 1.0 | 1.0 | ug/l | 98 | | 80-123 | | |
| Dimethyl ether | < 13 | 13. | ug/l | 93 | | 71-120 | | |
| Ethyl ether | < 13 | 13. | ug/l | 100 | | 63-121 | | |
| Ethylbenzene | < 1.0 | 1.0 | ug/l | 103 | | 80-120 | | |
| Freon 113 | < 1.0 | 1.0 | ug/l | 91 | | 73-127 | | |
| Methylene Chloride | < 1.0 | 1.0 | ug/l | 100 | | 80-120 | | |
| Tetrachloroethene | < 1.0 | 1.0 | ug/l | 107 | | 80-120 | | |
| Toluene | < 1.0 | 1.0 | ug/l | 103 | | 80-120 | | |
| 1,1,1-Trichloroethane | < 1.0 | 1.0 | ug/l | 91 | | 80-120 | | |
| Trichloroethene | < 1.0 | 1.0 | ug/l | 100 | | 80-120 | | |
| Trichlorofluoromethane | < 1.0 | 1.0 | ug/l | 100 | | 64-141 | | |
| Xylene (Total) | < 3.0 | 3.0 | ug/l | 107 | | 80-120 | | |

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Batch number: H142991AA | Sample number(s): 7648020-7648035 UNSPK: 7648023 | | | | | | | | |
| Benzene | 102 | 104 | 87-126 | 1 | 30 | | | | |
| 2-Butanone | 122 | 133 | 56-160 | 9 | 30 | | | | |
| Carbon Tetrachloride | 99 | 101 | 81-148 | 2 | 30 | | | | |
| Chloroethane | 106 | 104 | 70-139 | 2 | 30 | | | | |
| Chloromethane | 115 | 115 | 49-135 | 0 | 30 | | | | |
| Dichlorodifluoromethane | 119 | 116 | 28-136 | 3 | 30 | | | | |
| 1,1-Dichloroethane | 96 | 97 | 81-126 | 1 | 30 | | | | |
| 1,1-Dichloroethene | 98 | 99 | 86-132 | 1 | 30 | | | | |
| Dimethyl ether | 102 | 90 | 70-130 | 11 | 30 | | | | |
| Ethyl ether | 101 | 105 | 57-139 | 1 | 30 | | | | |
| Ethylbenzene | 104 | 107 | 80-140 | 2 | 30 | | | | |
| Freon 113 | 92 | 93 | 84-136 | 1 | 30 | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

REVISED

# Quality Control Summary

Client Name: Draper Aden Associates, Inc. Group Number: 1513270
Reported: 11/04/14 at 11:46 AM

## Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

| Analysis Name | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD MAX | BKG Conc | DUP Conc | DUP RPD | Dup RPD Max |
|---|---|---|---|---|---|---|---|---|---|
| Methylene Chloride | 97 | 100 | 77-135 | 2 | 30 | | | | |
| Tetrachloroethene | 111 | 114 | 75-129 | 3 | 30 | | | | |
| Toluene | 105 | 108 | 83-127 | 3 | 30 | | | | |
| 1,1,1-Trichloroethane | 94 | 94 | 85-140 | 1 | 30 | | | | |
| Trichloroethene | 102 | 106 | 85-131 | 3 | 30 | | | | |
| Trichlorofluoromethane | 109 | 107 | 73-139 | 2 | 30 | | | | |
| Xylene (Total) | 108 | 112 | 81-137 | 4 | 30 | | | | |

## Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed
unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 18 RAAP compounds
Batch number: H142991AA

| | Dibromofluoromethane | 1,2-Dichloroethane-d4 | Toluene-d8 | 4-Bromofluorobenzene |
|---|---|---|---|---|
| 7648020 | 102 | 108 | 100 | 90 |
| 7648021 | 102 | 107 | 100 | 91 |
| 7648022 | 102 | 109 | 99 | 91 |
| 7648023 | 102 | 107 | 100 | 91 |
| 7648024 | 102 | 108 | 101 | 95 |
| 7648025 | 100 | 104 | 100 | 95 |
| 7648026 | 101 | 107 | 100 | 91 |
| 7648027 | 101 | 108 | 99 | 91 |
| 7648028 | 102 | 106 | 99 | 90 |
| 7648029 | 101 | 109 | 100 | 90 |
| 7648030 | 102 | 107 | 99 | 91 |
| 7648031 | 102 | 109 | 99 | 90 |
| 7648032 | 101 | 107 | 100 | 90 |
| 7648033 | 99 | 107 | 100 | 92 |
| 7648034 | 101 | 108 | 99 | 90 |
| 7648035 | 102 | 106 | 99 | 90 |
| Blank | 101 | 106 | 99 | 91 |
| LCS | 100 | 105 | 99 | 95 |
| MS | 102 | 108 | 101 | 95 |
| MSD | 100 | 104 | 100 | 95 |
| Limits: | 77-114 | 74-113 | 77-110 | 78-110 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# CHAIN OF CUSTODY RECORD

11200 1513270 7648020-35

**Laboratory:** Eurofins Lancaster Laboratories Environmental, LLC , 2425 New Holland Pike, Lancaster, PA, 17605-2425/ Barb Wyant, Manager/ (717) 656-2300 OK JVE 10-2-2014

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0<br>**Attn:** 0<br>**Address:** 0<br>0<br>**Phone:** 0<br>**Fax:** 0<br>**Fax:** 0 | **Consultant:** Draper Aden Associates<br>**Attn:** Janet C. Frazier<br>**Address:** 2206 South Main Street<br>Blacksburg, Virginia 24060<br>**Phone:** (540) 552-0444<br>**Fax:** (540) 552-0291 | **Sample Site:** RAAP, Radford, Virginia<br>**Location:** HWMU16<br>**Event:** 2014 - 2nd Semiannual Monitoring Event<br>**DAA JN:** B03204-12<br>**Lab JN:** | **Project Specific (PS) or Batch (B) QC:**<br>**Sample Collection for Project Complete?** YES<br>UPS: 1Z 757 02X Y0 4117 4246<br>**Carrier:**<br>**Tracking Number:** | | |

| **Box 1: Matrix** | | **Box 2: Preservative** | | **Box 3: Filtered/Unfiltered** | **Box 4: Sample Type** | **Invoice** |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | Preserved and shipped on ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA<br>AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Box 4 - Sample Type | | | | | G | | | | | | | |
| Box 3 - Filtered/Unfiltered | | | | | U | | | | | | | |
| Required pH of Sample | | | | | <2 | | | | | | | |
| Box 2 - Preservative | | | | | A | | | | | | | |
| Box 5 - Sample Container Type | | | | | 3-40ml V | | | | | | | |
| Sample ID | Date: 2043 2014 JVE 10/2/2014 | Time | Box 1: Matrix | Number of Bottles | 8260C/5030C - 25 ml purge | | | | | | | |
| 16C1 | 10/22 | 1235 | GW | 3 | X | | | | | | | |
| 16MW8 | 10/21 | 1320 | GW | 3 | X | | | | | | | |
| 16MW9 | 10/22 | 0910 | GW | 3 | X | | | | | | | |
| 16WC1A | 10/22 | 1005 | GW | 9 | X | | | | | | | USE FOR QC |
| 16WDUP | 10/22 | 1020 | GW | 3 | X | | | | | | | |
| 16WC1B | 10/22 | 1145 | GW | 3 | X | | | | | | | |
| | | | | | | | | | | | | |
| 16-2 | 10/21 | 0955 | GW | 3 | X | | | | | | | |
| 16-3 | 10/20 | 1400 | GW | 3 | X | | | | | | | |
| 16-5 | 10/21 | 1100 | GW | 3 | X | | | | | | | |
| 16WC2B | 10/21 | 1220 | GW | 3 | X | | | | | | | |
| 16SPRING | 10/21 | 1125 | GW | 3 | X | | | | | | | |
| Trip Blank1 | 10/13 | — | GW | 3 | X | | | | | | | |
| Trip Blank2 | 10/13 | — | GW | 3 | X | | | | | | | |
| Trip Blank3 | ~~10/13~~ | — | GW | 3 | X | | | | | | | T.B. #3 WAS USED - DISREGARD LINE OUT - KJC 10/22/14 |

**GENERAL NOTES:**

1. DAA EDD required.
2. Level 1 deliverables required.
3. See attached target analyte list.
4. 1 Trip Blank to be analyzed per day of sample collection.
5. Project required LOQs attached. Please report these LOQs.
6. Report to at or above project QL's.

**Clients Special Instructions:** Level 1 with edd. See attached target analyte list. See Genral Notes block.

Received by lab in Good Condition X Yes ____ No Custody Seal Intact X Yes ____ No Temperature upon arrival 0.6 Received on Ice X Yes ____ No
Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): Tyler Emery | Date: 10/20/14 | #1 Relinquished by (Signature): | 10/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: | |
| Sampler Signature: | Time: 0730 | Company Name: DAA | Time: 1700 | Company Name: | Time: | | |
| Sampler Name (Print): Ken Coddington | Date: 10/20/14 | #1 Received by (Signature): | Date: | #2 Received by (Signature): | Date: 10/23/14 | 30 DYS ORG/6 MTHS INORG | |
| Sampler Signature: | Time: 0730 | Company Name: | Time: | Company Name: ECLE | Time: 940 | | |



1/2 OK 10/2/14

1513270

# HWMU16
# Radford Army Ammunition Plant
# Semiannual Monitoring Event
# DAA JN: B03204-12

**ANALYTICAL METHOD: 8260C/5030C 25 ml purge volume**
**TYPE METHOD: GCMS**
**CLASS: VOLATILE**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | Carbon tetrachloride | 56-23-5 | 1 |
| 2. | chloromethane ; (Methyl chloride) | 74-87-3 | 1 |
| 3. | 2-butanone (methyl ethyl ketone - MEK) | 78-93-3 | 10 |
| 4. | 1,1-dichloroethane | 75-34-3 | 1 |
| 5. | Dichlorodifluoromethane | 75-71-8 | 1 |
| 6. | Ethylbenzene | 100-41-4 | 1 |
| 7. | Tetrachloroethene | 127-18-4 | 1 |
| 8. | Toluene (methyl benzene) | 108-88-3 | 1 |
| 9. | 1,1,1-trichloroethane (methyl chloroform) | 71-55-6 | 1 |
| 10. | Trichloroethene | 79-01-6 | 1 |
| 11. | Trichlorofluoromethane (CFC-11) | 75-69-4 | 1 |
| 12. | Xylenes (total) | 1330-20-7 | 3 |
| 13 | Chloroethane | 75-00-3 | 1 |
| 14 | Diethyl ether | 60-29-7 | 12.5 |
| 15 | Dimethyl ether | 115-10-6 | 12.5 |
| 16 | Methylene chloride | 75-09-2 | 1 |
| 17 | 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76-13-1 | 1 |
| 18 | Benzene | 71-43-2 | 1 |
| 19 | 1,1-Dichloroethene | 75-35-4 | 1 |

Notes
13-16 added 10/03. JCF
Revised 10/31/03 JCF

**17 added 0704. Revised 7/28/2004**
**10/2008 JCF**
**18 added 04 2011. JCF**
**19 added 04 2014 KPO**



# 25 ml purge volume



4/1-2/12

eurofins | Lancaster Laboratories Environmental

# Sample Administration Receipt Documentation Log

Doc Log ID: 36119

Group Number(s): 1513270

Client: Draper Aden Associates

## Delivery and Receipt Information

| | | | |
|---|---|---|---|
| Delivery Method: | UPS | Arrival Timestamp: | 10/23/2014 9:40 |
| Number of Packages: | 1 | Number of Projects: | 1 |
| State/Province of Origin: | VA | | |

## Arrival Condition Summary

| | | | |
|---|---|---|---|
| Shipping Container Sealed: | Yes | Sample IDs on COC match Containers: | Yes |
| Custody Seal Present: | Yes | Sample Date/Times match COC: | Yes |
| Custody Seal Intact: | Yes | VOA Vial Headspace ≥ 6mm: | N/A |
| Samples Chilled: | Yes | Total Trip Blank Qty: | 6 |
| Paperwork Enclosed: | Yes | Trip Blank Type: | HCL |
| Samples Intact: | Yes | Air Quality Samples Present: | No |
| Missing Samples: | No | | |
| Extra Samples: | No | | |
| Discrepancy in Container Qty on COC: | No | | |

*Unpacked by Brandy Barclay (2299) at 13:11 on 10/23/2014*

## Samples Chilled Details

*Thermometer Types:* *DT = Digital (Temp. Bottle)* *IR = Infrared (Surface Temp)* *All Temperatures in °C.*

| Cooler # | Thermometer ID | Corrected Temp | Therm. Type | Ice Type | Ice Present? | Ice Container | Elevated Temp? |
|---|---|---|---|---|---|---|---|
| 1 | DT146 | 0.8 | DT | Wet | Y | Bagged | N |

General Comments: rec 2 vials for trip blank 1,2,3



2425 New Holland Pike
Lancaster, PA 17601-5994
T | 717-656-2300
F | 717-656-2681
www.LancasterLabs.com

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# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **RL** | Reporting Limit | **BMQL** | Below Minimum Quantitation Level |
| **N.D.** | none detected | **MPN** | Most Probable Number |
| **TNTC** | Too Numerous To Count | **CP Units** | cobalt-chloroplatinate units |
| **IU** | International Units | **NTU** | nephelometric turbidity units |
| **umhos/cm** | micromhos/cm | **ng** | nanogram(s) |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **meq** | milliequivalents | **lb.** | pound(s) |
| **g** | gram(s) | **kg** | kilogram(s) |
| **µg** | microgram(s) | **mg** | milligram(s) |
| **mL** | milliliter(s) | **L** | liter(s) |
| **m3** | cubic meter(s) | **µL** | microliter(s) |
| | | **pg/L** | picogram/liter |

**<** less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

*Data Qualifiers:*

**C –** result confirmed by reanalysis.

**J -** estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

*U.S. EPA CLP Data Qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quantitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike sample not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

**Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.**

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as “analyze immediately” are not performed within 15 minutes.

**WARRANTY AND LIMITS OF LIABILITY** - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

CompuChem
A Division Of
Liberty Analytical Corp.

10/30/2014

Abridged Data Package

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP APPIX 2014 UNIT 16

WorkOrder: 1410146

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1410146

**Project:** RAAP APPIX 2014 UNIT 16 **Sdg:** 1410146

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1410146-01 | 16WC1A | Water | 10/22/2014 10:05 | 10/23/2014 09:35 |
| 1410146-02 | 16C1 | Water | 10/22/2014 12:35 | 10/23/2014 09:35 |
| 1410146-03 | 16MW8 | Water | 10/21/2014 13:20 | 10/23/2014 09:35 |
| 1410146-04 | 16MW9 | Water | 10/22/2014 09:10 | 10/23/2014 09:35 |
| 1410146-05 | 16WDUP | Water | 10/22/2014 10:20 | 10/23/2014 09:35 |
| 1410146-06 | 16WC1B | Water | 10/22/2014 11:45 | 10/23/2014 09:35 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2014 UNIT 16

**Laboratory:** COMPUCHEM

**SDG:** 1410146

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16WC1A | SW8270D | 1410146-01 |
| 16C1 | SW8270D | 1410146-02 |
| 16MW8 | SW8270D | 1410146-03 |
| 16MW9 | SW8270D | 1410146-04 |
| 16WDUP | SW8270D | 1410146-05 |
| 16WC1B | SW8270D | 1410146-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions addressed in the narrative. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Quentisha Forrester

Name: Quentisha Forrester

Date: 10/27/2014

Title: Chemist III

Environmental Testing Laboratories
CompuChem
A Division Of
Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

**CompuChem, a Division of Liberty Analytical Corporation**

## I. SAMPLE DATA PACKAGE

**GC/MS by SW-846**

The Sample Data Package shall contain data for all samples in one Work Order/Sample Delivery Group (SDG), as follows:

**A. SDG Narrative**

**B. Chain of Custody Records**

**C. Sample Preparation and Analysis Holding Time Data**
(HOLDING TIME SUMMARY)

**D. Surrogate Recovery Results**
(SURROGATE STANDARD RECOVERY)

**E. Laboratory Control Sample Results**
(LCS/LCS DUPLICATE RECOVERY)

**F. Matrix Spike Results**
(MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY)

**G. Batch Summary**
(PREPARATION BATCH SUMMARY)

**H. Analysis Sequence Summary**
(ANALYSIS SEQUENCE SUMMARY)

**I. Instrument Performance Check**
(MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK)

**J. Internal Standard Results**
(INTERNAL STANDARD AREA AND RT SUMMARY)

**K. Target Compound Results – Forms and Raw Data**
(ANALYSIS DATA SHEET)

**L. Initial Calibration and Second Source Calibration Verification Forms and Raw Data**
(INITIAL CALIBRATION DATA) (SECOND-SOURCE CALIBRATION VERIFICATION)

**M. Continuing Calibration Data – Forms and Raw Data**
(CONTINUING CALIBRATION CHECK)

**N. BFB / DFTPP or FC43 - Raw Data**

**O. Blank Data – Forms and Raw Data**
(ANALYSIS DATA SHEET)

**P. Laboratory Control Sample Data – Forms and Raw Data**
(ANALYSIS DATA SHEET)

**Q. Matrix Spike Data – Forms and Raw Data**
(ANALYSIS DATA SHEET)

**R. GPC Data** (if applicable)

**S. Run Logs / Prep Sheets / Internal CoC Documents / Standard Info / Manual Integration Summary**

# CompuChem

**A division of Liberty Analytical Corporation**
**501 Madison Avenue**
**Cary, N.C. 27513**
**Tel: 919/379-4100 Fax: 919/379-4050**


## SDG NARRATIVE
## SDG # 1410146
## PROTOCOL: SW-846

**SAMPLE IDENTIFICATIONS: 16WC1A 16C1 16MW8 16MW9 16WDUP 16WC1B**

The 6 aqueous samples listed above were received intact, temperatures ranging from 0.9°C to 3.2°C, with proper documentation, in sealed shipping containers, on October 23, 2014. These samples were scheduled for the requested analyses of the semivolatile fraction. SW-846, 3rd Edition, Update 3, Separatory Funnel extraction (Method 3510C), and Method 8270D were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the narrative deals with the semivolatile fraction only.

**Semivolatile**

Extraction and analysis holding time requirements were met for these samples.

No Semivolatile project analytes identified were confirmed above the Quantitation Limit (QL) in these samples.

Manual integrations were performed in this SDG, as indicated on the detailed Manual Integration Summary report that is located in section S. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Tailing factor criteria were met for pentachlorophenol and benzidine. The breakdown criterion was met for DDT. These three compounds have been added to the DFTPP solution and analyzed together.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of these samples. All of the internal standards met response and retention time criteria in the analyses of these samples.

The associated method blank met all quality control criteria.

16WC1A was used as the original to prepare the duplicate matrix spikes as requested. The associated duplicate matrix spikes met all of the advisory accuracy criteria. Laboratory Control Samples (LCS/LCSD) were prepared and analyzed along with these samples and met all accuracy and precision criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Quentisha Forrester
Chemist III
October 27, 2014

# CHAIN OF CUSTODY RECORD

OK SRC 10/23/14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0 | **Consultant:** Draper Aden Associates | **Sample Site:** RAAP, Radford, Virginia | **Project Specific (PS) or Batch (B) QC:** |
| **Attn:** 0 | **Attn:** Janet C. Frazier | | **Sample Collection for Project Complete?** YES |
| **Address:** 0 | **Address:** 2206 South Main Street | **Location:** HWMU16 | **UPS:** 1Z-237-301-01-9194-3415 |
| 0 | Blacksburg, Virginia 24060 | | 1Z-237-301-01-9091-9024 |
| **Phone:** 0 | **Phone:** (540) 552-0444 | **Event:** 2014 - 2nd Semiannual Monitoring Event | **Carrier:** 1Z-237-301-01-9367-5238 |
| **Fax:** 0 | **Fax:** (540) 552-0291 | **DAA JN:** B03204-12 | **Tracking Number:** |
| **Fax:** 0 | | **Lab JN:** | |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER
Preserved and shipped on Ice: YES

| Box 4 - Sample Type | G | G | G | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Box 3 - Filtered/Unfiltered | U | U | U | | | | | | |
| Required pH of Sample | <2 | <2 | - | | | | | | |
| Box 2 - Preservative | B | B | H | | | | | | |
| Box 5 - Sample Container Type | 1-500 ml P | | 2-1L A | | | | | | |

| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | ICP/MS 6020A/3005A (Metals-Total) | 7470A (Mercury-Total) | 8270D/3510C (Semivolatiles) | metals / Hg pH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16C1 | 10/22 | 1235 | GW | 3 | X | X | X | <2 | | | 1410146-02 | |
| 16MW8 | 10/21 | 1320 | GW | 3 | X | X | X | <2 | | | -03 | |
| 16MW9 | 10/22 | 0910 | GW | 3 | X | X | X | <2 | | | -04 | |
| 16WC1A | 10/22 | 1005 | GW | 9 | X | X | X | <2 | | | -01 | USE FOR QC |
| 16WDUP | 10/22 | 1020 | GW | 3 | X | X | X | <2 | | | -05 | |
| 16WC1B | 10/22 | 1145 | GW | 3 | X | X | X | <2 | | | -06 | |
| | | | | | | | | | | | | |
| 16-2 | 10/21 | 0955 | GW | 3 | X | X | X | <2 | | | 1410147-01 | |
| 16-3 | ~~10/20~~ | ~~1400~~ | GW | 3 | X | X | X | <2 | | | -02 | DID COLLECT ON 10/20 @ 1400 SRC 10/22/14 |
| 16-5 | 10/21 | 1100 | GW | 3 | X | X | X | <2 | | | -03 | Cr(6) metals on 10/22/14 @ 10/23/14 |
| 16WC2B | 10/21 | 1220 | GW | 3 | X | X | X | <2 | | | -04 | |
| 16SPRING | 10/21 | 1125 | GW | 3 | X | X | X | <2 | | | -05 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**GENERAL NOTES:**
1. ERIS EDD & DAA EDD required.
2. Level 4 deliverables required.
3. See attached target analyte list
4. Report results at or above QL permit, (attached).

**Clients Special Instructions:** 1.1°C, 0.9°C, 3.2°C

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): Tyler Emery | Date: 10/20/14 | #1 Relinquished by (Signature): | Date: 10/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0730 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): KEN CODDINGTON | Date: 10/20/14 | #1 Received by (Signature) | Date: 10/23/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0730 | Company Name: CompuChem | Time: 0935 | Company Name: | Time: | |

1/3

**ANALYTICAL METHOD: SEE BELOW**
**TYPE METHOD: SEE BELOW**
**CLASS: TOTAL**

**Method SW 846-6020A/3005 (ICP/MS)**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | Arsenic | 7440-38-2 | 10 |
| 2. | Barium | 7440-39-3 | 10 |
| 3. | Beryllium | 7440-41-7 | 1 |
| 4. | Cadmium | 7440-43-9 | 1 |
| 5. | Chromium | 7440-47-3 | 5 |
| 6. | Cobalt | 7440-48-4 | 5 |
| 7. | Copper | 7440-50-8 | 5 |
| 8. | Lead | 7440-92-1 | 1 |
| 9. | Nickel | 7440-02-0 | 10 |
| 10. | Vanadium | 7440-62-2 | 10 |
| 11. | Zinc | 7440-66-6 | 10 |

**Method SW 7470A/CVAA**

| | | | |
|---|---|---|---|
| 15 | Mercury | 7439-97-6 2/7470A | 2 |

Notes. Antimony, selenium and silver deleted 4-6,2012.
**10/2013 JCF**

**ANALYTICAL METHOD: 8270D/3510C**
**TYPE METHOD: GCMS**
**CLASS: SEMIVOLATILE**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | 2,4-dinitrotoluene | 121-14-2 | 10 |
| 2. | 2,6-dinitrotoluene | 606-20-2 | 10 |
| 3. | Diethylphthalate | | 5 |

10/13 – diehtylphthate added

3/3

# HOLDING TIME SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16WC1A | 10/22/14 | 10/23/14 | 10/24/14 | 2 | 7 | 10/24/14 | 0.3 | 40 | |
| 16C1 | 10/22/14 | 10/23/14 | 10/24/14 | 2 | 7 | 10/24/14 | 0.4 | 40 | |
| 16MW8 | 10/21/14 | 10/23/14 | 10/24/14 | 3 | 7 | 10/24/14 | 0.4 | 40 | |
| 16MW9 | 10/22/14 | 10/23/14 | 10/24/14 | 2 | 7 | 10/24/14 | 0.4 | 40 | |
| 16WDUP | 10/22/14 | 10/23/14 | 10/24/14 | 2 | 7 | 10/24/14 | 0.4 | 40 | |
| 16WC1B | 10/22/14 | 10/23/14 | 10/24/14 | 2 | 7 | 10/24/14 | 0.5 | 40 | |

# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 16

SDG: 1410146 Instrument: 5972hp66

Sequence: 4J24010 Calibration: 4091606

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Blank (4102407-BLK1 ) ug/L** Lab File ID: 4102407-BLK166.d Analyzed: 10/24/14 17:04 | | | | |
| 2-Fluorophenol | 100.0 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 38 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 92 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 87 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 89 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 95 | 59 - 110 | |
| **LCS (4102407-BS1 ) ug/L** Lab File ID: 4102407-BS166.d Analyzed: 10/24/14 17:43 | | | | |
| 2-Fluorophenol | 100.0 | 57 | 33 - 110 | |
| Phenol-d5 | 100.0 | 33 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 83 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 84 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 93 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 90 | 59 - 110 | |
| **LCS Dup (4102407-BSD1 ) ug/L** Lab File ID: 4102407-BSD166.d Analyzed: 10/24/14 18:23 | | | | |
| 2-Fluorophenol | 100.0 | 61 | 33 - 110 | |
| Phenol-d5 | 100.0 | 36 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 89 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 84 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 96 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 88 | 59 - 110 | |

# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 16

SDG: 1410146 Instrument: 5972hp66

Sequence: 4J24010 Calibration: 4091606

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16WC1A (1410146-01 ) ug/L** Lab File ID: 1410146-0166.d Analyzed: 10/24/14 19:03 | | | | |
| 2-Fluorophenol | 100.0 | 54 | 33 - 110 | |
| Phenol-d5 | 100.0 | 27 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 83 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 78 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 85 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 91 | 59 - 110 | |
| **Matrix Spike (4102407-MS1 ) ug/L** Lab File ID: 4102407-MS166.d Analyzed: 10/24/14 19:42 | | | | |
| 2-Fluorophenol | 100.0 | 54 | 33 - 110 | |
| Phenol-d5 | 100.0 | 29 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 84 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 82 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 94 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 89 | 59 - 110 | |
| **Matrix Spike Dup (4102407-MSD1 ) ug/L** Lab File ID: 4102407-MSD166.d Analyzed: 10/24/14 20:22 | | | | |
| 2-Fluorophenol | 100.0 | 49 | 33 - 110 | |
| Phenol-d5 | 100.0 | 28 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 78 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 76 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 90 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 82 | 59 - 110 | |

# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 16

SDG: 1410146 Instrument: 5972hp66

Sequence: 4J24010 Calibration: 4091606

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16C1 (1410146-02 ) ug/L** Lab File ID: 1410146-0266.d Analyzed: 10/24/14 21:02 | | | | |
| 2-Fluorophenol | 105.3 | 53 | 33 - 110 | |
| Phenol-d5 | 105.3 | 31 | 20 - 110 | |
| Nitrobenzene-d5 | 52.63 | 84 | 45 - 110 | |
| 2-Fluorobiphenyl | 52.63 | 77 | 46 - 110 | |
| 2,4,6-Tribromophenol | 105.3 | 85 | 42 - 119 | |
| Terphenyl-d14 | 52.63 | 87 | 59 - 110 | |
| **16MW8 (1410146-03 ) ug/L** Lab File ID: 1410146-0366.d Analyzed: 10/24/14 21:41 | | | | |
| 2-Fluorophenol | 100.0 | 46 | 33 - 110 | |
| Phenol-d5 | 100.0 | 28 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 72 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 74 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 83 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 92 | 59 - 110 | |
| **16MW9 (1410146-04 ) ug/L** Lab File ID: 1410146-0466.d Analyzed: 10/24/14 22:21 | | | | |
| 2-Fluorophenol | 100.0 | 53 | 33 - 110 | |
| Phenol-d5 | 100.0 | 31 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 86 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 88 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 91 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 90 | 59 - 110 | |

# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 16

SDG: 1410146 Instrument: 5972hp66

Sequence: 4J24010 Calibration: 4091606

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16WDUP (1410146-05 ) ug/L** Lab File ID: 1410146-0566.d Analyzed: 10/24/14 23:00 | | | | |
| 2-Fluorophenol | 100.0 | 53 | 33 - 110 | |
| Phenol-d5 | 100.0 | 30 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 81 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 76 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 77 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 91 | 59 - 110 | |
| **16WC1B (1410146-06 ) ug/L** Lab File ID: 1410146-0666.d Analyzed: 10/24/14 23:40 | | | | |
| 2-Fluorophenol | 100.0 | 52 | 33 - 110 | |
| Phenol-d5 | 100.0 | 28 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 83 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 82 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 87 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 90 | 59 - 110 | |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102407-BS1 Matrix: Water Client ID: SLCSII Batch: 4102407

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 40.00 | 36.52 | 91 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 37.31 | 93 | | 58 - 123 |
| Diethylphthalate | 40.00 | 37.08 | 93 | | 64 - 114 |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102407-BSD1 Matrix: Water Client ID: SLCSDII Batch: 4102407

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| 2,6-Dinitrotoluene | 40.00 | 38.48 | 96 | 5 | 30 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 40.90 | 102 | 9 | 30 | | 58 - 123 |
| Diethylphthalate | 40.00 | 39.27 | 98 | 6 | 30 | | 64 - 114 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMS**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102407-MS1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 40.00 | 5.0 U | 37.08 | 93 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 5.0 U | 37.45 | 94 | | 58 - 123 |
| Diethylphthalate | 40.00 | 5.0 U | 38.13 | 95 | | 64 - 114 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*SW8270D*

**16WC1AMSD**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102407-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 40.00 | 36.68 | 92 | 1 | | 30 | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 36.17 | 90 | 3 | | 30 | 58 - 123 |
| Diethylphthalate | 40.00 | 37.40 | 94 | 2 | | 30 | 64 - 114 |

# PREPARATION BATCH SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Batch: 4102407 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16WC1A | 1410146-01 | 10/24/14 12:25 | 1000 | 1000 |
| 16C1 | 1410146-02 | 10/24/14 12:25 | 950 | 1000 |
| 16MW8 | 1410146-03 | 10/24/14 12:25 | 1000 | 1000 |
| 16MW9 | 1410146-04 | 10/24/14 12:25 | 1000 | 1000 |
| 16WDUP | 1410146-05 | 10/24/14 12:25 | 1000 | 1000 |
| 16WC1B | 1410146-06 | 10/24/14 12:25 | 1000 | 1000 |
| SBLKII | 4102407-BLK1 | 10/24/14 12:25 | 1000 | 1000 |
| SLCSII | 4102407-BS1 | 10/24/14 12:25 | 1000 | 1000 |
| SLCSDII | 4102407-BSD1 | 10/24/14 12:25 | 1000 | 1000 |
| 16WC1AMS | 4102407-MS1 | 10/24/14 12:25 | 1000 | 1000 |
| 16WC1AMSD | 4102407-MSD1 | 10/24/14 12:25 | 1000 | 1000 |

# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4I12008 Calibration: 4091606 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCG | 4I12008-TUN1 | 4I12008-TUN166.d | 09/12/14 14:08:00 |
| SSTD060CG | 4I12008-CAL6 | 4I12008-CAL666.d | 09/12/14 16:06:00 |
| SSTD050CG | 4I12008-CAL5 | 4I12008-CAL566.d | 09/12/14 16:45:00 |
| SSTD040CG | 4I12008-CAL4 | 4I12008-CAL466.d | 09/12/14 17:24:00 |
| SSTD025CG | 4I12008-CAL3 | 4I12008-CAL366.d | 09/12/14 18:04:00 |
| SSTD010CG | 4I12008-CAL2 | 4I12008-CAL266.d | 09/12/14 18:43:00 |
| SSTD005CG | 4I12008-CAL1 | 4I12008-CAL166.d | 09/12/14 19:22:00 |
| SCV025VAL1CG | 4I12008-SCV1 | 4I12008-SCV166.d | 09/12/14 20:01:00 |

# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCJ | 4J24010-TUN1 | 4J24010-TUN166.d | 10/24/14 16:02:00 |
| SSTD025CJ | 4J24010-ICV1 | 4J24010-ICV166.d | 10/24/14 16:24:00 |
| SBLKII | 4102407-BLK1 | 4102407-BLK166.d | 10/24/14 17:04:00 |
| SLCSII | 4102407-BS1 | 4102407-BS166.d | 10/24/14 17:43:00 |
| SLCSDII | 4102407-BSD1 | 4102407-BSD166.d | 10/24/14 18:23:00 |
| 16WC1A | 1410146-01 | 1410146-0166.d | 10/24/14 19:03:00 |
| 16WC1AMS | 4102407-MS1 | 4102407-MS166.d | 10/24/14 19:42:00 |
| 16WC1AMSD | 4102407-MSD1 | 4102407-MSD166.d | 10/24/14 20:22:00 |
| 16C1 | 1410146-02 | 1410146-0266.d | 10/24/14 21:02:00 |
| 16MW8 | 1410146-03 | 1410146-0366.d | 10/24/14 21:41:00 |
| 16MW9 | 1410146-04 | 1410146-0466.d | 10/24/14 22:21:00 |
| 16WDUP | 1410146-05 | 1410146-0566.d | 10/24/14 23:00:00 |
| 16WC1B | 1410146-06 | 1410146-0666.d | 10/24/14 23:40:00 |

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410146 |
| Client: | DRAPER | Project: | RAAP APPIX 2014 UNIT 16 |
| Lab File ID: | 4I12008-TUN166.d | Injection Date: | 09/12/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 14:08 |
| Sequence: | 4I12008 | Lab Sample ID: | 4I12008-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 66.2 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 77.5 | PASS |
| 70 | Less than 2% of 69 | 0.503 | PASS |
| 127 | 10 - 80% of 198 | 50.7 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.64 | PASS |
| 275 | 10 - 60% of 198 | 21.6 | PASS |
| 365 | Greater than 1% of 198 | 2.88 | PASS |
| 441 | Less than 100% of 443 | 80.9 | PASS |
| 442 | 50 - 100% of 198 | 70.1 | PASS |
| 443 | 15 - 24% of 442 | 19.9 | PASS |

# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410146 |
| Client: | DRAPER | Project: | RAAP APPIX 2014 UNIT 16 |
| Lab File ID: | 4J24010-TUN166.d | Injection Date: | 10/24/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 16:02 |
| Sequence: | 4J24010 | Lab Sample ID: | 4J24010-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 69.3 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 83 | PASS |
| 70 | Less than 2% of 69 | 0.637 | PASS |
| 127 | 10 - 80% of 198 | 54.7 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.86 | PASS |
| 275 | 10 - 60% of 198 | 21.7 | PASS |
| 365 | Greater than 1% of 198 | 3.06 | PASS |
| 441 | Less than 100% of 443 | 79.5 | PASS |
| 442 | 50 - 100% of 198 | 65.7 | PASS |
| 443 | 15 - 24% of 442 | 19.5 | PASS |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4I12008

SDG: 1410146
Project: RAAP APPIX 2014 UNIT 16
Instrument: 5972hp66
Calibration: 4091606

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4I12008-SCV1 )** | | | Lab File ID: 4I12008-SCV166.d | | | Analyzed: 09/12/14 20:01 | | | |
| 1,4-Dichlorobenzene-d4 | 240347 | 7.646 | 231758 | 7.653 | 104 | 50 - 200 | -0.0070 | +/-0.50 | |
| Naphthalene-d8 | 937905 | 10.456 | 838318 | 10.464 | 112 | 50 - 200 | -0.0080 | +/-0.50 | |
| Acenaphthene-d10 | 539955 | 14.524 | 494824 | 14.532 | 109 | 50 - 200 | -0.0080 | +/-0.50 | |
| Phenanthrene-d10 | 1110729 | 17.396 | 935469 | 17.404 | 119 | 50 - 200 | -0.0080 | +/-0.50 | |
| Chrysene-d12 | 1176634 | 21.771 | 1040717 | 21.768 | 113 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 972689 | 23.866 | 812786 | 23.863 | 120 | 50 - 200 | 0.0030 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410146 |
| Client: | DRAPER | Project: | RAAP APPIX 2014 UNIT 16 |
| Sequence: | 4J24010 | Instrument: | 5972hp66 |
| | | Calibration: | 4091606 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4J24010-ICV1 )** | | | Lab File ID: 4J24010-ICV166.d | | | Analyzed: 10/24/14 16:24 | | | |
| 1,4-Dichlorobenzene-d4 | 238978 | 7.588 | 231758 | 7.653 | 103 | 50 - 200 | -0.0650 | +/-0.50 | |
| Naphthalene-d8 | 870662 | 10.398 | 838318 | 10.464 | 104 | 50 - 200 | -0.0660 | +/-0.50 | |
| Acenaphthene-d10 | 479494 | 14.465 | 494824 | 14.532 | 97 | 50 - 200 | -0.0670 | +/-0.50 | |
| Phenanthrene-d10 | 912437 | 17.347 | 935469 | 17.404 | 98 | 50 - 200 | -0.0570 | +/-0.50 | |
| Chrysene-d12 | 1025892 | 21.71 | 1040717 | 21.768 | 99 | 50 - 200 | -0.0580 | +/-0.50 | |
| Perylene-d12 | 790064 | 23.805 | 812786 | 23.863 | 97 | 50 - 200 | -0.0580 | +/-0.50 | |
| **Blank (4102407-BLK1 )** | | | Lab File ID: 4102407-BLK166.d | | | Analyzed: 10/24/14 17:04 | | | |
| 1,4-Dichlorobenzene-d4 | 226756 | 7.593 | 238978 | 7.588 | 95 | 50 - 200 | 0.0050 | +/-0.50 | |
| Naphthalene-d8 | 823428 | 10.403 | 870662 | 10.398 | 95 | 50 - 200 | 0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 461795 | 14.46 | 479494 | 14.465 | 96 | 50 - 200 | -0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 904632 | 17.342 | 912437 | 17.347 | 99 | 50 - 200 | -0.0050 | +/-0.50 | |
| Chrysene-d12 | 963294 | 21.715 | 1025892 | 21.71 | 94 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 684317 | 23.81 | 790064 | 23.805 | 87 | 50 - 200 | 0.0050 | +/-0.50 | |
| **LCS (4102407-BS1 )** | | | Lab File ID: 4102407-BS166.d | | | Analyzed: 10/24/14 17:43 | | | |
| 1,4-Dichlorobenzene-d4 | 209038 | 7.59 | 238978 | 7.588 | 87 | 50 - 200 | 0.0020 | +/-0.50 | |
| Naphthalene-d8 | 761560 | 10.4 | 870662 | 10.398 | 87 | 50 - 200 | 0.0020 | +/-0.50 | |
| Acenaphthene-d10 | 406861 | 14.467 | 479494 | 14.465 | 85 | 50 - 200 | 0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 786421 | 17.349 | 912437 | 17.347 | 86 | 50 - 200 | 0.0020 | +/-0.50 | |
| Chrysene-d12 | 912233 | 21.712 | 1025892 | 21.71 | 89 | 50 - 200 | 0.0020 | +/-0.50 | |
| Perylene-d12 | 686167 | 23.807 | 790064 | 23.805 | 87 | 50 - 200 | 0.0020 | +/-0.50 | |
| **LCS Dup (4102407-BSD1 )** | | | Lab File ID: 4102407-BSD166.d | | | Analyzed: 10/24/14 18:23 | | | |
| 1,4-Dichlorobenzene-d4 | 243378 | 7.591 | 238978 | 7.588 | 102 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 929352 | 10.401 | 870662 | 10.398 | 107 | 50 - 200 | 0.0030 | +/-0.50 | |
| Acenaphthene-d10 | 547177 | 14.468 | 479494 | 14.465 | 114 | 50 - 200 | 0.0030 | +/-0.50 | |
| Phenanthrene-d10 | 1044490 | 17.35 | 912437 | 17.347 | 114 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 1204879 | 21.713 | 1025892 | 21.71 | 117 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 893075 | 23.808 | 790064 | 23.805 | 113 | 50 - 200 | 0.0030 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1410146
Client: DRAPER
Project: RAAP APPIX 2014 UNIT 16
Sequence: 4J24010
Instrument: 5972hp66
Calibration: 4091606

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16WC1A (1410146-01 )** | | | Lab File ID: 1410146-0166.d | | | Analyzed: 10/24/14 19:03 | | | |
| 1,4-Dichlorobenzene-d4 | 196319 | 7.583 | 238978 | 7.588 | 82 | 50 - 200 | -0.0050 | +/-0.50 | |
| Naphthalene-d8 | 657932 | 10.403 | 870662 | 10.398 | 76 | 50 - 200 | 0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 363488 | 14.46 | 479494 | 14.465 | 76 | 50 - 200 | -0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 704248 | 17.342 | 912437 | 17.347 | 77 | 50 - 200 | -0.0050 | +/-0.50 | |
| Chrysene-d12 | 778493 | 21.705 | 1025892 | 21.71 | 76 | 50 - 200 | -0.0050 | +/-0.50 | |
| Perylene-d12 | 567744 | 23.8 | 790064 | 23.805 | 72 | 50 - 200 | -0.0050 | +/-0.50 | |
| **Matrix Spike (4102407-MS1 )** | | | Lab File ID: 4102407-MS166.d | | | Analyzed: 10/24/14 19:42 | | | |
| 1,4-Dichlorobenzene-d4 | 219674 | 7.583 | 238978 | 7.588 | 92 | 50 - 200 | -0.0050 | +/-0.50 | |
| Naphthalene-d8 | 792723 | 10.403 | 870662 | 10.398 | 91 | 50 - 200 | 0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 437641 | 14.46 | 479494 | 14.465 | 91 | 50 - 200 | -0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 845238 | 17.342 | 912437 | 17.347 | 93 | 50 - 200 | -0.0050 | +/-0.50 | |
| Chrysene-d12 | 975676 | 21.715 | 1025892 | 21.71 | 95 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 754038 | 23.81 | 790064 | 23.805 | 95 | 50 - 200 | 0.0050 | +/-0.50 | |
| **Matrix Spike Dup (4102407-MSD1 )** | | | Lab File ID: 4102407-MSD166.d | | | Analyzed: 10/24/14 20:22 | | | |
| 1,4-Dichlorobenzene-d4 | 225943 | 7.589 | 238978 | 7.588 | 95 | 50 - 200 | 0.0010 | +/-0.50 | |
| Naphthalene-d8 | 821108 | 10.399 | 870662 | 10.398 | 94 | 50 - 200 | 0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 466664 | 14.466 | 479494 | 14.465 | 97 | 50 - 200 | 0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 919034 | 17.348 | 912437 | 17.347 | 101 | 50 - 200 | 0.0010 | +/-0.50 | |
| Chrysene-d12 | 1041627 | 21.711 | 1025892 | 21.71 | 102 | 50 - 200 | 0.0010 | +/-0.50 | |
| Perylene-d12 | 778109 | 23.806 | 790064 | 23.805 | 98 | 50 - 200 | 0.0010 | +/-0.50 | |
| **16C1 (1410146-02 )** | | | Lab File ID: 1410146-0266.d | | | Analyzed: 10/24/14 21:02 | | | |
| 1,4-Dichlorobenzene-d4 | 303779 | 7.579 | 238978 | 7.588 | 127 | 50 - 200 | -0.0090 | +/-0.50 | |
| Naphthalene-d8 | 1090703 | 10.389 | 870662 | 10.398 | 125 | 50 - 200 | -0.0090 | +/-0.50 | |
| Acenaphthene-d10 | 596689 | 14.456 | 479494 | 14.465 | 124 | 50 - 200 | -0.0090 | +/-0.50 | |
| Phenanthrene-d10 | 1128469 | 17.338 | 912437 | 17.347 | 124 | 50 - 200 | -0.0090 | +/-0.50 | |
| Chrysene-d12 | 1235376 | 21.712 | 1025892 | 21.71 | 120 | 50 - 200 | 0.0020 | +/-0.50 | |
| Perylene-d12 | 901602 | 23.806 | 790064 | 23.805 | 114 | 50 - 200 | 0.0010 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
Client: DRAPER
Sequence: 4J24010
SDG: 1410146
Project: RAAP APPIX 2014 UNIT 16
Instrument: 5972hp66
Calibration: 4091606

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16MW8 (1410146-03 )** | | | Lab File ID: 1410146-0366.d | | | Analyzed: 10/24/14 21:41 | | | |
| 1,4-Dichlorobenzene-d4 | 290218 | 7.581 | 238978 | 7.588 | 121 | 50 - 200 | -0.0070 | +/-0.50 | |
| Naphthalene-d8 | 1071648 | 10.391 | 870662 | 10.398 | 123 | 50 - 200 | -0.0070 | +/-0.50 | |
| Acenaphthene-d10 | 574415 | 14.458 | 479494 | 14.465 | 120 | 50 - 200 | -0.0070 | +/-0.50 | |
| Phenanthrene-d10 | 1036619 | 17.34 | 912437 | 17.347 | 114 | 50 - 200 | -0.0070 | +/-0.50 | |
| Chrysene-d12 | 1152234 | 21.703 | 1025892 | 21.71 | 112 | 50 - 200 | -0.0070 | +/-0.50 | |
| Perylene-d12 | 857531 | 23.808 | 790064 | 23.805 | 109 | 50 - 200 | 0.0030 | +/-0.50 | |
| **16MW9 (1410146-04 )** | | | Lab File ID: 1410146-0466.d | | | Analyzed: 10/24/14 22:21 | | | |
| 1,4-Dichlorobenzene-d4 | 248969 | 7.588 | 238978 | 7.588 | 104 | 50 - 200 | 0.0000 | +/-0.50 | |
| Naphthalene-d8 | 875276 | 10.398 | 870662 | 10.398 | 101 | 50 - 200 | 0.0000 | +/-0.50 | |
| Acenaphthene-d10 | 460611 | 14.465 | 479494 | 14.465 | 96 | 50 - 200 | 0.0000 | +/-0.50 | |
| Phenanthrene-d10 | 903916 | 17.347 | 912437 | 17.347 | 99 | 50 - 200 | 0.0000 | +/-0.50 | |
| Chrysene-d12 | 979400 | 21.71 | 1025892 | 21.71 | 95 | 50 - 200 | 0.0000 | +/-0.50 | |
| Perylene-d12 | 682682 | 23.805 | 790064 | 23.805 | 86 | 50 - 200 | 0.0000 | +/-0.50 | |
| **16WDUP (1410146-05 )** | | | Lab File ID: 1410146-0566.d | | | Analyzed: 10/24/14 23:00 | | | |
| 1,4-Dichlorobenzene-d4 | 268124 | 7.587 | 238978 | 7.588 | 112 | 50 - 200 | -0.0010 | +/-0.50 | |
| Naphthalene-d8 | 949826 | 10.397 | 870662 | 10.398 | 109 | 50 - 200 | -0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 534132 | 14.454 | 479494 | 14.465 | 111 | 50 - 200 | -0.0110 | +/-0.50 | |
| Phenanthrene-d10 | 958683 | 17.346 | 912437 | 17.347 | 105 | 50 - 200 | -0.0010 | +/-0.50 | |
| Chrysene-d12 | 1018054 | 21.709 | 1025892 | 21.71 | 99 | 50 - 200 | -0.0010 | +/-0.50 | |
| Perylene-d12 | 748902 | 23.804 | 790064 | 23.805 | 95 | 50 - 200 | -0.0010 | +/-0.50 | |
| **16WC1B (1410146-06 )** | | | Lab File ID: 1410146-0666.d | | | Analyzed: 10/24/14 23:40 | | | |
| 1,4-Dichlorobenzene-d4 | 283555 | 7.591 | 238978 | 7.588 | 119 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 952027 | 10.401 | 870662 | 10.398 | 109 | 50 - 200 | 0.0030 | +/-0.50 | |
| Acenaphthene-d10 | 510699 | 14.458 | 479494 | 14.465 | 107 | 50 - 200 | -0.0070 | +/-0.50 | |
| Phenanthrene-d10 | 954901 | 17.339 | 912437 | 17.347 | 105 | 50 - 200 | -0.0080 | +/-0.50 | |
| Chrysene-d12 | 1072698 | 21.713 | 1025892 | 21.71 | 105 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 775279 | 23.808 | 790064 | 23.805 | 98 | 50 - 200 | 0.0030 | +/-0.50 | |

# K. Target Compound Results

## (ANALYSIS DATA SHEETS)

### Analysis Data Sheets (ADS), Tentatively Identified Compounds (TICs), and Surrogate Recovery Results

Sample data shall be arranged in packets with the Analysis Data Sheet, followed by the raw data for volatile or semivolatile samples. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (ANALYSIS DATA SHEET)

Tabulated results (identification and quantitation) and Tentatively Identified Compounds (TICs) shall be included.

b. Reconstructed Ion Chromatograms (RICs)

Include for each sample or sample extract, including dilutions and reanalyses. The RIC shall contain the following header information: Client Sample ID Number, date and time of analysis, instrument ID, Lab file ID, and analyst ID.

d. Quantitation Report for target analytes and TICs.

Include a printout of the Extracted Ion Current Profile (EICP) for all manual changes to all compounds, internal standards, and surrogate compounds.

e. Copies of raw spectra and copies of background-subtracted mass spectra of target analytes plus TICs identified in the sample.

- The spectra shall include the following information: Client Sample ID number, Lab file ID, date and time of analysis, and instrument ID.
- The compound name must be clearly marked.

# ANALYSIS DATA SHEET

*SW8270D*

**16C1**

Client: DRAPER SDG 1410146 Project: RAAP APPIX 2014 UNIT 16

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410146-0266.d Sampled: 10/22/14 12:35

Initial/Final: 950mL / 1000uL Sulfur Cleanup: N Lab ID: 1410146-02 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/24/14 21:02

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | 0.79 | 5.3 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.88 | 5.3 | *U* |
| 84-66-2 | Diethylphthalate | | 0.55 | 5.3 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 105.3 | 55.53 | 53 | 33 - 110 | |
| Phenol-d5 | 105.3 | 32.33 | 31 | 20 - 110 | |
| Nitrobenzene-d5 | 52.63 | 44.26 | 84 | 45 - 110 | |
| 2-Fluorobiphenyl | 52.63 | 40.65 | 77 | 46 - 110 | |
| 2,4,6-Tribromophenol | 105.3 | 89.09 | 85 | 42 - 119 | |
| Terphenyl-d14 | 52.63 | 45.73 | 87 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW8**

Client: DRAPER SDG 1410146 Project: RAAP APPIX 2014 UNIT 16

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410146-0366.d Sampled: 10/21/14 13:20

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410146-03 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/24/14 21:41

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 46.17 | 46 | 33 - 110 | |
| Phenol-d5 | 100.0 | 27.54 | 28 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 36.01 | 72 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 37.09 | 74 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 82.93 | 83 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 46.17 | 92 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16MW9**

Client: DRAPER | SDG 1410146 | Project: RAAP APPIX 2014 UNIT 16

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 1410146-0466.d | Sampled: 10/22/14 09:10

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 1410146-04 | Received: 10/23/14 09:35

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 10/24/14 12:25

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 10/24/14 22:21

Batch: 4102407 | Sequence: 4J24010 | Calibration: 4091606 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | 0.86 | 0.52 | 5.0 | *J* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 53.11 | 53 | 33 - 110 | |
| Phenol-d5 | 100.0 | 30.70 | 31 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 43.22 | 86 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 44.04 | 88 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 90.93 | 91 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 44.87 | 90 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1A**

Client: DRAPER SDG 1410146 Project: RAAP APPIX 2014 UNIT 16

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410146-0166.d Sampled: 10/22/14 10:05

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410146-01 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/24/14 19:03

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 53.64 | 54 | 33 - 110 | |
| Phenol-d5 | 100.0 | 26.90 | 27 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 41.73 | 83 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 39.20 | 78 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 85.36 | 85 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 45.36 | 91 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC1B**

Client: DRAPER SDG 1410146 Project: RAAP APPIX 2014 UNIT 16

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410146-0666.d Sampled: 10/22/14 11:45

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410146-06 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/24/14 23:40

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 51.51 | 52 | 33 - 110 | |
| Phenol-d5 | 100.0 | 27.94 | 28 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 41.27 | 83 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 40.88 | 82 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 86.63 | 87 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 44.75 | 90 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WDUP**

Client: DRAPER SDG 1410146 Project: RAAP APPIX 2014 UNIT 16

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410146-0566.d Sampled: 10/22/14 10:20

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410146-05 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/24/14 23:00

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 52.53 | 53 | 33 - 110 | |
| Phenol-d5 | 100.0 | 30.02 | 30 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 40.54 | 81 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 38.15 | 76 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 77.11 | 77 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 45.25 | 91 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

# INITIAL CALIBRATION DATA

*SW8270D*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Calibration: 4091606 Instrument: 5972hp66

Calibration Date: 9/12/2014 2:08:40PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| 2,6-Dinitrotoluene | 5 | 0.2702626 | 10 | 0.3051678 | 25 | 0.2971642 | 40 | 0.3367283 | 50 | 0.3465023 | 60 | 0.3357404 |
| 2,4-Dinitrotoluene | 5 | 0.337485 | 10 | 0.373239 | 25 | 0.4354518 | 40 | 0.5124406 | 50 | 0.465772 | 60 | 0.4858007 |
| Diethylphthalate | 5 | 1.44208 | 10 | 1.566479 | 25 | 1.628755 | 40 | 1.821907 | 50 | 1.833971 | 60 | 1.759484 |
| 2-Fluorophenol | 5 | 1.011885 | 10 | 1.149928 | 25 | 1.213266 | 40 | 1.252162 | 50 | 1.305771 | 60 | 1.361265 |
| Phenol-d5 | 5 | 1.607559 | 10 | 1.638908 | 25 | 1.830782 | 40 | 1.701233 | 50 | 1.677256 | 60 | 1.845186 |
| Nitrobenzene-d5 | 5 | 0.4341532 | 10 | 0.4071029 | 25 | 0.4537429 | 40 | 0.4478169 | 50 | 0.4530958 | 60 | 0.460399 |
| 2-Fluorobiphenyl | 5 | 1.301329 | 10 | 1.344602 | 25 | 1.292503 | 40 | 1.373226 | 50 | 1.32445 | 60 | 1.298866 |
| 2,4,6-Tribromophenol | 5 | 0.2720984 | 10 | 0.2919113 | 25 | 0.3204744 | 40 | 0.3576729 | 50 | 0.362777 | 60 | 0.3608988 |
| Terphenyl-d14 | 5 | 0.7793212 | 10 | 0.7925018 | 25 | 0.8280361 | 40 | 0.8361684 | 50 | 0.8554457 | 60 | 0.8425943 |

# INITIAL CALIBRATION DATA (Continued)

*SW8270D*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Calibration: 4091606 Instrument: 5972hp66

Calibration Date: 9/12/2014 2:08:40PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 0.3152609 | 9.313405 | 14.2045 | 4.102548E-02 | | | CCC (20) | |
| 2,4-Dinitrotoluene | 0.4350315 | 15.53899 | 15.075 | 3.408698E-02 | | | CCC (20) | |
| Diethylphthalate | 1.675446 | 9.329195 | 15.70033 | 1.630099E-02 | | | CCC (20) | |
| 2-Fluorophenol | 1.215713 | 10.17478 | 5.050167 | 4.682262E-02 | | | CCC (20) | |
| Phenol-d5 | 1.716821 | 5.782727 | 7.089333 | 0.0676039 | | | CCC (20) | |
| Nitrobenzene-d5 | 0.4427185 | 4.414335 | 8.872833 | 2.532045E-02 | | | CCC (20) | |
| 2-Fluorobiphenyl | 1.322496 | 2.384473 | 13.09567 | 2.668261E-02 | | | CCC (20) | |
| 2,4,6-Tribromophenol | 0.3276388 | 11.94279 | 16.16017 | 9.164436E-03 | | | CCC (20) | |
| Terphenyl-d14 | 0.8223446 | 3.63626 | 20.18383 | 2.918444E-02 | | | CCC (20) | |

# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Instrument: 5972hp66 Calibration: 4091606

Lab File ID: 4I12008-SCV166.d Standard ID: 4D25015

Sequence: 4I12008 Injection Date: 09/12/14

Lab Sample ID: 4I12008-SCV1 InjectionTime: 20:01

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2,6-Dinitrotoluene | 25.00 | 27.26 | 9.0 | 30.00 |
| 2,4-Dinitrotoluene | 25.00 | 28.50 | 14.0 | 30.00 |
| Diethylphthalate | 25.00 | 27.18 | 8.7 | 30.00 |

* Values outside of QC limits

# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Instrument ID: 5972hp66 Calibration: 4091606

Lab File ID: 4J24010-ICV166.d Calibration Date: 09/12/14 14:08

Sequence: 4J24010 Injection Date: 10/24/14

Lab Sample ID: 4J24010-ICV1 Injection Time: 16:24

| COMPOUND | TYPE | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| | | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,6-Dinitrotoluene | Avg | 25.00 | 27.00 | 0.3152609 | 0.3377344 | 0.2 | 7.1 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 25.50 | 0.4350315 | 0.4465357 | 0.2 | 2.6 | 20 |
| Diethylphthalate | Avg | 25.00 | 26.00 | 1.675446 | 1.744062 | 0.01 | 4.1 | 20 |
| 2-Fluorophenol | Avg | 25.00 | 24.00 | 1.215713 | 1.167595 | 0.05 | -4.0 | 20 |
| Phenol-d5 | Avg | 25.00 | 24.50 | 1.716821 | 1.675686 | 0.05 | -2.4 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 26.00 | 0.4427185 | 0.4638861 | 0.05 | 4.8 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 25.00 | 1.322496 | 1.331869 | 0.05 | 0.7 | 20 |
| 2,4,6-Tribromophenol | Avg | 25.00 | 24.00 | 0.3276388 | 0.3168073 | 0.05 | -3.3 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 24.50 | 0.8223446 | 0.8126945 | 0.05 | -1.2 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Data File: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d

Date : 12-SEP-2014 14:08

Client ID: DFTPPCG

Instrument: 5972hp66.i

Sample Info: 4I12008-TUN1:OWS

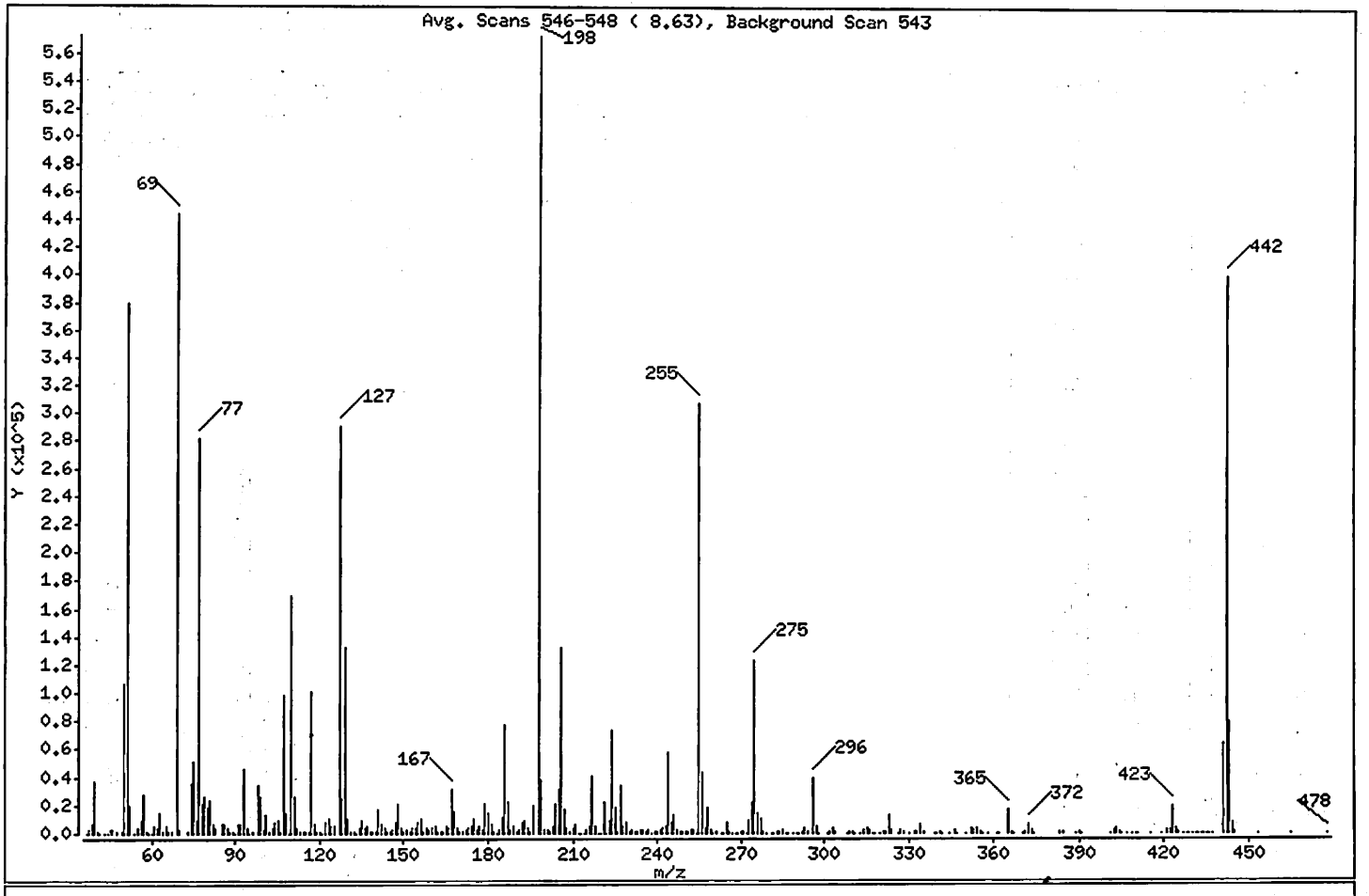
Volume Injected (uL): 2.0

Operator: OWS

Column phase: RTX-5MS

Column diameter: 0.32

1 Decafluorotriphenylphosphine




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 |
| 51 | 10.00 - 80.00% of mass 198 | 66.19 |
| 68 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 69 | Mass 69 relative abundance | 77.51 |
| 70 | Less than 2.00% of mass 69 | 0.39 ( 0.50) |
| 127 | 10.00 - 80.00% of mass 198 | 50.72 |
| 197 | Less than 2.00% of mass 198 | 0.00 |
| 199 | 5.00 - 9.00% of mass 198 | 6.64 |
| 275 | 10.00 - 60.00% of mass 198 | 21.63 |
| 365 | Greater than 1.00% of mass 198 | 2.88 |
| 441 | Present, but less than mass 443 | 11.28 |
| 442 | 50.00 - 100.00% of mass 198 | 70.08 |
| 443 | 15.00 - 24.00% of mass 442 | 13.94 ( 19.89) |

Rakdw Ham 9/16/2014

DFTPP TUNE/TAILING FACTOR/DEGRADATION SUMMARY RESULTS

DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 66.19 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 77.51 | | PASS |
| 70 | Less than 2% of mass 69 | 0.39 | ( 0.50) | PASS |
| 127 | 10 - 80% of mass 198 | 50.72 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.64 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.63 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.88 | | PASS |
| 441 | Present, but less than mass 443 | 11.28 | ( 80.89) | PASS |
| 442 | 50 - 100% of mass 198 | 70.08 | | PASS |
| 443 | 15 - 24% of mass 442 | 13.94 | ( 19.89) | PASS |

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 1.48 | 2.0 | PASS |
| Benzidine | 1.09 | 2.0 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 2170978 | | | N/A |
| 4,4-DDE | 1046 | 0.0 | 20.0 | PASS |
| 4,4-DDD | 3939 | 0.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 4985 | 0.2 | 20.0 | PASS |

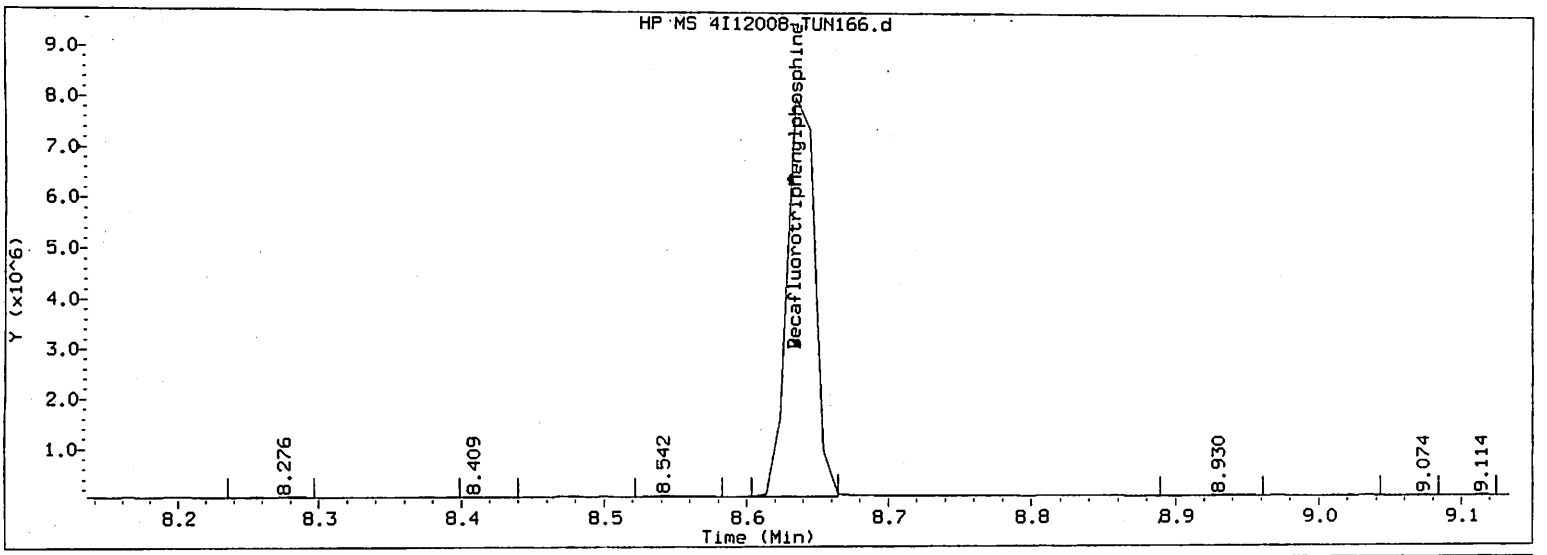
Tuning Sample, /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN166.d,

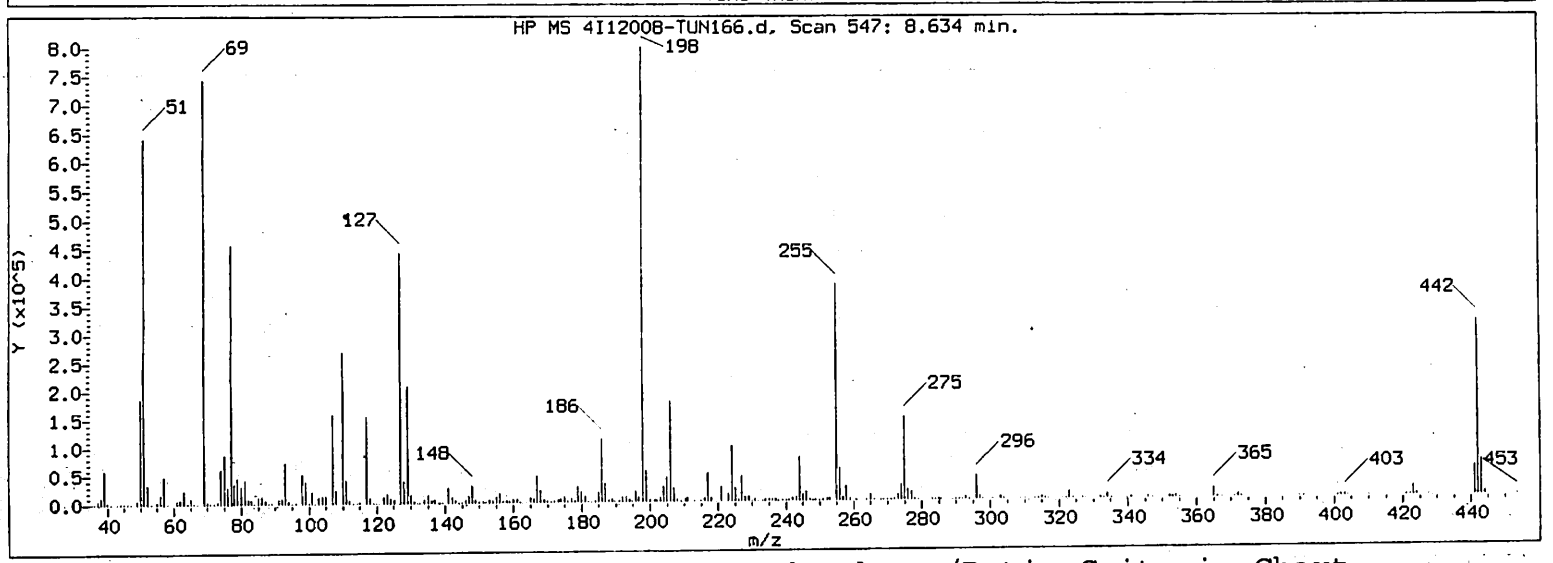


Robin Hamm 9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m Inst: 5972hp66
Injection Date: 12-SEP-2014 14:08 Operator: OWS
Sample Info: 4I12008-TUN1 4I12008-TUN1:OWS
Misc Info: DFTPPCG




DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

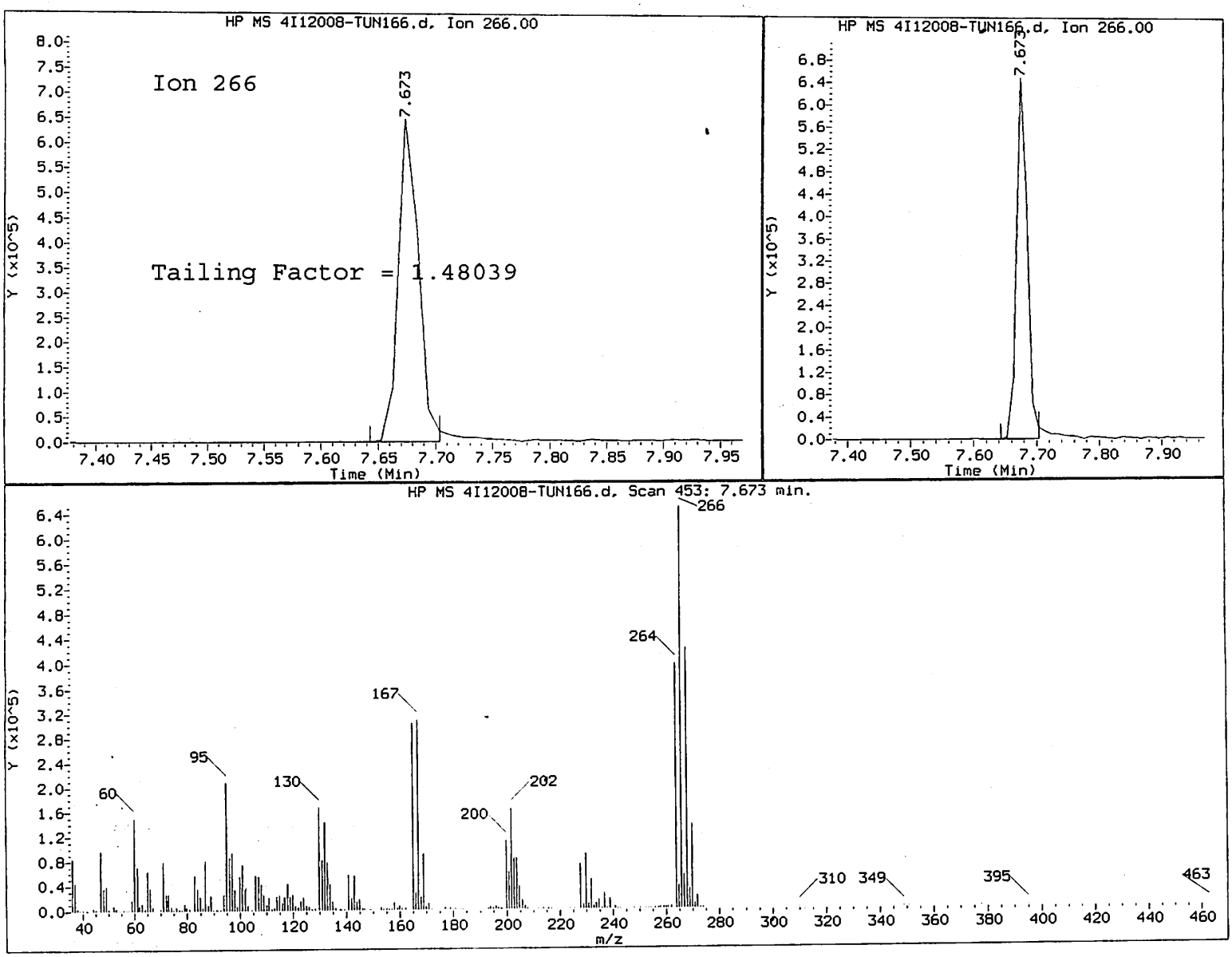
| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 66.19 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 77.51 | | PASS |
| 70 | Less than 2% of mass 69 | 0.39 | ( 0.50) | PASS |
| 127 | 10 - 80% of mass 198 | 50.72 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.64 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.63 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.88 | | PASS |
| 441 | Present, but less than mass 443 | 11.28 | ( 80.89) | PASS |
| 442 | 50 - 100% of mass 198 | 70.08 | | PASS |
| 443 | 15 - 24% of mass 442 | 13.94 | ( 19.89) | PASS |



Robert Hamm 9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:




Pentachlorophenol
==========

| | |
|---|---|
| Exp. RT = | 7.890 |
| Found RT = | 7.673 |

| Mass | Area | Ratio |
|---|---|---|
| 266 | 789187 | 100.00 |

Tailing factor for Pentachlorophenol OK

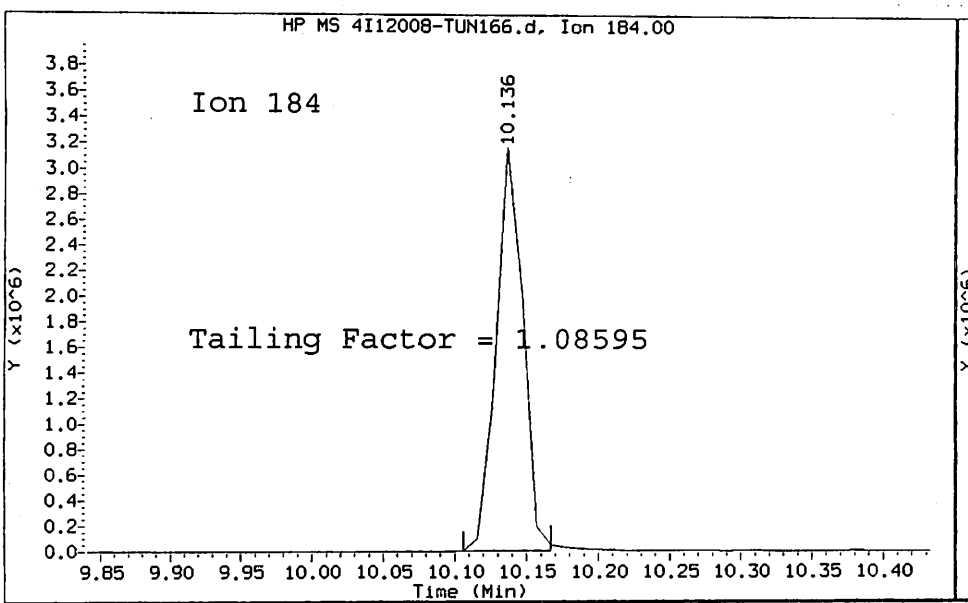
Tail Factor = 1.480 Maximum Allowed = 2.0

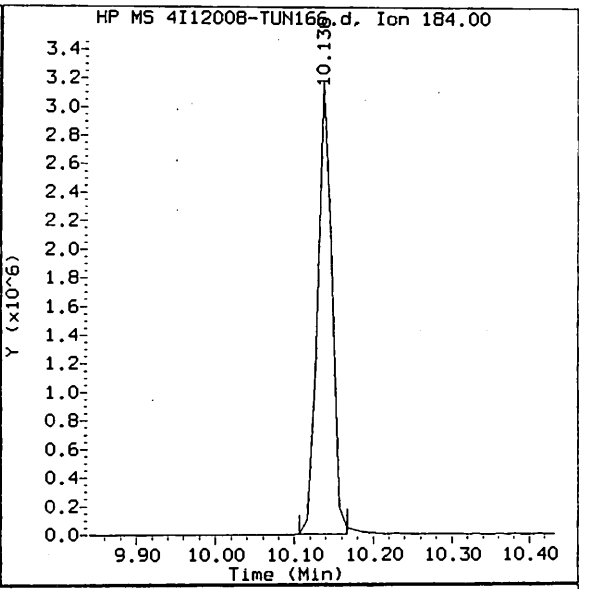


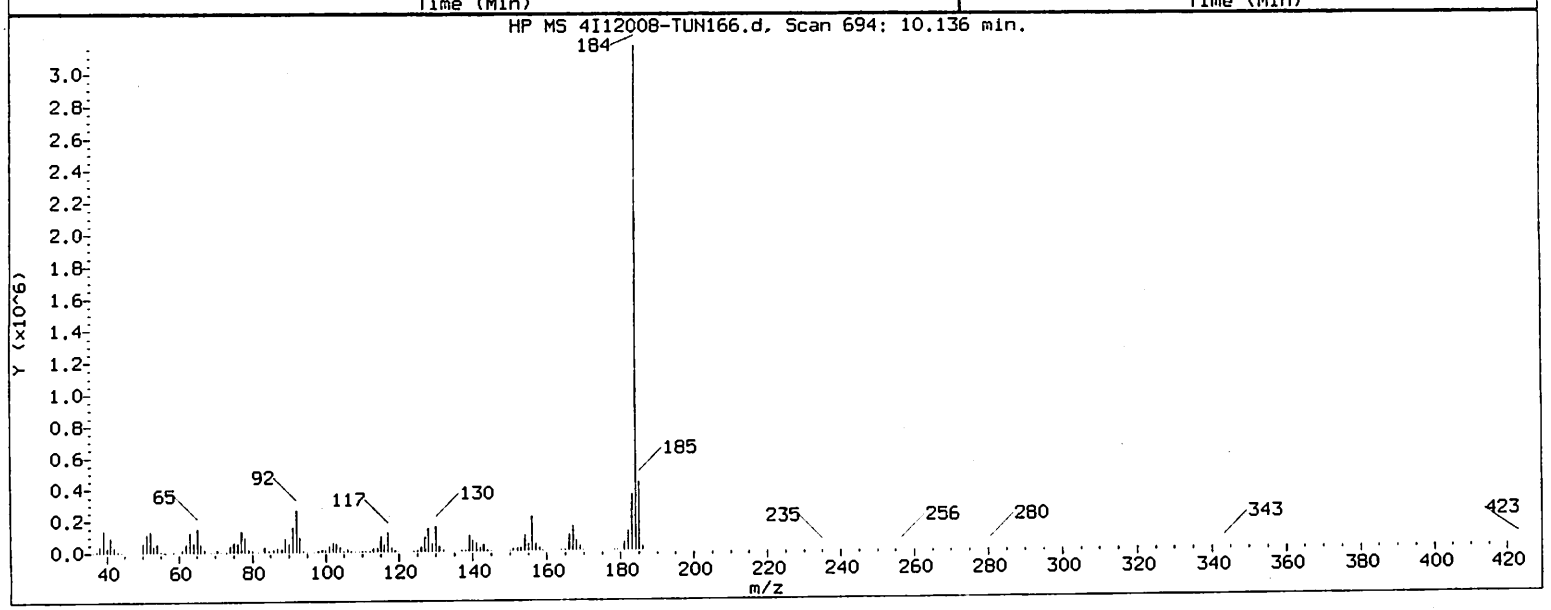
Robin Hamm 9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:




Benzidine
=========
Exp. RT = 10.340
Found RT = 10.136

| Mass | Area | Ratio |
|---|---|---|
| 184 | 4083715 | 100.00 |

Tailing factor for Benzidine OK

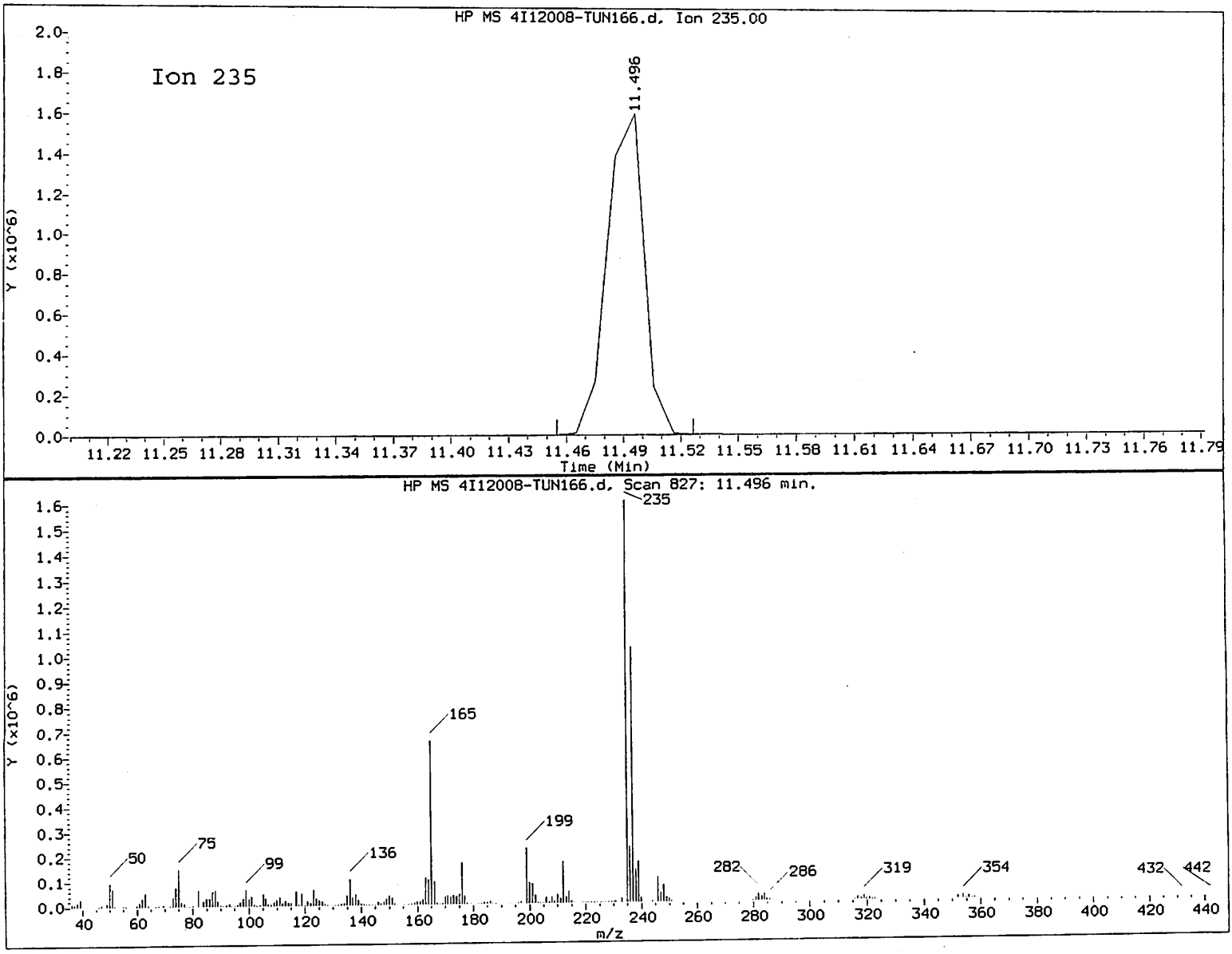
Tail Factor = 1.086 Maximum Allowed = 2.0



9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:




4,4'-DDT
========
Exp. RT = 11.690
Found RT = 11.496

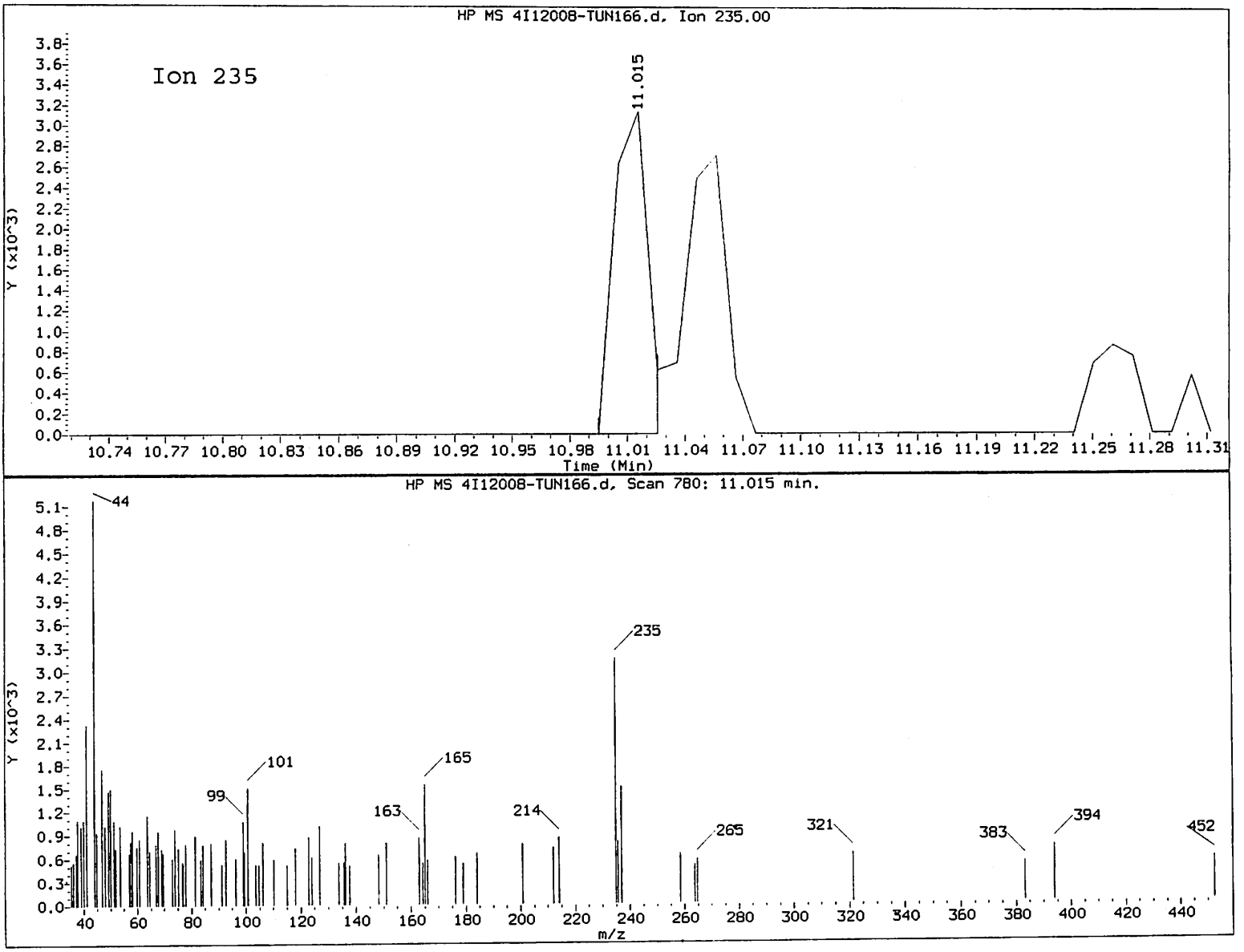
| Mass | Area | Ratio |
|---|---|---|
| 235 | 2170978 | 100.00 |



9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:



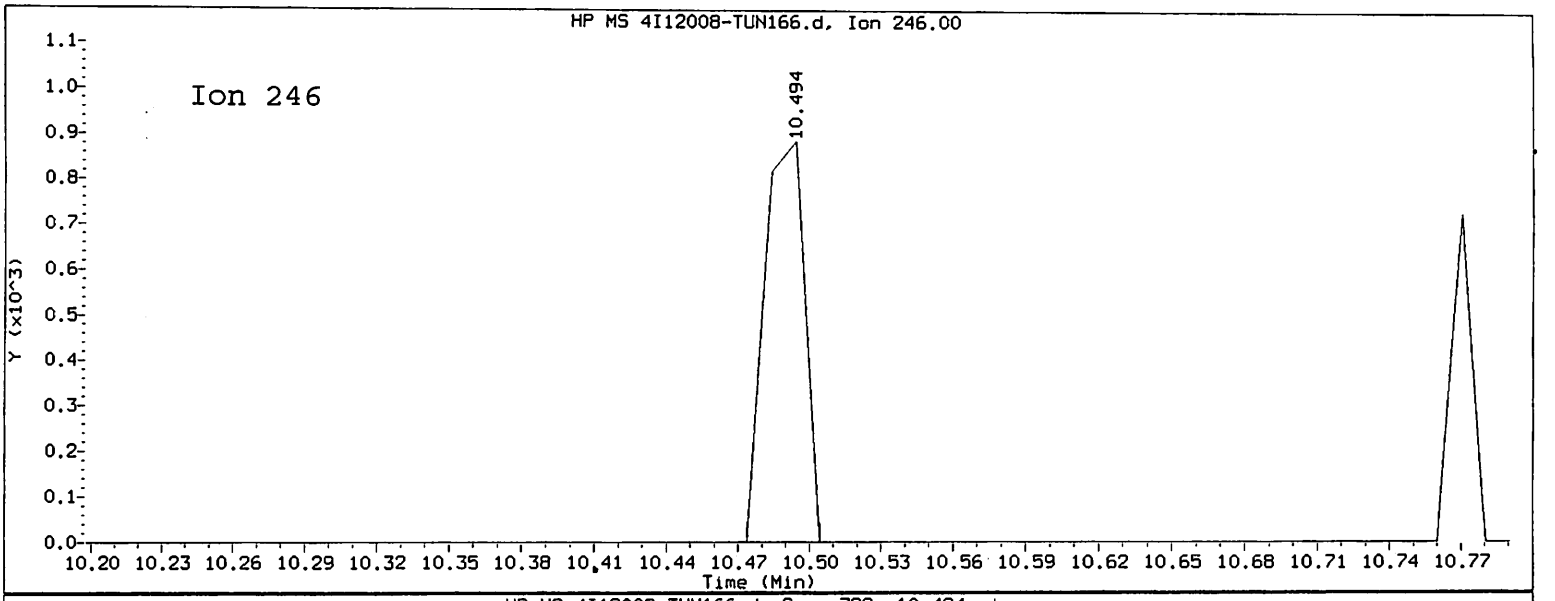

4,4'-DDD
========
Exp. RT = 11.250
Found RT = 11.015

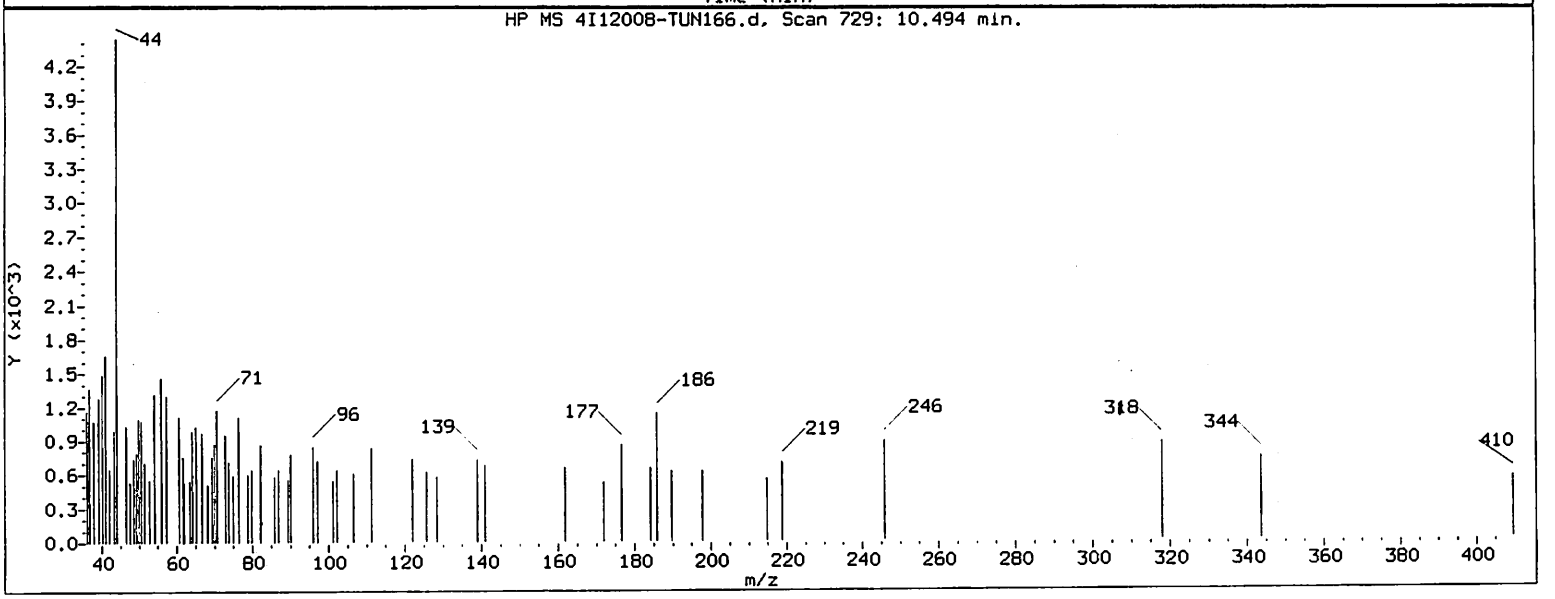
| Mass | Area | Ratio |
|---|---|---|
| 235 | 3939 | 100.00 |

9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:

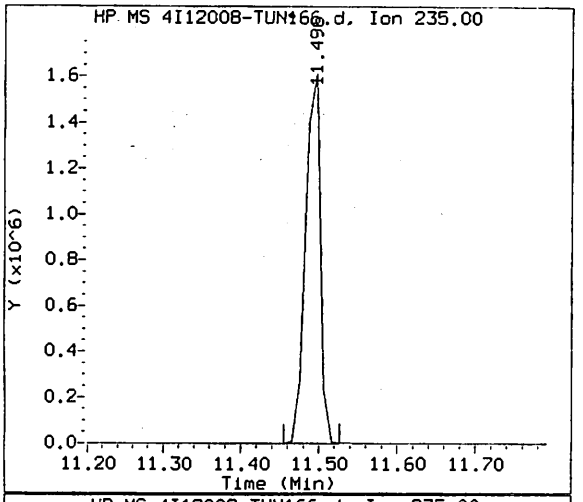


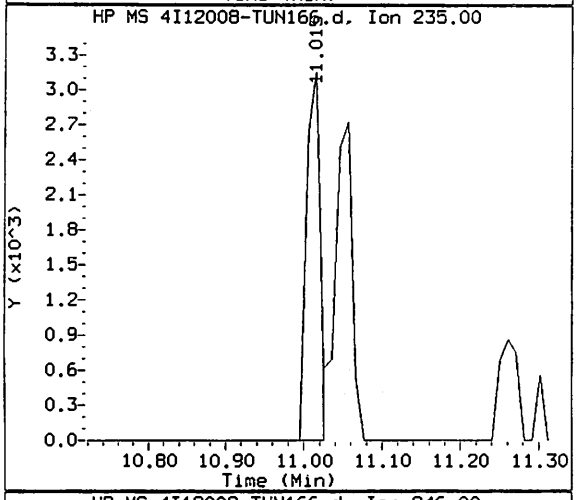

4,4'-DDE
========
Exp. RT = 10.800
Found RT = 10.494

| Mass | Area | Ratio |
|---|---|---|
| 246 | 1046 | 100.00 |

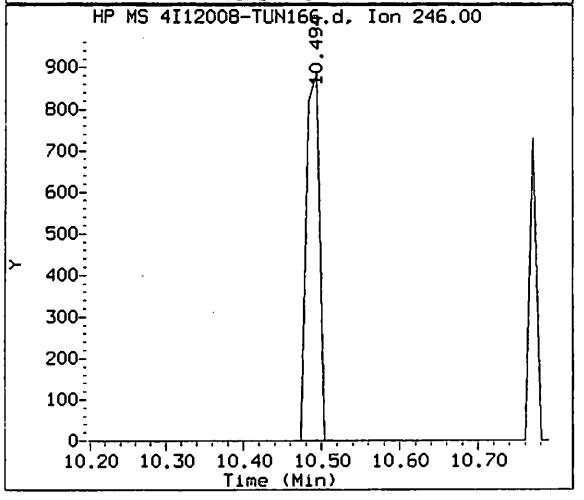
9/16/2014




Compound: 4,4'-DDT
Quant Mass: 235
RT: 11.496
Area: 2170978




Compound: 4,4'-DDD
Quant Mass: 235
RT: 11.015
Area: 3939




Compound: 4,4'-DDE
Quant Mass: 246
RT: 10.494
Area: 1046

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 2170978 | | | N/A |
| 4,4-DDE | 1046 | 0.0 | 20.0 | PASS |
| 4,4-DDD | 3939 | 0.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 4985 | 0.2 | 20.0 | PASS |

**********

TUNE SAMPLE *** PASSED *** DDT BREAKDOWN TEST

**********

Rakdw Ham 9/16/2014

Data File: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d

Date : 24-OCT-2014 16:02

Client ID: DFTPPCJ

Instrument: 5972hp66.i

Sample Info: 4J24010-TUN1:OWS

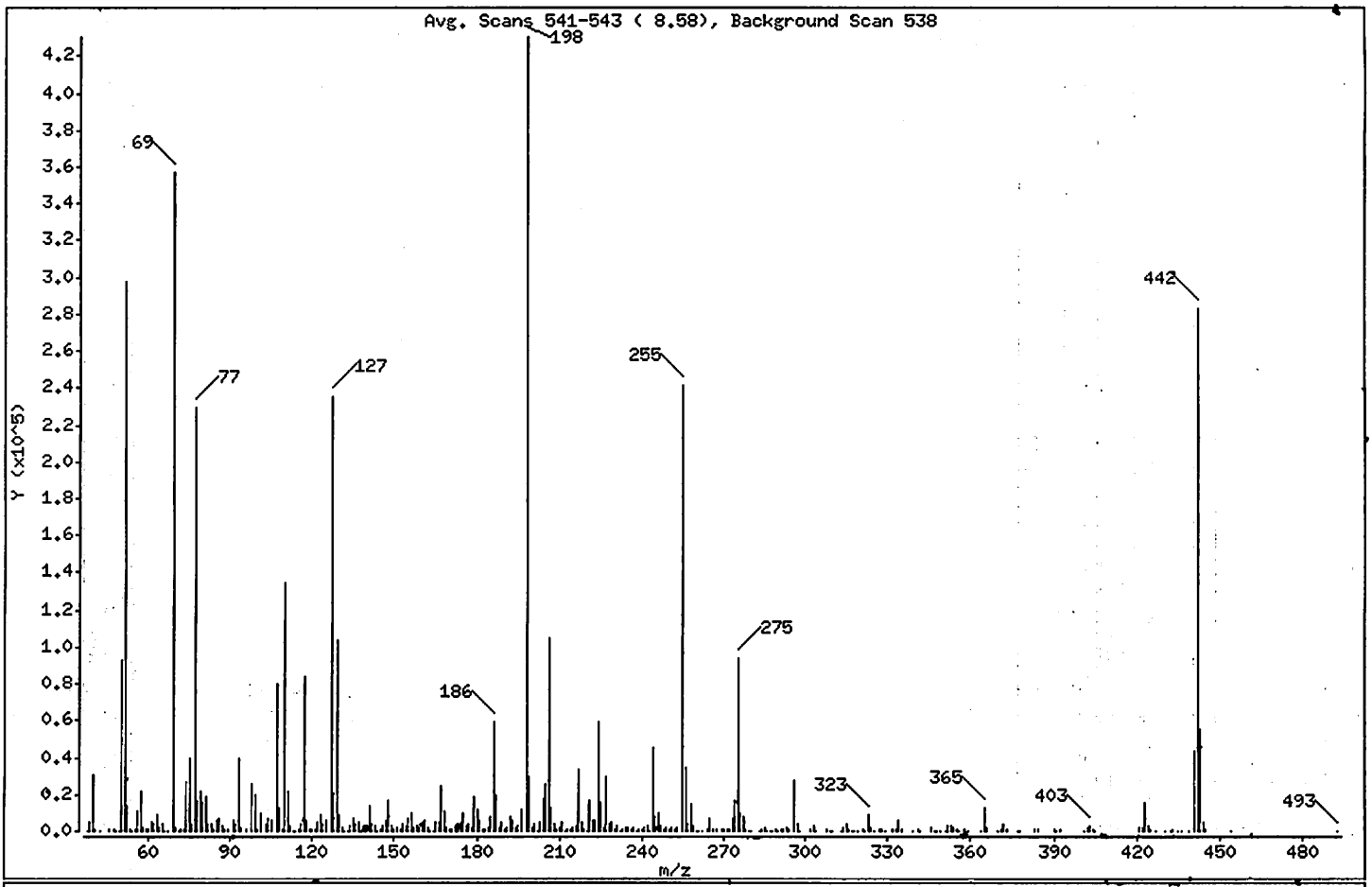
Volume Injected (uL): 2.0

Operator: OWS

Column phase: RTX-5MS

Column diameter: 0.32

1 Decafluorotriphenylphosphine




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 |
| 51 | 10.00 - 80.00% of mass 198 | 69.31 |
| 68 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 69 | Mass 69 relative abundance | 83.05 |
| 70 | Less than 2.00% of mass 69 | 0.53 ( 0.64) |
| 127 | 10.00 - 80.00% of mass 198 | 54.70 |
| 197 | Less than 2.00% of mass 198 | 0.00 |
| 199 | 5.00 - 9.00% of mass 198 | 6.86 |
| 275 | 10.00 - 60.00% of mass 198 | 21.73 |
| 365 | Greater than 1.00% of mass 198 | 3.06 |
| 441 | Present, but less than mass 443 | 10.18 |
| 442 | 50.00 - 100.00% of mass 198 | 65.66 |
| 443 | 15.00 - 24.00% of mass 442 | 12.80 ( 19.50) |

DFTPP TUNE/TAILING FACTOR/DEGRADATION SUMMARY RESULTS

DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 69.31 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 83.05 | | PASS |
| 70 | Less than 2% of mass 69 | 0.53 | ( 0.64) | PASS |
| 127 | 10 - 80% of mass 198 | 54.70 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.86 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.73 | | PASS |
| 365 | Greater than 1% of mass 198 | 3.06 | | PASS |
| 441 | Present, but less than mass 443 | 10.18 | ( 79.53) | PASS |
| 442 | 50 - 100% of mass 198 | 65.66 | | PASS |
| 443 | 15 - 24% of mass 442 | 12.80 | ( 19.50) | PASS |

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 1.85 | 2.0 | PASS |
| Benzidine | 0.91 | 2.0 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

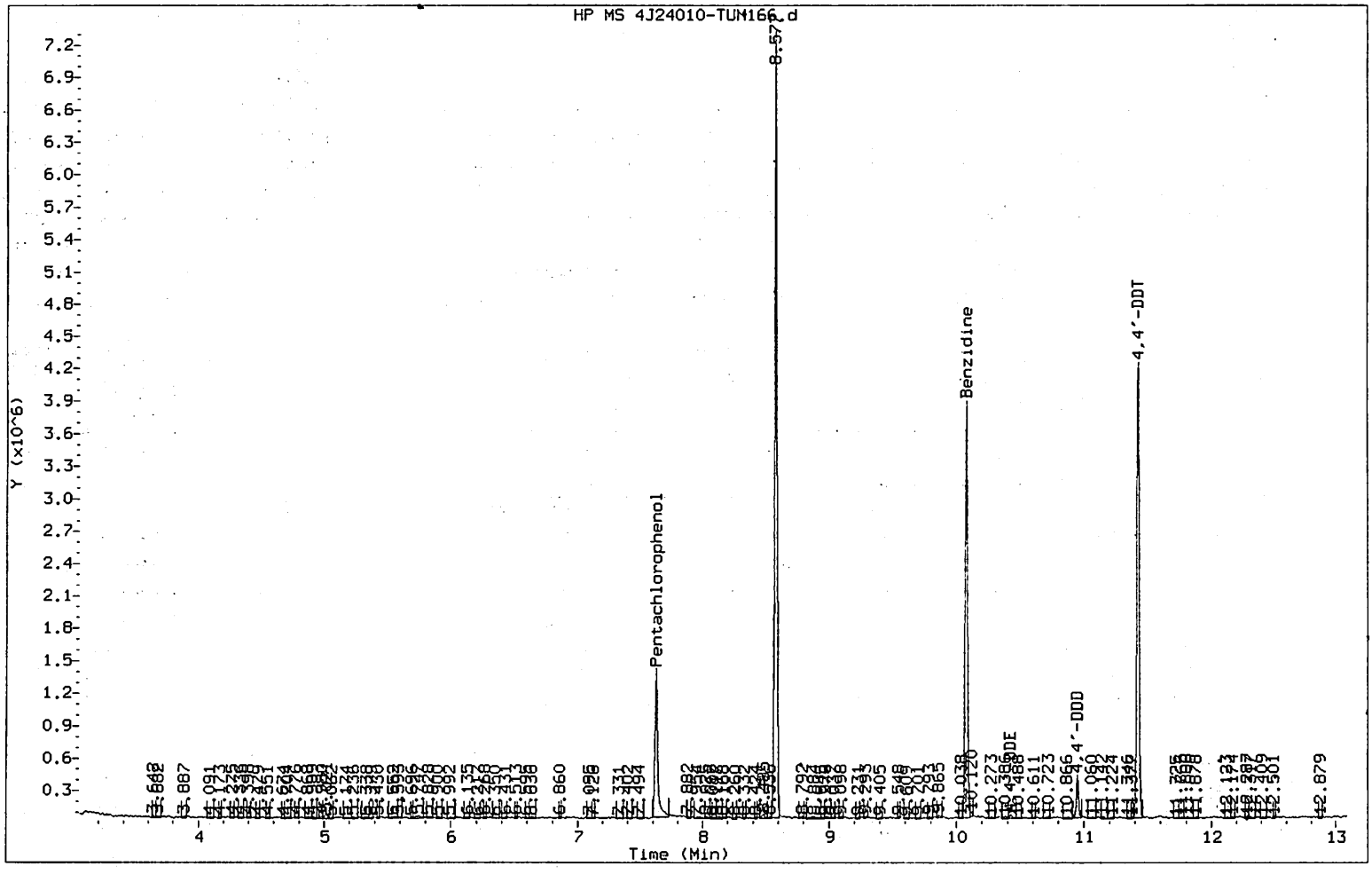
| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 996500 | | | N/A |
| 4,4-DDE | 4599 | 0.5 | 20.0 | PASS |
| 4,4-DDD | 77291 | 7.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 81890 | 7.6 | 20.0 | PASS |

Tuning Sample, /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN166.d,

DFTPP TUNE/TAILING FACTOR/DEGRADATION SAMPLE AND GRAPHIC REPORT

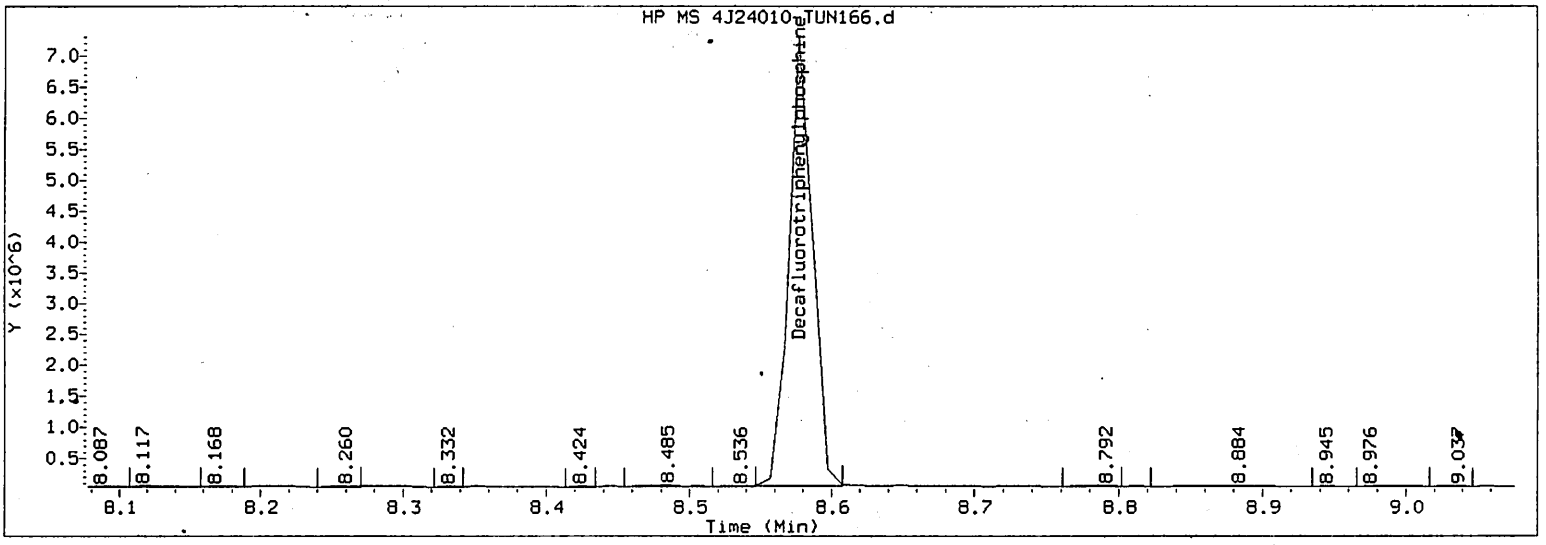
Report Date: 10/24/2014 18:53

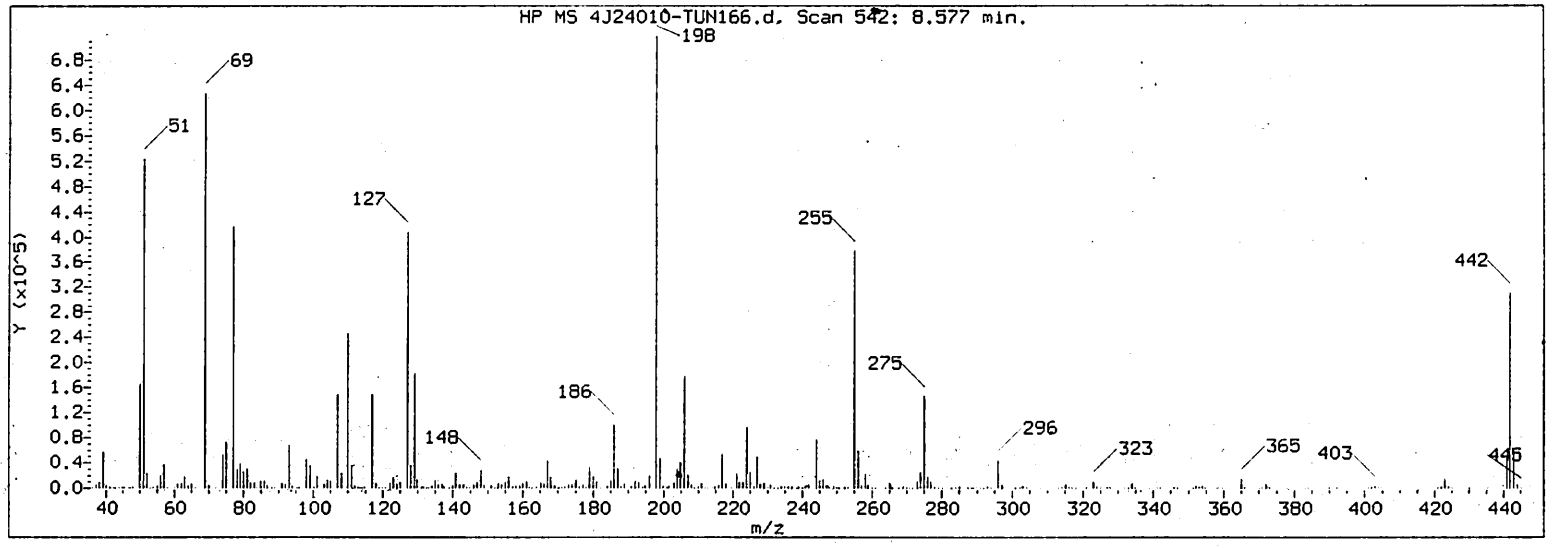
Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m Inst: 5972hp66
Injection Date: 24-OCT-2014 16:02 Operator: OWS
Sample Info: 4J24010-TUN1 4J24010-TUN1:OWS
Misc Info: DFTPPCJ



Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m  Inst: 5972hp66
Injection Date: 24-OCT-2014 16:02  Operator: OWS
Sample Info: 4J24010-TUN1  4J24010-TUN1:OWS
Misc Info: DFTPPCJ



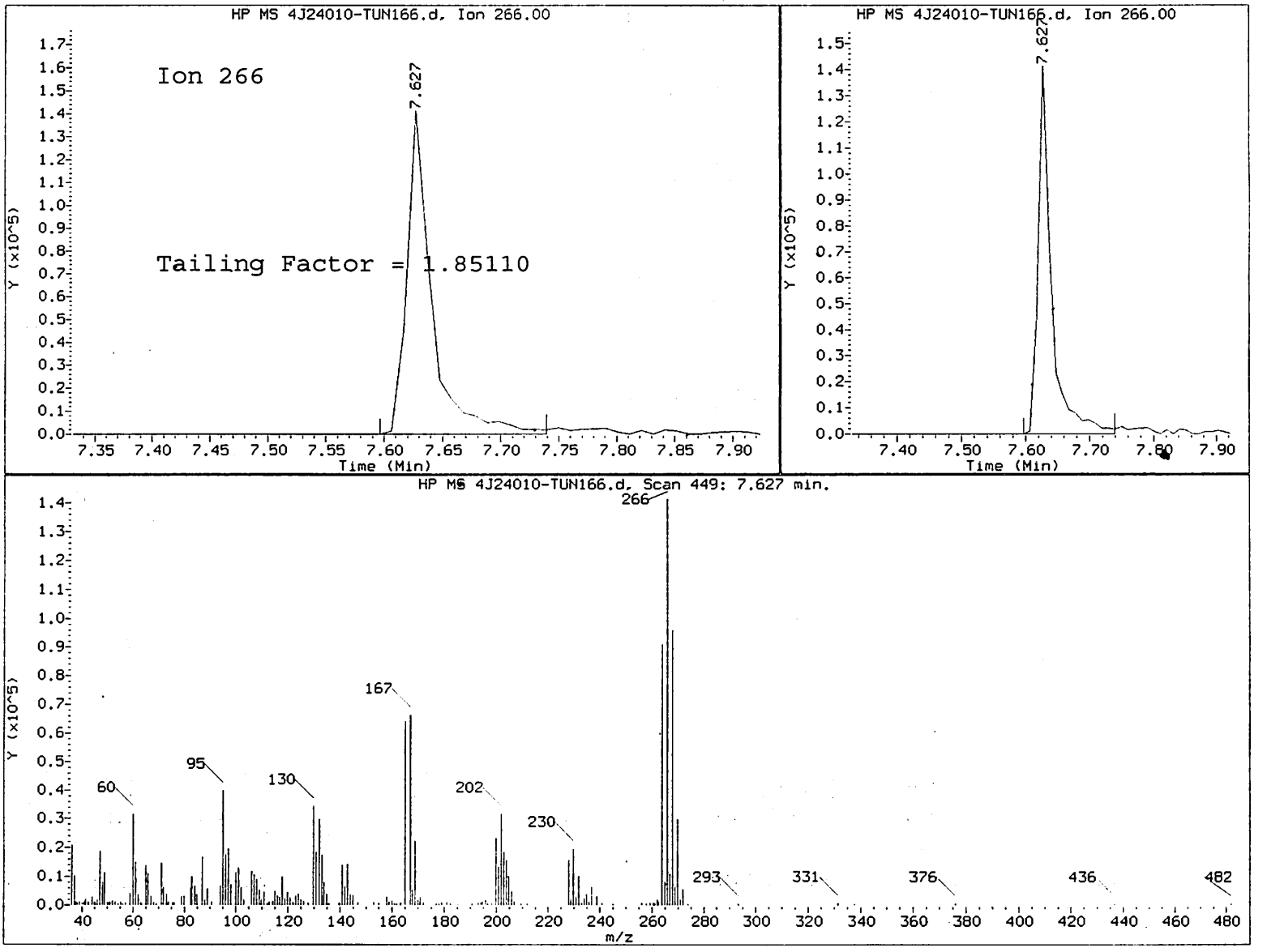




DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 69.31 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 83.05 | | PASS |
| 70 | Less than 2% of mass 69 | 0.53 | ( 0.64) | PASS |
| 127 | 10 - 80% of mass 198 | 54.70 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.86 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.73 | | PASS |
| 365 | Greater than 1% of mass 198 | 3.06 | | PASS |
| 441 | Present, but less than mass 443 | 10.18 | ( 79.53) | PASS |
| 442 | 50 - 100% of mass 198 | 65.66 | | PASS |
| 443 | 15 - 24% of mass 442 | 12.80 | ( 19.50) | PASS |

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:




Pentachlorophenol
==========

| | |
|---|---|
| Exp. RT = | 7.890 |
| Found RT = | 7.627 |

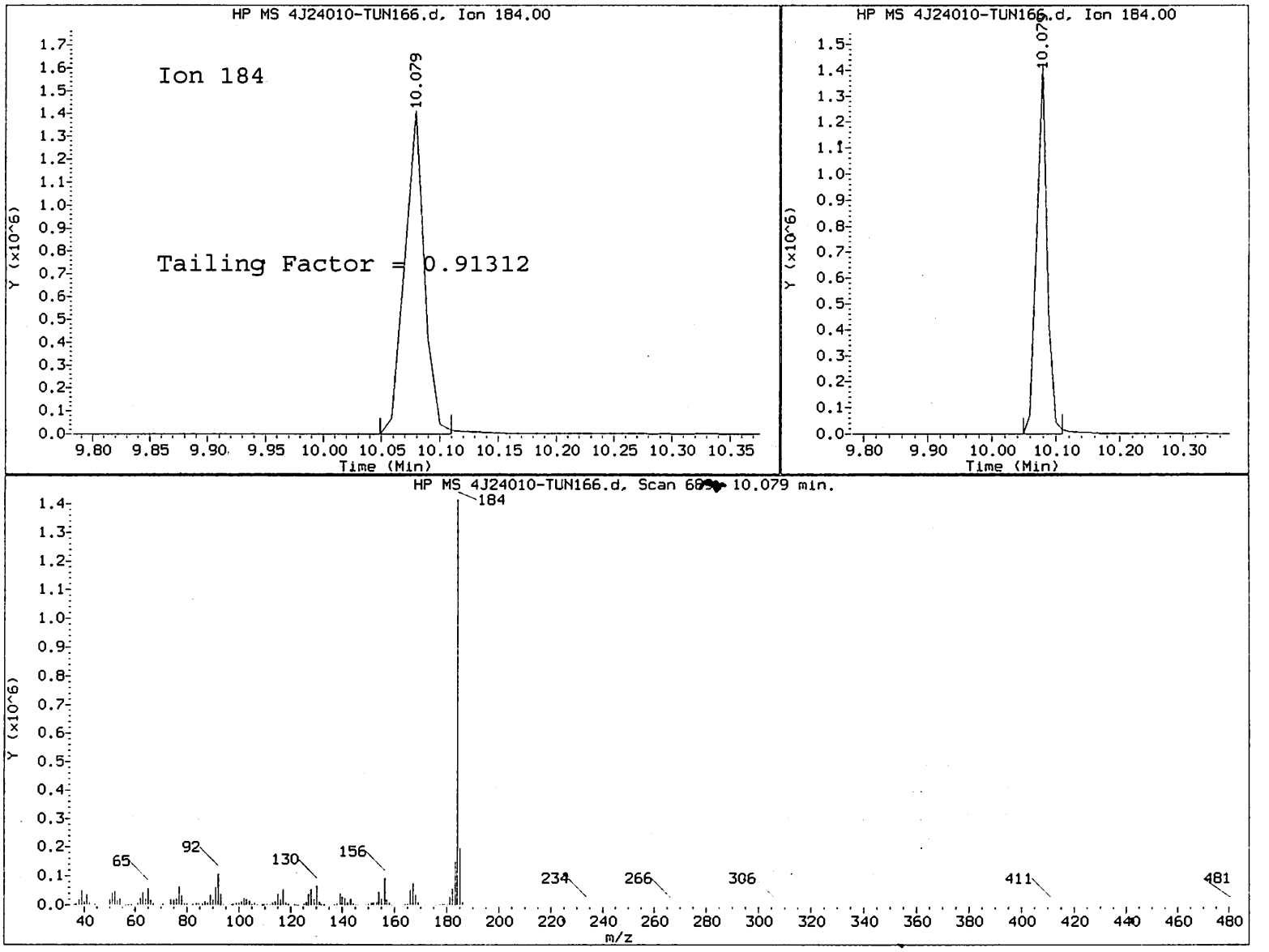
| Mass | Area | Ratio |
|---|---|---|
| 266 | 208473 | 100.00 |

Tailing factor for Pentachlorophenol OK

Tail Factor = 1.851 Maximum Allowed = 2.0

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:




Benzidine
=========
Exp. RT = 10.340
Found RT = 10.079

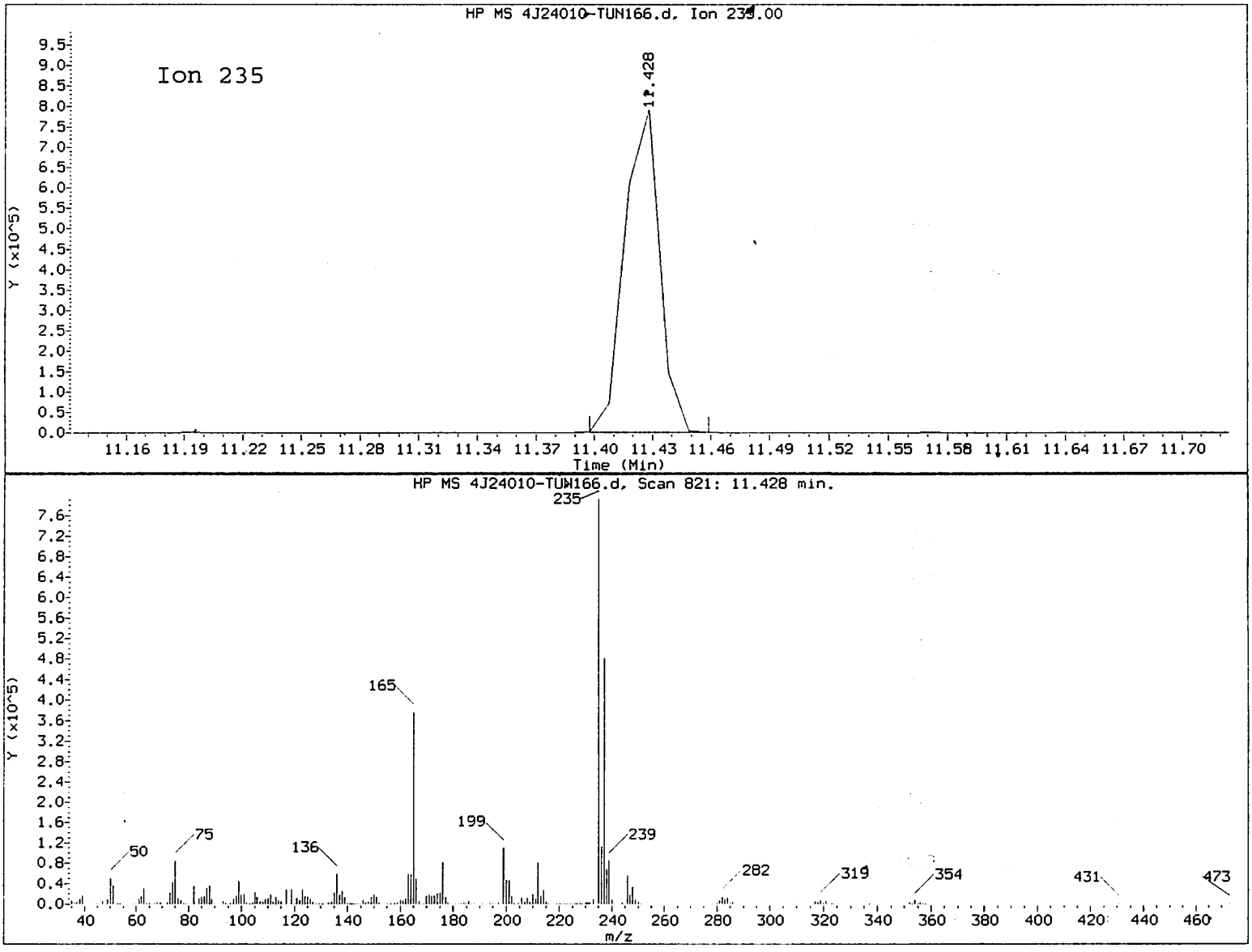
| Mass | Area | Ratio |
|---|---|---|
| 184 | 1644237 | 100.00 |

Tailing factor for Benzidine OK

Tail Factor = 0.913 Maximum Allowed = 2.0

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:

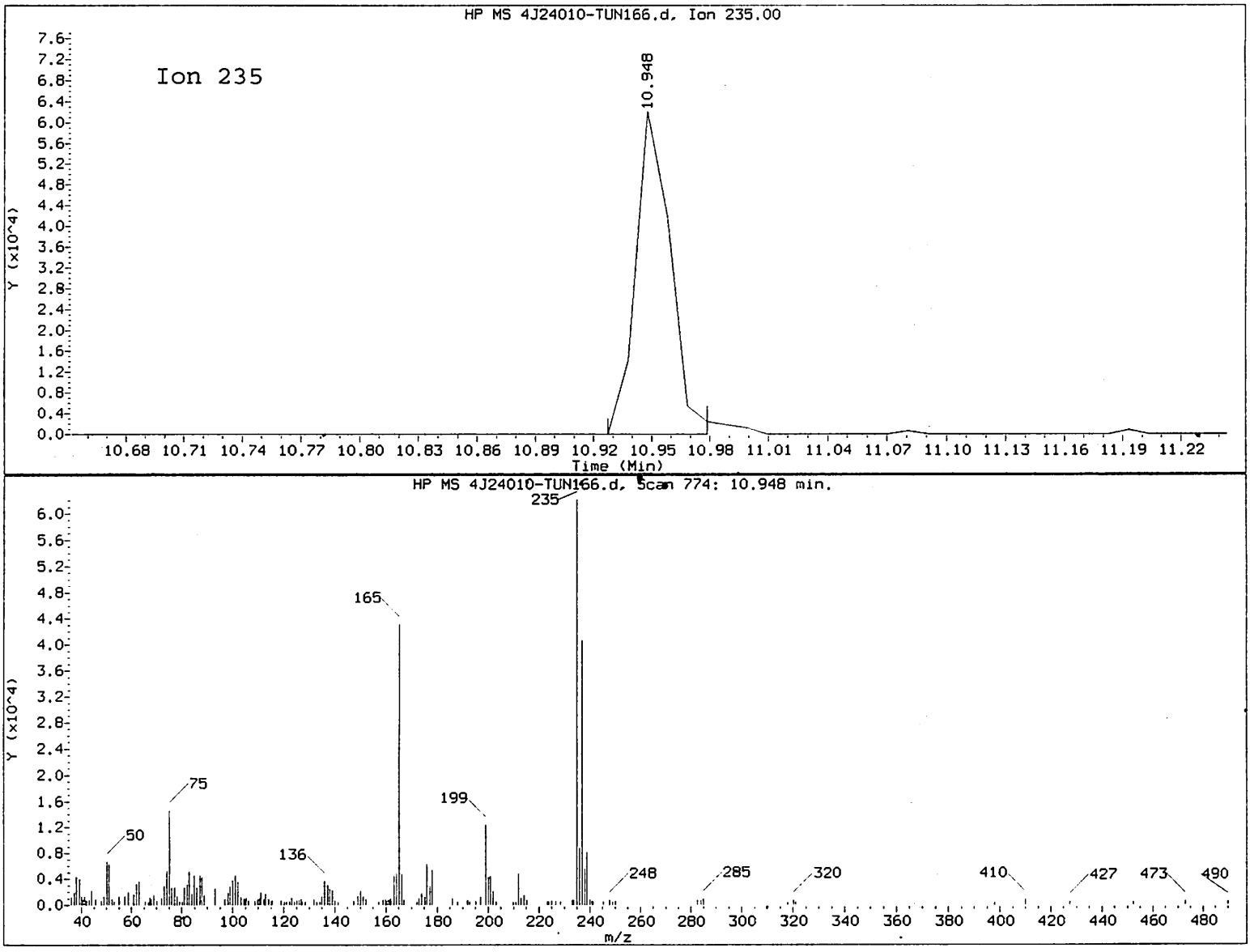



4,4'-DDT
========
Exp. RT = 11.690
Found RT = 11.428

| Mass | Area | Ratio |
|---|---|---|
| 235 | 996500 | 100.00 |

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS .
Misc Info:

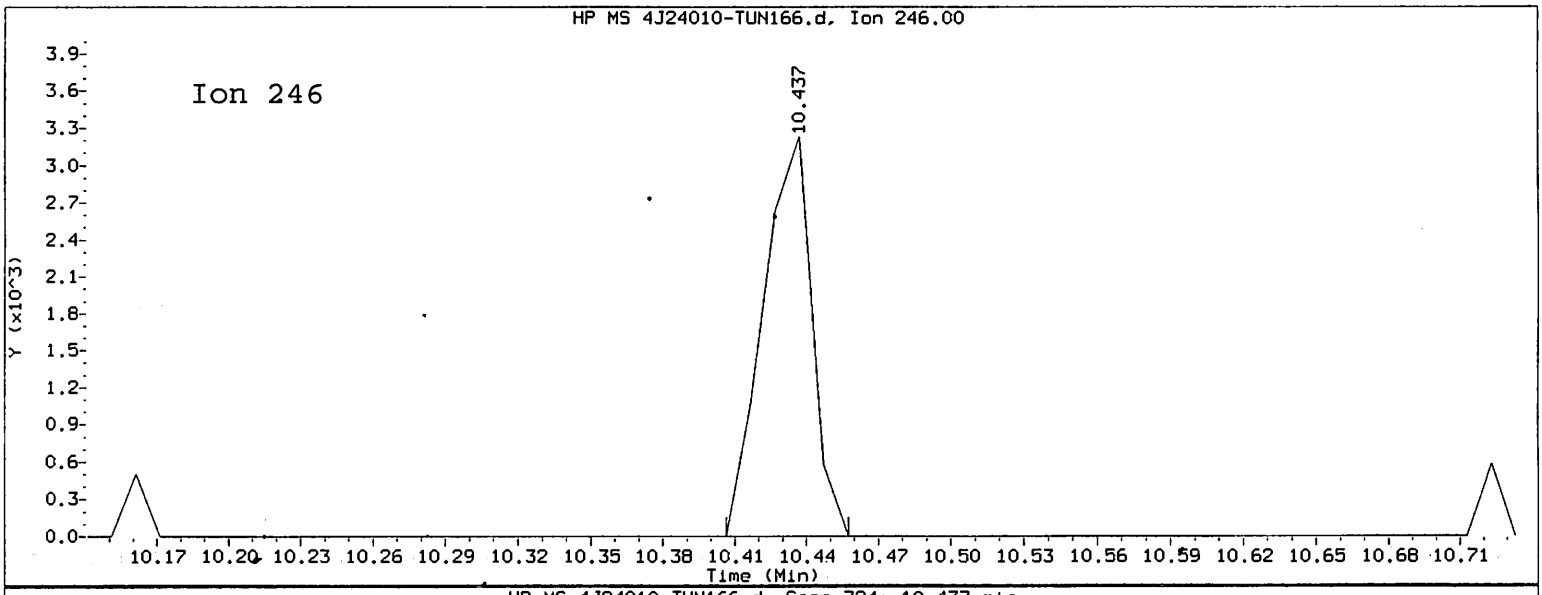


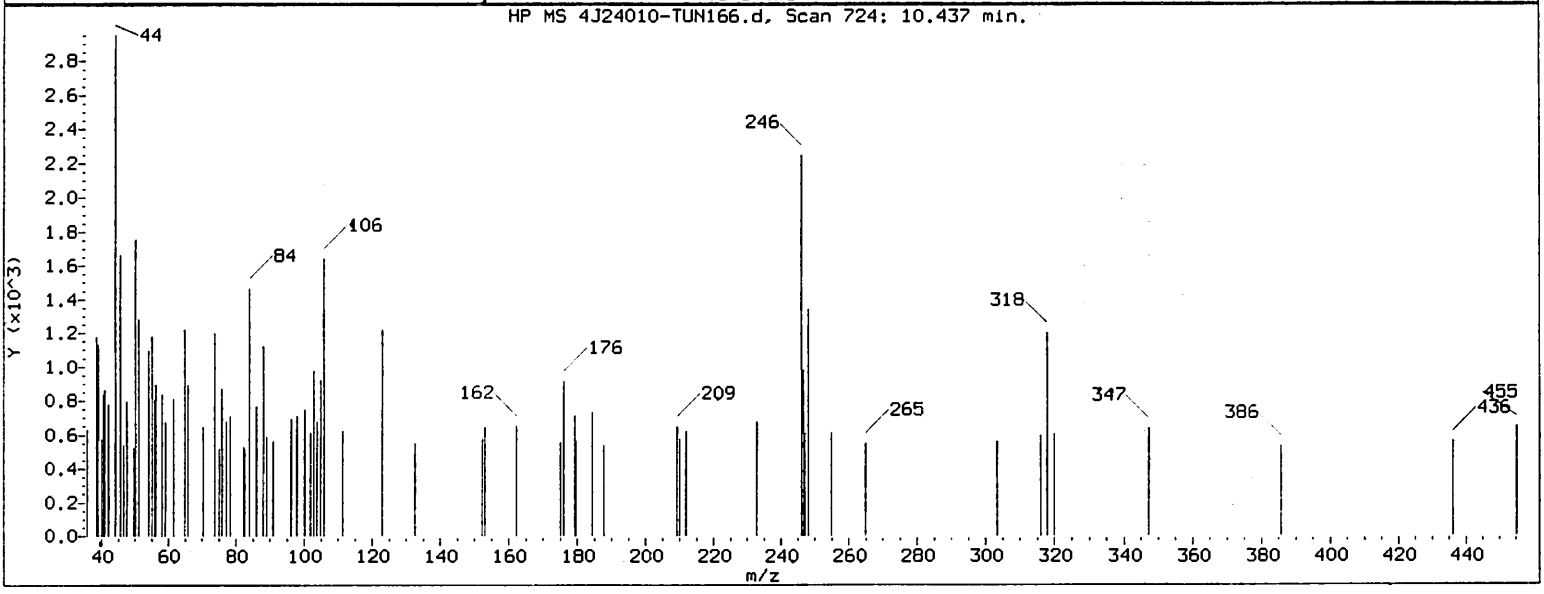

4,4'-DDD
========
Exp. RT = 11.250
Found RT = 10.948

| Mass | Area | Ratio |
|---|---|---|
| 235 | 77291 | 100.00 |

Report Date: 10/24/2014 18:53

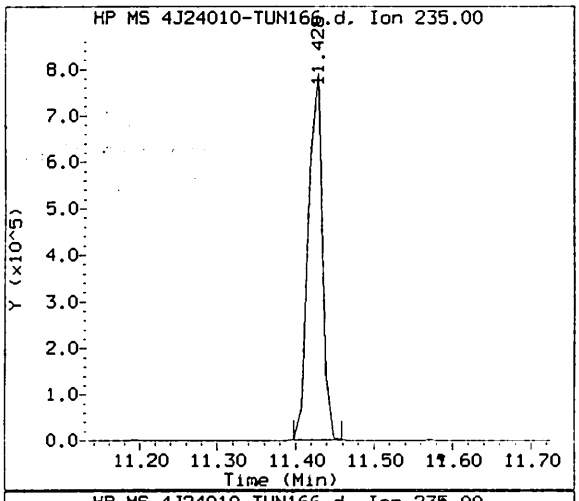
Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:



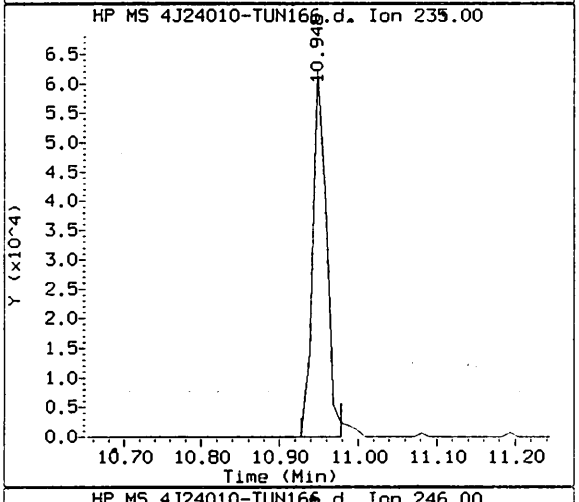




4,4'-DDE
========
Exp. RT = 10.800
Found RT = 10.437

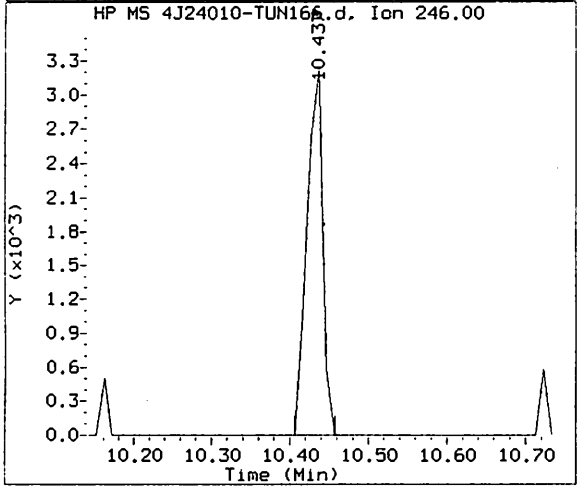
| Mass | Area | Ratio |
|---|---|---|
| 246 | 4599 | 100.00 |




Compound: 4,4'-DDT
Quant Mass: 235
RT: 11.428
Area: 996500




Compound: 4,4'-DDD
Quant Mass: 235
RT: 10.948
Area: 77291




Compound: 4,4'-DDE
Quant Mass: 246
RT: 10.437
Area: 4599

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 996500 | | | N/A |
| 4,4-DDE | 4599 | 0.5 | 20.0 | PASS |
| 4,4-DDD | 77291 | 7.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 81890 | 7.6 | 20.0 | PASS |

**********

TUNE SAMPLE *** PASSED *** DDT BREAKDOWN TEST

**********

# ANALYSIS DATA SHEET

*SW8270D*

**SBLKII**

Client: DRAPER | SDG: 1410146 | Project: RAAP APPIX 2014 UNIT 16

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4102407-BLK166.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4102407-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 10/24/14 12:25

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 10/24/14 17:04

Batch: 4102407 | Sequence: 4J24010 | Calibration: 4091606 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | 0.75 | 5.0 | U |
| 121-14-2 | 2,4-Dinitrotoluene | | 0.84 | 5.0 | U |
| 84-66-2 | Diethylphthalate | | 0.52 | 5.0 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| 2-Fluorophenol | 100.0 | 64.72 | 65 | 33 - 110 | |
| Phenol-d5 | 100.0 | 37.64 | 38 | 20 - 110 | |
| Nitrobenzene-d5 | 50.00 | 46.00 | 92 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.38 | 87 | 46 - 110 | |
| 2,4,6-Tribromophenol | 100.0 | 89.19 | 89 | 42 - 119 | |
| Terphenyl-d14 | 50.00 | 47.44 | 95 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

Assigned To: 4512 | 2855
Employee ID Number

# PREPARATION BENCH SHEET

4102407

**SVOC 8270D**

Matrix: Water

**Prepared using: SVOA - EPA 3510C_SVOA**

Date/Time Extracted: 10-24-14/1225



| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH A/N | Adjusted pH BASE | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1410146-01 | 16WC1A | Sample | 1000 | 1000 | 1.9 | 13 | QC | 500 | |
| 1410146-02 | 16C1 | Sample | 950 | | 1.9 | 13 | MA | 500 | |
| 1410146-03 | 16MW8 | Sample | 1000 | | 1.9 | 13 | | 500 | |
| 1410146-04 | 16MW9 | Sample | | | 1.9 | 13 | | 500 | |
| 1410146-05 | 16WDUP | Sample | | | 1.9 | 13 | | 500 | |
| 1410146-06 | 16WC1B | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-01 | 16-2 | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-02 | 16-3 | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-03 | 16-5 | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-04 | 16WC2B | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-05 | 16SPRING | Sample | | | 1.9 | 13 | | 500 | |
| 4102407-BLK1 | SBLKII | Blank | | | 1.9 | 13 | | 500 | |
| 4102407-BS1 | SLCSII | LCS | | | 1.9 | 13 | | 500 | |
| 4102407-BSD1 | SLCSDII | LCS Dup | | | 1.9 | 13 | | 500 | |
| 4102407-MS1 | 16WC1AMS | Matrix Spike | | | 1.9 | 13 | | 500 | |
| 4102407-MSD1 | 16WC1AMSD | Matrix Spike Dup | | | 1.9 | 13 | N/A | 500 | |

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4H24005 |
| SPIKE | 8270 Full Short LCS/MS Spike 2 | 500 | LCS/LCSD | 4H12014 |
| SPIKE | 8270 Full Short LCS/MS Spike 2 | 500 | MS/MSD | 4H12014 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | LCS/LCSD | 4I05010 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | MS/MSD | 4I05010 |

Surrogate & Spike Added By: _____ 10/24/14
Initials / Date

Spiking Witnessed By: SAB 10-24-14
Initials / Date

Analysts Initials: Extracted: _____ KD: _____ N2: _____ Bottled up: _____

Final Vol Verified: _____

Reviewed By: _____

10N NaOH: 4524003

Manuf. and lot # of reagents/solvents used: $Na_2SO_4$: 4J12001; $H_2SO_4$: 4F27004; $CH_2Cl_2$: 4321023 bch_PH_AN.rpt (Rev. 0 3/11/2011)

CompuChem
A Division Of
Liberty Analytical Corp.

10/30/2014

Abridged Data Package

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1410147

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1410147

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1410147

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1410147-01 | 16-2 | Water | 10/21/2014 09:55 | 10/23/2014 09:35 |
| 1410147-02 | 16-3 | Water | 10/20/2014 10:20 | 10/23/2014 09:35 |
| 1410147-03 | 16-5 | Water | 10/21/2014 11:00 | 10/23/2014 09:35 |
| 1410147-04 | 16WC2B | Water | 10/21/2014 12:20 | 10/23/2014 09:35 |
| 1410147-05 | 16SPRING | Water | 10/21/2014 11:25 | 10/23/2014 09:35 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1410147

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16-2 | SW8270D | 1410147-01 |
| 16-3 | SW8270D | 1410147-02 |
| 16-5 | SW8270D | 1410147-03 |
| 16WC2B | SW8270D | 1410147-04 |
| 16SPRING | SW8270D | 1410147-05 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions addressed in the narrative. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Steve Pruskin

Date: 10/28/2014 Title: Technical Director

Environmental Testing Laboratories
CompuChem
A Division Of
Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

# CompuChem

**A division of Liberty Analytical Corporation**
**501 Madison Avenue**
**Cary, N.C. 27513**
**Tel: 919/379-4100 Fax: 919/379-4050**


## SDG NARRATIVE
## SDG # 1410147
## PROTOCOL: SW-846

**SAMPLE IDENTIFICATIONS: 16-2 16-3 16-5 16WC2B 16SPRING**

The 5 aqueous samples listed above were received intact, temperatures ranging from 0.9°C to 3.2°C, with proper documentation, in sealed shipping containers, on October 23, 2014. These samples were scheduled for the requested analyses of the semivolatile fraction. SW-846, 3rd Edition, Update 3, Separatory Funnel extraction (Method 3510C), and Method 8270D were used to prepare and analyze these samples, with the exceptions and/or additions requested by the client. This portion of the narrative deals with the semivolatile fraction only.

**Semivolatile**

Extraction and analysis holding time requirements were met for these samples.

No Semivolatile project analytes identified were confirmed above the Quantitation Limit (QL) in these samples. All non-detects are reported to the reporting limit (RL) with a "U" flag qualifier.

Manual integrations were performed in this SDG, as indicated on the detailed Manual Integration Summary report that is located in section S. The reasons have been coded with explanations provided in the notice included in the narrative section of the SDG.

All decafluorotriphenylphosphine (DFTPP) abundance criteria were met for tunes associated to this SDG. Tailing factor criteria were met for pentachlorophenol and benzidine. The breakdown criterion was met for DDT. These three compounds have been added to the DFTPP solution and analyzed together.

All QC criteria were met for all initial and continuing calibration standards associated to this SDG.

All of the surrogates met recovery and retention time criteria in the analyses of these samples. All of the internal standards met response and retention time criteria in the analyses of these samples.

The associated method blank met all quality control criteria.

Duplicate matrix spikes were not requested with this SDG. Laboratory Control Samples (LCS/LCSD) were prepared and analyzed along with these samples and met all accuracy and precision criteria.

An uncertainty of these test results may be estimated from the recovery of the surrogates added to the sample prior to sample preparation or from the recovery of spiked compound(s) in the associated laboratory control sample. Further information is available upon request.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Furthermore, I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Quentisha Forrester
Chemist III
October 29, 2014

# CHAIN OF CUSTODY RECORD

OK SRC 10/23/14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0 | **Consultant:** Draper Aden Associates | **Sample Site:** RAAP, Radford, Virginia | **Project Specific (PS) or Batch (B) QC:** (B) | |
| **Attn:** 0 | **Attn:** Janet C. Frazier | | **Sample Collection for Project Complete?** YES | |
| **Address:** 0 | **Address:** 2206 South Main Street Blacksburg, Virginia 24060 | **Location:** HWMU16 | **UPS:** 1Z-237-301-01-9194 -3415<br>1Z-237-301-01-9091 -9024 | |
| 0 | | **Event:** 2014 - 2nd Semiannual Monitoring Event | **Carrier:** 1Z-237-301-01-9367 -5238 | |
| **Phone:** 0 | **Phone:** (540) 552-0444 | **DAA JN:** B03204-12 | **Tracking Number:** | |
| **Fax:** 0 | **Fax:** (540) 552-0291 | **Lab JN:** | | |
| **Fax:** 0 | | | | |

| **Box 1: Matrix** | | **Box 2: Preservative** | | **Box 3: Filtered/Unfiltered** | **Box 4: Sample Type** | **Invoice** |
|---|---|---|---|---|---|---|
| SW Surface Water | T Trip Blank | A HCL | E NaOH | F Filtered | G Grab | Copy to Consultant: YES |
| GW Groundwater | E Equipment Blank | B $HNO_3$ | F ZnAc | U Unfiltered | C Composite | Bill: CLIENT OTHER |
| L Leachate | P Product | C $H_2SO_4$ | G Other (Specify) | **Box 5: Sample Container Type** | | Preserved and shipped on Ice: YES |
| S Soil | O Other | D $Na_2S_2O_3$ | H None | P Plastic V VOA AG Amber Glass CG Clear Glass | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Box 4 - Sample Type** | | | | | G | G | G | | | | | | |
| **Box 3 - Filtered/Unfiltered** | | | | | U | U | U | | | | | | |
| **Required pH of Sample** | | | | | <2 | <2 | - | | | | | | |
| **Box 2 - Preservative** | | | | | B | B | H | | | | | | |
| **Box 5 - Sample Container Type** | | | | | 1-500 ml P | | 2-1L A | | | | | | |
| **Sample ID** | **Date: 2014** | **Time** | **Box 1: Matrix** | **Number of Bottles** | **ICP/MS 6020A/3005A (Metals-Total)** | **7470A (Mercury-Total)** | **8270D/3510C (Semivolatiles)** | **metals / Hg pH** | | | | | |
| 16C1 | 10/22 | 1235 | GW | 3 | X | X | X | <2 | | | 1410146-02 | | |
| 16MW8 | 10/21 | 1320 | GW | 3 | X | X | X | <2 | | | | -03 | |
| 16MW9 | 10/22 | 0910 | GW | 3 | X | X | X | <2 | | | | -04 | |
| 16WC1A | 10/22 | 1005 | GW | 9 | X | X | X | <2 | | | | -01 | USE FOR QC |
| 16WDUP | 10/22 | 1020 | GW | 3 | X | X | X | <2 | | | | -05 | |
| 16WC1B | 10/22 | 1145 | GW | 3 | X | X | X | <2 | | | | -06 | |
| | | | | | | | | | | | | | |
| 16-2 | 10/21 | 0955 | GW | 3 | X | X | X | <2 | | | 1410147-01 | | |
| 16-3 | ~~10/20~~ | ~~1400~~ | GW | 3 | X | X | X | <2 | | | | -02 | DID COLLECT ON 10/20 @ 1400 SRC 10/22/14 |
| 16-5 | 10/21 | 1100 | GW | 3 | X | X | X | <2 | | | | -03 | Lreid Metals on 10/22/14 @ 10/23/14 |
| 16WC2B | 10/21 | 1220 | GW | 3 | X | X | X | <2 | | | | -04 | |
| 16SPRING | 10/21 | 1125 | GW | 3 | X | X | X | <2 | | | | -05 | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**GENERAL NOTES:**

1. ERIS EDD & DAA EDD required.
2. Level 4 deliverables required.
3. See attached target analyte list
4. Report results at or above QL permit, (attached).

**Clients Special Instructions:** 1.1°C, 0.9°C, 3.2°C

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No

Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): Tyler Emery | Date: 10/20/14 | #1 Relinquished by (Signature): | Date: 10/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0730 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): KEN CODDINGTON | Date: 10/20/14 | #1 Received by (Signature) | Date: 10/23/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0730 | Company Name: CompuChem | Time: 0935 | Company Name: | Time: | |

1/3

**ANALYTICAL METHOD: SEE BELOW**
**TYPE METHOD: SEE BELOW**
**CLASS: TOTAL**

**Method SW 846-6020A/3005 (ICP/MS)**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | Arsenic | 7440-38-2 | 10 |
| 2. | Barium | 7440-39-3 | 10 |
| 3. | Beryllium | 7440-41-7 | 1 |
| 4. | Cadmium | 7440-43-9 | 1 |
| 5. | Chromium | 7440-47-3 | 5 |
| 6. | Cobalt | 7440-48-4 | 5 |
| 7. | Copper | 7440-50-8 | 5 |
| 8. | Lead | 7440-92-1 | 1 |
| 9. | Nickel | 7440-02-0 | 10 |
| 10. | Vanadium | 7440-62-2 | 10 |
| 11. | Zinc | 7440-66-6 | 10 |

**Method SW 7470A/CVAA**

| | | | |
|---|---|---|---|
| 15 | Mercury | 7439-97-6 2/7470A | 2 |

Notes. Antimony, selenium and silver deleted 4-6,2012.
**10/2013 JCF**

**ANALYTICAL METHOD: 8270D/3510C**
**TYPE METHOD: GCMS**
**CLASS: SEMIVOLATILE**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | 2,4-dinitrotoluene | 121-14-2 | 10 |
| 2. | 2,6-dinitrotoluene | 606-20-2 | 10 |
| 3. | Diethylphthalate | | 5 |

10/13 – diehtylphthate added

3/3

# HOLDING TIME SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

| Sample Name | Date Collected | Date Received | Date Prepared | Days to Prep | Max Days to Prep | Date Analyzed | Days to Analysis | Max Days to Analysis | Q |
|---|---|---|---|---|---|---|---|---|---|
| 16-2 | 10/21/14 | 10/23/14 | 10/24/14 | 3 | 7 | 10/25/14 | 0.5 | 40 | |
| 16-3 | 10/20/14 | 10/23/14 | 10/24/14 | 4 | 7 | 10/25/14 | 0.5 | 40 | |
| 16-5 | 10/21/14 | 10/23/14 | 10/24/14 | 3 | 7 | 10/25/14 | 0.6 | 40 | |
| 16WC2B | 10/21/14 | 10/23/14 | 10/24/14 | 3 | 7 | 10/25/14 | 0.6 | 40 | |
| 16SPRING | 10/21/14 | 10/23/14 | 10/24/14 | 3 | 7 | 10/25/14 | 0.6 | 40 | |

# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1410147 Instrument: 5972hp66

Sequence: 4J24010 Calibration: 4091606

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **Blank (4102407-BLK1 ) ug/L** Lab File ID: 4102407-BLK166.d Analyzed: 10/24/14 17:04 | | | | |
| Nitrobenzene-d5 | 50.00 | 92 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 87 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 95 | 59 - 110 | |
| **LCS (4102407-BS1 ) ug/L** Lab File ID: 4102407-BS166.d Analyzed: 10/24/14 17:43 | | | | |
| Nitrobenzene-d5 | 50.00 | 83 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 84 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 90 | 59 - 110 | |
| **LCS Dup (4102407-BSD1 ) ug/L** Lab File ID: 4102407-BSD166.d Analyzed: 10/24/14 18:23 | | | | |
| Nitrobenzene-d5 | 50.00 | 89 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 84 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 88 | 59 - 110 | |
| **16-2 (1410147-01 ) ug/L** Lab File ID: 1410147-0166.d Analyzed: 10/25/14 00:19 | | | | |
| Nitrobenzene-d5 | 50.00 | 88 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 82 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 90 | 59 - 110 | |
| **16-3 (1410147-02 ) ug/L** Lab File ID: 1410147-0266.d Analyzed: 10/25/14 00:59 | | | | |
| Nitrobenzene-d5 | 50.00 | 79 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 76 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 83 | 59 - 110 | |
| **16-5 (1410147-03 ) ug/L** Lab File ID: 1410147-0366.d Analyzed: 10/25/14 01:38 | | | | |
| Nitrobenzene-d5 | 50.00 | 86 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 86 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 95 | 59 - 110 | |

# SURROGATE STANDARD RECOVERY

*SW8270D*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1410147 Instrument: 5972hp66

Sequence: 4J24010 Calibration: 4091606

| Surrogate Compound | Spike Level | % Recovery | Recovery Limits | Q |
|---|---|---|---|---|
| **16WC2B (1410147-04 ) ug/L** Lab File ID: 1410147-0466.d Analyzed: 10/25/14 02:18 | | | | |
| Nitrobenzene-d5 | 50.00 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 82 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 90 | 59 - 110 | |
| **16SPRING (1410147-05 ) ug/L** Lab File ID: 1410147-0566.d Analyzed: 10/25/14 02:58 | | | | |
| Nitrobenzene-d5 | 50.00 | 88 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 88 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 100 | 59 - 110 | |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4102407-BS1 Matrix: Water Client ID: SLCSII Batch: 4102407

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 40.00 | 36.52 | 91 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 37.31 | 93 | | 58 - 123 |
| Diethylphthalate | 40.00 | 37.08 | 93 | | 64 - 114 |

# LCS / LCS DUPLICATE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4102407-BSD1 Matrix: Water Client ID: SLCSDII Batch: 4102407

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| 2,6-Dinitrotoluene | 40.00 | 38.48 | 96 | 5 | 30 | | 66 - 117 |
| 2,4-Dinitrotoluene | 40.00 | 40.90 | 102 | 9 | 30 | | 58 - 123 |
| Diethylphthalate | 40.00 | 39.27 | 98 | 6 | 30 | | 64 - 114 |

# PREPARATION BATCH SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Batch: 4102407 Matrix: Water Preparation: EPA 3510C_SVOA

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (uL) |
|---|---|---|---|---|
| 16-2 | 1410147-01 | 10/24/14 12:25 | 1000 | 1000 |
| 16-3 | 1410147-02 | 10/24/14 12:25 | 1000 | 1000 |
| 16-5 | 1410147-03 | 10/24/14 12:25 | 1000 | 1000 |
| 16WC2B | 1410147-04 | 10/24/14 12:25 | 1000 | 1000 |
| 16SPRING | 1410147-05 | 10/24/14 12:25 | 1000 | 1000 |
| SBLKII | 4102407-BLK1 | 10/24/14 12:25 | 1000 | 1000 |
| SLCSII | 4102407-BS1 | 10/24/14 12:25 | 1000 | 1000 |
| SLCSDII | 4102407-BSD1 | 10/24/14 12:25 | 1000 | 1000 |

# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4I12008 Calibration: 4091606 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCG | 4I12008-TUN1 | 4I12008-TUN166.d | 09/12/14 14:08:00 |
| SSTD060CG | 4I12008-CAL6 | 4I12008-CAL666.d | 09/12/14 16:06:00 |
| SSTD050CG | 4I12008-CAL5 | 4I12008-CAL566.d | 09/12/14 16:45:00 |
| SSTD040CG | 4I12008-CAL4 | 4I12008-CAL466.d | 09/12/14 17:24:00 |
| SSTD025CG | 4I12008-CAL3 | 4I12008-CAL366.d | 09/12/14 18:04:00 |
| SSTD010CG | 4I12008-CAL2 | 4I12008-CAL266.d | 09/12/14 18:43:00 |
| SSTD005CG | 4I12008-CAL1 | 4I12008-CAL166.d | 09/12/14 19:22:00 |
| SCV025VAL1CG | 4I12008-SCV1 | 4I12008-SCV166.d | 09/12/14 20:01:00 |

# ANALYSIS SEQUENCE SUMMARY

*SW8270D*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| DFTPPCJ | 4J24010-TUN1 | 4J24010-TUN166.d | 10/24/14 16:02:00 |
| SSTD025CJ | 4J24010-ICV1 | 4J24010-ICV166.d | 10/24/14 16:24:00 |
| SBLKII | 4102407-BLK1 | 4102407-BLK166.d | 10/24/14 17:04:00 |
| SLCSII | 4102407-BS1 | 4102407-BS166.d | 10/24/14 17:43:00 |
| SLCSDII | 4102407-BSD1 | 4102407-BSD166.d | 10/24/14 18:23:00 |
| 16-2 | 1410147-01 | 1410147-0166.d | 10/25/14 00:19:00 |
| 16-3 | 1410147-02 | 1410147-0266.d | 10/25/14 00:59:00 |
| 16-5 | 1410147-03 | 1410147-0366.d | 10/25/14 01:38:00 |
| 16WC2B | 1410147-04 | 1410147-0466.d | 10/25/14 02:18:00 |
| 16SPRING | 1410147-05 | 1410147-0566.d | 10/25/14 02:58:00 |

# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410147 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4I12008-TUN166.d | Injection Date: | 09/12/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 14:08 |
| Sequence: | 4I12008 | Lab Sample ID: | 4I12008-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 66.2 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 77.5 | PASS |
| 70 | Less than 2% of 69 | 0.503 | PASS |
| 127 | 10 - 80% of 198 | 50.7 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.64 | PASS |
| 275 | 10 - 60% of 198 | 21.6 | PASS |
| 365 | Greater than 1% of 198 | 2.88 | PASS |
| 441 | Less than 100% of 443 | 80.9 | PASS |
| 442 | 50 - 100% of 198 | 70.1 | PASS |
| 443 | 15 - 24% of 442 | 19.9 | PASS |

# MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410147 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Lab File ID: | 4J24010-TUN166.d | Injection Date: | 10/24/14 |
| Instrument ID: | 5972hp66 | Injection Time: | 16:02 |
| Sequence: | 4J24010 | Lab Sample ID: | 4J24010-TUN1 |

| m/z | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE | |
|---|---|---|---|
| 198 | Base peak, 100% relative abundance | 100 | PASS |
| 51 | 10 - 80% of 198 | 69.3 | PASS |
| 68 | Less than 2% of 69 | 0 | PASS |
| 69 | Present | 83 | PASS |
| 70 | Less than 2% of 69 | 0.637 | PASS |
| 127 | 10 - 80% of 198 | 54.7 | PASS |
| 197 | Less than 2% of 198 | 0 | PASS |
| 199 | 5 - 9% of 198 | 6.86 | PASS |
| 275 | 10 - 60% of 198 | 21.7 | PASS |
| 365 | Greater than 1% of 198 | 3.06 | PASS |
| 441 | Less than 100% of 443 | 79.5 | PASS |
| 442 | 50 - 100% of 198 | 65.7 | PASS |
| 443 | 15 - 24% of 442 | 19.5 | PASS |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410147 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Sequence: | 4I12008 | Instrument: | 5972hp66 |
| | | Calibration: | 4091606 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Secondary Cal Check (4I12008-SCV1 )** | | | Lab File ID: 4I12008-SCV166.d | | Analyzed: 09/12/14 20:01 | | | | |
| 1,4-Dichlorobenzene-d4 | 240347 | 7.646 | 231758 | 7.653 | 104 | 50 - 200 | -0.0070 | +/-0.50 | |
| Naphthalene-d8 | 937905 | 10.456 | 838318 | 10.464 | 112 | 50 - 200 | -0.0080 | +/-0.50 | |
| Acenaphthene-d10 | 539955 | 14.524 | 494824 | 14.532 | 109 | 50 - 200 | -0.0080 | +/-0.50 | |
| Phenanthrene-d10 | 1110729 | 17.396 | 935469 | 17.404 | 119 | 50 - 200 | -0.0080 | +/-0.50 | |
| Chrysene-d12 | 1176634 | 21.771 | 1040717 | 21.768 | 113 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 972689 | 23.866 | 812786 | 23.863 | 120 | 50 - 200 | 0.0030 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410147 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Sequence: | 4J24010 | Instrument: | 5972hp66 |
| | | Calibration: | 4091606 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **Initial Cal Check (4J24010-ICV1 )** | | | Lab File ID: 4J24010-ICV166.d | | | Analyzed: 10/24/14 16:24 | | | |
| 1,4-Dichlorobenzene-d4 | 238978 | 7.588 | 231758 | 7.653 | 103 | 50 - 200 | -0.0650 | +/-0.50 | |
| Naphthalene-d8 | 870662 | 10.398 | 838318 | 10.464 | 104 | 50 - 200 | -0.0660 | +/-0.50 | |
| Acenaphthene-d10 | 479494 | 14.465 | 494824 | 14.532 | 97 | 50 - 200 | -0.0670 | +/-0.50 | |
| Phenanthrene-d10 | 912437 | 17.347 | 935469 | 17.404 | 98 | 50 - 200 | -0.0570 | +/-0.50 | |
| Chrysene-d12 | 1025892 | 21.71 | 1040717 | 21.768 | 99 | 50 - 200 | -0.0580 | +/-0.50 | |
| Perylene-d12 | 790064 | 23.805 | 812786 | 23.863 | 97 | 50 - 200 | -0.0580 | +/-0.50 | |
| **Blank (4102407-BLK1 )** | | | Lab File ID: 4102407-BLK166.d | | | Analyzed: 10/24/14 17:04 | | | |
| 1,4-Dichlorobenzene-d4 | 226756 | 7.593 | 238978 | 7.588 | 95 | 50 - 200 | 0.0050 | +/-0.50 | |
| Naphthalene-d8 | 823428 | 10.403 | 870662 | 10.398 | 95 | 50 - 200 | 0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 461795 | 14.46 | 479494 | 14.465 | 96 | 50 - 200 | -0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 904632 | 17.342 | 912437 | 17.347 | 99 | 50 - 200 | -0.0050 | +/-0.50 | |
| Chrysene-d12 | 963294 | 21.715 | 1025892 | 21.71 | 94 | 50 - 200 | 0.0050 | +/-0.50 | |
| Perylene-d12 | 684317 | 23.81 | 790064 | 23.805 | 87 | 50 - 200 | 0.0050 | +/-0.50 | |
| **LCS (4102407-BS1 )** | | | Lab File ID: 4102407-BS166.d | | | Analyzed: 10/24/14 17:43 | | | |
| 1,4-Dichlorobenzene-d4 | 209038 | 7.59 | 238978 | 7.588 | 87 | 50 - 200 | 0.0020 | +/-0.50 | |
| Naphthalene-d8 | 761560 | 10.4 | 870662 | 10.398 | 87 | 50 - 200 | 0.0020 | +/-0.50 | |
| Acenaphthene-d10 | 406861 | 14.467 | 479494 | 14.465 | 85 | 50 - 200 | 0.0020 | +/-0.50 | |
| Phenanthrene-d10 | 786421 | 17.349 | 912437 | 17.347 | 86 | 50 - 200 | 0.0020 | +/-0.50 | |
| Chrysene-d12 | 912233 | 21.712 | 1025892 | 21.71 | 89 | 50 - 200 | 0.0020 | +/-0.50 | |
| Perylene-d12 | 686167 | 23.807 | 790064 | 23.805 | 87 | 50 - 200 | 0.0020 | +/-0.50 | |
| **LCS Dup (4102407-BSD1 )** | | | Lab File ID: 4102407-BSD166.d | | | Analyzed: 10/24/14 18:23 | | | |
| 1,4-Dichlorobenzene-d4 | 243378 | 7.591 | 238978 | 7.588 | 102 | 50 - 200 | 0.0030 | +/-0.50 | |
| Naphthalene-d8 | 929352 | 10.401 | 870662 | 10.398 | 107 | 50 - 200 | 0.0030 | +/-0.50 | |
| Acenaphthene-d10 | 547177 | 14.468 | 479494 | 14.465 | 114 | 50 - 200 | 0.0030 | +/-0.50 | |
| Phenanthrene-d10 | 1044490 | 17.35 | 912437 | 17.347 | 114 | 50 - 200 | 0.0030 | +/-0.50 | |
| Chrysene-d12 | 1204879 | 21.713 | 1025892 | 21.71 | 117 | 50 - 200 | 0.0030 | +/-0.50 | |
| Perylene-d12 | 893075 | 23.808 | 790064 | 23.805 | 113 | 50 - 200 | 0.0030 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

Laboratory: COMPUCHEM
SDG: 1410147
Client: DRAPER
Project: RAAP 2013 UNIT 16 & 10/B03204-12
Sequence: 4J24010
Instrument: 5972hp66
Calibration: 4091606

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16-2 (1410147-01 )** | | | Lab File ID: 1410147-0166.d | | | Analyzed: 10/25/14 00:19 | | | |
| 1,4-Dichlorobenzene-d4 | 257406 | 7.583 | 238978 | 7.588 | 108 | 50 - 200 | -0.0050 | +/-0.50 | |
| Naphthalene-d8 | 907494 | 10.404 | 870662 | 10.398 | 104 | 50 - 200 | 0.0060 | +/-0.50 | |
| Acenaphthene-d10 | 519694 | 14.461 | 479494 | 14.465 | 108 | 50 - 200 | -0.0040 | +/-0.50 | |
| Phenanthrene-d10 | 975282 | 17.342 | 912437 | 17.347 | 107 | 50 - 200 | -0.0050 | +/-0.50 | |
| Chrysene-d12 | 1073568 | 21.706 | 1025892 | 21.71 | 105 | 50 - 200 | -0.0040 | +/-0.50 | |
| Perylene-d12 | 744863 | 23.8 | 790064 | 23.805 | 94 | 50 - 200 | -0.0050 | +/-0.50 | |
| **16-3 (1410147-02 )** | | | Lab File ID: 1410147-0266.d | | | Analyzed: 10/25/14 00:59 | | | |
| 1,4-Dichlorobenzene-d4 | 223285 | 7.592 | 238978 | 7.588 | 93 | 50 - 200 | 0.0040 | +/-0.50 | |
| Naphthalene-d8 | 780774 | 10.403 | 870662 | 10.398 | 90 | 50 - 200 | 0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 423756 | 14.459 | 479494 | 14.465 | 88 | 50 - 200 | -0.0060 | +/-0.50 | |
| Phenanthrene-d10 | 762068 | 17.341 | 912437 | 17.347 | 84 | 50 - 200 | -0.0060 | +/-0.50 | |
| Chrysene-d12 | 860761 | 21.704 | 1025892 | 21.71 | 84 | 50 - 200 | -0.0060 | +/-0.50 | |
| Perylene-d12 | 613102 | 23.799 | 790064 | 23.805 | 78 | 50 - 200 | -0.0060 | +/-0.50 | |
| **16-5 (1410147-03 )** | | | Lab File ID: 1410147-0366.d | | | Analyzed: 10/25/14 01:38 | | | |
| 1,4-Dichlorobenzene-d4 | 157993 | 7.583 | 238978 | 7.588 | 66 | 50 - 200 | -0.0050 | +/-0.50 | |
| Naphthalene-d8 | 612265 | 10.403 | 870662 | 10.398 | 70 | 50 - 200 | 0.0050 | +/-0.50 | |
| Acenaphthene-d10 | 329533 | 14.46 | 479494 | 14.465 | 69 | 50 - 200 | -0.0050 | +/-0.50 | |
| Phenanthrene-d10 | 630175 | 17.342 | 912437 | 17.347 | 69 | 50 - 200 | -0.0050 | +/-0.50 | |
| Chrysene-d12 | 706575 | 21.705 | 1025892 | 21.71 | 69 | 50 - 200 | -0.0050 | +/-0.50 | |
| Perylene-d12 | 490191 | 23.8 | 790064 | 23.805 | 62 | 50 - 200 | -0.0050 | +/-0.50 | |
| **16WC2B (1410147-04 )** | | | Lab File ID: 1410147-0466.d | | | Analyzed: 10/25/14 02:18 | | | |
| 1,4-Dichlorobenzene-d4 | 364297 | 7.589 | 238978 | 7.588 | 152 | 50 - 200 | 0.0010 | +/-0.50 | |
| Naphthalene-d8 | 1326982 | 10.399 | 870662 | 10.398 | 152 | 50 - 200 | 0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 720350 | 14.466 | 479494 | 14.465 | 150 | 50 - 200 | 0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 1361045 | 17.348 | 912437 | 17.347 | 149 | 50 - 200 | 0.0010 | +/-0.50 | |
| Chrysene-d12 | 1469605 | 21.712 | 1025892 | 21.71 | 143 | 50 - 200 | 0.0020 | +/-0.50 | |
| Perylene-d12 | 1051201 | 23.806 | 790064 | 23.805 | 133 | 50 - 200 | 0.0010 | +/-0.50 | |

# INTERNAL STANDARD AREA AND RT SUMMARY
## SW8270D

| | | | |
|---|---|---|---|
| Laboratory: | COMPUCHEM | SDG: | 1410147 |
| Client: | DRAPER | Project: | RAAP 2013 UNIT 16 & 10/B03204-12 |
| Sequence: | 4J24010 | Instrument: | 5972hp66 |
| | | Calibration: | 4091606 |

| Internal Standard | Response | RT | Reference Response | Reference RT | Area % | Area % Limits | RT Diff | RT Diff Limit | Q |
|---|---|---|---|---|---|---|---|---|---|
| **16SPRING (1410147-05 )** | | | Lab File ID: 1410147-0566.d | | | Analyzed: 10/25/14 02:58 | | | |
| 1,4-Dichlorobenzene-d4 | 266453 | 7.587 | 238978 | 7.588 | 111 | 50 - 200 | -0.0010 | +/-0.50 | |
| Naphthalene-d8 | 988949 | 10.397 | 870662 | 10.398 | 114 | 50 - 200 | -0.0010 | +/-0.50 | |
| Acenaphthene-d10 | 539174 | 14.464 | 479494 | 14.465 | 112 | 50 - 200 | -0.0010 | +/-0.50 | |
| Phenanthrene-d10 | 1016849 | 17.346 | 912437 | 17.347 | 111 | 50 - 200 | -0.0010 | +/-0.50 | |
| Chrysene-d12 | 1077442 | 21.709 | 1025892 | 21.71 | 105 | 50 - 200 | -0.0010 | +/-0.50 | |
| Perylene-d12 | 772165 | 23.804 | 790064 | 23.805 | 98 | 50 - 200 | -0.0010 | +/-0.50 | |

# K. Target Compound Results

## (ANALYSIS DATA SHEETS)

### Analysis Data Sheets (ADS), Tentatively Identified Compounds (TICs), and Surrogate Recovery Results

Sample data shall be arranged in packets with the Analysis Data Sheet, followed by the raw data for volatile or semivolatile samples. These sample packets shall be placed in increasing Client Sample ID number order, considering both letters and numbers.

a. Target Analyte Results (ANALYSIS DATA SHEET)

Tabulated results (identification and quantitation) and Tentatively Identified Compounds (TICs) shall be included.

b. Reconstructed Ion Chromatograms (RICs)

Include for each sample or sample extract, including dilutions and reanalyses. The RIC shall contain the following header information: Client Sample ID Number, date and time of analysis, instrument ID, Lab file ID, and analyst ID.

d. Quantitation Report for target analytes and TICs.

Include a printout of the Extracted Ion Current Profile (EICP) for all manual changes to all compounds, internal standards, and surrogate compounds.

e. Copies of raw spectra and copies of background-subtracted mass spectra of target analytes plus TICs identified in the sample.

- The spectra shall include the following information: Client Sample ID number, Lab file ID, date and time of analysis, and instrument ID.
- The compound name must be clearly marked.

# ANALYSIS DATA SHEET

*SW8270D*

**16-2**

Client: DRAPER SDG 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410147-0166.d Sampled: 10/21/14 09:55

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410147-01 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/25/14 00:19

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 43.94 | 88 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 40.83 | 82 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 44.80 | 90 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

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# ANALYSIS DATA SHEET

*SW8270D*

**16-3**

Client: DRAPER SDG 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410147-0266.d Sampled: 10/20/14 10:20

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410147-02 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/25/14 00:59

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 39.64 | 79 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 37.93 | 76 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 41.61 | 83 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16-5**

Client: DRAPER SDG 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410147-0366.d Sampled: 10/21/14 11:00

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410147-03 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/25/14 01:38

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 42.92 | 86 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 42.88 | 86 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 47.51 | 95 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

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# ANALYSIS DATA SHEET

*SW8270D*

**16SPRING**

Client: DRAPER SDG 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410147-0566.d Sampled: 10/21/14 11:25

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410147-05 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/25/14 02:58

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 44.11 | 88 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 44.03 | 88 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 49.90 | 100 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# ANALYSIS DATA SHEET

*SW8270D*

**16WC2B**

Client: DRAPER SDG 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water Extraction: EPA 3510C_SVOA File ID: 1410147-0466.d Sampled: 10/21/14 12:20

Initial/Final: 1000mL / 1000uL Sulfur Cleanup: N Lab ID: 1410147-04 Received: 10/23/14 09:35

Dilution: 1 pH: Florisil Cleanup: N Prepared: 10/24/14 12:25

% Moisture: NA GPC Cleanup: N GPC Cleanup Factor: N Analyzed: 10/25/14 02:18

Batch: 4102407 Sequence: 4J24010 Calibration: 4091606 Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC. (ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | *U* |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | *U* |
| 84-66-2 | Diethylphthalate | | | 5.0 | *U* |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 43.55 | 87 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 41.20 | 82 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 45.10 | 90 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.
(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.
(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

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# INITIAL CALIBRATION DATA

*SW8270D*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4091606 Instrument: 5972hp66

Calibration Date: 9/12/2014 2:08:40PM

| Compound | Level 01 | | Level 02 | | Level 03 | | Level 04 | | Level 05 | | Level 06 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RF | | RF | | RF | | RF | | RF | | RF |
| 2,6-Dinitrotoluene | 5 | 0.2702626 | 10 | 0.3051678 | 25 | 0.2971642 | 40 | 0.3367283 | 50 | 0.3465023 | 60 | 0.3357404 |
| 2,4-Dinitrotoluene | 5 | 0.337485 | 10 | 0.373239 | 25 | 0.4354518 | 40 | 0.5124406 | 50 | 0.465772 | 60 | 0.4858007 |
| Diethylphthalate | 5 | 1.44208 | 10 | 1.566479 | 25 | 1.628755 | 40 | 1.821907 | 50 | 1.833971 | 60 | 1.759484 |
| Nitrobenzene-d5 | 5 | 0.4341532 | 10 | 0.4071029 | 25 | 0.4537429 | 40 | 0.4478169 | 50 | 0.4530958 | 60 | 0.460399 |
| 2-Fluorobiphenyl | 5 | 1.301329 | 10 | 1.344602 | 25 | 1.292503 | 40 | 1.373226 | 50 | 1.32445 | 60 | 1.298866 |
| Terphenyl-d14 | 5 | 0.7793212 | 10 | 0.7925018 | 25 | 0.8280361 | 40 | 0.8361684 | 50 | 0.8554457 | 60 | 0.8425943 |

# INITIAL CALIBRATION DATA (Continued)

*SW8270D*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4091606 Instrument: 5972hp66

Calibration Date: 9/12/2014 2:08:40PM

| Compound | Mean RF | % RSD | Mean RT | RT RSD | Linear r | Quad COD | RSD LIMIT | Q |
|---|---|---|---|---|---|---|---|---|
| 2,6-Dinitrotoluene | 0.3152609 | 9.313405 | 14.2045 | 4.102548E-02 | | | CCC (20) | |
| 2,4-Dinitrotoluene | 0.4350315 | 15.53899 | 15.075 | 3.408698E-02 | | | CCC (20) | |
| Diethylphthalate | 1.675446 | 9.329195 | 15.70033 | 1.630099E-02 | | | CCC (20) | |
| Nitrobenzene-d5 | 0.4427185 | 4.414335 | 8.872833 | 2.532045E-02 | | | CCC (20) | |
| 2-Fluorobiphenyl | 1.322496 | 2.384473 | 13.09567 | 2.668261E-02 | | | CCC (20) | |
| Terphenyl-d14 | 0.8223446 | 3.63626 | 20.18383 | 2.918444E-02 | | | CCC (20) | |

# SECOND-SOURCE CALIBRATION VERIFICATION

*SW8270D*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument: 5972hp66 Calibration: 4091606

Lab File ID: 4I12008-SCV166.d Standard ID: 4D25015

Sequence: 4I12008 Injection Date: 09/12/14

Lab Sample ID: 4I12008-SCV1 InjectionTime: 20:01

| ANALYTE | EXPECTED (ug/mL) | FOUND (ug/mL) | % DRIFT | QC LIMIT |
|---|---|---|---|---|
| 2,6-Dinitrotoluene | 25.00 | 27.26 | 9.0 | 30.00 |
| 2,4-Dinitrotoluene | 25.00 | 28.50 | 14.0 | 30.00 |
| Diethylphthalate | 25.00 | 27.18 | 8.7 | 30.00 |

* Values outside of QC limits

# CONTINUING CALIBRATION CHECK

*SW8270D*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument ID: 5972hp66 Calibration: 4091606

Lab File ID: 4J24010-ICV166.d Calibration Date: 09/12/14 14:08

Sequence: 4J24010 Injection Date: 10/24/14

Lab Sample ID: 4J24010-ICV1 Injection Time: 16:24

| | | CONC. (ug/mL) | | RESPONSE FACTOR | | | % DIFF / DRIFT | |
|---|---|---|---|---|---|---|---|---|
| COMPOUND | TYPE | STD | CCV | ICAL | CCV | MIN (#) | CCV | LIMIT |
| 2,6-Dinitrotoluene | Avg | 25.00 | 27.00 | 0.3152609 | 0.3377344 | 0.2 | 7.1 | 20 |
| 2,4-Dinitrotoluene | Avg | 25.00 | 25.50 | 0.4350315 | 0.4465357 | 0.2 | 2.6 | 20 |
| Diethylphthalate | Avg | 25.00 | 26.00 | 1.675446 | 1.744062 | 0.01 | 4.1 | 20 |
| Nitrobenzene-d5 | Avg | 25.00 | 26.00 | 0.4427185 | 0.4638861 | 0.05 | 4.8 | 20 |
| 2-Fluorobiphenyl | Avg | 25.00 | 25.00 | 1.322496 | 1.331869 | 0.05 | 0.7 | 20 |
| Terphenyl-d14 | Avg | 25.00 | 24.50 | 0.8223446 | 0.8126945 | 0.05 | -1.2 | 20 |

# Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

Data File: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d

Date : 12-SEP-2014 14:08

Client ID: DFTPPCG

Instrument: 5972hp66.i

Sample Info: 4I12008-TUN1:OWS

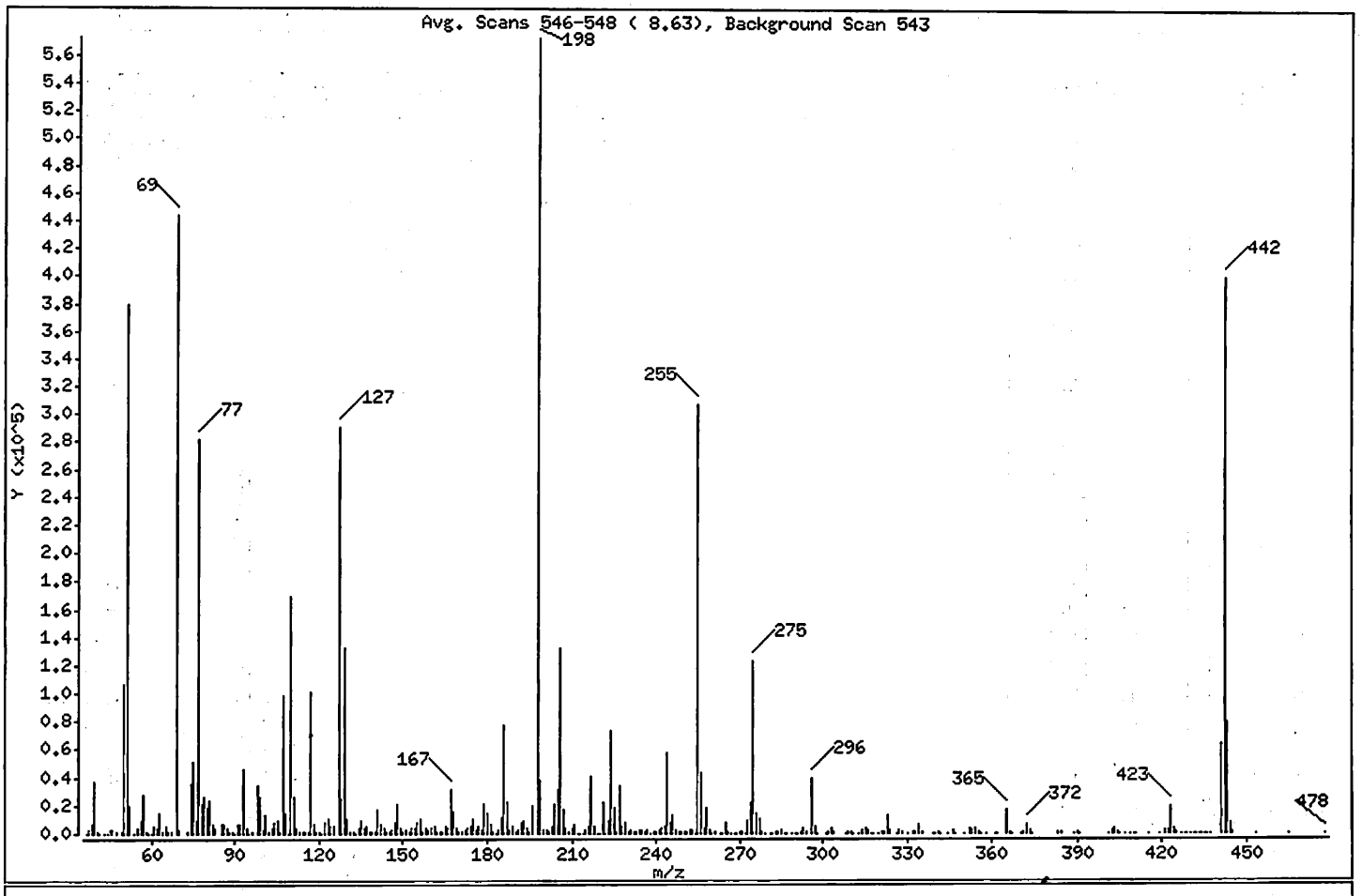
Volume Injected (uL): 2.0

Operator: OWS

Column phase: RTX-5MS

Column diameter: 0.32

1 Decafluorotriphenylphosphine




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 |
| 51 | 10.00 - 80.00% of mass 198 | 66.19 |
| 68 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 69 | Mass 69 relative abundance | 77.51 |
| 70 | Less than 2.00% of mass 69 | 0.39 ( 0.50) |
| 127 | 10.00 - 80.00% of mass 198 | 50.72 |
| 197 | Less than 2.00% of mass 198 | 0.00 |
| 199 | 5.00 - 9.00% of mass 198 | 6.64 |
| 275 | 10.00 - 60.00% of mass 198 | 21.63 |
| 365 | Greater than 1.00% of mass 198 | 2.88 |
| 441 | Present, but less than mass 443 | 11.28 |
| 442 | 50.00 - 100.00% of mass 198 | 70.08 |
| 443 | 15.00 - 24.00% of mass 442 | 13.94 ( 19.89) |

Rakdw Ham 9/16/2014

DFTPP TUNE/TAILING FACTOR/DEGRADATION SUMMARY RESULTS

DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 66.19 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 77.51 | | PASS |
| 70 | Less than 2% of mass 69 | 0.39 | ( 0.50) | PASS |
| 127 | 10 - 80% of mass 198 | 50.72 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.64 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.63 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.88 | | PASS |
| 441 | Present, but less than mass 443 | 11.28 | ( 80.89) | PASS |
| 442 | 50 - 100% of mass 198 | 70.08 | | PASS |
| 443 | 15 - 24% of mass 442 | 13.94 | ( 19.89) | PASS |

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 1.48 | 2.0 | PASS |
| Benzidine | 1.09 | 2.0 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 2170978 | | | N/A |
| 4,4-DDE | 1046 | 0.0 | 20.0 | PASS |
| 4,4-DDD | 3939 | 0.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 4985 | 0.2 | 20.0 | PASS |

Tuning Sample, /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN166.d,

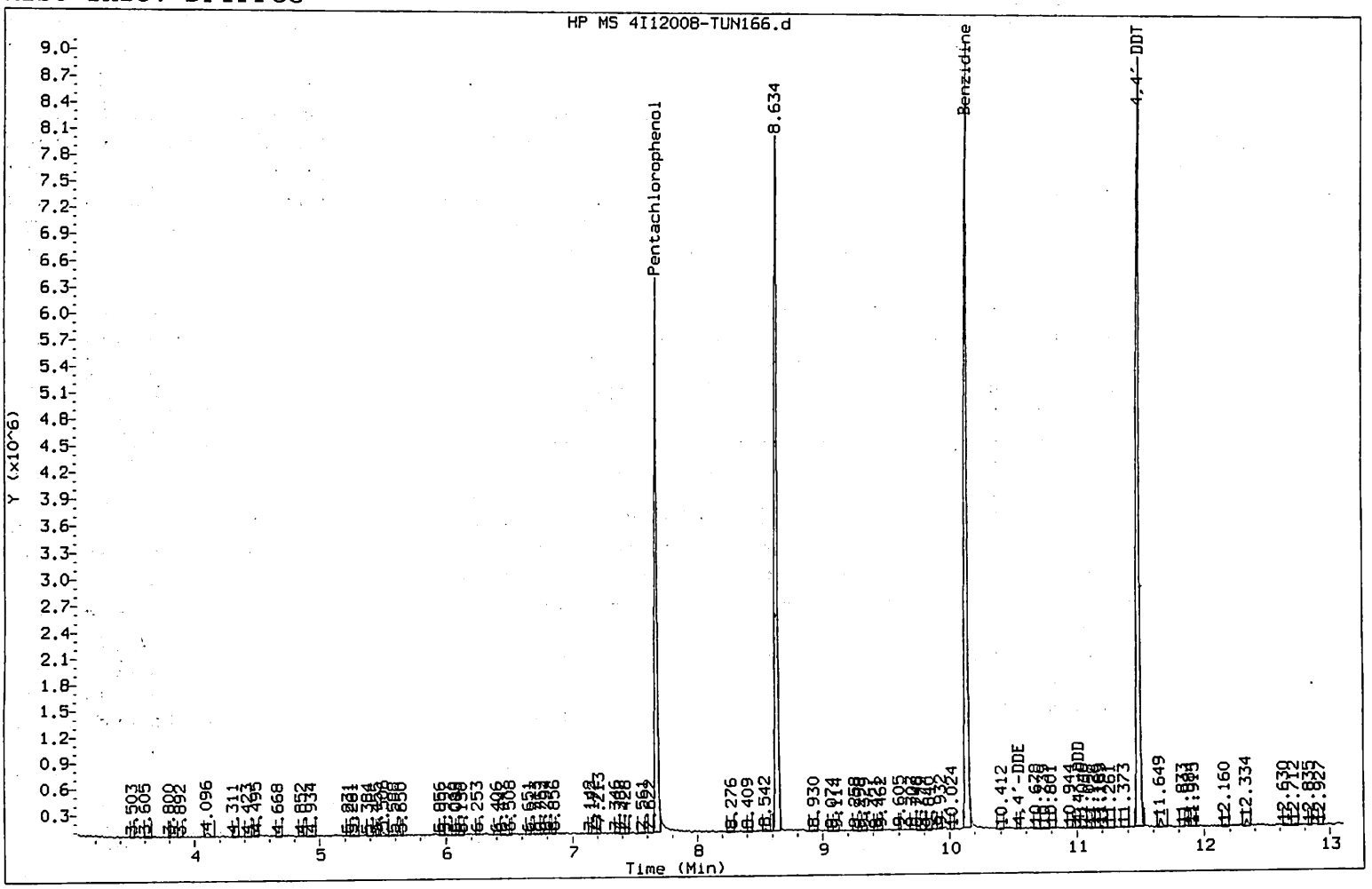


Robin Hamm 9/16/2014

DFTPP TUNE/TAILING FACTOR/DEGRADATION SAMPLE AND GRAPHIC REPORT

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m Inst: 5972hp66
Injection Date: 12-SEP-2014 14:08 Operator: OWS
Sample Info: 4I12008-TUN1 4I12008-TUN1:OWS
Misc Info: DFTPPCG

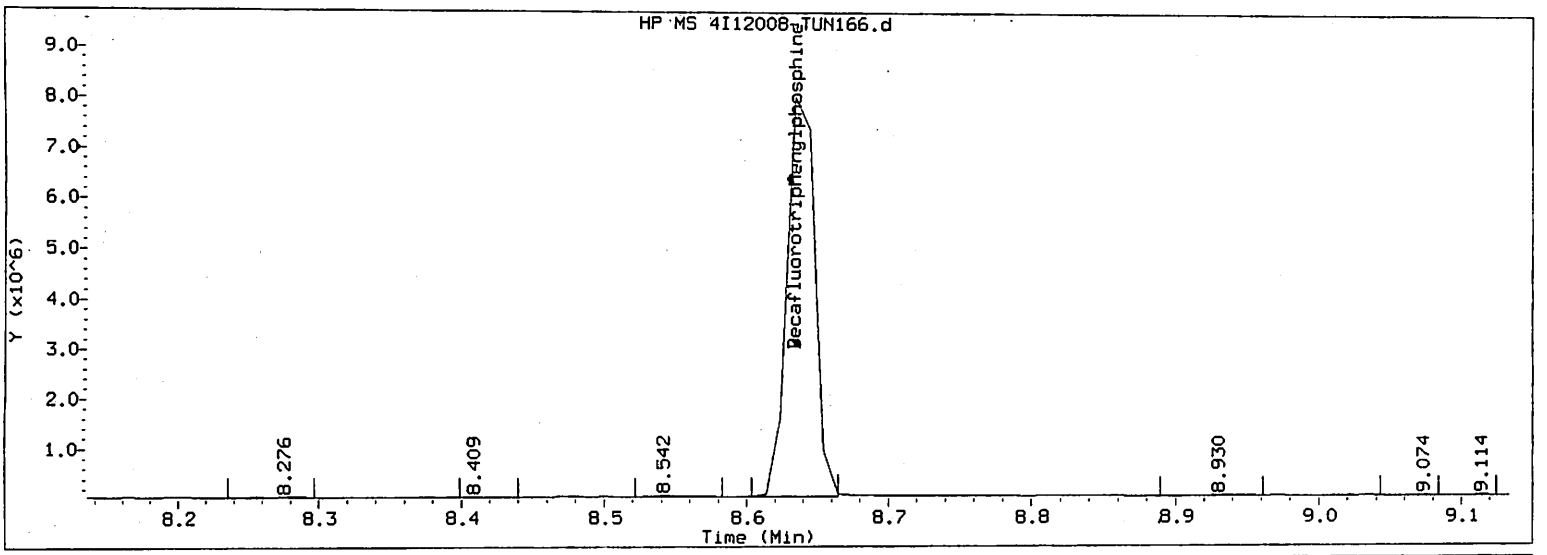


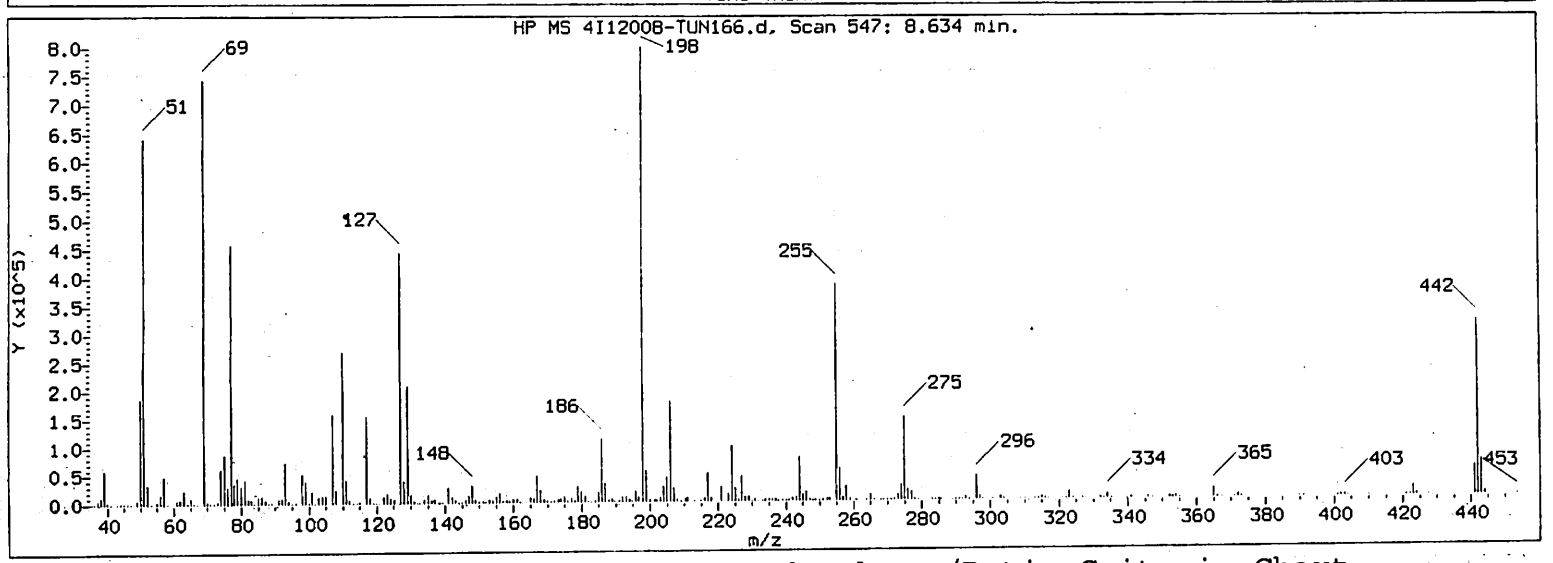



9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m Inst: 5972hp66
Injection Date: 12-SEP-2014 14:08 Operator: OWS
Sample Info: 4I12008-TUN1 4I12008-TUN1:OWS
Misc Info: DFTPPCG




DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

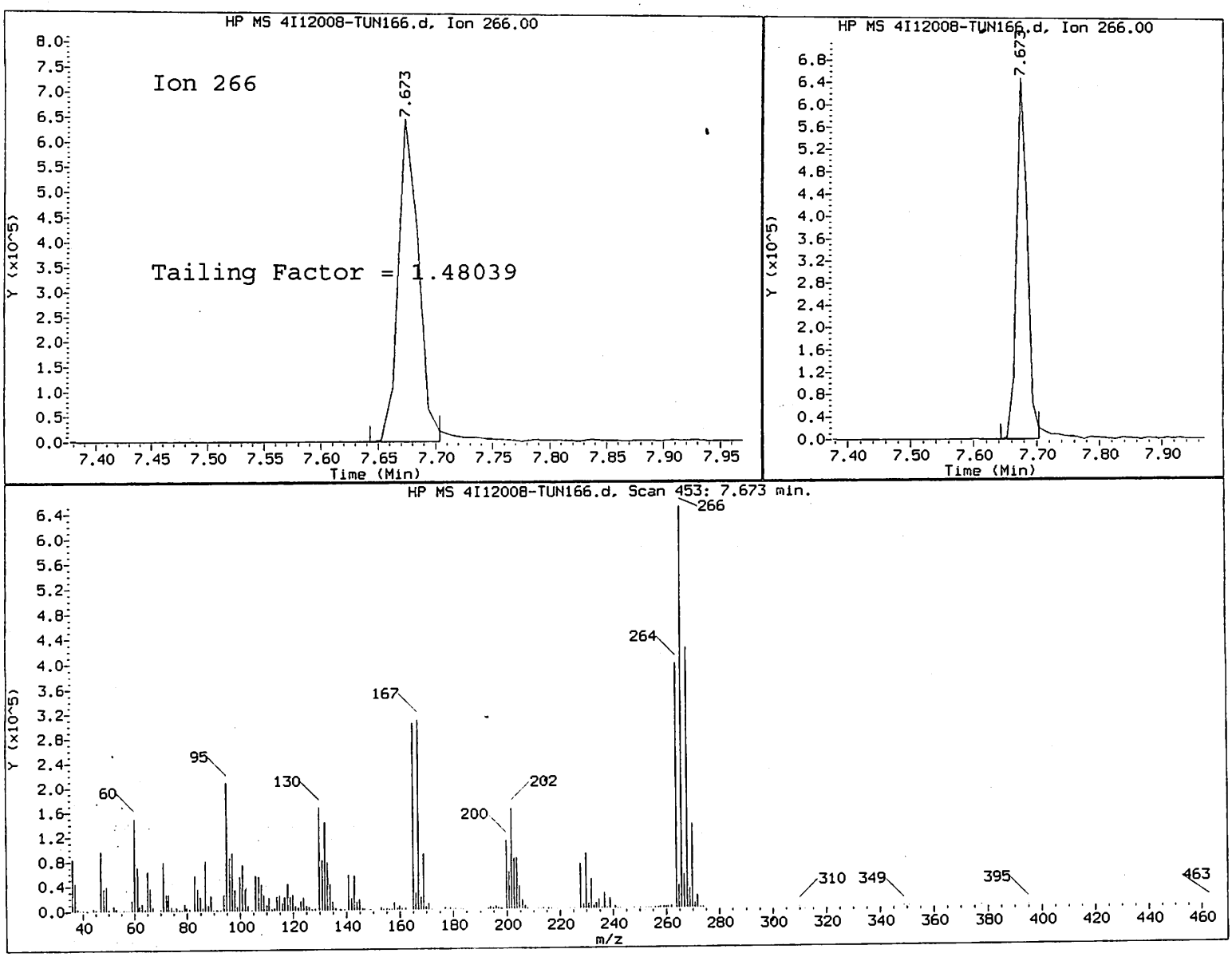
| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 66.19 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 77.51 | | PASS |
| 70 | Less than 2% of mass 69 | 0.39 | ( 0.50) | PASS |
| 127 | 10 - 80% of mass 198 | 50.72 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.64 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.63 | | PASS |
| 365 | Greater than 1% of mass 198 | 2.88 | | PASS |
| 441 | Present, but less than mass 443 | 11.28 | ( 80.89) | PASS |
| 442 | 50 - 100% of mass 198 | 70.08 | | PASS |
| 443 | 15 - 24% of mass 442 | 13.94 | ( 19.89) | PASS |



Robert Hamm 9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:




Pentachlorophenol
==========

| | |
|---|---|
| Exp. RT = | 7.890 |
| Found RT = | 7.673 |

| Mass | Area | Ratio |
|---|---|---|
| 266 | 789187 | 100.00 |

Tailing factor for Pentachlorophenol OK

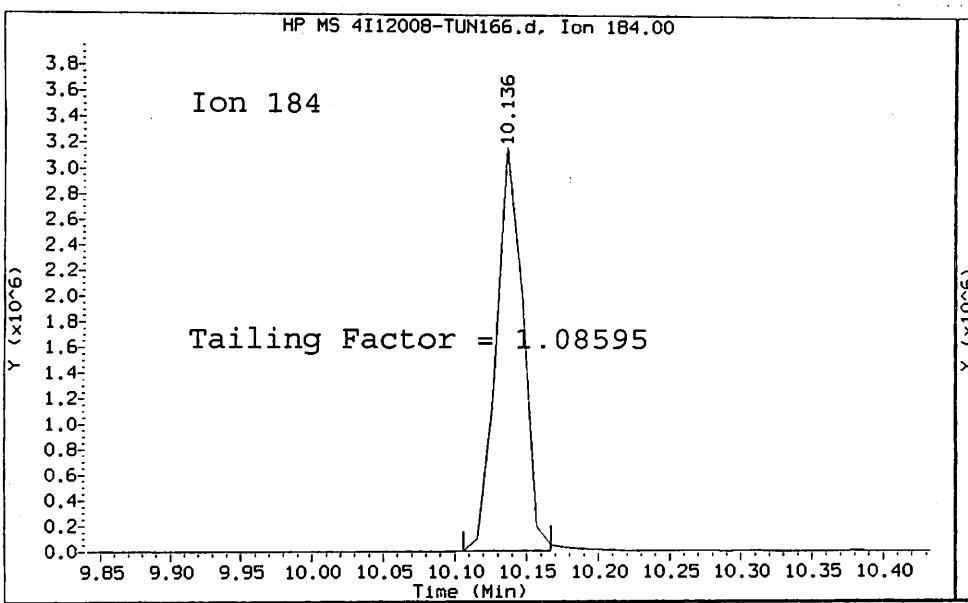
Tail Factor = 1.480 Maximum Allowed = 2.0

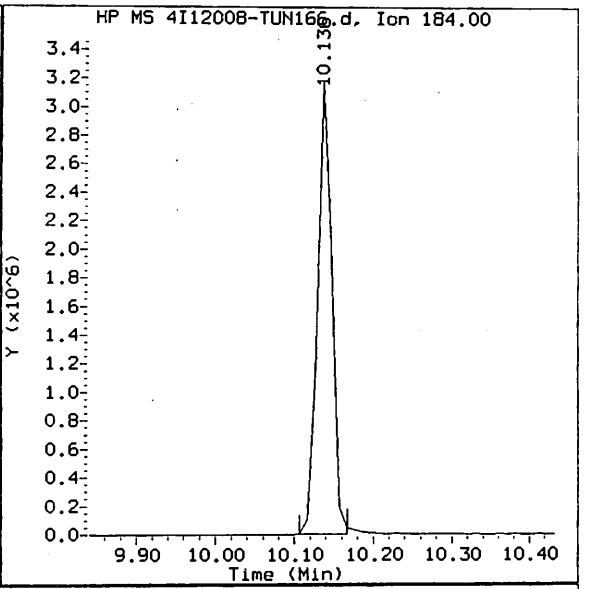


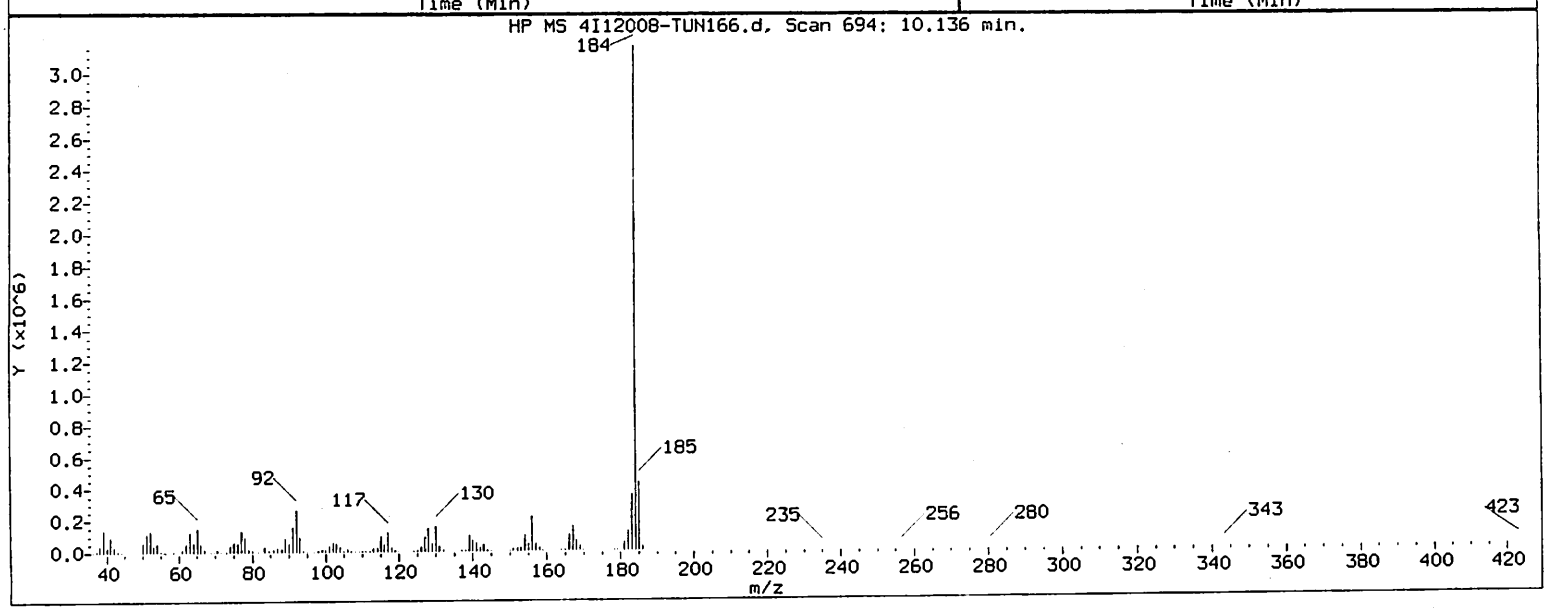
Robin Hamm 9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:




Benzidine
=========
Exp. RT = 10.340
Found RT = 10.136

| Mass | Area | Ratio |
|---|---|---|
| 184 | 4083715 | 100.00 |

Tailing factor for Benzidine OK

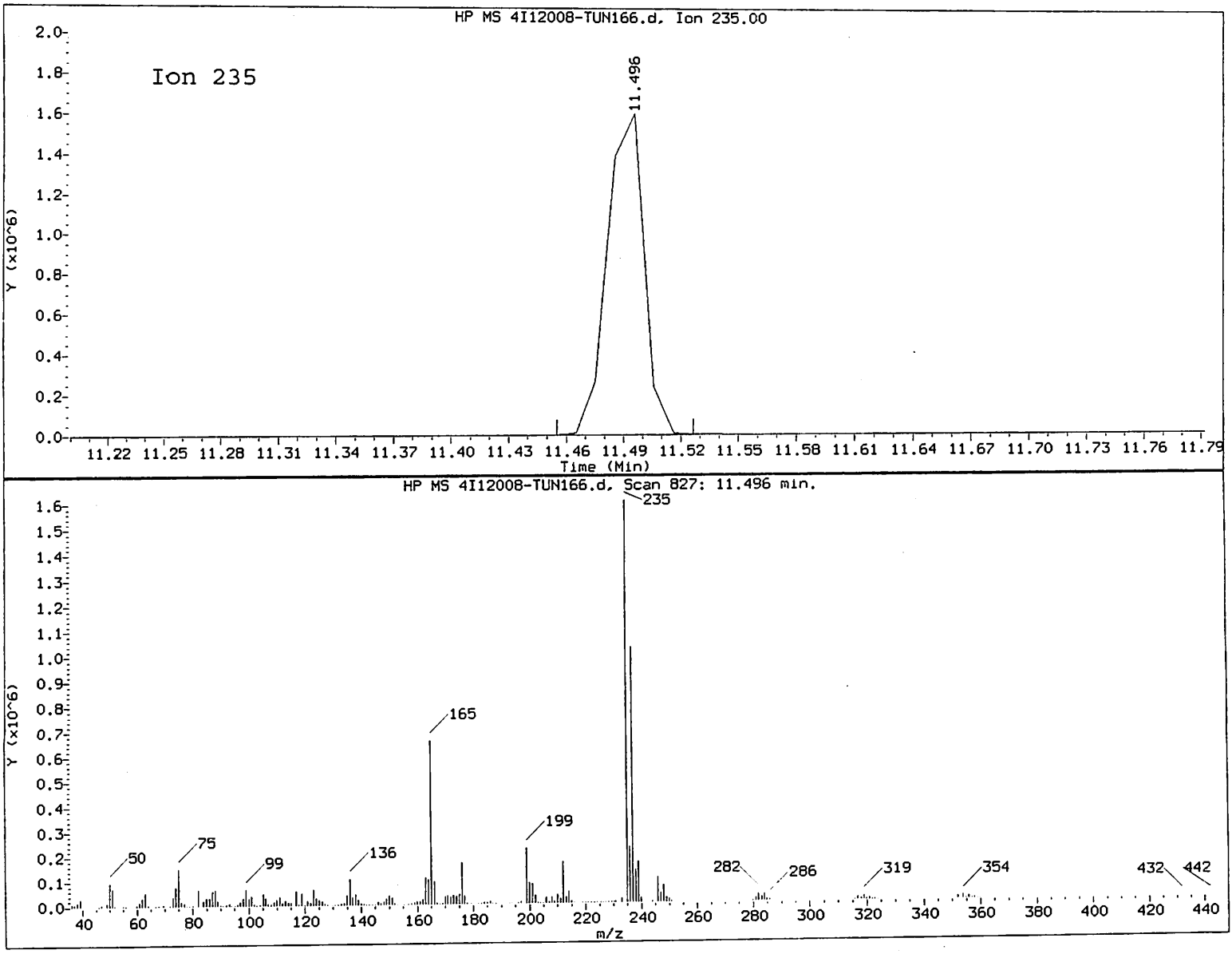
Tail Factor = 1.086 Maximum Allowed = 2.0



9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:




4,4'-DDT
========
Exp. RT = 11.690
Found RT = 11.496

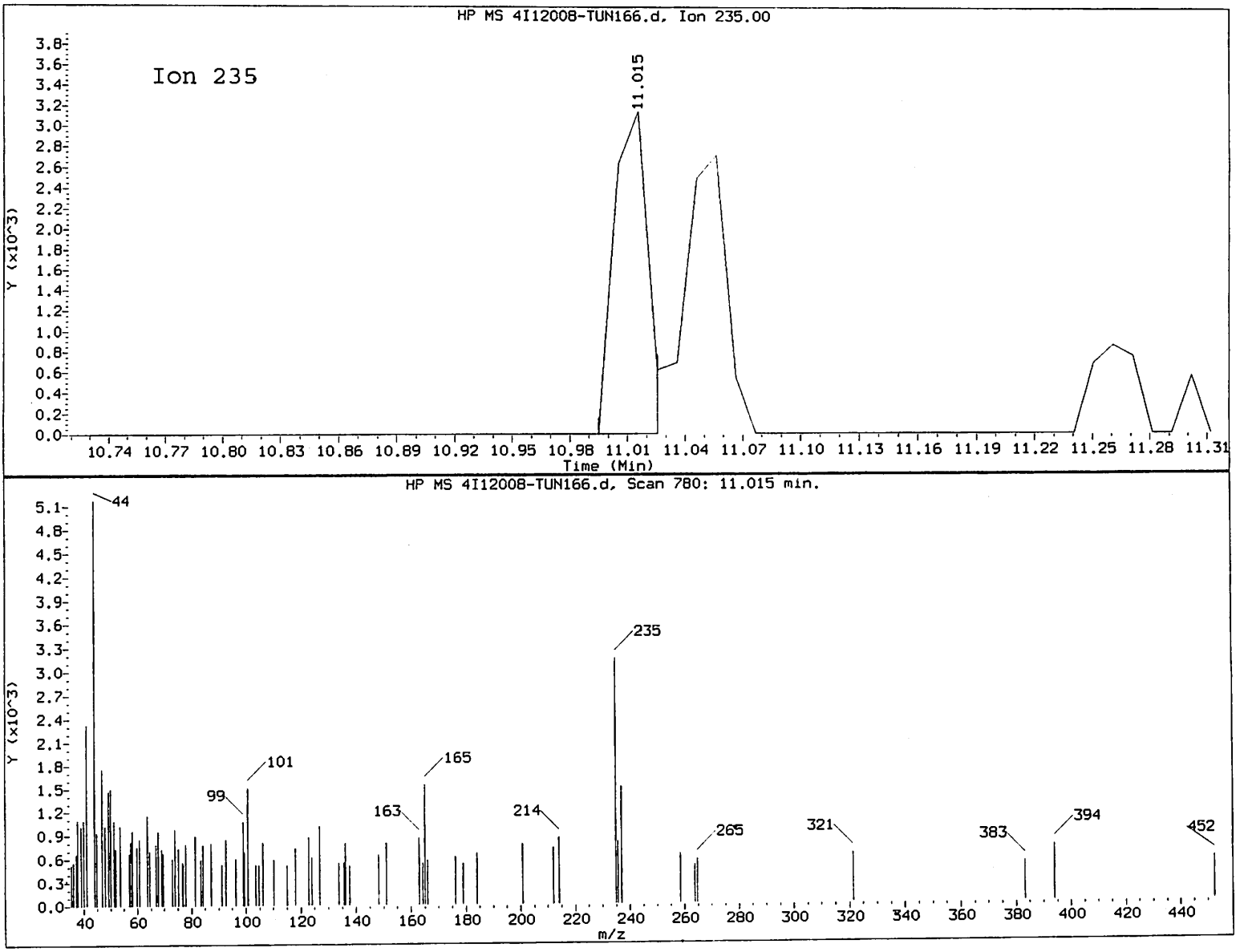
| Mass | Area | Ratio |
|---|---|---|
| 235 | 2170978 | 100.00 |



9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:



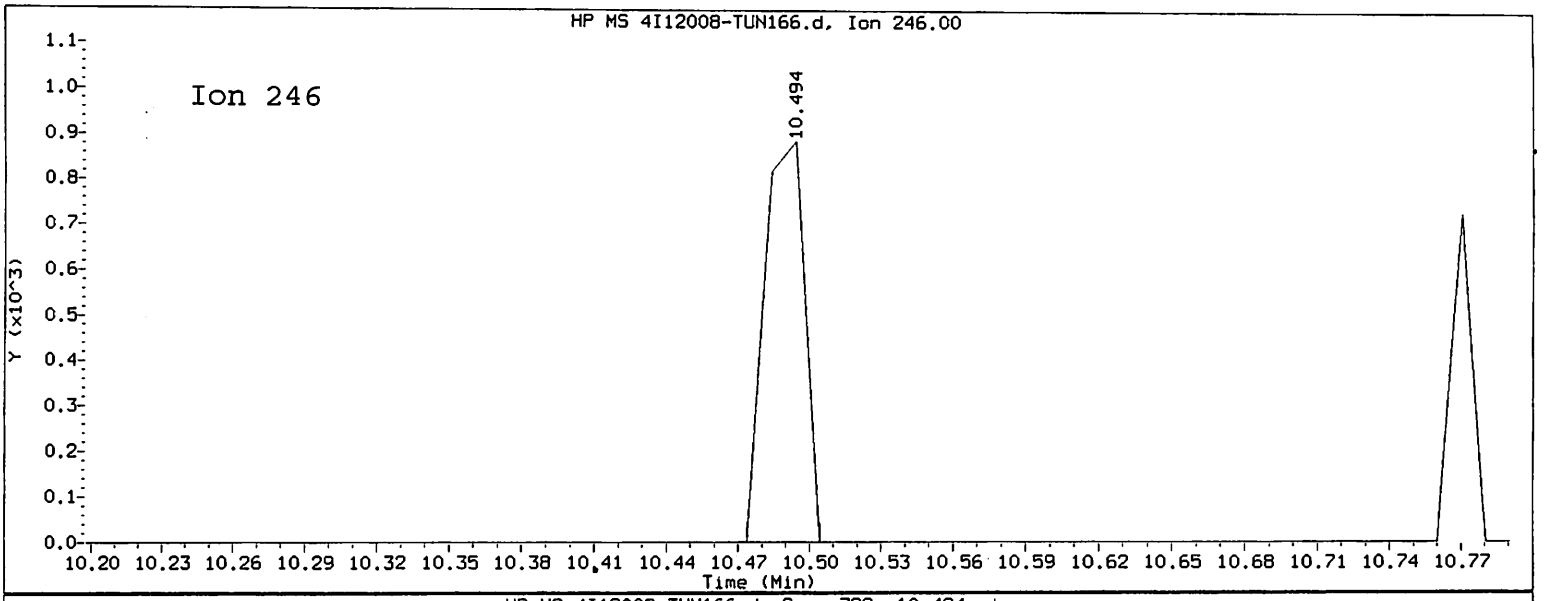

4,4'-DDD
========
Exp. RT = 11.250
Found RT = 11.015

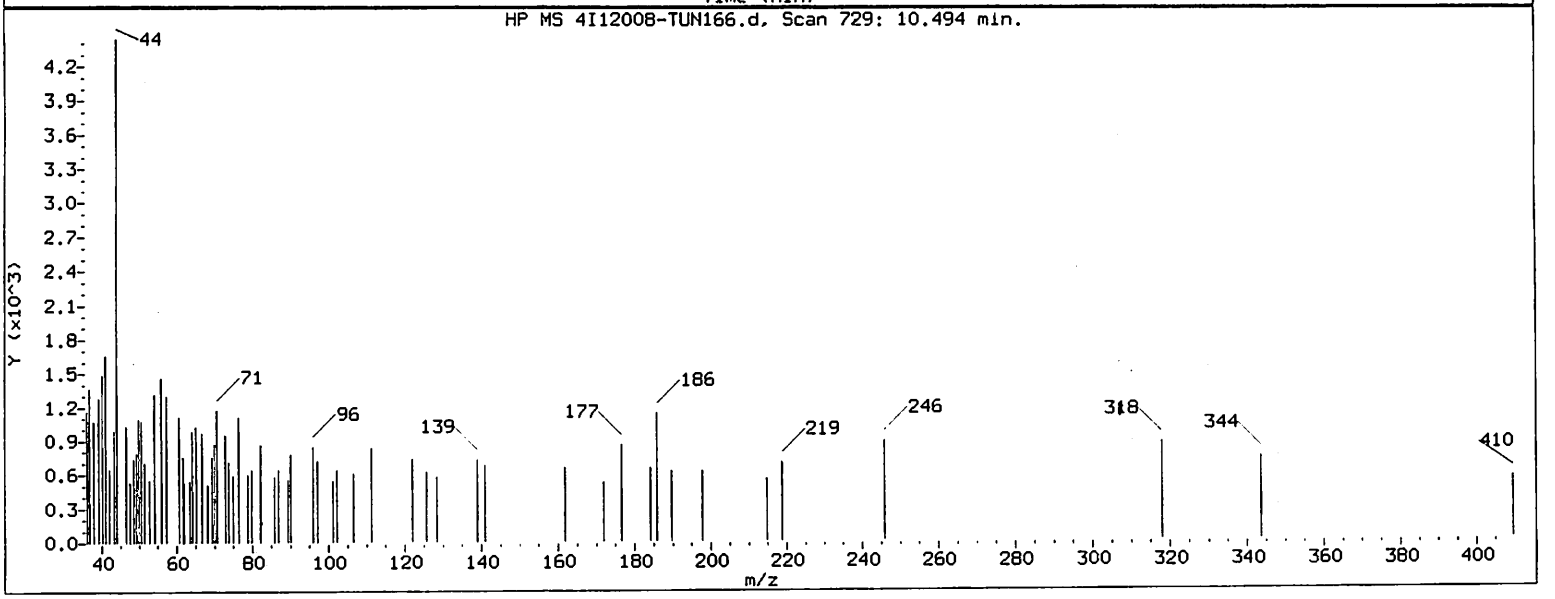
| Mass | Area | Ratio |
|---|---|---|
| 235 | 3939 | 100.00 |

9/16/2014

Report Date: 09/15/2014 13:14

Datafile Analyzed: /chem/5972hp66.i/D4I12008A66.b/4I12008-TUN166.d/4I12008-TUN16
Method Used: /chem/5972hp66.i/D4I12008A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 12-SEP-2014 14:08 Operator:
Sample Info: DFTPP 4I12008-TUN1:OWS
Misc Info:

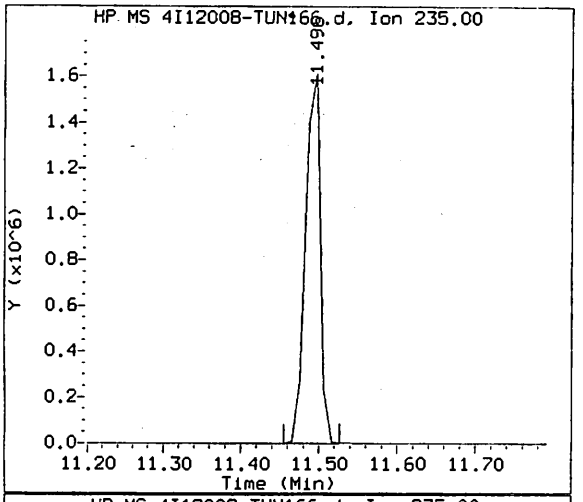


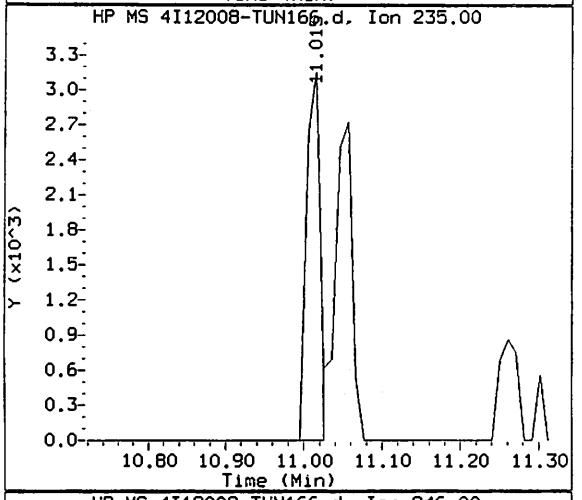

4,4'-DDE
========
Exp. RT = 10.800
Found RT = 10.494

| Mass | Area | Ratio |
|---|---|---|
| 246 | 1046 | 100.00 |

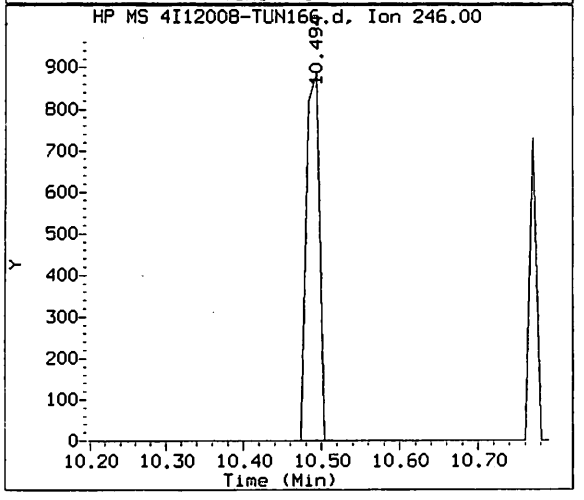
Rakdw Ham 9/16/2014




Compound: 4,4'-DDT
Quant Mass: 235
RT: 11.496
Area: 2170978




Compound: 4,4'-DDD
Quant Mass: 235
RT: 11.015
Area: 3939




Compound: 4,4'-DDE
Quant Mass: 246
RT: 10.494
Area: 1046

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 2170978 | | | N/A |
| 4,4-DDE | 1046 | 0.0 | 20.0 | PASS |
| 4,4-DDD | 3939 | 0.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 4985 | 0.2 | 20.0 | PASS |

**********

TUNE SAMPLE *** PASSED *** DDT BREAKDOWN TEST

**********

Rakdw Ham 9/16/2014

Data File: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d

Date : 24-OCT-2014 16:02

Client ID: DFTPPCJ

Instrument: 5972hp66.i

Sample Info: 4J24010-TUN1:OWS

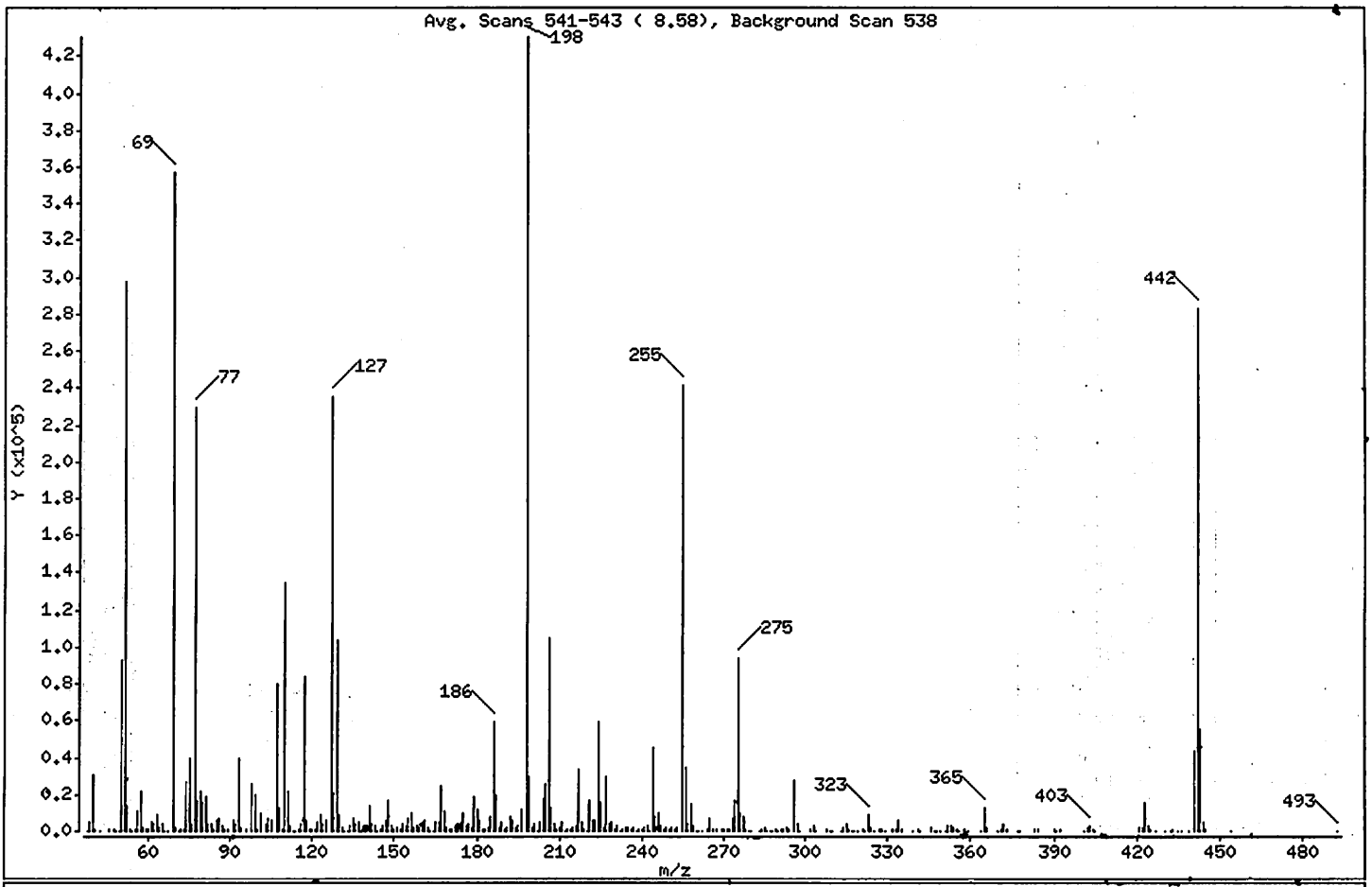
Volume Injected (uL): 2.0

Operator: OWS

Column phase: RTX-5MS

Column diameter: 0.32

1 Decafluorotriphenylphosphine




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 |
| 51 | 10.00 - 80.00% of mass 198 | 69.31 |
| 68 | Less than 2.00% of mass 69 | 0.00 ( 0.00) |
| 69 | Mass 69 relative abundance | 83.05 |
| 70 | Less than 2.00% of mass 69 | 0.53 ( 0.64) |
| 127 | 10.00 - 80.00% of mass 198 | 54.70 |
| 197 | Less than 2.00% of mass 198 | 0.00 |
| 199 | 5.00 - 9.00% of mass 198 | 6.86 |
| 275 | 10.00 - 60.00% of mass 198 | 21.73 |
| 365 | Greater than 1.00% of mass 198 | 3.06 |
| 441 | Present, but less than mass 443 | 10.18 |
| 442 | 50.00 - 100.00% of mass 198 | 65.66 |
| 443 | 15.00 - 24.00% of mass 442 | 12.80 ( 19.50) |

DFTPP TUNE/TAILING FACTOR/DEGRADATION SUMMARY RESULTS

DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 69.31 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 83.05 | | PASS |
| 70 | Less than 2% of mass 69 | 0.53 | ( 0.64) | PASS |
| 127 | 10 - 80% of mass 198 | 54.70 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.86 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.73 | | PASS |
| 365 | Greater than 1% of mass 198 | 3.06 | | PASS |
| 441 | Present, but less than mass 443 | 10.18 | ( 79.53) | PASS |
| 442 | 50 - 100% of mass 198 | 65.66 | | PASS |
| 443 | 15 - 24% of mass 442 | 12.80 | ( 19.50) | PASS |

TAILING ANALYSIS SUMMARY

| Compound | Tail Factor | Max Allowed | Test |
|---|---|---|---|
| Pentachlorophenol | 1.85 | 2.0 | PASS |
| Benzidine | 0.91 | 2.0 | PASS |

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

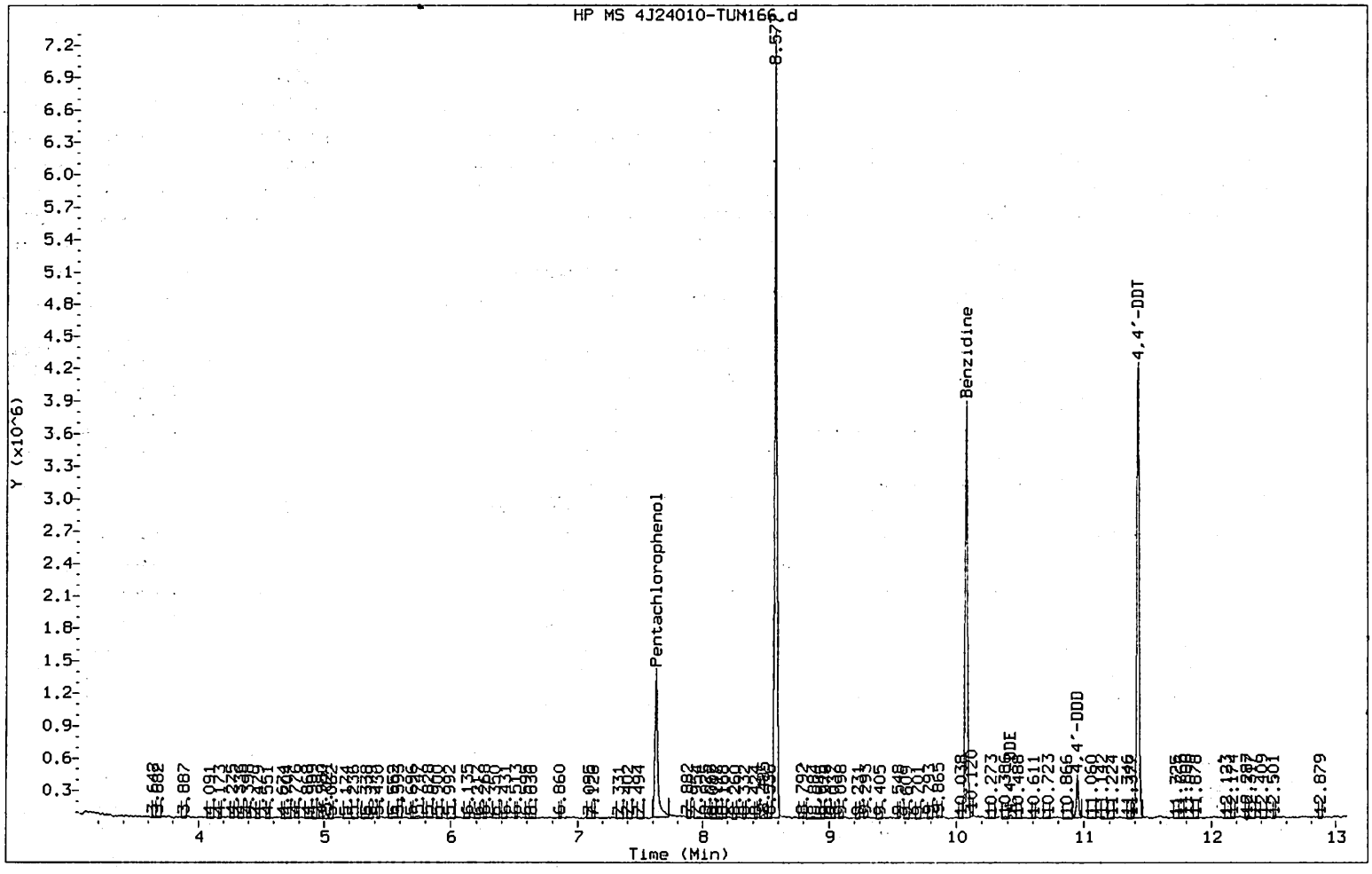
| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 996500 | | | N/A |
| 4,4-DDE | 4599 | 0.5 | 20.0 | PASS |
| 4,4-DDD | 77291 | 7.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 81890 | 7.6 | 20.0 | PASS |

Tuning Sample, /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN166.d,

DFTPP TUNE/TAILING FACTOR/DEGRADATION SAMPLE AND GRAPHIC REPORT

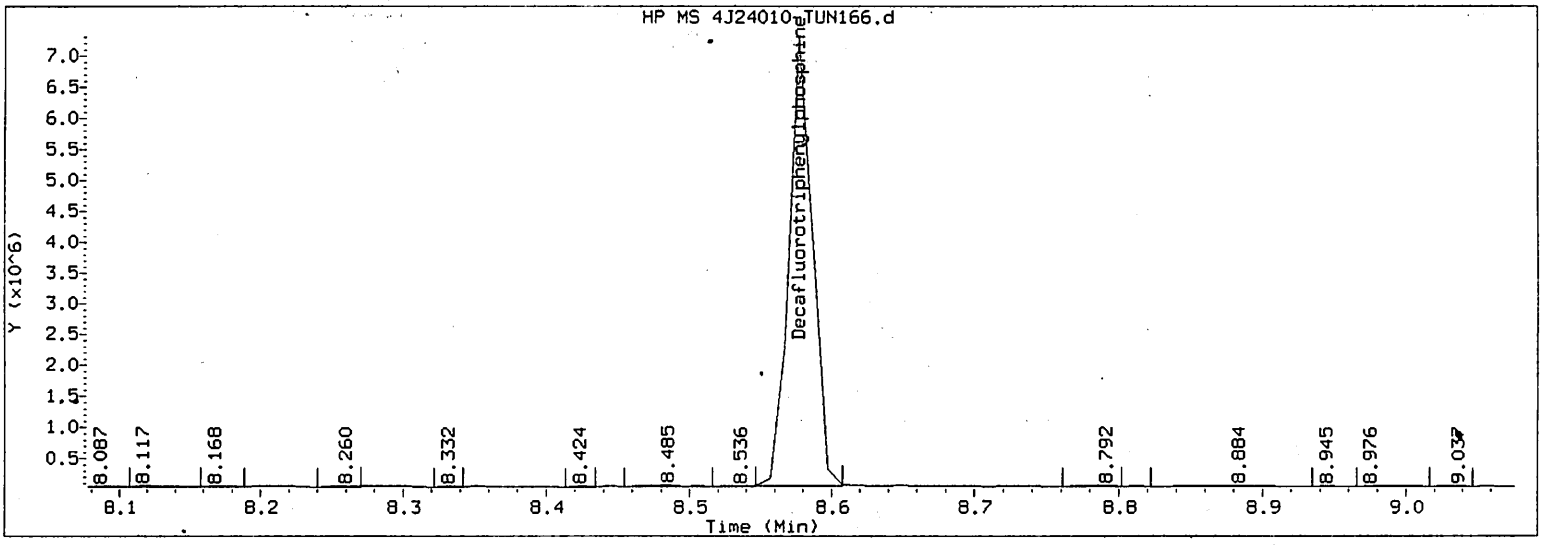
Report Date: 10/24/2014 18:53

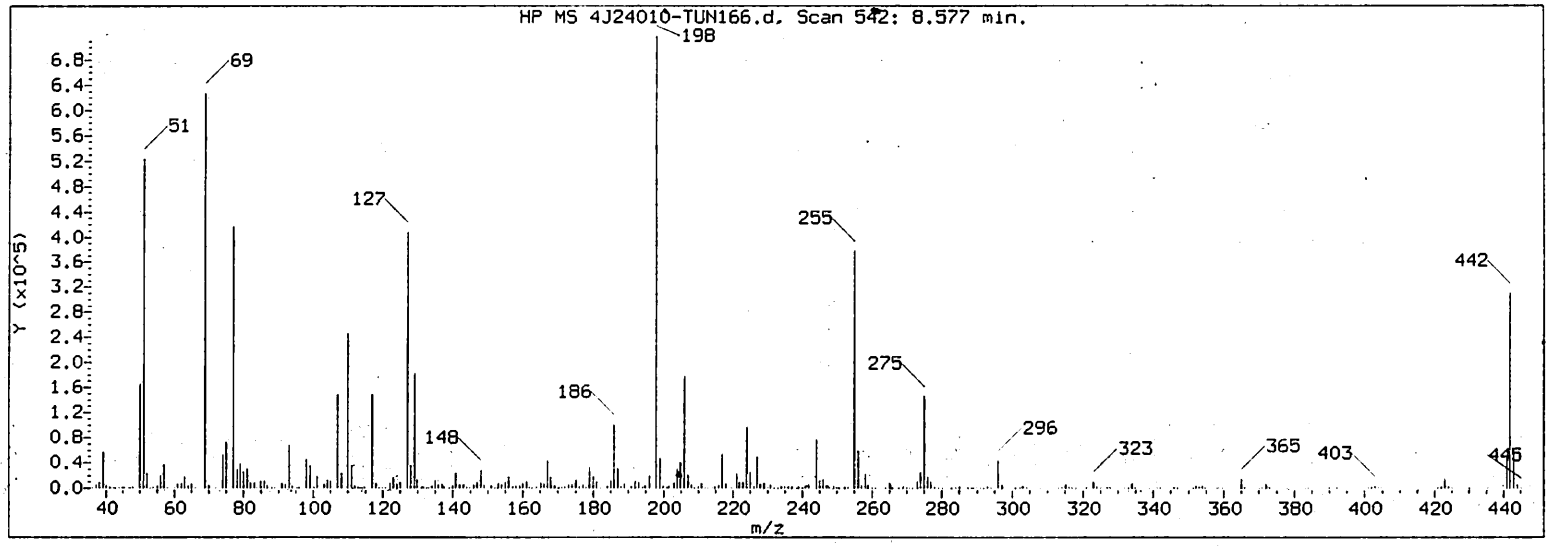
Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m Inst: 5972hp66
Injection Date: 24-OCT-2014 16:02 Operator: OWS
Sample Info: 4J24010-TUN1 4J24010-TUN1:OWS
Misc Info: DFTPPCJ



Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m  Inst: 5972hp66
Injection Date: 24-OCT-2014 16:02  Operator: OWS
Sample Info: 4J24010-TUN1  4J24010-TUN1:OWS
Misc Info: DFTPPCJ



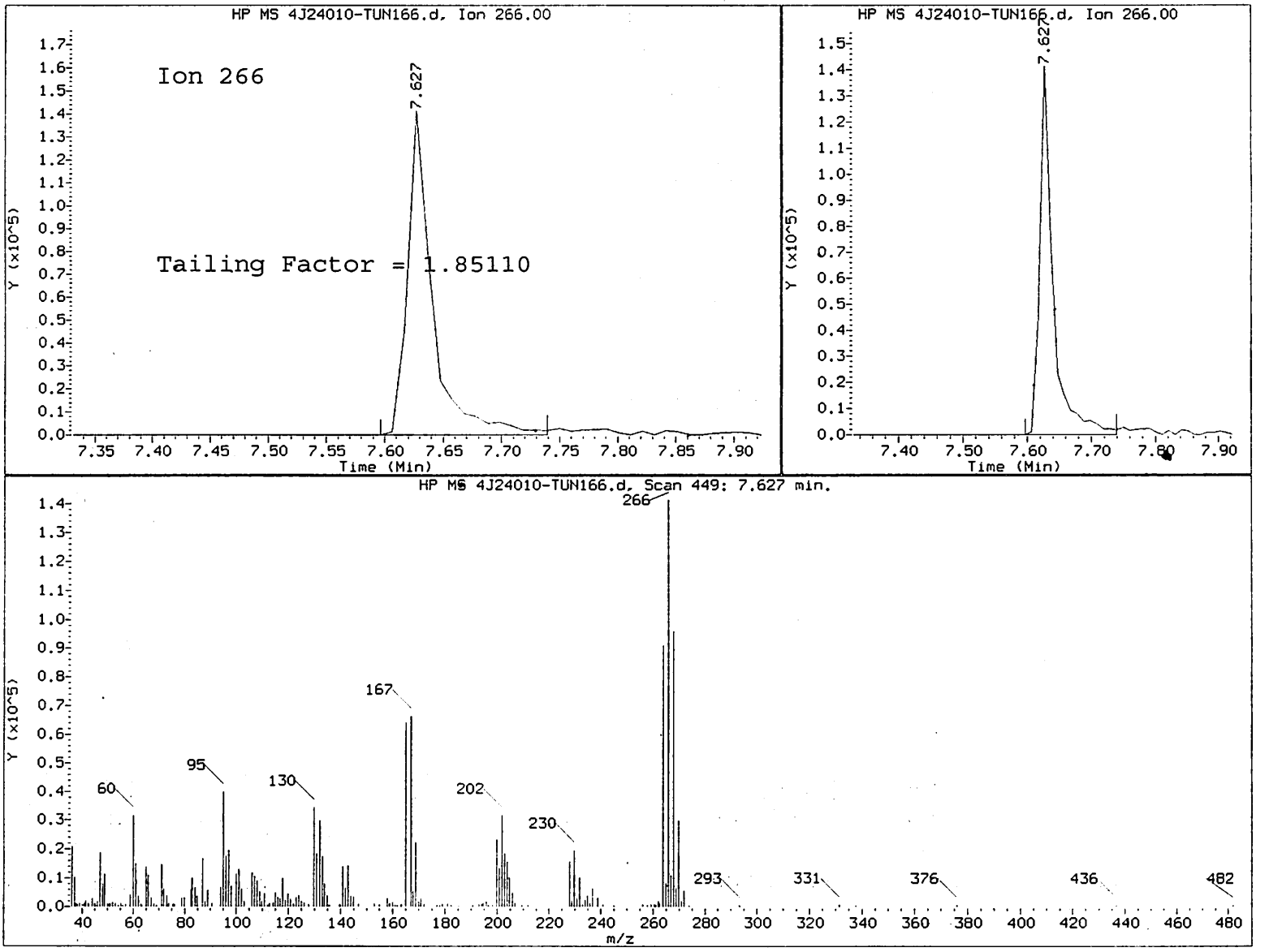




DECAFLUOROTRIPHENYLPHOSPHINE Ion Abundance/Ratio Criteria Chart

| Ion | Abundance Criteria | Base Peak | Other | Test |
|---|---|---|---|---|
| 198 | Base Peak, 100% relative abundance | 100.00 | | PASS |
| 51 | 10 - 80% of mass 198 | 69.31 | | PASS |
| 68 | Less than 2% of mass 69 | 0.00 | ( 0.00) | PASS |
| 69 | Mass 69 relative abundance | 83.05 | | PASS |
| 70 | Less than 2% of mass 69 | 0.53 | ( 0.64) | PASS |
| 127 | 10 - 80% of mass 198 | 54.70 | | PASS |
| 197 | Less than 2% of mass 198 | 0.00 | ( 0.00) | PASS |
| 199 | 5 - 9% of mass 198 | 6.86 | | PASS |
| 275 | 10 - 60% of mass 198 | 21.73 | | PASS |
| 365 | Greater than 1% of mass 198 | 3.06 | | PASS |
| 441 | Present, but less than mass 443 | 10.18 | ( 79.53) | PASS |
| 442 | 50 - 100% of mass 198 | 65.66 | | PASS |
| 443 | 15 - 24% of mass 442 | 12.80 | ( 19.50) | PASS |

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:




Pentachlorophenol
==========

| | |
|---|---|
| Exp. RT = | 7.890 |
| Found RT = | 7.627 |

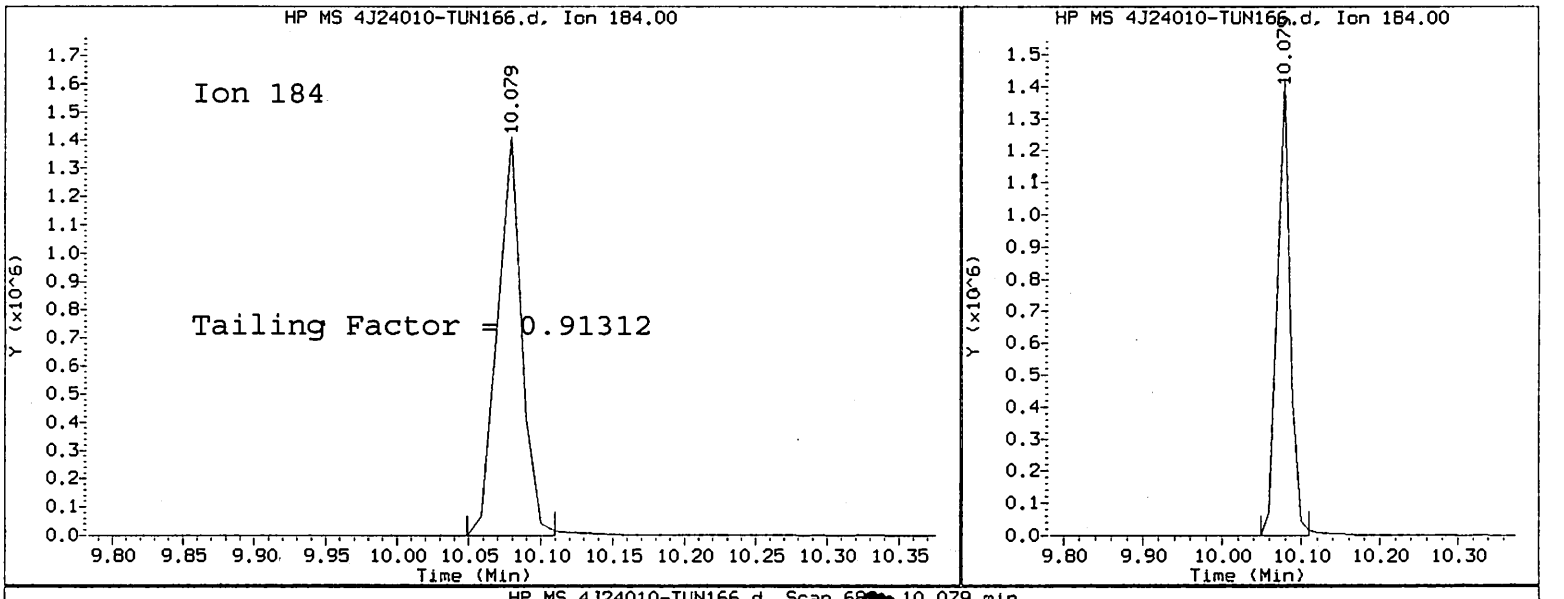
| Mass | Area | Ratio |
|---|---|---|
| 266 | 208473 | 100.00 |

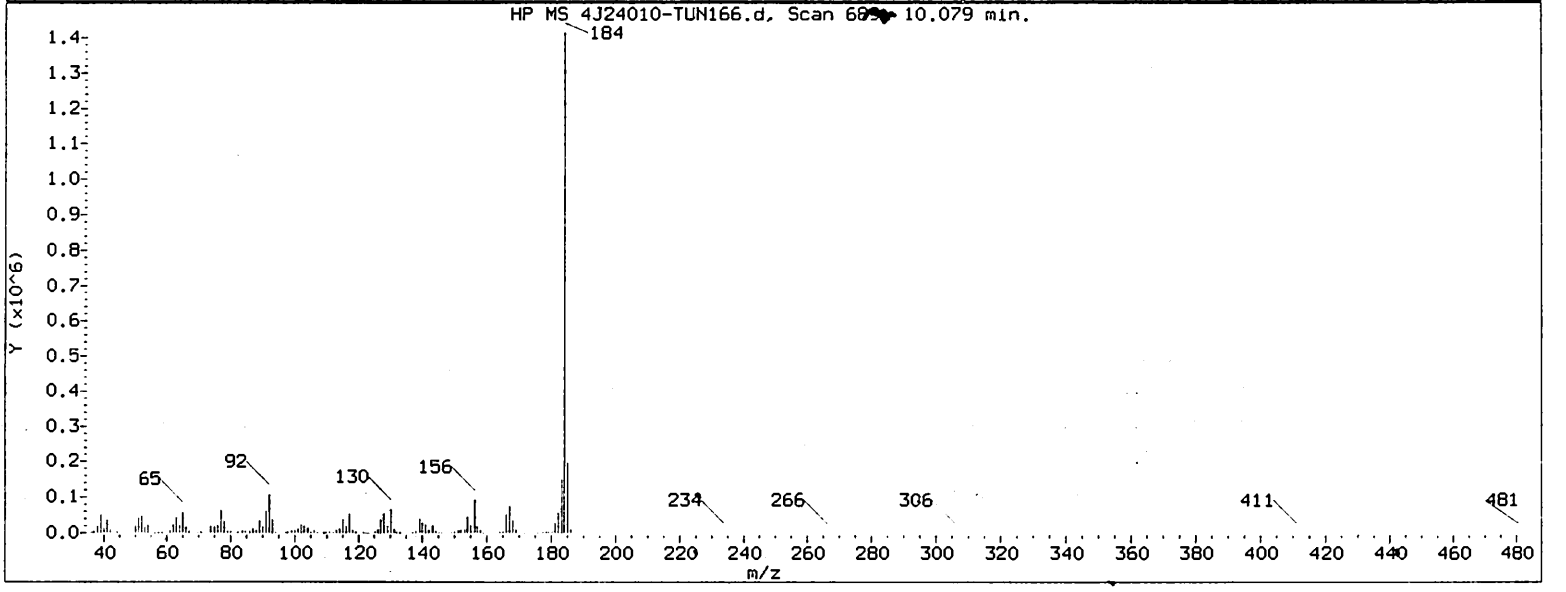
Tailing factor for Pentachlorophenol OK

Tail Factor = 1.851 Maximum Allowed = 2.0

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:




Benzidine
=========
Exp. RT = 10.340
Found RT = 10.079

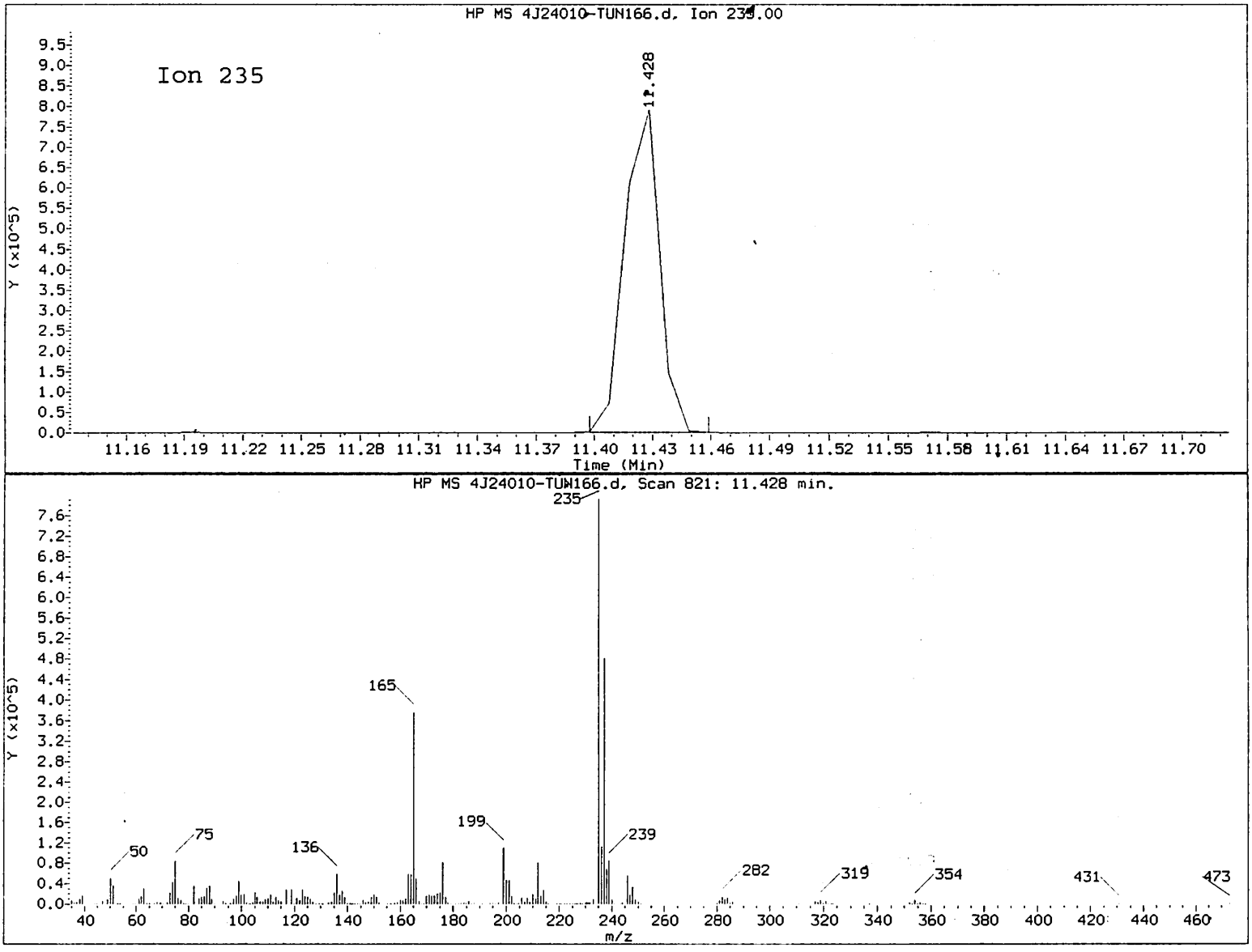
| Mass | Area | Ratio |
|---|---|---|
| 184 | 1644237 | 100.00 |

Tailing factor for Benzidine OK

Tail Factor = 0.913 Maximum Allowed = 2.0

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:

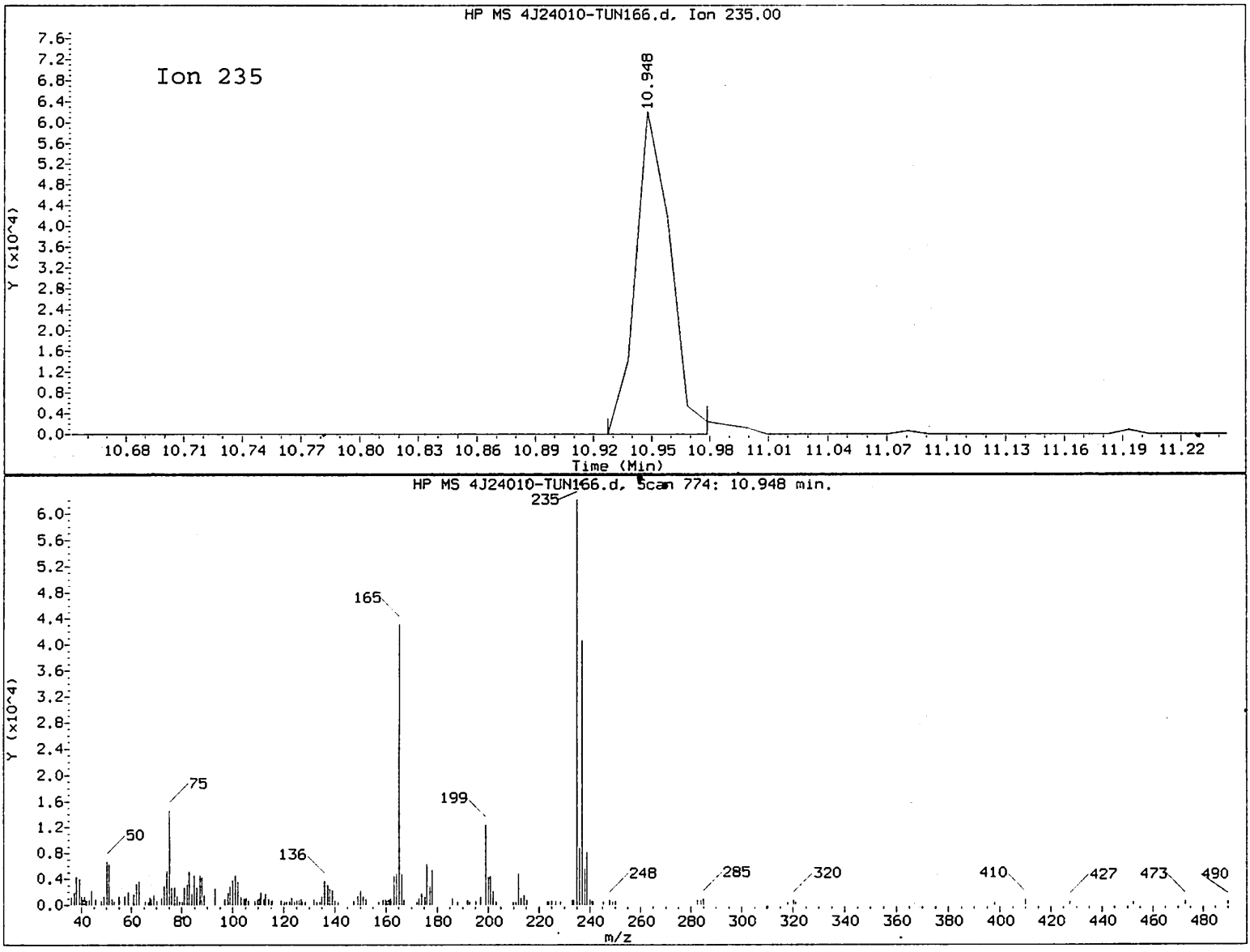



4,4'-DDT
========
Exp. RT = 11.690
Found RT = 11.428

| Mass | Area | Ratio |
|---|---|---|
| 235 | 996500 | 100.00 |

Report Date: 10/24/2014 18:53

Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS .
Misc Info:

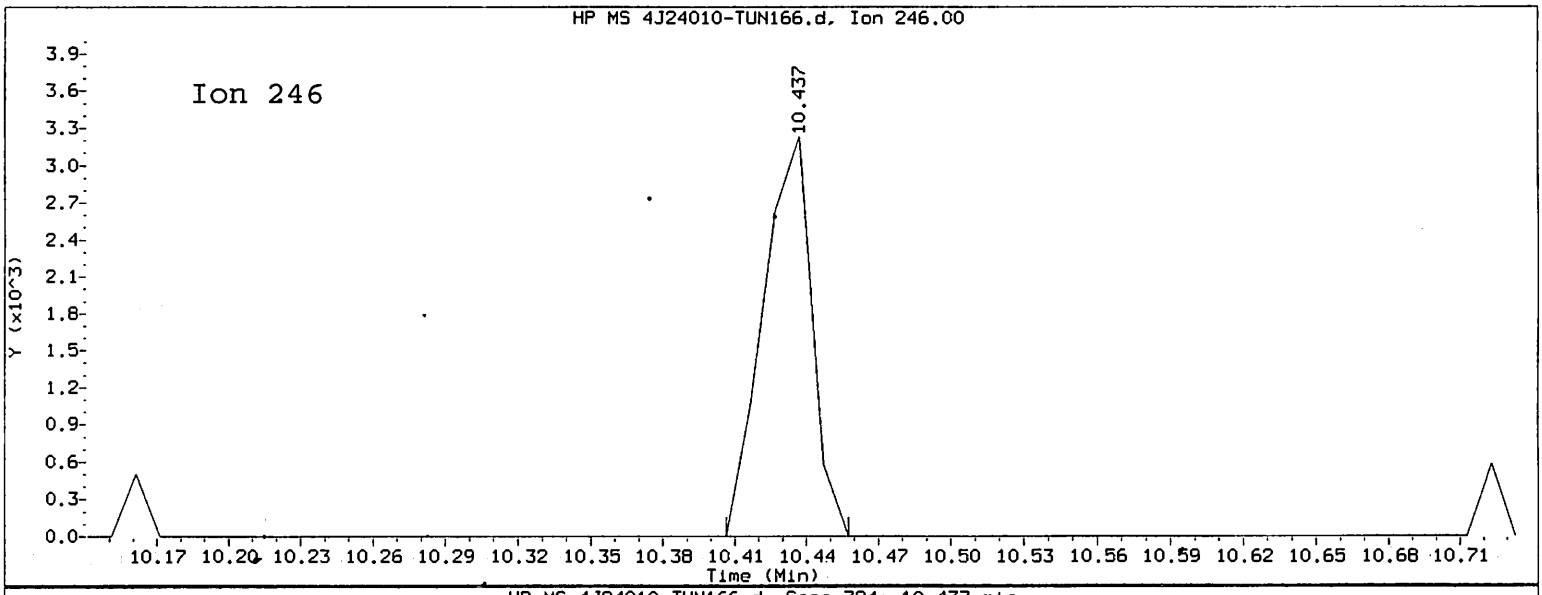


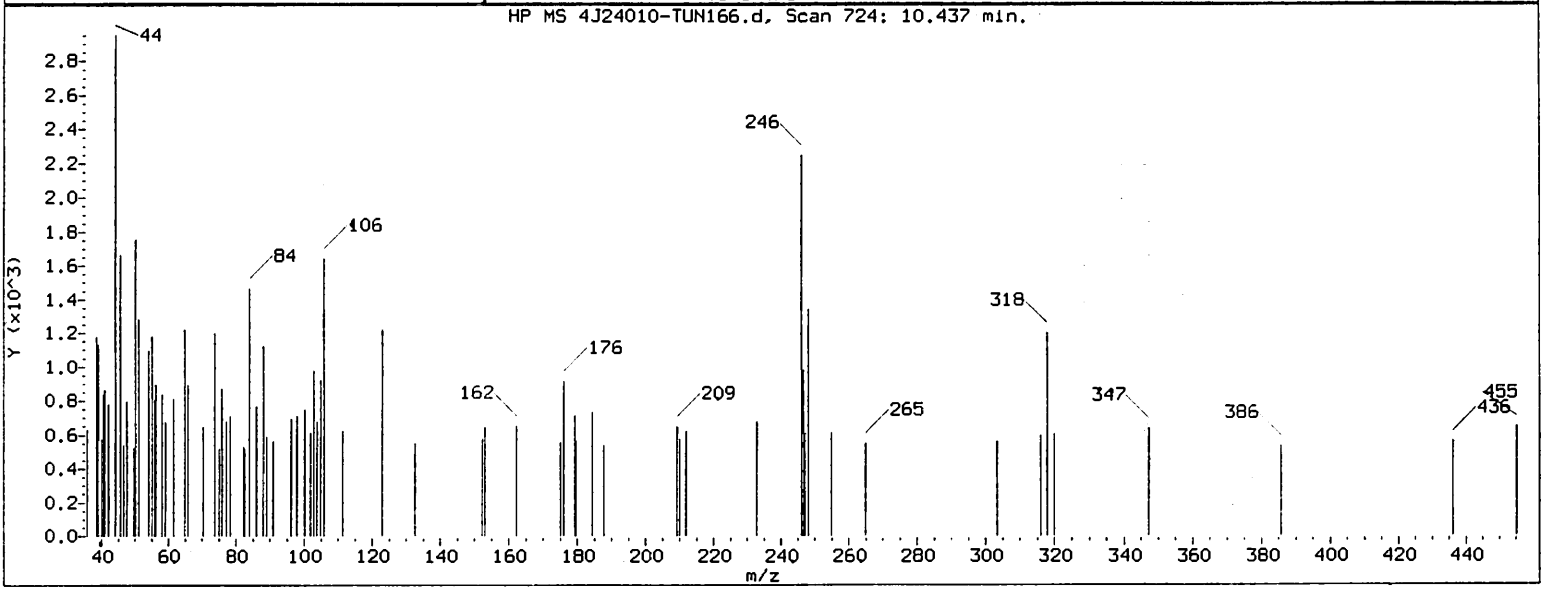

4,4'-DDD
========
Exp. RT = 11.250
Found RT = 10.948

| Mass | Area | Ratio |
|---|---|---|
| 235 | 77291 | 100.00 |

Report Date: 10/24/2014 18:53

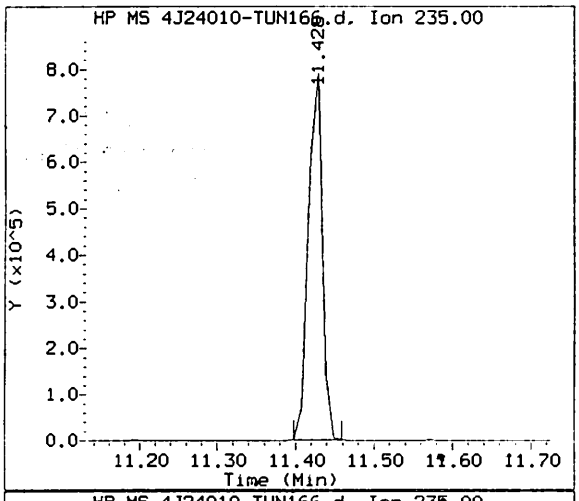
Datafile Analyzed: /chem/5972hp66.i/D4J24010A66.b/4J24010-TUN166.d/4J24010-TUN16
Method Used: /chem/5972hp66.i/D4J24010A66.b/dftpp8270D.m/BrkDwnTF.m Inst: 5972h
Injection Date: 24-OCT-2014 16:02 Operator:
Sample Info: DFTPP 4J24010-TUN1:OWS
Misc Info:



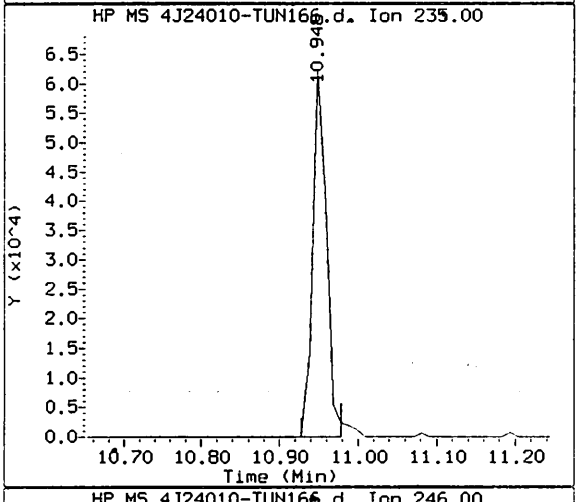




4,4'-DDE
========
Exp. RT = 10.800
Found RT = 10.437

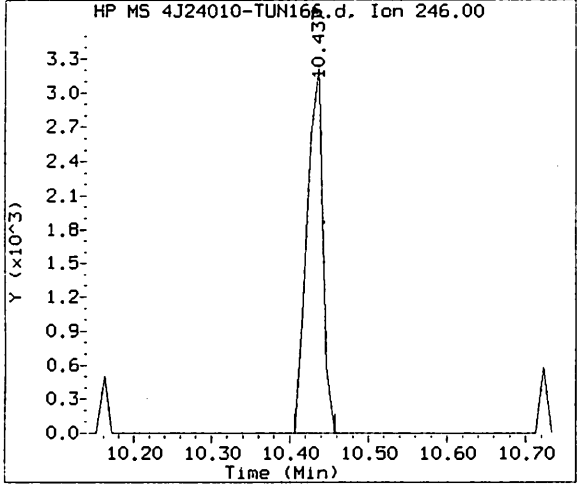
| Mass | Area | Ratio |
|---|---|---|
| 246 | 4599 | 100.00 |




Compound: 4,4'-DDT
Quant Mass: 235
RT: 11.428
Area: 996500




Compound: 4,4'-DDD
Quant Mass: 235
RT: 10.948
Area: 77291




Compound: 4,4'-DDE
Quant Mass: 246
RT: 10.437
Area: 4599

DDT DEGRADATION BREAKDOWN ANALYSIS SUMMARY

| Compound | Response | %Breakdown | Max Allowed | Test |
|---|---|---|---|---|
| 4,4-DDT | 996500 | | | N/A |
| 4,4-DDE | 4599 | 0.5 | 20.0 | PASS |
| 4,4-DDD | 77291 | 7.2 | 20.0 | PASS |
| 4,4-DDD + DDE | 81890 | 7.6 | 20.0 | PASS |

**********

TUNE SAMPLE *** PASSED *** DDT BREAKDOWN TEST

**********

# ANALYSIS DATA SHEET

*SW8270D*

**SBLKII**

Client: DRAPER | SDG: 1410147 | Project: RAAP 2013 UNIT 16 & 10/B03204-12

Matrix: Water | Extraction: EPA 3510C_SVOA | File ID: 4102407-BLK166.d | QC Type: Blank

Initial/Final: 1000mL / 1000uL | Sulfur Cleanup: N | Lab ID: 4102407-BLK1 | Column ID: RTX-5Sil MS

Dilution: 1 | pH: | Florisil Cleanup: N | Prepared: 10/24/14 12:25

% Moisture: NA | GPC Cleanup: N | GPC Cleanup Factor: N | Analyzed: 10/24/14 17:04

Batch: 4102407 | Sequence: 4J24010 | Calibration: 4091606 | Instrument: 5972hp66

| CAS NO. | COMPOUND | CONC.(ug/L) | MDL | RL | Q |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | | | 5.0 | U |
| 121-14-2 | 2,4-Dinitrotoluene | | | 5.0 | U |
| 84-66-2 | Diethylphthalate | | | 5.0 | U |

| SURROGATE RECOVERY RESULTS | ADDED (ug/L) | CONC (ug/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| Nitrobenzene-d5 | 50.00 | 46.00 | 92 | 45 - 110 | |
| 2-Fluorobiphenyl | 50.00 | 43.38 | 87 | 46 - 110 | |
| Terphenyl-d14 | 50.00 | 47.44 | 95 | 59 - 110 | |

(1) - N-nitrosodiphenylamine cannot be separated from diphenylamine. It is acceptable to report the combined result.

(2) - 1,2-Diphenylhydrazine is unstable and converts to azobenzene.

(3) - 3 & 4-Methylphenol cannot be separated for quantitation.

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

Assigned To: 4121 2855
Employee ID Number

# PREPARATION BENCH SHEET

4102407

SVOC 8270D

Matrix: Water

Prepared using: SVOA - EPA 3510C_SVOA

Date/Time Extracted: 10-24-14/1225

| Lab Number | Client ID | QCType | Initial (mL) | Final (uL) | Adjusted pH A/N | Adjusted pH BASE | QC | Surr (uL) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1410146-01 | 16WC1A | Sample | 1000 | 1000 | 1.9 | 13 | QC | 500 | |
| 1410146-02 | 16C1 | Sample | 950 | | 1.9 | 13 | MA | 500 | |
| 1410146-03 | 16MW8 | Sample | 1000 | | 1.9 | 13 | | 500 | |
| 1410146-04 | 16MW9 | Sample | | | 1.9 | 13 | | 500 | |
| 1410146-05 | 16WDUP | Sample | | | 1.9 | 13 | | 500 | |
| 1410146-06 | 16WC1B | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-01 | 16-2 | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-02 | 16-3 | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-03 | 16-5 | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-04 | 16WC2B | Sample | | | 1.9 | 13 | | 500 | |
| 1410147-05 | 16SPRING | Sample | | | 1.9 | 13 | | 500 | |
| 4102407-BLK1 | SBLKII | Blank | | | 1.9 | 13 | | 500 | |
| 4102407-BS1 | SLCSII | LCS | | | 1.9 | 13 | | 500 | |
| 4102407-BSD1 | SLCSDII | LCS Dup | | | 1.9 | 13 | | 500 | |
| 4102407-MS1 | 16WC1AMS | Matrix Spike | | | 1.9 | 13 | | 500 | |
| 4102407-MSD1 | 16WC1AMSD | Matrix Spike Dup | | | 1.9 | 13 | N/A | 500 | |

| | Description | Spike Amount (uL) | | Lot Number |
|---|---|---|---|---|
| SURROGATE | NSI BNA Surrogates (SW 846) (WL-3 | 500 | | 4H24005 |
| SPIKE | 8270 Full Short LCS/MS Spike 2 | 500 | LCS/LCSD | 4H12014 |
| SPIKE | 8270 Full Short LCS/MS Spike 2 | 500 | MS/MSD | 4H12014 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | LCS/LCSD | 4I05010 |
| SPIKE | 8270 Full Short LCS/MS Spike 1 | 500 | MS/MSD | 4I05010 |

Surrogate & Spike Added By: Initials / Date: 10/24/14

Spiking Witnessed By: SAB 10-24-14 (Initials / Date)

Analysts Initials: Extracted: _____ KD: _____ N2: _____ Bottled up: _____

Final Vol Verified: _____

Reviewed By: _____

10N NaOH: 4524003

Manuf. and lot # of reagents/solvents used: $Na_2SO_4$: 4J12001; $H_2SO_4$: 4F27004; $CH_2Cl_2$: 4321023

CompuChem
A Division Of
Liberty Analytical Corp.

10/30/2014

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Abridged Data Package

Subject:

Report of Data - Project: RAAP APPIX 2014 UNIT 16

WorkOrder: 1410146

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1410146

**Project:** RAAP APPIX 2014 UNIT 16 **Sdg:** 1410146

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1410146-01 | 16WC1A | Water | 10/22/2014 10:05 | 10/23/2014 09:35 |
| 1410146-02 | 16C1 | Water | 10/22/2014 12:35 | 10/23/2014 09:35 |
| 1410146-03 | 16MW8 | Water | 10/21/2014 13:20 | 10/23/2014 09:35 |
| 1410146-04 | 16MW9 | Water | 10/22/2014 09:10 | 10/23/2014 09:35 |
| 1410146-05 | 16WDUP | Water | 10/22/2014 10:20 | 10/23/2014 09:35 |
| 1410146-06 | 16WC1B | Water | 10/22/2014 11:45 | 10/23/2014 09:35 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP APPIX 2014 UNIT 16

**Laboratory:** COMPUCHEM

**SDG:** 1410146

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16WC1A | EPA 7470A | 1410146-01 |
| 16WC1A | EPA 6020A | 1410146-01 |
| 16C1 | EPA 7470A | 1410146-02 |
| 16C1 | EPA 6020A | 1410146-02 |
| 16MW8 | EPA 7470A | 1410146-03 |
| 16MW8 | EPA 6020A | 1410146-03 |
| 16MW9 | EPA 7470A | 1410146-04 |
| 16MW9 | EPA 6020A | 1410146-04 |
| 16MW9 | EPA 6020A | 1410146-04RE1 |
| 16WDUP | EPA 7470A | 1410146-05 |
| 16WDUP | EPA 6020A | 1410146-05 |
| 16WC1B | EPA 7470A | 1410146-06 |
| 16WC1B | EPA 6020A | 1410146-06 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions addressed in the narrative. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 10/27/2014

Title: Chemist III

Environmental Testing Laboratories
CompuChem
A Division Of
Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

**CompuChem**
**a Division of Liberty Analytical Corp.**
501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1410146
# Client: DRAPER
# Project: RAAP APPIX 2014 UNIT 16

The indicated Sample Delivery Group (SDG) consisting of six (6) water samples was received into the laboratory information management system (LIMS) on October 23, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 0.9 to 3.2 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6020A/7470A methodology for the requested metals and mercury.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Arsenic for sample 16WC1A

$$\frac{0.61772\ \mu g/L\ (C) \times 0.10\ L\ (F)}{0.10\ L\ (I)} = 0.6177\ \mu g/L \text{ reported as } 0.618\ J\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

The ICP/MS sample matrix spike, CCN = 4102401-MS1 (16WC1AS) was found to be inside control limits.

The mercury sample matrix spike, CCN = 4102402-MS1 (16WC1AS) was found to be inside control limits.

The ICP/MS sample matrix duplicate spike, CCN = 4102401-MS1 (16WC1AS) was found to be inside control limits.

The mercury sample matrix duplicate spike, CCN = 4102402-MSD1 (16WC1ASD) was found to be inside control limits.

The ICP/MS sample duplicate, CCN = 4102401-DUP1 (16WC1AD) was found to be inside control limits.

The mercury sample duplicate, CCN = 4102402-DUP1 (16WC1AD) was found to be inside control limits.

A five-fold serial dilution of sample, CCN = SDI1410146-01 (16WC1AL) was performed in accordance with SW-846 requirements for ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP/MS sample post digestion spike, CCN =4102401-PS1 (16WC1AA) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
October 27, 2014

# CHAIN OF CUSTODY RECORD

OK SRC 10/23/14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** 0 | **Consultant:** Draper Aden Associates | **Sample Site:** RAAP, Radford, Virginia | **Project Specific (PS) or Batch (B) QC:** |
| **Attn:** 0 | **Attn:** Janet C. Frazier | | **Sample Collection for Project Complete?** YES |
| **Address:** 0 | **Address:** 2206 South Main Street | **Location:** HWMU16 | **UPS:** 1Z-237-301-01-9194-3415 |
| 0 | Blacksburg, Virginia 24060 | | 1Z-237-301-01-9091-9024 |
| **Phone:** 0 | **Phone:** (540) 552-0444 | **Event:** 2014 - 2nd Semiannual Monitoring Event | **Carrier:** 1Z-237-301-01-9367-5238 |
| **Fax:** 0 | **Fax:** (540) 552-0291 | **DAA JN:** B03204-12 | **Tracking Number:** |
| **Fax:** 0 | | **Lab JN:** | |

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
Copy to Consultant: YES
Bill: CLIENT OTHER _____
Preserved and shipped on Ice: YES

| Box 4 - Sample Type | G | G | G | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Box 3 - Filtered/Unfiltered | U | U | U | | | | | | |
| Required pH of Sample | <2 | <2 | - | | | | | | |
| Box 2 - Preservative | B | B | H | | | | | | |
| Box 5 - Sample Container Type | 1-500 ml P | | 2-1L A | | | | | | |

| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | ICP/MS 6020A/3005A (Metals-Total) | 7470A (Mercury-Total) | 8270D/3510C (Semivolatiles) | metals / Hg pH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16C1 | 10/22 | 1235 | GW | 3 | X | X | X | <2 | | | 1410146-02 | |
| 16MW8 | 10/21 | 1320 | GW | 3 | X | X | X | <2 | | | -03 | |
| 16MW9 | 10/22 | 0910 | GW | 3 | X | X | X | <2 | | | -04 | |
| 16WC1A | 10/22 | 1005 | GW | 9 | X | X | X | <2 | | | -01 | USE FOR QC |
| 16WDUP | 10/22 | 1020 | GW | 3 | X | X | X | <2 | | | -05 | |
| 16WC1B | 10/22 | 1145 | GW | 3 | X | X | X | <2 | | | -06 | |
| | | | | | | | | | | | | |
| 16-2 | 10/21 | 0955 | GW | 3 | X | X | X | <2 | | | 1410147-01 | |
| 16-3 | ~~10/20~~ | ~~1400~~ | GW | 3 | X | X | X | <2 | | | -02 | DID COLLECT ON 10/20 @ 1400 SRC 10/22/14 |
| 16-5 | 10/21 | 1100 | GW | 3 | X | X | X | <2 | | | -03 | Cr(6) Metals on 10/22/14 @ 10/23/14 |
| 16WC2B | 10/21 | 1220 | GW | 3 | X | X | X | <2 | | | -04 | |
| 16SPRING | 10/21 | 1125 | GW | 3 | X | X | X | <2 | | | -05 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**GENERAL NOTES:**
1. ERIS EDD & DAA EDD required.
2. Level 4 deliverables required.
3. See attached target analyte list
4. Report results at or above QL permit, (attached).

**Clients Special Instructions:** 1.1°C, 0.9°C, 3.2°C

Received by lab in Good Condition ✓ Yes ____ No  Custody Seal Intact ✓ Yes ____ No  Temperature upon arrival ✓  Received on Ice ✓ Yes ____ No

Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): Tyler Emery | Date: 10/20/14 | #1 Relinquished by (Signature): | Date: 10/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0730 | Company Name: DAA | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): KEN CODDINGTON | Date: 10/20/14 | #1 Received by (Signature) | Date: 10/23/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0730 | Company Name: CompuChem | Time: 0935 | Company Name: | Time: | |

1/3

**ANALYTICAL METHOD: SEE BELOW**
**TYPE METHOD: SEE BELOW**
**CLASS: TOTAL**

**Method SW 846-6020A/3005 (ICP/MS)**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | Arsenic | 7440-38-2 | 10 |
| 2. | Barium | 7440-39-3 | 10 |
| 3. | Beryllium | 7440-41-7 | 1 |
| 4. | Cadmium | 7440-43-9 | 1 |
| 5. | Chromium | 7440-47-3 | 5 |
| 6. | Cobalt | 7440-48-4 | 5 |
| 7. | Copper | 7440-50-8 | 5 |
| 8. | Lead | 7440-92-1 | 1 |
| 9. | Nickel | 7440-02-0 | 10 |
| 10. | Vanadium | 7440-62-2 | 10 |
| 11. | Zinc | 7440-66-6 | 10 |

**Method SW 7470A/CVAA**

| | | | |
|---|---|---|---|
| 15 | Mercury | 7439-97-6 2/7470A | 2 |

Notes. Antimony, selenium and silver deleted 4-6,2012.
**10/2013 JCF**

**ANALYTICAL METHOD: 8270D/3510C**
**TYPE METHOD: GCMS**
**CLASS: SEMIVOLATILE**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | 2,4-dinitrotoluene | 121-14-2 | 10 |
| 2. | 2,6-dinitrotoluene | 606-20-2 | 10 |
| 3. | Diethylphthalate | | 5 |

10/13 – diehtylphthate added

3/3

# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 16

SDG: 1410146

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16WC1A | 10/22/14 | 10/23/14 | 10/24/14 | 10/27/14 | 5.2 | 180 | |
| 16C1 | 10/22/14 | 10/23/14 | 10/24/14 | 10/27/14 | 5.1 | 180 | |
| 16MW8 | 10/21/14 | 10/23/14 | 10/24/14 | 10/27/14 | 6.1 | 180 | |
| 16MW9 | 10/22/14 | 10/23/14 | 10/24/14 | 10/27/14 | 5.3 | 180 | |
| 16MW9 | 10/22/14 | 10/23/14 | 10/24/14 | 10/27/14 | 5.4 | 180 | |
| 16WDUP | 10/22/14 | 10/23/14 | 10/24/14 | 10/27/14 | 5.2 | 180 | |
| 16WC1B | 10/22/14 | 10/23/14 | 10/24/14 | 10/27/14 | 5.2 | 180 | |

# HOLDING TIME SUMMARY

*EPA 7470A*

Client: DRAPER

Project: RAAP APPIX 2014 UNIT 16

SDG: 1410146

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16WC1A | 10/22/14 | 10/23/14 | 10/24/14 | 10/24/14 | 2.3 | 28 | |
| 16C1 | 10/22/14 | 10/23/14 | 10/24/14 | 10/24/14 | 2.2 | 28 | |
| 16MW8 | 10/21/14 | 10/23/14 | 10/24/14 | 10/24/14 | 3.1 | 28 | |
| 16MW9 | 10/22/14 | 10/23/14 | 10/24/14 | 10/24/14 | 2.3 | 28 | |
| 16WDUP | 10/22/14 | 10/23/14 | 10/24/14 | 10/24/14 | 2.3 | 28 | |
| 16WC1B | 10/22/14 | 10/23/14 | 10/24/14 | 10/24/14 | 2.2 | 28 | |

# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1410146

**Client:** DRAPER **Project:** RAAP APPIX 2014 UNIT 16

**Matrix:** Water **Instrument:** PEMS

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Arsenic | 0.14 | 10.0 | ug/L | EPA 6020A |
| Barium | 0.1 | 10.0 | ug/L | EPA 6020A |
| Beryllium | 0.033 | 1.00 | ug/L | EPA 6020A |
| Cadmium | 0.011 | 1.00 | ug/L | EPA 6020A |
| Chromium | 0.068 | 5.00 | ug/L | EPA 6020A |
| Cobalt | 0.0095 | 5.00 | ug/L | EPA 6020A |
| Copper | 0.12 | 5.00 | ug/L | EPA 6020A |
| Lead | 0.021 | 1.00 | ug/L | EPA 6020A |
| Nickel | 0.0091 | 10.0 | ug/L | EPA 6020A |
| Vanadium | 0.056 | 10.0 | ug/L | EPA 6020A |
| Zinc | 0.12 | 10.0 | ug/L | EPA 6020A |

# METHOD DETECTION AND REPORTING LIMITS

**Laboratory:** COMPUCHEM **SDG:** 1410146

**Client:** DRAPER **Project:** RAAP APPIX 2014 UNIT 16

**Matrix:** Water **Instrument:** V4

| Analyte | MDL | RL | Units | Method |
|---|---|---|---|---|
| Mercury | 0.0711 | 2.00 | ug/L | EPA 7470A |

# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102401-BS1 Matrix: Water Client ID: MLCSKL Batch: 4102401

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Arsenic | 220.0 | 209 | 95.1 | | 80 - 120 |
| Barium | 110.0 | 107 | 96.8 | | 80 - 120 |
| Beryllium | 110.0 | 106 | 96.8 | | 80 - 120 |
| Cadmium | 110.0 | 108 | 97.8 | | 80 - 120 |
| Chromium | 110.0 | 108 | 98.4 | | 80 - 120 |
| Cobalt | 110.0 | 108 | 98.1 | | 80 - 120 |
| Copper | 110.0 | 108 | 98.4 | | 80 - 120 |
| Lead | 220.0 | 219 | 99.4 | | 80 - 120 |
| Nickel | 110.0 | 107 | 97.6 | | 80 - 120 |
| Vanadium | 110.0 | 110 | 99.7 | | 80 - 120 |
| Zinc | 220.0 | 207 | 94.3 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102401-BSD1 Matrix: Water Client ID: MLCSDKL Batch: 4102401

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Arsenic | 220.0 | 211 | 96.0 | 0.916 | 20 | | 80 - 120 |
| Barium | 110.0 | 108 | 98.2 | 1.36 | 20 | | 80 - 120 |
| Beryllium | 110.0 | 105 | 95.8 | 0.974 | 20 | | 80 - 120 |
| Cadmium | 110.0 | 109 | 99.0 | 1.25 | 20 | | 80 - 120 |
| Chromium | 110.0 | 107 | 97.7 | 0.757 | 20 | | 80 - 120 |
| Cobalt | 110.0 | 111 | 101 | 2.89 | 20 | | 80 - 120 |
| Copper | 110.0 | 111 | 101 | 2.59 | 20 | | 80 - 120 |
| Lead | 220.0 | 223 | 101 | 1.90 | 20 | | 80 - 120 |
| Nickel | 110.0 | 110 | 99.8 | 2.27 | 20 | | 80 - 120 |
| Vanadium | 110.0 | 108 | 97.7 | 1.94 | 20 | | 80 - 120 |
| Zinc | 220.0 | 212 | 96.4 | 2.25 | 20 | | 80 - 120 |

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ACCREDITED IN ACCORDANCE WITH nelac

# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102402-BS1 Matrix: Water Client ID: MLCSKM Batch: 4102402

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Mercury | 4.000 | 3.91 | 98 | | 80 - 120 |

# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102402-BSD1 Matrix: Water Client ID: MLCSDKM Batch: 4102402

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Mercury | 4.000 | 3.85 | 96 | 2 | 20 | | 80 - 120 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**16WC1AS**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102401-MS1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Arsenic | 220.0 | 0.618 J | 208 | 94.2 | | 75 - 125 |
| Barium | 110.0 | 231 | 334 | 93.6 | | 75 - 125 |
| Beryllium | 110.0 | 1.00 U | 107 | 97.6 | | 75 - 125 |
| Cadmium | 110.0 | 1.00 U | 106 | 96.1 | | 75 - 125 |
| Chromium | 110.0 | 1.27 J | 106 | 95.2 | | 75 - 125 |
| Cobalt | 110.0 | 4.47 J | 110 | 95.5 | | 75 - 125 |
| Copper | 110.0 | 1.28 J | 102 | 92.0 | | 75 - 125 |
| Lead | 220.0 | 0.0344 J | 226 | 103 | | 75 - 125 |
| Nickel | 110.0 | 7.26 J | 109 | 92.5 | | 75 - 125 |
| Vanadium | 110.0 | 0.0567 J | 106 | 96.3 | | 75 - 125 |
| Zinc | 220.0 | 5.54 J | 206 | 90.9 | | 75 - 125 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 6020A*

**16WC1ASD**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102401-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Arsenic | 220.0 | 205 | 93.1 | 1.25 | | 20 | 75 - 125 |
| Barium | 110.0 | 336 | 95.3 | 1.78 | | 20 | 75 - 125 |
| Beryllium | 110.0 | 109 | 99.1 | 1.44 | | 20 | 75 - 125 |
| Cadmium | 110.0 | 108 | 98.0 | 1.93 | | 20 | 75 - 125 |
| Chromium | 110.0 | 103 | 92.7 | 2.72 | | 20 | 75 - 125 |
| Cobalt | 110.0 | 107 | 93.0 | 2.66 | | 20 | 75 - 125 |
| Copper | 110.0 | 99.9 | 89.6 | 2.59 | | 20 | 75 - 125 |
| Lead | 220.0 | 224 | 102 | 0.552 | | 20 | 75 - 125 |
| Nickel | 110.0 | 106 | 89.6 | 3.13 | | 20 | 75 - 125 |
| Vanadium | 110.0 | 106 | 96.1 | 0.201 | | 20 | 75 - 125 |
| Zinc | 220.0 | 200 | 88.6 | 2.63 | | 20 | 75 - 125 |

# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 7470A*

**16WC1AS**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102402-MS1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | SAMPLE CONCENTRATION (ug/L) | MS CONCENTRATION (ug/L) | MS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Mercury | 1.000 | 2.00 U | 0.962 | 96 | | 75 - 125 |

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# MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

*EPA 7470A*

**16WC1ASD**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102402-MSD1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | SPIKE ADDED (ug/L) | MSD CONCENTRATION (ug/L) | MSD % REC. # | % RPD | Q | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|---|
| Mercury | 1.000 | 0.966 | 97 | 0.4 | | 20 | 75 - 125 |

# SERIAL DILUTION

*EPA 6020A*

**16WC1AL**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4J27013-SRD1 Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

Sequence: 4J27013 Dilution: 5 Report to MDL: YES

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Arsenic | 0.62 J | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Barium | 230.94 | 231.90 | 10.0 | 0.416 | | EPA 6020A | 10 |
| Beryllium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Cadmium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Chromium | 1.27 J | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Cobalt | 4.47 J | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Copper | 1.28 J | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Lead | 0.03 J | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Nickel | 7.26 J | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Vanadium | 0.06 J | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Zinc | 5.54 J | 50.00 U | 10.0 | | | EPA 6020A | 10 |

# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**16WC1AA**

Laboratory: COMPUCHEM
Client: DRAPER
Matrix: Water

SDG: 1410146
Project: RAAP APPIX 2014 UNIT 16
Laboratory ID: 4102401-PS1
Lab Source ID: 1410146-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Arsenic | 10.8 | 0.618 J | 10.00 | 102 | 75 - 125 |
| Barium | 334 | 231 | 100.0 | 103 | 75 - 125 |
| Beryllium | 9.79 | U | 10.00 | 97.6 | 75 - 125 |
| Cadmium | 9.94 | U | 10.00 | 99.3 | 75 - 125 |
| Chromium | 21.3 | 1.27 J | 20.00 | 100 | 75 - 125 |
| Cobalt | 14.4 | 4.47 J | 10.00 | 99.7 | 75 - 125 |
| Copper | 19.8 | 1.28 J | 20.00 | 92.4 | 75 - 125 |
| Lead | 10.6 | 0.0344 J | 10.00 | 106 | 75 - 125 |
| Nickel | 16.5 | 7.26 J | 10.00 | 92.6 | 75 - 125 |
| Vanadium | 50.5 | 0.0567 J | 50.00 | 101 | 75 - 125 |
| Zinc | 23.9 | 5.54 J | 20.00 | 92.0 | 75 - 125 |

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# DUPLICATES

*EPA 6020A*

**16WC1AD**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102401-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Arsenic | 20 | *0.618 J* | 0.642 J | 3.79 | | EPA 6020A |
| Barium | 20 | *231* | 241 | 4.16 | | EPA 6020A |
| Beryllium | 20 | *1.00 U* | 1.00 U | | | EPA 6020A |
| Cadmium | 20 | *1.00 U* | 0.0288 J | | | EPA 6020A |
| Chromium | 20 | *1.27 J* | 3.91 J | 102 | | EPA 6020A |
| Cobalt | 20 | *4.47 J* | 4.83 J | 7.57 | | EPA 6020A |
| Copper | 20 | *1.28 J* | 1.48 J | 14.6 | | EPA 6020A |
| Lead | 20 | *0.0344 J* | 0.0841 J | 83.8 | | EPA 6020A |
| Nickel | 20 | *7.26 J* | 8.31 J | 13.4 | | EPA 6020A |
| Vanadium | 20 | *0.0567 J* | 10.0 U | | | EPA 6020A |
| Zinc | 20 | *5.54 J* | 9.29 J | 50.6 | | EPA 6020A |

# DUPLICATES

*EPA 7470A*

**16WC1AD**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 4102402-DUP1 % Solid: NA Matrix: Water Lab Source ID: 1410146-01 Source Sample: 16WC1A

| ANALYTE | CONTROL LIMIT | SAMPLE CONCENTRATION (ug/L) | DUPLICATE CONCENTRATION (ug/L) | RPD % | Q | METHOD |
|---|---|---|---|---|---|---|
| Mercury | 20 | *2.00 U* | 2.00 U | | | EPA 7470A |

# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Batch: 4102401 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16WC1A | 1410146-01 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16C1 | 1410146-02 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16MW8 | 1410146-03 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16MW9 | 1410146-04 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16MW9 | 1410146-04RE1 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16WDUP | 1410146-05 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16WC1B | 1410146-06 | 10/24/14 09:50 | 50.0 | 50.0 |
| PBWKL | 4102401-BLK1 | 10/24/14 09:50 | 50.0 | 50.0 |
| MLCSKL | 4102401-BS1 | 10/24/14 09:50 | 50.0 | 50.0 |
| MLCSDKL | 4102401-BSD1 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16WC1AD | 4102401-DUP1 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16WC1AS | 4102401-MS1 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16WC1ASD | 4102401-MSD1 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16WC1AA | 4102401-PS1 | 10/24/14 09:50 | 50.0 | 50.0 |

# PREPARATION BATCH SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Batch: 4102402 Matrix: Water Preparation: EPA 7470A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16WC1A | 1410146-01 | 10/24/14 09:50 | 100 | 100 |
| 16C1 | 1410146-02 | 10/24/14 09:50 | 100 | 100 |
| 16MW8 | 1410146-03 | 10/24/14 09:50 | 100 | 100 |
| 16MW9 | 1410146-04 | 10/24/14 09:50 | 100 | 100 |
| 16WDUP | 1410146-05 | 10/24/14 09:50 | 100 | 100 |
| 16WC1B | 1410146-06 | 10/24/14 09:50 | 100 | 100 |
| PBWKM | 4102402-BLK1 | 10/24/14 09:50 | 100 | 100 |
| MLCSKM | 4102402-BS1 | 10/24/14 09:50 | 100 | 100 |
| MLCSDKM | 4102402-BSD1 | 10/24/14 09:50 | 100 | 100 |
| 16WC1AD | 4102402-DUP1 | 10/24/14 09:50 | 100 | 100 |
| 16WC1AS | 4102402-MS1 | 10/24/14 09:50 | 100 | 100 |
| 16WC1ASD | 4102402-MSD1 | 10/24/14 09:50 | 100 | 100 |

# ANALYSIS SEQUENCE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J25003 Calibration: 4102601 Instrument: V4

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| S0 | 4J25003-CAL1 | 4J25003_P-001 | 10/24/14 15:18:46 |
| 0.2 | 4J25003-CAL2 | 4J25003_P-002 | 10/24/14 15:21:20 |
| S0.5 | 4J25003-CAL3 | 4J25003_P-003 | 10/24/14 15:24:00 |
| S1.0 | 4J25003-CAL4 | 4J25003_P-004 | 10/24/14 15:27:06 |
| S5.0 | 4J25003-CAL5 | 4J25003_P-005 | 10/24/14 15:30:15 |
| S10.0 | 4J25003-CAL6 | 4J25003_P-006 | 10/24/14 15:32:56 |
| ICV | 4J25003-ICV1 | 4J25003_P-007 | 10/24/14 15:35:26 |
| ICB | 4J25003-ICB1 | 4J25003_P-008 | 10/24/14 15:37:54 |
| CCV | 4J25003-CCV1 | 4J25003_P-010 | 10/24/14 15:44:26 |
| CCB | 4J25003-CCB1 | 4J25003_P-011 | 10/24/14 15:47:31 |
| PBWKM | 4102402-BLK1 | 4J25003_P-015 | 10/24/14 15:58:08 |
| MLCSKM | 4102402-BS1 | 4J25003_P-016 | 10/24/14 16:01:09 |
| MLCSDKM | 4102402-BSD1 | 4J25003_P-017 | 10/24/14 16:03:44 |
| 16WC1A | 1410146-01 | 4J25003_P-018 | 10/24/14 16:06:55 |
| 16WC1AD | 4102402-DUP1 | 4J25003_P-019 | 10/24/14 16:09:54 |
| 16WC1AS | 4102402-MS1 | 4J25003_P-020 | 10/24/14 16:12:29 |
| 16WC1ASD | 4102402-MSD1 | 4J25003_P-021 | 10/24/14 16:15:10 |
| CCV | 4J25003-CCV2 | 4J25003_P-022 | 10/24/14 16:19:03 |
| CCB | 4J25003-CCB2 | 4J25003_P-023 | 10/24/14 16:22:05 |
| 16C1 | 1410146-02 | 4J25003_P-024 | 10/24/14 16:24:34 |
| 16MW8 | 1410146-03 | 4J25003_P-025 | 10/24/14 16:27:06 |
| 16MW9 | 1410146-04 | 4J25003_P-026 | 10/24/14 16:29:56 |
| 16WDUP | 1410146-05 | 4J25003_P-027 | 10/24/14 16:32:37 |
| 16WC1B | 1410146-06 | 4J25003_P-028 | 10/24/14 16:35:40 |
| CCV | 4J25003-CCV3 | 4J25003_P-034 | 10/24/14 16:51:54 |
| CCB | 4J25003-CCB3 | 4J25003_P-035 | 10/24/14 16:54:33 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Calibration: 4102704 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUNE | 4J27013-TUN1 | 4J27013_P-001 | 10/27/14 12:55:46 |
| S0 | 4J27013-CAL1 | 4J27013_P-002 | 10/27/14 15:01:57 |
| S 6020-MS1 | 4J27013-CAL2 | 4J27013_P-003 | 10/27/14 15:04:05 |
| S 6020-MS2 | 4J27013-CAL3 | 4J27013_P-004 | 10/27/14 15:06:11 |
| S 6020-MS3 | 4J27013-CAL4 | 4J27013_P-005 | 10/27/14 15:08:18 |
| S 6020-MS4 | 4J27013-CAL5 | 4J27013_P-006 | 10/27/14 15:10:25 |
| S 6020-MS5 | 4J27013-CAL6 | 4J27013_P-007 | 10/27/14 15:12:32 |
| LLICV | 4J27013-CRL1 | 4J27013_P-008 | 10/27/14 15:16:20 |
| ICV | 4J27013-ICV1 | 4J27013_P-009 | 10/27/14 15:18:28 |
| ICB | 4J27013-ICB1 | 4J27013_P-010 | 10/27/14 15:20:36 |
| ICSA | 4J27013-IFA1 | 4J27013_P-011 | 10/27/14 15:22:44 |
| ICSAB | 4J27013-IFB1 | 4J27013_P-012 | 10/27/14 15:24:50 |
| LLCCV | 4J27013-CRL2 | 4J27013_P-013 | 10/27/14 15:26:58 |
| CCV | 4J27013-CCV1 | 4J27013_P-014 | 10/27/14 15:29:07 |
| CCB | 4J27013-CCB1 | 4J27013_P-015 | 10/27/14 15:31:13 |
| PBWKL | 4102401-BLK1 | 4J27013_P-016 | 10/27/14 15:39:38 |
| MLCSKL | 4102401-BS1 | 4J27013_P-017 | 10/27/14 15:41:45 |
| MLCSDKL | 4102401-BSD1 | 4J27013_P-018 | 10/27/14 15:43:51 |
| 16WC1A | 1410146-01 | 4J27013_P-019 | 10/27/14 15:45:58 |
| 16WC1AD | 4102401-DUP1 | 4J27013_P-020 | 10/27/14 15:48:05 |
| 16WC1AS | 4102401-MS1 | 4J27013_P-021 | 10/27/14 15:50:12 |
| 16WC1ASD | 4102401-MSD1 | 4J27013_P-022 | 10/27/14 15:52:19 |
| 16WC1AL | 4J27013-SRD1 | 4J27013_P-023 | 10/27/14 15:54:26 |
| 16WC1AA | 4102401-PS1 | 4J27013_P-024 | 10/27/14 15:56:33 |
| 16C1 | 1410146-02 | 4J27013_P-025 | 10/27/14 15:58:40 |
| CCV | 4J27013-CCV2 | 4J27013_P-026 | 10/27/14 16:00:48 |
| CCB | 4J27013-CCB2 | 4J27013_P-027 | 10/27/14 16:02:55 |
| 16MW8 | 1410146-03 | 4J27013_P-028 | 10/27/14 16:05:04 |
| 16MW9 | 1410146-04 | 4J27013_P-029 | 10/27/14 16:07:10 |

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# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Calibration: 4102704 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| 16WDUP | 1410146-05 | 4J27013_P-030 | 10/27/14 16:09:17 |
| 16WC1B | 1410146-06 | 4J27013_P-031 | 10/27/14 16:11:24 |
| LLCCV | 4J27013-CRL3 | 4J27013_P-037 | 10/27/14 16:24:06 |
| CCV | 4J27013-CCV3 | 4J27013_P-038 | 10/27/14 16:26:14 |
| CCB | 4J27013-CCB3 | 4J27013_P-039 | 10/27/14 16:28:21 |
| CCV | 4J27013-CCV4 | 4J27013_P-050 | 10/27/14 17:00:58 |
| CCB | 4J27013-CCB4 | 4J27013_P-051 | 10/27/14 17:03:05 |
| LLCCV | 4J27013-CRL4 | 4J27013_P-059 | 10/27/14 17:20:05 |
| CCV | 4J27013-CCV5 | 4J27013_P-060 | 10/27/14 17:22:13 |
| CCB | 4J27013-CCB5 | 4J27013_P-061 | 10/27/14 17:24:20 |
| 16MW9 | 1410146-04RE1 | 4J27013_P-062 | 10/27/14 17:34:26 |
| LLCCV | 4J27013-CRL5 | 4J27013_P-071 | 10/27/14 17:53:29 |
| CCV | 4J27013-CCV6 | 4J27013_P-072 | 10/27/14 17:55:37 |
| CCB | 4J27013-CCB6 | 4J27013_P-073 | 10/27/14 17:57:44 |

# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**16WC1A**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 1410146-01 % Solid: Matrix: Water Sampled: 10/22/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 0.618 | 0.140 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-39-3 | Barium | 231 | 0.100 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-43-9 | Cadmium | | 0.0110 | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-47-3 | Chromium | 1.27 | 0.0680 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-48-4 | Cobalt | 4.47 | 0.00950 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-50-8 | Copper | 1.28 | 0.120 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7439-92-1 | Lead | 0.0344 | 0.0210 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7439-97-6 | Mercury | | 0.0711 | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:06 |
| 7440-02-0 | Nickel | 7.26 | 0.00910 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-62-2 | Vanadium | 0.0567 | 0.0560 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |
| 7440-66-6 | Zinc | 5.54 | 0.120 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:45 |

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# ANALYSIS DATA SHEET

**16C1**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 1410146-02 % Solid: Matrix: Water Sampled: 10/22/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 0.179 | 0.140 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-39-3 | Barium | 200 | 0.100 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-43-9 | Cadmium | 0.0472 | 0.0110 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-47-3 | Chromium | 0.0987 | 0.0680 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-48-4 | Cobalt | 0.155 | 0.00950 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-50-8 | Copper | 0.224 | 0.120 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7439-92-1 | Lead | 0.0286 | 0.0210 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7439-97-6 | Mercury | | 0.0711 | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:24 |
| 7440-02-0 | Nickel | 3.03 | 0.00910 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-62-2 | Vanadium | 0.0923 | 0.0560 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |
| 7440-66-6 | Zinc | 3.62 | 0.120 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 15:58 |

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# ANALYSIS DATA SHEET

**16MW8**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 1410146-03 % Solid: Matrix: Water Sampled: 10/21/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 0.150 | 0.140 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-39-3 | Barium | 125 | 0.100 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-41-7 | Beryllium | 0.361 | 0.0330 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-43-9 | Cadmium | 0.297 | 0.0110 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-47-3 | Chromium | 0.163 | 0.0680 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-48-4 | Cobalt | 0.416 | 0.00950 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-50-8 | Copper | 25.6 | 0.120 | 5.00 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7439-92-1 | Lead | 1.10 | 0.0210 | 1.00 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7439-97-6 | Mercury | | 0.0711 | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:27 |
| 7440-02-0 | Nickel | 4.30 | 0.00910 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:05 |
| 7440-66-6 | Zinc | 56.1 | 0.120 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:05 |

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# ANALYSIS DATA SHEET

**16MW9**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 1410146-04 % Solid: Matrix: Water Sampled: 10/22/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 1.05 | 0.140 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7440-39-3 | Barium | 519 | 0.200 | 20.0 | 2 | D | EPA 6020A | 4J27013 | 10/27/14 17:34 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7440-43-9 | Cadmium | 0.0252 | 0.0110 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7440-47-3 | Chromium | 0.109 | 0.0680 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7440-48-4 | Cobalt | 3.79 | 0.00950 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7440-50-8 | Copper | 0.209 | 0.120 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7439-92-1 | Lead | 0.0222 | 0.0210 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7439-97-6 | Mercury | | 0.0711 | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:29 |
| 7440-02-0 | Nickel | 13.9 | 0.00910 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7440-62-2 | Vanadium | | 0.0560 | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:07 |
| 7440-66-6 | Zinc | 3.16 | 0.120 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:07 |

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# ANALYSIS DATA SHEET

**16WDUP**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 1410146-05 % Solid: Matrix: Water Sampled: 10/22/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 0.625 | 0.140 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-39-3 | Barium | 237 | 0.100 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-41-7 | Beryllium | | 0.0330 | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-43-9 | Cadmium | 0.0117 | 0.0110 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-47-3 | Chromium | 0.136 | 0.0680 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-48-4 | Cobalt | 4.50 | 0.00950 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-50-8 | Copper | 0.682 | 0.120 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7439-92-1 | Lead | 0.0258 | 0.0210 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7439-97-6 | Mercury | | 0.0711 | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:32 |
| 7440-02-0 | Nickel | 6.72 | 0.00910 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-62-2 | Vanadium | 0.101 | 0.0560 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:09 |
| 7440-66-6 | Zinc | 36.5 | 0.120 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:09 |

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# ANALYSIS DATA SHEET

**16WC1B**

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Lab ID: 1410146-06 % Solid: Matrix: Water Sampled: 10/22/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | 0.423 | 0.140 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-39-3 | Barium | 138 | 0.100 | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-41-7 | Beryllium | 0.0570 | 0.0330 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-43-9 | Cadmium | 0.482 | 0.0110 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-47-3 | Chromium | 0.581 | 0.0680 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-48-4 | Cobalt | 13.4 | 0.00950 | 5.00 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-50-8 | Copper | 1.09 | 0.120 | 5.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7439-92-1 | Lead | 0.0611 | 0.0210 | 1.00 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7439-97-6 | Mercury | 0.814 | 0.0711 | 2.00 | 1 | J | EPA 7470A | 4J25003 | 10/24/14 16:35 |
| 7440-02-0 | Nickel | 5.57 | 0.00910 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-62-2 | Vanadium | 0.0778 | 0.0560 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |
| 7440-66-6 | Zinc | 6.71 | 0.120 | 10.0 | 1 | J | EPA 6020A | 4J27013 | 10/27/14 16:11 |

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# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4J27013-CRL1 | Arsenic | 1.000 | 0.975 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Barium | 10.00 | 9.94 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Beryllium | 1.000 | 0.948 | 95 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Cadmium | 1.000 | 0.934 | 93 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Chromium | 2.000 | 1.98 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Cobalt | 1.000 | 0.976 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Copper | 2.000 | 1.97 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Lead | 1.000 | 1.01 | 101 | ug/L | | 70 - 130 |
| LLICV | 4J27013-CRL1 | Nickel | 1.000 | 0.938 | 94 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Vanadium | 5.000 | 4.86 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Zinc | 2.000 | 1.81 | 90 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Arsenic | 1.000 | 0.943 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Barium | 10.00 | 9.62 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Beryllium | 1.000 | 0.928 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Cadmium | 1.000 | 0.998 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Chromium | 2.000 | 1.99 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Cobalt | 1.000 | 0.985 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Copper | 2.000 | 1.99 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Lead | 1.000 | 0.976 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Nickel | 1.000 | 0.918 | 92 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Vanadium | 5.000 | 5.01 | 100 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Zinc | 2.000 | 1.84 | 92 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Arsenic | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Barium | 10.00 | 9.61 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Beryllium | 1.000 | 0.965 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Cadmium | 1.000 | 1.05 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Chromium | 2.000 | 1.99 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Cobalt | 1.000 | 0.967 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Copper | 2.000 | 2.02 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Lead | 1.000 | 0.955 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Nickel | 1.000 | 0.969 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Vanadium | 5.000 | 4.88 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Zinc | 2.000 | 1.92 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Arsenic | 1.000 | 1.05 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Barium | 10.00 | 9.81 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Beryllium | 1.000 | 0.869 | 87 | ug/L | J | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4J27013-CRL4 | Cadmium | 1.000 | 0.946 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Chromium | 2.000 | 2.04 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Cobalt | 1.000 | 1.00 | 100 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Copper | 2.000 | 2.01 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Lead | 1.000 | 0.969 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Nickel | 1.000 | 0.974 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Vanadium | 5.000 | 4.81 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Zinc | 2.000 | 1.81 | 90 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Arsenic | 1.000 | 1.06 | 106 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Barium | 10.00 | 9.84 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Beryllium | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Cadmium | 1.000 | 0.937 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Chromium | 2.000 | 2.03 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Cobalt | 1.000 | 0.983 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Copper | 2.000 | 2.02 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Lead | 1.000 | 0.956 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Nickel | 1.000 | 0.971 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Vanadium | 5.000 | 4.82 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Zinc | 2.000 | 1.86 | 93 | ug/L | J | 70 - 130 |

# INITIAL CALIBRATION DATA

*EPA 7470A*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Calibration: 4102601 Instrument: V4

Calibration Date: 10/24/2014 15:18:20

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Mercury | CAL1 | S0 | 210 | 0 |
| Mercury | CAL2 | 0.2 | 1870 | 0.2 |
| Mercury | CAL3 | S0.5 | 4240 | 0.5 |
| Mercury | CAL4 | S1.0 | 8707 | 1 |
| Mercury | CAL5 | S5.0 | 42445 | 5 |
| Mercury | CAL6 | S10.0 | 83907 | 10 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 7470A*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Calibration: 4102601 Instrument: V4

Calibration Date: 10/24/2014 15:18:20

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Mercury | 0.0001192 | -0.02759 | 0.9999 | 0.995 | |

# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Calibration: 4102704 Instrument: PEMS

Calibration Date: 10/27/2014 12:55:47

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Arsenic | CAL1 | S0 | 88.405 | 0 |
| Arsenic | CAL2 | S 6020-MS1 | 1343.515 | 1 |
| Arsenic | CAL3 | S 6020-MS2 | 2551.797 | 2 |
| Arsenic | CAL4 | S 6020-MS3 | 142715.1 | 125 |
| Arsenic | CAL5 | S 6020-MS4 | 288256 | 250 |
| Arsenic | CAL6 | S 6020-MS5 | 576503.8 | 500 |
| Barium | CAL1 | S0 | 21.111 | 0 |
| Barium | CAL2 | S 6020-MS1 | 16783.52 | 10 |
| Barium | CAL3 | S 6020-MS2 | 34244.11 | 20 |
| Barium | CAL4 | S 6020-MS3 | 207530.9 | 125 |
| Barium | CAL5 | S 6020-MS4 | 428362.9 | 250 |
| Barium | CAL6 | S 6020-MS5 | 832261.9 | 500 |
| Beryllium | CAL1 | S0 | 5.556 | 0 |
| Beryllium | CAL2 | S 6020-MS1 | 142.223 | 1 |
| Beryllium | CAL3 | S 6020-MS2 | 253.892 | 2 |
| Beryllium | CAL4 | S 6020-MS3 | 16174.19 | 125 |
| Beryllium | CAL5 | S 6020-MS4 | 33839.4 | 250 |
| Beryllium | CAL6 | S 6020-MS5 | 65587.27 | 500 |
| Cadmium | CAL1 | S0 | -1.49 | 0 |
| Cadmium | CAL2 | S 6020-MS1 | 1230.823 | 1 |
| Cadmium | CAL3 | S 6020-MS2 | 2513.634 | 2 |
| Cadmium | CAL4 | S 6020-MS3 | 143469.1 | 125 |
| Cadmium | CAL5 | S 6020-MS4 | 296138.7 | 250 |
| Cadmium | CAL6 | S 6020-MS5 | 583590.8 | 500 |
| Chromium | CAL1 | S0 | 5555.432 | 0 |
| Chromium | CAL2 | S 6020-MS1 | 16878.68 | 2 |
| Chromium | CAL3 | S 6020-MS2 | 29371.4 | 4 |

| | | | | |
|---|---|---|---|---|
| Chromium | CAL4 | S 6020-MS3 | 705920.5 | 125 |
| Chromium | CAL5 | S 6020-MS4 | 1451339 | 250 |
| Chromium | CAL6 | S 6020-MS5 | 2766160 | 500 |
| Cobalt | CAL1 | S0 | 32.222 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 6644.432 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 13908 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 831565.9 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 1678063 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 3207285 | 500 |
| Copper | CAL1 | S0 | 71.297 | 0 |
| Copper | CAL2 | S 6020-MS1 | 6890.338 | 2 |
| Copper | CAL3 | S 6020-MS2 | 14173 | 4 |
| Copper | CAL4 | S 6020-MS3 | 412369.9 | 125 |
| Copper | CAL5 | S 6020-MS4 | 833018.7 | 250 |
| Copper | CAL6 | S 6020-MS5 | 1601480 | 500 |
| Lead | CAL1 | S0 | 86.111 | 0 |
| Lead | CAL2 | S 6020-MS1 | 8104.726 | 1 |
| Lead | CAL3 | S 6020-MS2 | 15715.69 | 2 |
| Lead | CAL4 | S 6020-MS3 | 942256.5 | 125 |
| Lead | CAL5 | S 6020-MS4 | 1925726 | 250 |
| Lead | CAL6 | S 6020-MS5 | 3643263 | 500 |
| Nickel | CAL1 | S0 | 13.889 | 0 |
| Nickel | CAL2 | S 6020-MS1 | 1399.172 | 1 |
| Nickel | CAL3 | S 6020-MS2 | 3107.89 | 2 |
| Nickel | CAL4 | S 6020-MS3 | 179988.3 | 125 |
| Nickel | CAL5 | S 6020-MS4 | 370337.6 | 250 |
| Nickel | CAL6 | S 6020-MS5 | 711366.3 | 500 |
| Vanadium | CAL1 | S0 | 1810.849 | 0 |
| Vanadium | CAL2 | S 6020-MS1 | 35866.52 | 5 |
| Vanadium | CAL3 | S 6020-MS2 | 71591.95 | 10 |
| Vanadium | CAL4 | S 6020-MS3 | 838976.2 | 125 |
| Vanadium | CAL5 | S 6020-MS4 | 1726320 | 250 |
| Vanadium | CAL6 | S 6020-MS5 | 3287178 | 500 |
| Zinc | CAL1 | S0 | 108.334 | 0 |
| Zinc | CAL2 | S 6020-MS1 | 1647.358 | 2 |

| | | | | |
|---|---|---|---|---|
| Zinc | CAL3 | S 6020-MS2 | 3460.784 | 4 |
| Zinc | CAL4 | S 6020-MS3 | 101794.3 | 125 |
| Zinc | CAL5 | S 6020-MS4 | 208481 | 250 |
| Zinc | CAL6 | S 6020-MS5 | 404342.3 | 500 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Calibration: 4102704 Instrument: PEMS

Calibration Date: 10/27/2014 12:55:47

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Arsenic | 0.001417 | 0 | 0.9999 | 0.998 | |
| Barium | 0.001036 | 0 | 0.9999 | 0.998 | |
| Beryllium | 0.001185 | 0 | 0.9998 | 0.998 | |
| Cadmium | 0.0008229 | 0 | 0.9999 | 0.998 | |
| Chromium | 0.006857 | 0 | 0.9999 | 0.998 | |
| Cobalt | 0.007973 | 0 | 0.9999 | 0.998 | |
| Copper | 0.003975 | 0 | 0.9999 | 0.998 | |
| Lead | 0.008700 | 0 | 0.9998 | 0.998 | |
| Nickel | 0.001765 | 0 | 0.9999 | 0.998 | |
| Vanadium | 0.008166 | 0 | 0.9999 | 0.998 | |
| Zinc | 0.001000 | 0 | 0.9999 | 0.998 | |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 7470A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J25003 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4J25003-ICV1 | Mercury | 4.000 | 3.99 | 100 | ug/L | | +/-20 |
| CCV | 4J25003-CCV1 | Mercury | 5.000 | 5.03 | 101 | ug/L | | +/-20 |
| CCV | 4J25003-CCV2 | Mercury | 5.000 | 5.01 | 100 | ug/L | | +/-20 |
| CCV | 4J25003-CCV3 | Mercury | 5.000 | 5.10 | 102 | ug/L | | +/-20 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4J27013-ICV1 | Arsenic | 220.0 | 213 | 97 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Barium | 110.0 | 108 | 98 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Beryllium | 110.0 | 105 | 96 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Cadmium | 110.0 | 108 | 98 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Chromium | 110.0 | 111 | 101 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Cobalt | 110.0 | 113 | 103 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Copper | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Lead | 220.0 | 219 | 99 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Nickel | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Vanadium | 110.0 | 111 | 101 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Zinc | 220.0 | 214 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Arsenic | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Barium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Beryllium | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Cadmium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Chromium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Cobalt | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Copper | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Lead | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Nickel | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Zinc | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Arsenic | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Beryllium | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Cadmium | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Chromium | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Cobalt | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Copper | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Lead | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Nickel | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Vanadium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Zinc | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Arsenic | 300.0 | 306 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Barium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Beryllium | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Cadmium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Chromium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Cobalt | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Copper | 300.0 | 303 | 101 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4J27013-CCV3 | Lead | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Nickel | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Vanadium | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Zinc | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Arsenic | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Beryllium | 300.0 | 313 | 104 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Cadmium | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Chromium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Cobalt | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Copper | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Lead | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Nickel | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Zinc | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Arsenic | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Beryllium | 300.0 | 313 | 104 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Cadmium | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Chromium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Cobalt | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Copper | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Lead | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Nickel | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Vanadium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Zinc | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Arsenic | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Barium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Beryllium | 300.0 | 314 | 105 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Cadmium | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Chromium | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Cobalt | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Copper | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Lead | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Nickel | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Zinc | 300.0 | 293 | 98 | ug/L | | +/-10 |

# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4J27013-IFA1 | Arsenic | | 0.00 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Barium | | 0.01 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Beryllium | | 0.00 | 2 | ug/L |
| ICSA | 4J27013-IFA1 | Cadmium | | 0.00 | 2 | ug/L |
| ICSA | 4J27013-IFA1 | Chromium | | 0.07 | 10 | ug/L |
| ICSA | 4J27013-IFA1 | Cobalt | | 0.00 | 10 | ug/L |
| ICSA | 4J27013-IFA1 | Copper | | 0.11 | 10 | ug/L |
| ICSA | 4J27013-IFA1 | Lead | | 0.00 | 2 | ug/L |
| ICSA | 4J27013-IFA1 | Nickel | | 0.06 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Vanadium | | 0.01 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Zinc | | 0.06 | 20 | ug/L |
| ICSAB | 4J27013-IFB1 | Arsenic | 25.00 | 25.77 | 103 | ug/L |
| ICSAB | 4J27013-IFB1 | Barium | | 0.02 | 20 | ug/L |
| ICSAB | 4J27013-IFB1 | Beryllium | | -0.01 | 2 | ug/L |
| ICSAB | 4J27013-IFB1 | Cadmium | 25.00 | 25.90 | 104 | ug/L |
| ICSAB | 4J27013-IFB1 | Chromium | 50.00 | 55.14 | 110 | ug/L |
| ICSAB | 4J27013-IFB1 | Cobalt | 50.00 | 55.22 | 110 | ug/L |
| ICSAB | 4J27013-IFB1 | Copper | 50.00 | 55.35 | 111 | ug/L |
| ICSAB | 4J27013-IFB1 | Lead | | 0.00 | 2 | ug/L |
| ICSAB | 4J27013-IFB1 | Nickel | 50.00 | 53.46 | 107 | ug/L |
| ICSAB | 4J27013-IFB1 | Vanadium | 50.00 | 54.68 | 109 | ug/L |
| ICSAB | 4J27013-IFB1 | Zinc | 25.00 | 27.01 | 108 | ug/L |

* The absence of an entry in the “True” column denotes the lack of a true value for that analyte. The entry in the “%R” column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1410146

Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Date: 10/27/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 8.975 | 0.657 | 10 | 0.689 |
| Mg - 24 | 23.975 | 0.700 | 10 | 0.56 |
| Mg - 25 | 24.975 | 0.700 | 10 | 0.574 |
| Mg - 26 | 26.075 | 0.692 | 10 | 0.619 |
| Co - 59 | 58.925 | 0.703 | 10 | 0.564 |
| In - 113 | 112.825 | 0.723 | 10 | 0.662 |
| In - 115 | 114.875 | 0.716 | 10 | 0.552 |
| Pb - 206 | 205.975 | 0.684 | 10 | 0.924 |
| Pb - 207 | 206.975 | 0.686 | 10 | 0.559 |
| Pb - 208 | 207.975 | 0.688 | 10 | 0.947 |

Comments:

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1410146

Sequence: 4J27013

Project: RAAP APPIX 2014 UNIT 16

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 10/27/14 15:01 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 10/27/14 15:04 | 99 | 99 | 100 | 99 | 100 |
| S 6020-MS2 | 10/27/14 15:06 | 98 | 100 | 100 | 100 | 101 |
| S 6020-MS3 | 10/27/14 15:08 | 98 | 100 | 96 | 101 | 100 |
| S 6020-MS4 | 10/27/14 15:10 | 96 | 98 | 97 | 99 | 97 |
| S 6020-MS5 | 10/27/14 15:12 | 92 | 96 | 95 | 98 | 96 |
| LLICV | 10/27/14 15:16 | 97 | 99 | 98 | 97 | 96 |
| ICV | 10/27/14 15:18 | 97 | 98 | 100 | 100 | 98 |
| ICB | 10/27/14 15:20 | 97 | 100 | 100 | 100 | 99 |
| ICSA | 10/27/14 15:22 | 97 | 102 | 98 | 102 | 100 |
| ICSAB | 10/27/14 15:24 | 98 | 101 | 101 | 101 | 99 |
| LLCCV | 10/27/14 15:26 | 99 | 100 | 99 | 101 | 101 |
| CCV | 10/27/14 15:29 | 96 | 100 | 97 | 100 | 98 |
| CCB | 10/27/14 15:31 | 98 | 99 | 99 | 98 | 99 |
| PBWKL | 10/27/14 15:39 | 97 | 98 | 98 | 98 | 98 |
| MLCSKL | 10/27/14 15:41 | 96 | 100 | 96 | 100 | 99 |
| MLCSDKL | 10/27/14 15:43 | 94 | 98 | 94 | 97 | 96 |
| 16WC1A | 10/27/14 15:45 | 100 | 103 | 97 | 97 | 97 |
| 16WC1AD | 10/27/14 15:48 | 98 | 99 | 93 | 95 | 94 |
| 16WC1AS | 10/27/14 15:50 | 98 | 101 | 96 | 99 | 96 |
| 16WC1ASD | 10/27/14 15:52 | 97 | 100 | 94 | 98 | 94 |
| 16WC1AL | 10/27/14 15:54 | 102 | 100 | 99 | 99 | 100 |
| 16WC1AA | 10/27/14 15:56 | 98 | 98 | 94 | 96 | 92 |
| 16C1 | 10/27/14 15:58 | 97 | 94 | 93 | 94 | 93 |
| CCV | 10/27/14 16:00 | 96 | 92 | 97 | 98 | 96 |
| CCB | 10/27/14 16:02 | 100 | 94 | 95 | 98 | 98 |
| 16MW8 | 10/27/14 16:05 | 96 | 94 | 92 | 96 | 93 |
| 16MW9 | 10/27/14 16:07 | 95 | 90 | 90 | 94 | 89 |
| 16WDUP | 10/27/14 16:09 | 95 | 91 | 91 | 93 | 89 |

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# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1410146

Sequence: 4J27013

Project: RAAP APPIX 2014 UNIT 16

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| 16WC1B | 10/27/14 16:11 | 95 | 87 | 89 | 90 | 88 |
| LLCCV | 10/27/14 16:24 | 103 | 94 | 98 | 99 | 98 |
| CCV | 10/27/14 16:26 | 98 | 89 | 93 | 98 | 95 |
| CCB | 10/27/14 16:28 | 99 | 90 | 96 | 98 | 97 |
| CCV | 10/27/14 17:00 | 93 | 89 | 94 | 98 | 94 |
| CCB | 10/27/14 17:03 | 96 | 88 | 94 | 97 | 94 |
| LLCCV | 10/27/14 17:20 | 97 | 91 | 96 | 98 | 97 |
| CCV | 10/27/14 17:22 | 94 | 89 | 95 | 99 | 95 |
| CCB | 10/27/14 17:24 | 97 | 93 | 95 | 100 | 98 |
| 16MW9 | 10/27/14 17:34 | 96 | 89 | 93 | 96 | 90 |
| LLCCV | 10/27/14 17:53 | 96 | 90 | 94 | 98 | 98 |
| CCV | 10/27/14 17:55 | 93 | 88 | 93 | 97 | 93 |
| CCB | 10/27/14 17:57 | 95 | 90 | 93 | 97 | 95 |

# BLANKS

*EPA 7470A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J25003 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4J25003-ICB1 | Mercury | 0.0200 | 0.0711 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4J25003-CCB1 | Mercury | -0.0280 | 0.0711 | 2.00 | ug/L | *U* | EPA 7470A |
| PBWKM | 4102402-BLK1 | Mercury | | 0.0711 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4J25003-CCB2 | Mercury | -0.0330 | 0.0711 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4J25003-CCB3 | Mercury | -0.0250 | 0.0711 | 2.00 | ug/L | *U* | EPA 7470A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4J27013-ICB1 | Arsenic | 0.135 | 0.140 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Barium | 0.0346 | 0.100 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Beryllium | 0.0666 | 0.0330 | 1.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Cadmium | 0.0502 | 0.0110 | 1.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Chromium | 0.0735 | 0.0680 | 5.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Cobalt | 0.0968 | 0.00950 | 5.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Copper | 0.108 | 0.120 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Lead | 0.0300 | 0.0210 | 1.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Nickel | 0.102 | 0.00910 | 10.0 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Vanadium | 0.0261 | 0.0560 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Zinc | 0.119 | 0.120 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Arsenic | 0.00240 | 0.140 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Barium | 0.0155 | 0.100 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Beryllium | 0.0133 | 0.0330 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Cadmium | 0.0123 | 0.0110 | 1.00 | ug/L | J | EPA 6020A |
| CCB | 4J27013-CCB1 | Chromium | 0.0195 | 0.0680 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Cobalt | 0.00292 | 0.00950 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Copper | 0.0431 | 0.120 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Lead | 0.00913 | 0.0210 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Nickel | 0.0152 | 0.00910 | 10.0 | ug/L | J | EPA 6020A |
| CCB | 4J27013-CCB1 | Vanadium | 0.0219 | 0.0560 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Zinc | 0.0151 | 0.120 | 10.0 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Arsenic | | 0.140 | 10.0 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Barium | | 0.100 | 10.0 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Beryllium | | 0.0330 | 1.00 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Cadmium | | 0.0110 | 1.00 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Chromium | | 0.0680 | 5.00 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Cobalt | | 0.00950 | 5.00 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Copper | | 0.120 | 5.00 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Lead | | 0.0210 | 1.00 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Nickel | 0.0136 | 0.00910 | 10.0 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Vanadium | | 0.0560 | 10.0 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Zinc | | 0.120 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB2 | Arsenic | 0.0533 | 0.140 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB2 | Barium | 0.121 | 0.100 | 10.0 | ug/L | J | EPA 6020A |
| CCB | 4J27013-CCB2 | Beryllium | 0.0206 | 0.0330 | 1.00 | ug/L | U | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4J27013-CCB2 | Cadmium | 0.0533 | 0.0110 | 1.00 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Chromium | 0.0234 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB2 | Cobalt | 0.0197 | 0.00950 | 5.00 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Copper | 0.0547 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB2 | Lead | 0.0326 | 0.0210 | 1.00 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Nickel | 0.0226 | 0.00910 | 10.0 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Vanadium | 0.0441 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB2 | Zinc | 0.0187 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Arsenic | 0.0511 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Barium | 0.0207 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Beryllium | -0.00739 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Cadmium | 0.00527 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Chromium | 0.000950 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Cobalt | 0.00274 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Copper | 0.0421 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Lead | 0.00277 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Nickel | 0.00450 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Vanadium | 0.0247 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Zinc | 0.0106 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Arsenic | 0.0360 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Barium | 0.0139 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Beryllium | -0.00351 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Cadmium | 0.00957 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Chromium | 0.0255 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Cobalt | 0.00526 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Copper | 0.0495 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Lead | 0.00430 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Nickel | 0.00983 | 0.00910 | 10.0 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB4 | Vanadium | 0.0221 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Zinc | 0.0379 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Arsenic | 0.0385 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Barium | 0.0161 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Beryllium | -0.00677 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Cadmium | 0.00341 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Chromium | 0.0147 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Cobalt | 0.00414 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1410146 Project: RAAP APPIX 2014 UNIT 16

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4J27013-CCB5 | Copper | 0.0404 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Lead | 0.00280 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Nickel | 0.00875 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Vanadium | 0.00750 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Zinc | 0.0245 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Arsenic | 0.0249 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Barium | 0.0162 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Beryllium | 0.0309 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Cadmium | 0.00734 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Chromium | 0.0120 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Cobalt | 0.00350 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Copper | 0.0476 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Lead | 0.00151 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Nickel | 0.00457 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Vanadium | 0.0158 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Zinc | 0.0408 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 10-24-14
Preparation Time: 0950
Batch Number: 4102401/02
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4102401/02-BLK1 | PBWKL/KM | MB | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BS1 | MLCSKL/KM | LCS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BSD1 | MLCSDKL/KM | LCSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-DUP1 | 16WC1AD | DUP | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MS1 | 16WC1AS | MS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MSD1 | 16WC1ASD | MSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-01 | 16WC1A | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-02 | 16C1 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-03 | 16MW8 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-04 | 16MW9 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-05 | 16WDUP | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-06 | 16WC1B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-01 | 16-2 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-02 | 16-3 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-03 | 16-5 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-04 | 16WC2B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-05 | 16SPRING | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard/QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | |
|---|---|
| Hot Block Temp In: | 95 C |
| Hot Block Temp Out: | 95 C |
| Hot Block Identifier | HOTBLOCK#1 |
| Time Hg in water bath: | 1025 |
| Time Hg out water bath: | 1225 |
| Water Bath Temp In: | 95 C |
| Water Bath Temp Out: | 95 C |
| Water Bath Identifier | HGBATH#1 |

**MS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GO1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 1.0mL 100ppb Hg
Ref# 4J24005

**LCS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GO1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 0.4 mL of MSHG-1PPM
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Bolton
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** MP
***Date:*** 10/28/14

111611 JCF

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 10-24-14
Preparation Time: 0950
Batch Number: 4102401/02
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4102401/02-BLK1 | PBWKL/KM | MB | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BS1 | MLCSKL/KM | LCS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BSD1 | MLCSDKL/KM | LCSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-DUP1 | 16WC1AD | DUP | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MS1 | 16WC1AS | MS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MSD1 | 16WC1ASD | MSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-01 | 16WC1A | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-02 | 16C1 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-03 | 16MW8 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-04 | 16MW9 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-05 | 16WDUP | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-06 | 16WC1B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-01 | 16-2 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-02 | 16-3 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-03 | 16-5 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-04 | 16WC2B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-05 | 16SPRING | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | |
|---|---|
| Hot Block Temp In: | 95 C |
| Hot Block Temp Out: | 95 C |
| Hot Block Identifier | HOTBLOCK#1 |
| Time Hg in water bath: | 1025 |
| Time Hg out water bath: | 1225 |
| Water Bath Temp In: | 95 C |
| Water Bath Temp Out: | 95 C |
| Water Bath Identifier | HGBATH#1 |

**MS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GG1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DG1014
HG: 1.0mL 100ppb Hg
Ref# 4J24005

**LCS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GG1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DG1014
HG: 0.4 mL of MSHG-1PPM
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Baltzer
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

**Reviewed By:** [signature]
**Date:** 10/28/14

111611 JCF

CompuChem
A Division Of
Liberty Analytical Corp.

10/30/2014

Abridged data package

JANET FRAZIER

DRAPER

2206 SOUTH MAIN STREET

BLACKSBURG, VA 24060

Subject:

Report of Data - Project: RAAP 2013 UNIT 16 & 10/B03204-12

WorkOrder: 1410147

Attn.: JANET FRAZIER

Enclosed are the results of analytical work performed in accordance with the referenced account number. This report covers sample(s) appearing on the listing.

Thank you for selecting CompuChem for your sample analysis. If you should have questions or require additional analytical services, please contact your representative at 1-800-833-5097

Sincerely,

Compuchem

a division of Liberty Analytical Corporation

Attachment

TOTAL NUMBER

OF PAGES _____

**501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050**

## CompuChem, a division of Liberty Analytical

**Client:** DRAPER **Work:** 1410147

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12 **Sdg:** 1410147

| Lab ID | Client ID | Matrix | Date Sampled | Date Received |
|---|---|---|---|---|
| 1410147-01 | 16-2 | Water | 10/21/2014 09:55 | 10/23/2014 09:35 |
| 1410147-02 | 16-3 | Water | 10/20/2014 10:20 | 10/23/2014 09:35 |
| 1410147-03 | 16-5 | Water | 10/21/2014 11:00 | 10/23/2014 09:35 |
| 1410147-04 | 16WC2B | Water | 10/21/2014 12:20 | 10/23/2014 09:35 |
| 1410147-05 | 16SPRING | Water | 10/21/2014 11:25 | 10/23/2014 09:35 |

# ANALYSES DATA PACKAGE COVER PAGE

**Client:** DRAPER

**Project:** RAAP 2013 UNIT 16 & 10/B03204-12

**Laboratory:** COMPUCHEM

**SDG:** 1410147

| Client Sample Id: | Analysis: | Lab Sample Id: |
|---|---|---|
| 16-2 | EPA 7470A | 1410147-01 |
| 16-2 | EPA 6020A | 1410147-01 |
| 16-3 | EPA 7470A | 1410147-02 |
| 16-3 | EPA 6020A | 1410147-02 |
| 16-3 | EPA 6020A | 1410147-02RE1 |
| 16-5 | EPA 7470A | 1410147-03 |
| 16-5 | EPA 6020A | 1410147-03 |
| 16WC2B | EPA 7470A | 1410147-04 |
| 16WC2B | EPA 6020A | 1410147-04 |
| 16SPRING | EPA 7470A | 1410147-05 |
| 16SPRING | EPA 6020A | 1410147-05 |

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions addressed in the narrative. Release of the data contained in this hardcopy data package and in the Electronic Data Deliverable has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Susan W Bass

Name: Susan Bass

Date: 10/28/2014

Title: Chemist III

CompuChem
A Division Of
Liberty Analytical Corp.

501 Madison Avenue, Cary, NC 27513 Tel: 919-379-4100 Fax: 919-379-4050

**CompuChem**
**a Division of Liberty Analytical Corp.**
501 Madison Avenue
Cary, NC 27513

# SDG NARRATIVE
# SDG # 1410147
# Client: DRAPER
# Project: RAAP 2013 UNIT 16 & 10/B03204-12

The indicated Sample Delivery Group (SDG) consisting of five (5) water samples was received into the laboratory information management system (LIMS) on October 23, 2014 intact and in good condition with the Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The cooler temperature indicator bottle was found with the samples and the samples temperature was 0.9 to 3.2 degrees Celsius. Temperature was recorded by IR temperature gun.

The samples were prepared and analyzed in accordance with SW846 6020A/7470A methodology for the requested metals and mercury.

## EQUATIONS FOR LIQUID SAMPLE CALCULATIONS:

Equation for obtaining metals sample results in µg/L as presented on Analysis Data Sheet data sheets from ICP/MS instrument acquired results in µg/L (ppb).

$$\frac{C \times F}{I}$$

Where

C = concentration (µg/L)

F = final volume in liters after sample preparation

I = initial volume in liters

Example: Barium for sample 16-2

$$\frac{241.9827\ \mu g/L\ (C) \times 0.10\ L\ (F)}{0.10\ L\ (I)} = 241.98\ \mu g/L \text{ reported as } 242\ \mu g/L$$

## INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (LLICV, LLCCV, ICV & CCV), blanks (ICB, & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within SW-846 methodology.

## SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verifications (LCSW, LCSWD, & PBW) were found to be within acceptable ranges and the field samples were prepared and analyzed within the contract specified holding times.

## MATRIX RELATED QUALITY CONTROL:

No matrix spikes were requested for these samples.

A five-fold serial dilution of sample, CCN = SDI1410147-01 (16-2L) was performed in accordance with SW-846 requirements for ICP/MS analysis.

The adjusted sample concentration was inside control limits.

The ICP/MS sample post digestion spike, CCN =4102401-PS2 (16-2A) was performed and passed criteria.

I certify that the tests used in this report meet all requirements of the NELAC standards unless otherwise stated in the SDG narrative or QA notice.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on CD has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Susan W Bass

Susan W. Bass
Senior Chemist
October 28, 2014

# CHAIN OF CUSTODY RECORD

OK SRC 12/23/14

**Laboratory:** CompuChem Environmental, 501 Madison Avenue, Cary, NC 27513/Cathy Dover, Manager/1-800-833-5097

| | | | | | |
|---|---|---|---|---|---|
| **Client:** | 0 | **Consultant:** | Draper Aden Associates | **Sample Site:** | RAAP, Radford, Virginia |
| **Attn:** | 0 | **Attn:** | Janet C. Frazier | | |
| **Address:** | 0 | **Address:** | 2206 South Main Street | **Location:** | HWMU16 |
| | 0 | | Blacksburg, Virginia 24060 | | |
| **Phone:** | 0 | **Phone:** | (540) 552-0444 | **Event:** | 2014 - 2nd Semiannual Monitoring Event |
| **Fax:** | 0 | **Fax:** | (540) 552-0291 | **DAA JN:** | B03204-12 |
| **Fax:** | 0 | | | **Lab JN:** | |

**Project Specific (PS) or Batch (B) QC:** B
**Sample Collection for Project Complete?** YES
UPS: 1Z-237-301-01-9194 -3415
1Z-237-301-01-9091 -9024
**Carrier:** 1Z-237-301-01-9367 -5238
**Tracking Number:**

**Box 1: Matrix**
SW Surface Water; GW Groundwater; L Leachate; S Soil; T Trip Blank; E Equipment Blank; P Product; O Other

**Box 2: Preservative**
A HCL; B $HNO_3$; C $H_2SO_4$; D $Na_2S_2O_3$; E NaOH; F ZnAc; G Other (Specify); H None

**Box 3: Filtered/Unfiltered**
F Filtered; U Unfiltered

**Box 4: Sample Type**
G Grab; C Composite

**Box 5: Sample Container Type**
P Plastic; AG Amber Glass; V VOA; CG Clear Glass

**Invoice**
**Copy to Consultant:** YES
**Bill:** CLIENT **OTHER**
**Preserved and shipped on Ice:** YES

| Box 4 - Sample Type | G | G | G | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Box 3 - Filtered/Unfiltered | U | U | U | | | | | | |
| Required pH of Sample | <2 | <2 | - | | | | | | |
| Box 2 - Preservative | B | B | H | | | | | | |
| Box 5 - Sample Container Type | 1-500 ml P | | 2-1L A | | | | | | |

| Sample ID | Date: 2014 | Time | Box 1: Matrix | Number of Bottles | ICP/MS 6020A/3005A (Metals-Total) | 7470A (Mercury-Total) | 8270D/3510C (Semivolatiles) | metals / Hg pH | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16C1 | 10/22 | 1235 | GW | 3 | X | X | X | <2 | | | 1410146-02 | |
| 16MW8 | 10/21 | 1320 | GW | 3 | X | X | X | <2 | | | -03 | |
| 16MW9 | 10/22 | 0910 | GW | 3 | X | X | X | <2 | | | -04 | |
| 16WC1A | 10/22 | 1005 | GW | 9 | X | X | X | <2 | | | -01 | USE FOR QC |
| 16WDUP | 10/22 | 1020 | GW | 3 | X | X | X | <2 | | | -05 | |
| 16WC1B | 10/22 | 1145 | GW | 3 | X | X | X | <2 | | | -06 | |
| | | | | | | | | | | | | |
| 16-2 | 10/21 | 0955 | GW | 3 | X | X | X | <2 | | | 1410147-01 | |
| 16-3 | ~~10/20~~ | ~~1400~~ | GW | 3 | X | X | X | <2 | | | -02 | DID COLLECT ON 10/20 @ 1400 SRC 10/22/14 |
| 16-5 | 10/21 | 1100 | GW | 3 | X | X | X | <2 | | | -03 | Cr(6) Metals on 10/22/14 @ 10/23/14 |
| 16WC2B | 10/21 | 1220 | GW | 3 | X | X | X | <2 | | | -04 | |
| 16SPRING | 10/21 | 1125 | GW | 3 | X | X | X | <2 | | | -05 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

**GENERAL NOTES:**
1. ERIS EDD & DAA EDD required.
2. Level 4 deliverables required.
3. See attached target analyte list
4. Report results at or above QL permit, (attached).

**Clients Special Instructions:** 1.1°C, 0.9°C, 3.2°C

Received by lab in Good Condition ✓ Yes ____ No Custody Seal Intact ✓ Yes ____ No Temperature upon arrival ✓ Received on Ice ✓ Yes ____ No
Describe problems, if any:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampler Name (Print): Tyler Emery | Date: 10/20/14 | #1 Relinquished by (Signature): | | Date: 10/22/14 | #2 Relinquished by (Signature): | Date: | Sample Storage Time Requested: |
| Sampler Signature: | Time: 0730 | Company Name: DAA | | Time: 1700 | Company Name: | Time: | |
| Sampler Name (Print): LEN CODDINGTON | Date: 10/20/14 | #1 Received by (Signature) | | Date: 10/23/14 | #2 Received by (Signature): | Date: | 30 DYS ORG/6 MTHS INORG |
| Sampler Signature: | Time: 0730 | Company Name: CompuChem | | Time: 0935 | Company Name: | Time: | |

1/3

**ANALYTICAL METHOD: SEE BELOW**
**TYPE METHOD: SEE BELOW**
**CLASS: TOTAL**

**Method SW 846-6020A/3005 (ICP/MS)**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | Arsenic | 7440-38-2 | 10 |
| 2. | Barium | 7440-39-3 | 10 |
| 3. | Beryllium | 7440-41-7 | 1 |
| 4. | Cadmium | 7440-43-9 | 1 |
| 5. | Chromium | 7440-47-3 | 5 |
| 6. | Cobalt | 7440-48-4 | 5 |
| 7. | Copper | 7440-50-8 | 5 |
| 8. | Lead | 7440-92-1 | 1 |
| 9. | Nickel | 7440-02-0 | 10 |
| 10. | Vanadium | 7440-62-2 | 10 |
| 11. | Zinc | 7440-66-6 | 10 |

**Method SW 7470A/CVAA**

| | | | |
|---|---|---|---|
| 15 | Mercury | 7439-97-6 2/7470A | 2 |

Notes. Antimony, selenium and silver deleted 4-6,2012.
**10/2013 JCF**

**ANALYTICAL METHOD: 8270D/3510C**
**TYPE METHOD: GCMS**
**CLASS: SEMIVOLATILE**

| No. | ANALYTE | CAS RN | Required LOQ (µg/l) |
|---|---|---|---|
| 1. | 2,4-dinitrotoluene | 121-14-2 | 10 |
| 2. | 2,6-dinitrotoluene | 606-20-2 | 10 |
| 3. | Diethylphthalate | | 5 |

10/13 – diehtylphthate added

3/3

# HOLDING TIME SUMMARY

*EPA 6020A*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1410147

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16-2 | 10/21/14 | 10/23/14 | 10/24/14 | 10/27/14 | 6.3 | 180 | |
| 16-3 | 10/20/14 | 10/23/14 | 10/24/14 | 10/27/14 | 7.2 | 180 | |
| 16-3 | 10/20/14 | 10/23/14 | 10/24/14 | 10/27/14 | 7.3 | 180 | |
| 16-5 | 10/21/14 | 10/23/14 | 10/24/14 | 10/27/14 | 6.2 | 180 | |
| 16WC2B | 10/21/14 | 10/23/14 | 10/24/14 | 10/27/14 | 6.2 | 180 | |
| 16SPRING | 10/21/14 | 10/23/14 | 10/24/14 | 10/27/14 | 6.2 | 180 | |

# HOLDING TIME SUMMARY

*EPA 7470A*

Client: DRAPER

Project: RAAP 2013 UNIT 16 & 10/B03204-12

SDG: 1410147

| Sample Name | Date Collected | Date Received | Date Prepared | Date Analyzed | Days to Analysis | Max Days to Analysis* | Q |
|---|---|---|---|---|---|---|---|
| 16-2 | 10/21/14 | 10/23/14 | 10/24/14 | 10/24/14 | 3.3 | 28 | |
| 16-3 | 10/20/14 | 10/23/14 | 10/24/14 | 10/24/14 | 4.3 | 28 | |
| 16-5 | 10/21/14 | 10/23/14 | 10/24/14 | 10/24/14 | 3.2 | 28 | |
| 16WC2B | 10/21/14 | 10/23/14 | 10/24/14 | 10/24/14 | 3.2 | 28 | |
| 16SPRING | 10/21/14 | 10/23/14 | 10/24/14 | 10/24/14 | 3.2 | 28 | |

# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4102401-BS1 Matrix: Water Client ID: MLCSKL Batch: 4102401

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Arsenic | 220.0 | 209 | 95.1 | | 80 - 120 |
| Barium | 110.0 | 107 | 96.8 | | 80 - 120 |
| Beryllium | 110.0 | 106 | 96.8 | | 80 - 120 |
| Cadmium | 110.0 | 108 | 97.8 | | 80 - 120 |
| Chromium | 110.0 | 108 | 98.4 | | 80 - 120 |
| Cobalt | 110.0 | 108 | 98.1 | | 80 - 120 |
| Copper | 110.0 | 108 | 98.4 | | 80 - 120 |
| Lead | 220.0 | 219 | 99.4 | | 80 - 120 |
| Nickel | 110.0 | 107 | 97.6 | | 80 - 120 |
| Vanadium | 110.0 | 110 | 99.7 | | 80 - 120 |
| Zinc | 220.0 | 207 | 94.3 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4102401-BSD1 Matrix: Water Client ID: MLCSDKL Batch: 4102401

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Arsenic | 220.0 | 211 | 96.0 | 0.916 | 20 | | 80 - 120 |
| Barium | 110.0 | 108 | 98.2 | 1.36 | 20 | | 80 - 120 |
| Beryllium | 110.0 | 105 | 95.8 | 0.974 | 20 | | 80 - 120 |
| Cadmium | 110.0 | 109 | 99.0 | 1.25 | 20 | | 80 - 120 |
| Chromium | 110.0 | 107 | 97.7 | 0.757 | 20 | | 80 - 120 |
| Cobalt | 110.0 | 111 | 101 | 2.89 | 20 | | 80 - 120 |
| Copper | 110.0 | 111 | 101 | 2.59 | 20 | | 80 - 120 |
| Lead | 220.0 | 223 | 101 | 1.90 | 20 | | 80 - 120 |
| Nickel | 110.0 | 110 | 99.8 | 2.27 | 20 | | 80 - 120 |
| Vanadium | 110.0 | 108 | 97.7 | 1.94 | 20 | | 80 - 120 |
| Zinc | 220.0 | 212 | 96.4 | 2.25 | 20 | | 80 - 120 |

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# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4102402-BS1 Matrix: Water Client ID: MLCSKM Batch: 4102402

| ANALYTE | SPIKE ADDED (ug/L) | LCS CONCENTRATION (ug/L) | LCS % REC. | Q | QC LIMITS REC. |
|---|---|---|---|---|---|
| Mercury | 4.000 | 3.91 | 98 | | 80 - 120 |

# LCS / LCS DUPLICATE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4102402-BSD1 Matrix: Water Client ID: MLCSDKM Batch: 4102402

| ANALYTE | SPIKE ADDED (ug/L) | LCSD CONCENTRATION (ug/L) | LCSD % REC. # | % RPD # | QC LIMITS | | |
|---|---|---|---|---|---|---|---|
| | | | | | RPD | Q | REC. |
| Mercury | 4.000 | 3.85 | 96 | 2 | 20 | | 80 - 120 |

# SERIAL DILUTION

*EPA 6020A*

**16-2L**

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 4J27013-SRD2 Matrix: Water Lab Source ID: 1410147-01 Source Sample: 16-2

Sequence: 4J27013 Dilution: 5 Report to MDL: NO

| Analyte | Initial Sample Result (I) | Serial Dilution Result (S) | RL | % Difference | Q | Method | QC Limits % Difference |
|---|---|---|---|---|---|---|---|
| Arsenic | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Barium | 241.98 | 252.13 | 10.0 | 4.19 | | EPA 6020A | 10 |
| Beryllium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Cadmium | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Chromium | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Cobalt | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Copper | 5.00 U | 25.00 U | 5.00 | | | EPA 6020A | 10 |
| Lead | 1.00 U | 5.00 U | 1.00 | | | EPA 6020A | 10 |
| Nickel | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Vanadium | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |
| Zinc | 10.00 U | 50.00 U | 10.0 | | | EPA 6020A | 10 |

# POST DIGEST SPIKE SAMPLE RECOVERY

*EPA 6020A*

**16-2A**

Laboratory: COMPUCHEM
SDG: 1410147
Client: DRAPER
Project: RAAP 2013 UNIT 16 & 10/B03204-12
Matrix: Water
Laboratory ID: 4102401-PS2
Lab Source ID: 1410147-01

| Analyte | Spike Sample Result (SSR) (ug/L) | Sample Result (SR) (ug/L) | Spike Added (SA) (ug/L) | %R | Control Limit %R |
|---|---|---|---|---|---|
| Arsenic | 10.8 | U | 10.00 | 107 | 75 - 125 |
| Barium | 351 | 242 | 100.0 | 109 | 75 - 125 |
| Beryllium | 10.1 | U | 10.00 | 101 | 75 - 125 |
| Cadmium | 10.4 | U | 10.00 | 104 | 75 - 125 |
| Chromium | 21.3 | U | 20.00 | 106 | 75 - 125 |
| Cobalt | 10.2 | U | 10.00 | 102 | 75 - 125 |
| Copper | 19.8 | U | 20.00 | 99.0 | 75 - 125 |
| Lead | 10.7 | U | 10.00 | 107 | 75 - 125 |
| Nickel | 11.3 | U | 10.00 | 113 | 75 - 125 |
| Vanadium | 51.9 | U | 50.00 | 104 | 75 - 125 |
| Zinc | 21.5 | U | 20.00 | 107 | 75 - 125 |

# PREPARATION BATCH SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Batch: 4102401 Matrix: Water Preparation: EPA 3005A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16-2 | 1410147-01 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16-3 | 1410147-02 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16-3 | 1410147-02RE1 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16-5 | 1410147-03 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16WC2B | 1410147-04 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16SPRING | 1410147-05 | 10/24/14 09:50 | 50.0 | 50.0 |
| PBWKL | 4102401-BLK1 | 10/24/14 09:50 | 50.0 | 50.0 |
| MLCSKL | 4102401-BS1 | 10/24/14 09:50 | 50.0 | 50.0 |
| MLCSDKL | 4102401-BSD1 | 10/24/14 09:50 | 50.0 | 50.0 |
| 16-2A | 4102401-PS2 | 10/24/14 09:50 | 50.0 | 50.0 |

# PREPARATION BATCH SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Batch: 4102402 Matrix: Water Preparation: EPA 7470A

| SAMPLE NAME | LAB SAMPLE ID | DATE PREPARED | INITIAL VOL/WT (mL) | FINAL VOL/WT (mL) |
|---|---|---|---|---|
| 16-2 | 1410147-01 | 10/24/14 09:50 | 100 | 100 |
| 16-3 | 1410147-02 | 10/24/14 09:50 | 100 | 100 |
| 16-5 | 1410147-03 | 10/24/14 09:50 | 100 | 100 |
| 16WC2B | 1410147-04 | 10/24/14 09:50 | 100 | 100 |
| 16SPRING | 1410147-05 | 10/24/14 09:50 | 100 | 100 |
| PBWKM | 4102402-BLK1 | 10/24/14 09:50 | 100 | 100 |
| MLCSKM | 4102402-BS1 | 10/24/14 09:50 | 100 | 100 |
| MLCSDKM | 4102402-BSD1 | 10/24/14 09:50 | 100 | 100 |

# ANALYSIS SEQUENCE SUMMARY

*EPA 7470A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J25003 Calibration: 4102601 Instrument: V4

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| S0 | 4J25003-CAL1 | 4J25003_P-001 | 10/24/14 15:18:46 |
| 0.2 | 4J25003-CAL2 | 4J25003_P-002 | 10/24/14 15:21:20 |
| S0.5 | 4J25003-CAL3 | 4J25003_P-003 | 10/24/14 15:24:00 |
| S1.0 | 4J25003-CAL4 | 4J25003_P-004 | 10/24/14 15:27:06 |
| S5.0 | 4J25003-CAL5 | 4J25003_P-005 | 10/24/14 15:30:15 |
| S10.0 | 4J25003-CAL6 | 4J25003_P-006 | 10/24/14 15:32:56 |
| ICV | 4J25003-ICV1 | 4J25003_P-007 | 10/24/14 15:35:26 |
| ICB | 4J25003-ICB1 | 4J25003_P-008 | 10/24/14 15:37:54 |
| CCV | 4J25003-CCV1 | 4J25003_P-010 | 10/24/14 15:44:26 |
| CCB | 4J25003-CCB1 | 4J25003_P-011 | 10/24/14 15:47:31 |
| PBWKM | 4102402-BLK1 | 4J25003_P-015 | 10/24/14 15:58:08 |
| MLCSKM | 4102402-BS1 | 4J25003_P-016 | 10/24/14 16:01:09 |
| MLCSDKM | 4102402-BSD1 | 4J25003_P-017 | 10/24/14 16:03:44 |
| CCV | 4J25003-CCV2 | 4J25003_P-022 | 10/24/14 16:19:03 |
| CCB | 4J25003-CCB2 | 4J25003_P-023 | 10/24/14 16:22:05 |
| 16-2 | 1410147-01 | 4J25003_P-029 | 10/24/14 16:38:20 |
| 16-3 | 1410147-02 | 4J25003_P-030 | 10/24/14 16:41:23 |
| 16-5 | 1410147-03 | 4J25003_P-031 | 10/24/14 16:44:02 |
| 16WC2B | 1410147-04 | 4J25003_P-032 | 10/24/14 16:46:32 |
| 16SPRING | 1410147-05 | 4J25003_P-033 | 10/24/14 16:49:13 |
| CCV | 4J25003-CCV3 | 4J25003_P-034 | 10/24/14 16:51:54 |
| CCB | 4J25003-CCB3 | 4J25003_P-035 | 10/24/14 16:54:33 |

# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Calibration: 4102704 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| TUNE | 4J27013-TUN1 | 4J27013_P-001 | 10/27/14 12:55:46 |
| S0 | 4J27013-CAL1 | 4J27013_P-002 | 10/27/14 15:01:57 |
| S 6020-MS1 | 4J27013-CAL2 | 4J27013_P-003 | 10/27/14 15:04:05 |
| S 6020-MS2 | 4J27013-CAL3 | 4J27013_P-004 | 10/27/14 15:06:11 |
| S 6020-MS3 | 4J27013-CAL4 | 4J27013_P-005 | 10/27/14 15:08:18 |
| S 6020-MS4 | 4J27013-CAL5 | 4J27013_P-006 | 10/27/14 15:10:25 |
| S 6020-MS5 | 4J27013-CAL6 | 4J27013_P-007 | 10/27/14 15:12:32 |
| LLICV | 4J27013-CRL1 | 4J27013_P-008 | 10/27/14 15:16:20 |
| ICV | 4J27013-ICV1 | 4J27013_P-009 | 10/27/14 15:18:28 |
| ICB | 4J27013-ICB1 | 4J27013_P-010 | 10/27/14 15:20:36 |
| ICSA | 4J27013-IFA1 | 4J27013_P-011 | 10/27/14 15:22:44 |
| ICSAB | 4J27013-IFB1 | 4J27013_P-012 | 10/27/14 15:24:50 |
| LLCCV | 4J27013-CRL2 | 4J27013_P-013 | 10/27/14 15:26:58 |
| CCV | 4J27013-CCV1 | 4J27013_P-014 | 10/27/14 15:29:07 |
| CCB | 4J27013-CCB1 | 4J27013_P-015 | 10/27/14 15:31:13 |
| PBWKL | 4102401-BLK1 | 4J27013_P-016 | 10/27/14 15:39:38 |
| MLCSKL | 4102401-BS1 | 4J27013_P-017 | 10/27/14 15:41:45 |
| MLCSDKL | 4102401-BSD1 | 4J27013_P-018 | 10/27/14 15:43:51 |
| CCV | 4J27013-CCV2 | 4J27013_P-026 | 10/27/14 16:00:48 |
| CCB | 4J27013-CCB2 | 4J27013_P-027 | 10/27/14 16:02:55 |
| 16-2 | 1410147-01 | 4J27013_P-032 | 10/27/14 16:13:31 |
| 16-2L | 4J27013-SRD2 | 4J27013_P-033 | 10/27/14 16:15:38 |
| 16-2A | 4102401-PS2 | 4J27013_P-034 | 10/27/14 16:17:45 |
| 16-3 | 1410147-02 | 4J27013_P-035 | 10/27/14 16:19:52 |
| 16-5 | 1410147-03 | 4J27013_P-036 | 10/27/14 16:21:58 |
| LLCCV | 4J27013-CRL3 | 4J27013_P-037 | 10/27/14 16:24:06 |
| CCV | 4J27013-CCV3 | 4J27013_P-038 | 10/27/14 16:26:14 |
| CCB | 4J27013-CCB3 | 4J27013_P-039 | 10/27/14 16:28:21 |
| 16WC2B | 1410147-04 | 4J27013_P-040 | 10/27/14 16:39:48 |

# ANALYSIS SEQUENCE SUMMARY

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Calibration: 4102704 Instrument: PEMS

| Sample Name | Lab Sample ID | Lab File ID | Analysis Date/Time |
|---|---|---|---|
| 16SPRING | 1410147-05 | 4J27013_P-041 | 10/27/14 16:41:55 |
| CCV | 4J27013-CCV4 | 4J27013_P-050 | 10/27/14 17:00:58 |
| CCB | 4J27013-CCB4 | 4J27013_P-051 | 10/27/14 17:03:05 |
| LLCCV | 4J27013-CRL4 | 4J27013_P-059 | 10/27/14 17:20:05 |
| CCV | 4J27013-CCV5 | 4J27013_P-060 | 10/27/14 17:22:13 |
| CCB | 4J27013-CCB5 | 4J27013_P-061 | 10/27/14 17:24:20 |
| 16-3 | 1410147-02RE1 | 4J27013_P-063 | 10/27/14 17:36:32 |
| LLCCV | 4J27013-CRL5 | 4J27013_P-071 | 10/27/14 17:53:29 |
| CCV | 4J27013-CCV6 | 4J27013_P-072 | 10/27/14 17:55:37 |
| CCB | 4J27013-CCB6 | 4J27013_P-073 | 10/27/14 17:57:44 |

# L. Target Element Results

## (ANALYSIS DATA SHEETS)

# ANALYSIS DATA SHEET

**16-2**

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1410147-01 % Solid: Matrix: Water Sampled: 10/21/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-39-3 | Barium | 242 | | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-41-7 | Beryllium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-43-9 | Cadmium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-47-3 | Chromium | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-48-4 | Cobalt | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-50-8 | Copper | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7439-92-1 | Lead | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7439-97-6 | Mercury | | | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:38 |
| 7440-02-0 | Nickel | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-62-2 | Vanadium | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |
| 7440-66-6 | Zinc | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:13 |

# ANALYSIS DATA SHEET

**16-3**

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1410147-02 % Solid: Matrix: Water Sampled: 10/20/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7440-39-3 | Barium | 745 | | 20.0 | 2 | D | EPA 6020A | 4J27013 | 10/27/14 17:36 |
| 7440-41-7 | Beryllium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7440-43-9 | Cadmium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7440-47-3 | Chromium | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7440-48-4 | Cobalt | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7440-50-8 | Copper | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7439-92-1 | Lead | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7439-97-6 | Mercury | | | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:41 |
| 7440-02-0 | Nickel | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7440-62-2 | Vanadium | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |
| 7440-66-6 | Zinc | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:19 |

# ANALYSIS DATA SHEET

**16-5**

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1410147-03 % Solid: Matrix: Water Sampled: 10/21/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-39-3 | Barium | 171 | | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-41-7 | Beryllium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-43-9 | Cadmium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-47-3 | Chromium | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-48-4 | Cobalt | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-50-8 | Copper | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7439-92-1 | Lead | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7439-97-6 | Mercury | | | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:44 |
| 7440-02-0 | Nickel | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-62-2 | Vanadium | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |
| 7440-66-6 | Zinc | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:21 |

# ANALYSIS DATA SHEET

**16WC2B**

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1410147-04 % Solid: Matrix: Water Sampled: 10/21/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-39-3 | Barium | 116 | | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-41-7 | Beryllium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-43-9 | Cadmium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-47-3 | Chromium | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-48-4 | Cobalt | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-50-8 | Copper | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7439-92-1 | Lead | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7439-97-6 | Mercury | | | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:46 |
| 7440-02-0 | Nickel | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-62-2 | Vanadium | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |
| 7440-66-6 | Zinc | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:39 |

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# ANALYSIS DATA SHEET

**16SPRING**

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Lab ID: 1410147-05 % Solid: Matrix: Water Sampled: 10/21/14 Received: 10/23/14

| CAS NO. | Analyte | Conc. (ug/L) | MDL | RL | D.F. | Q | Method | Sequence | Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| 7440-38-2 | Arsenic | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-39-3 | Barium | 219 | | 10.0 | 1 | | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-41-7 | Beryllium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-43-9 | Cadmium | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-47-3 | Chromium | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-48-4 | Cobalt | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-50-8 | Copper | | | 5.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7439-92-1 | Lead | | | 1.00 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7439-97-6 | Mercury | | | 2.00 | 1 | U | EPA 7470A | 4J25003 | 10/24/14 16:49 |
| 7440-02-0 | Nickel | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-62-2 | Vanadium | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |
| 7440-66-6 | Zinc | | | 10.0 | 1 | U | EPA 6020A | 4J27013 | 10/27/14 16:41 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLICV | 4J27013-CRL1 | Arsenic | 1.000 | 0.975 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Barium | 10.00 | 9.94 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Beryllium | 1.000 | 0.948 | 95 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Cadmium | 1.000 | 0.934 | 93 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Chromium | 2.000 | 1.98 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Cobalt | 1.000 | 0.976 | 98 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Copper | 2.000 | 1.97 | 99 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Lead | 1.000 | 1.01 | 101 | ug/L | | 70 - 130 |
| LLICV | 4J27013-CRL1 | Nickel | 1.000 | 0.938 | 94 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Vanadium | 5.000 | 4.86 | 97 | ug/L | J | 70 - 130 |
| LLICV | 4J27013-CRL1 | Zinc | 2.000 | 1.81 | 90 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Arsenic | 1.000 | 0.943 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Barium | 10.00 | 9.62 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Beryllium | 1.000 | 0.928 | 93 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Cadmium | 1.000 | 0.998 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Chromium | 2.000 | 1.99 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Cobalt | 1.000 | 0.985 | 99 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Copper | 2.000 | 1.99 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Lead | 1.000 | 0.976 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Nickel | 1.000 | 0.918 | 92 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Vanadium | 5.000 | 5.01 | 100 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL2 | Zinc | 2.000 | 1.84 | 92 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Arsenic | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Barium | 10.00 | 9.61 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Beryllium | 1.000 | 0.965 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Cadmium | 1.000 | 1.05 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Chromium | 2.000 | 1.99 | 100 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Cobalt | 1.000 | 0.967 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Copper | 2.000 | 2.02 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Lead | 1.000 | 0.955 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Nickel | 1.000 | 0.969 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Vanadium | 5.000 | 4.88 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL3 | Zinc | 2.000 | 1.92 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Arsenic | 1.000 | 1.05 | 105 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Barium | 10.00 | 9.81 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Beryllium | 1.000 | 0.869 | 87 | ug/L | J | 70 - 130 |

# LOW LEVEL INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | QC Limts |
|---|---|---|---|---|---|---|---|---|
| LLCCV | 4J27013-CRL4 | Cadmium | 1.000 | 0.946 | 95 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Chromium | 2.000 | 2.04 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Cobalt | 1.000 | 1.00 | 100 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Copper | 2.000 | 2.01 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Lead | 1.000 | 0.969 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Nickel | 1.000 | 0.974 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Vanadium | 5.000 | 4.81 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL4 | Zinc | 2.000 | 1.81 | 90 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Arsenic | 1.000 | 1.06 | 106 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Barium | 10.00 | 9.84 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Beryllium | 1.000 | 1.03 | 103 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Cadmium | 1.000 | 0.937 | 94 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Chromium | 2.000 | 2.03 | 102 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Cobalt | 1.000 | 0.983 | 98 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Copper | 2.000 | 2.02 | 101 | ug/L | | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Lead | 1.000 | 0.956 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Nickel | 1.000 | 0.971 | 97 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Vanadium | 5.000 | 4.82 | 96 | ug/L | J | 70 - 130 |
| LLCCV | 4J27013-CRL5 | Zinc | 2.000 | 1.86 | 93 | ug/L | J | 70 - 130 |

# INITIAL CALIBRATION DATA

*EPA 7470A*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4102601 Instrument: V4

Calibration Date: 10/24/2014 15:18:20

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Mercury | CAL1 | S0 | 210 | 0 |
| Mercury | CAL2 | 0.2 | 1870 | 0.2 |
| Mercury | CAL3 | S0.5 | 4240 | 0.5 |
| Mercury | CAL4 | S1.0 | 8707 | 1 |
| Mercury | CAL5 | S5.0 | 42445 | 5 |
| Mercury | CAL6 | S10.0 | 83907 | 10 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 7470A*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4102601 Instrument: V4

Calibration Date: 10/24/2014 15:18:20

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Mercury | 0.0001192 | -0.02759 | 0.9999 | 0.995 | |

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# INITIAL CALIBRATION DATA

*EPA 6020A*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4102704 Instrument: PEMS

Calibration Date: 10/27/2014 12:55:47

| Compound | QC Sample | Lab ID | Area | Conc (ug/L) |
|---|---|---|---|---|
| Arsenic | CAL1 | S0 | 88.405 | 0 |
| Arsenic | CAL2 | S 6020-MS1 | 1343.515 | 1 |
| Arsenic | CAL3 | S 6020-MS2 | 2551.797 | 2 |
| Arsenic | CAL4 | S 6020-MS3 | 142715.1 | 125 |
| Arsenic | CAL5 | S 6020-MS4 | 288256 | 250 |
| Arsenic | CAL6 | S 6020-MS5 | 576503.8 | 500 |
| Barium | CAL1 | S0 | 21.111 | 0 |
| Barium | CAL2 | S 6020-MS1 | 16783.52 | 10 |
| Barium | CAL3 | S 6020-MS2 | 34244.11 | 20 |
| Barium | CAL4 | S 6020-MS3 | 207530.9 | 125 |
| Barium | CAL5 | S 6020-MS4 | 428362.9 | 250 |
| Barium | CAL6 | S 6020-MS5 | 832261.9 | 500 |
| Beryllium | CAL1 | S0 | 5.556 | 0 |
| Beryllium | CAL2 | S 6020-MS1 | 142.223 | 1 |
| Beryllium | CAL3 | S 6020-MS2 | 253.892 | 2 |
| Beryllium | CAL4 | S 6020-MS3 | 16174.19 | 125 |
| Beryllium | CAL5 | S 6020-MS4 | 33839.4 | 250 |
| Beryllium | CAL6 | S 6020-MS5 | 65587.27 | 500 |
| Cadmium | CAL1 | S0 | -1.49 | 0 |
| Cadmium | CAL2 | S 6020-MS1 | 1230.823 | 1 |
| Cadmium | CAL3 | S 6020-MS2 | 2513.634 | 2 |
| Cadmium | CAL4 | S 6020-MS3 | 143469.1 | 125 |
| Cadmium | CAL5 | S 6020-MS4 | 296138.7 | 250 |
| Cadmium | CAL6 | S 6020-MS5 | 583590.8 | 500 |
| Chromium | CAL1 | S0 | 5555.432 | 0 |
| Chromium | CAL2 | S 6020-MS1 | 16878.68 | 2 |
| Chromium | CAL3 | S 6020-MS2 | 29371.4 | 4 |

| | | | | |
|---|---|---|---|---|
| Chromium | CAL4 | S 6020-MS3 | 705920.5 | 125 |
| Chromium | CAL5 | S 6020-MS4 | 1451339 | 250 |
| Chromium | CAL6 | S 6020-MS5 | 2766160 | 500 |
| Cobalt | CAL1 | S0 | 32.222 | 0 |
| Cobalt | CAL2 | S 6020-MS1 | 6644.432 | 1 |
| Cobalt | CAL3 | S 6020-MS2 | 13908 | 2 |
| Cobalt | CAL4 | S 6020-MS3 | 831565.9 | 125 |
| Cobalt | CAL5 | S 6020-MS4 | 1678063 | 250 |
| Cobalt | CAL6 | S 6020-MS5 | 3207285 | 500 |
| Copper | CAL1 | S0 | 71.297 | 0 |
| Copper | CAL2 | S 6020-MS1 | 6890.338 | 2 |
| Copper | CAL3 | S 6020-MS2 | 14173 | 4 |
| Copper | CAL4 | S 6020-MS3 | 412369.9 | 125 |
| Copper | CAL5 | S 6020-MS4 | 833018.7 | 250 |
| Copper | CAL6 | S 6020-MS5 | 1601480 | 500 |
| Lead | CAL1 | S0 | 86.111 | 0 |
| Lead | CAL2 | S 6020-MS1 | 8104.726 | 1 |
| Lead | CAL3 | S 6020-MS2 | 15715.69 | 2 |
| Lead | CAL4 | S 6020-MS3 | 942256.5 | 125 |
| Lead | CAL5 | S 6020-MS4 | 1925726 | 250 |
| Lead | CAL6 | S 6020-MS5 | 3643263 | 500 |
| Nickel | CAL1 | S0 | 13.889 | 0 |
| Nickel | CAL2 | S 6020-MS1 | 1399.172 | 1 |
| Nickel | CAL3 | S 6020-MS2 | 3107.89 | 2 |
| Nickel | CAL4 | S 6020-MS3 | 179988.3 | 125 |
| Nickel | CAL5 | S 6020-MS4 | 370337.6 | 250 |
| Nickel | CAL6 | S 6020-MS5 | 711366.3 | 500 |
| Vanadium | CAL1 | S0 | 1810.849 | 0 |
| Vanadium | CAL2 | S 6020-MS1 | 35866.52 | 5 |
| Vanadium | CAL3 | S 6020-MS2 | 71591.95 | 10 |
| Vanadium | CAL4 | S 6020-MS3 | 838976.2 | 125 |
| Vanadium | CAL5 | S 6020-MS4 | 1726320 | 250 |
| Vanadium | CAL6 | S 6020-MS5 | 3287178 | 500 |
| Zinc | CAL1 | S0 | 108.334 | 0 |
| Zinc | CAL2 | S 6020-MS1 | 1647.358 | 2 |

| | | | | |
|---|---|---|---|---|
| Zinc | CAL3 | S 6020-MS2 | 3460.784 | 4 |
| Zinc | CAL4 | S 6020-MS3 | 101794.3 | 125 |
| Zinc | CAL5 | S 6020-MS4 | 208481 | 250 |
| Zinc | CAL6 | S 6020-MS5 | 404342.3 | 500 |

# INITIAL CALIBRATION DATA (Continued)

*EPA 6020A*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Calibration: 4102704 Instrument: PEMS

Calibration Date: 10/27/2014 12:55:47

| Compound | Slope | Intercept | Linear r | Linear Limit | Q |
|---|---|---|---|---|---|
| Arsenic | 0.001417 | 0 | 0.9999 | 0.998 | |
| Barium | 0.001036 | 0 | 0.9999 | 0.998 | |
| Beryllium | 0.001185 | 0 | 0.9998 | 0.998 | |
| Cadmium | 0.0008229 | 0 | 0.9999 | 0.998 | |
| Chromium | 0.006857 | 0 | 0.9999 | 0.998 | |
| Cobalt | 0.007973 | 0 | 0.9999 | 0.998 | |
| Copper | 0.003975 | 0 | 0.9999 | 0.998 | |
| Lead | 0.008700 | 0 | 0.9998 | 0.998 | |
| Nickel | 0.001765 | 0 | 0.9999 | 0.998 | |
| Vanadium | 0.008166 | 0 | 0.9999 | 0.998 | |
| Zinc | 0.001000 | 0 | 0.9999 | 0.998 | |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 7470A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J25003 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4J25003-ICV1 | Mercury | 4.000 | 3.99 | 100 | ug/L | | +/-20 |
| CCV | 4J25003-CCV1 | Mercury | 5.000 | 5.03 | 101 | ug/L | | +/-20 |
| CCV | 4J25003-CCV2 | Mercury | 5.000 | 5.01 | 100 | ug/L | | +/-20 |
| CCV | 4J25003-CCV3 | Mercury | 5.000 | 5.10 | 102 | ug/L | | +/-20 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| ICV | 4J27013-ICV1 | Arsenic | 220.0 | 213 | 97 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Barium | 110.0 | 108 | 98 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Beryllium | 110.0 | 105 | 96 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Cadmium | 110.0 | 108 | 98 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Chromium | 110.0 | 111 | 101 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Cobalt | 110.0 | 113 | 103 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Copper | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Lead | 220.0 | 219 | 99 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Nickel | 110.0 | 109 | 99 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Vanadium | 110.0 | 111 | 101 | ug/L | | +/-10 |
| ICV | 4J27013-ICV1 | Zinc | 220.0 | 214 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Arsenic | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Barium | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Beryllium | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Cadmium | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Chromium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Cobalt | 300.0 | 298 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Copper | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Lead | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Nickel | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV1 | Zinc | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Arsenic | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Beryllium | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Cadmium | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Chromium | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Cobalt | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Copper | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Lead | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Nickel | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Vanadium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV2 | Zinc | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Arsenic | 300.0 | 306 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Barium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Beryllium | 300.0 | 307 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Cadmium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Chromium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Cobalt | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Copper | 300.0 | 303 | 101 | ug/L | | +/-10 |

# INITIAL AND CONTINUING CALIBRATION CHECK

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units | Q | Control Limit |
|---|---|---|---|---|---|---|---|---|
| CCV | 4J27013-CCV3 | Lead | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Nickel | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Vanadium | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV3 | Zinc | 300.0 | 302 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Arsenic | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Beryllium | 300.0 | 313 | 104 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Cadmium | 300.0 | 291 | 97 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Chromium | 300.0 | 293 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Cobalt | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Copper | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Lead | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Nickel | 300.0 | 292 | 97 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV4 | Zinc | 300.0 | 295 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Arsenic | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Barium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Beryllium | 300.0 | 313 | 104 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Cadmium | 300.0 | 288 | 96 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Chromium | 300.0 | 300 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Cobalt | 300.0 | 308 | 103 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Copper | 300.0 | 305 | 102 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Lead | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Nickel | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Vanadium | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV5 | Zinc | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Arsenic | 300.0 | 301 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Barium | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Beryllium | 300.0 | 314 | 105 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Cadmium | 300.0 | 284 | 95 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Chromium | 300.0 | 294 | 98 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Cobalt | 300.0 | 299 | 100 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Copper | 300.0 | 297 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Lead | 300.0 | 304 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Nickel | 300.0 | 303 | 101 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Vanadium | 300.0 | 296 | 99 | ug/L | | +/-10 |
| CCV | 4J27013-CCV6 | Zinc | 300.0 | 293 | 98 | ug/L | | +/-10 |

# ICP INTERFERENCE CHECK SAMPLE

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | True | Found | %R | Units |
|---|---|---|---|---|---|---|
| ICSA | 4J27013-IFA1 | Arsenic | | 0.00 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Barium | | 0.01 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Beryllium | | 0.00 | 2 | ug/L |
| ICSA | 4J27013-IFA1 | Cadmium | | 0.00 | 2 | ug/L |
| ICSA | 4J27013-IFA1 | Chromium | | 0.07 | 10 | ug/L |
| ICSA | 4J27013-IFA1 | Cobalt | | 0.00 | 10 | ug/L |
| ICSA | 4J27013-IFA1 | Copper | | 0.11 | 10 | ug/L |
| ICSA | 4J27013-IFA1 | Lead | | 0.00 | 2 | ug/L |
| ICSA | 4J27013-IFA1 | Nickel | | 0.06 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Vanadium | | 0.01 | 20 | ug/L |
| ICSA | 4J27013-IFA1 | Zinc | | 0.06 | 20 | ug/L |
| ICSAB | 4J27013-IFB1 | Arsenic | 25.00 | 25.77 | 103 | ug/L |
| ICSAB | 4J27013-IFB1 | Barium | | 0.02 | 20 | ug/L |
| ICSAB | 4J27013-IFB1 | Beryllium | | -0.01 | 2 | ug/L |
| ICSAB | 4J27013-IFB1 | Cadmium | 25.00 | 25.90 | 104 | ug/L |
| ICSAB | 4J27013-IFB1 | Chromium | 50.00 | 55.14 | 110 | ug/L |
| ICSAB | 4J27013-IFB1 | Cobalt | 50.00 | 55.22 | 110 | ug/L |
| ICSAB | 4J27013-IFB1 | Copper | 50.00 | 55.35 | 111 | ug/L |
| ICSAB | 4J27013-IFB1 | Lead | | 0.00 | 2 | ug/L |
| ICSAB | 4J27013-IFB1 | Nickel | 50.00 | 53.46 | 107 | ug/L |
| ICSAB | 4J27013-IFB1 | Vanadium | 50.00 | 54.68 | 109 | ug/L |
| ICSAB | 4J27013-IFB1 | Zinc | 25.00 | 27.01 | 108 | ug/L |

* The absence of an entry in the “True” column denotes the lack of a true value for that analyte. The entry in the “%R” column represents a Control Limit, established as +/- 2 times analyte Limit Reporting Limit.

# ICP-MS Tune

*EPA 6020A*

Client: DRAPER SDG: 1410147

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Date: 10/27/14 ICP-MS Instrument ID: PEMS

| Element - Mass | Avg. Measured Mass (amu) | Average Peak Width (amu) | %Height | %RSD |
|---|---|---|---|---|
| Be - 9 | 8.975 | 0.657 | 10 | 0.689 |
| Mg - 24 | 23.975 | 0.700 | 10 | 0.56 |
| Mg - 25 | 24.975 | 0.700 | 10 | 0.574 |
| Mg - 26 | 26.075 | 0.692 | 10 | 0.619 |
| Co - 59 | 58.925 | 0.703 | 10 | 0.564 |
| In - 113 | 112.825 | 0.723 | 10 | 0.662 |
| In - 115 | 114.875 | 0.716 | 10 | 0.552 |
| Pb - 206 | 205.975 | 0.684 | 10 | 0.924 |
| Pb - 207 | 206.975 | 0.686 | 10 | 0.559 |
| Pb - 208 | 207.975 | 0.688 | 10 | 0.947 |

Comments:

Environmental Testing Laboratories CompuChem A Division Of Liberty Analytical Corp.

ACCREDITED IN ACCORDANCE WITH nelac

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1410147

Sequence: 4J27013

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| S0 | 10/27/14 15:01 | 100 | 100 | 100 | 100 | 100 |
| S 6020-MS1 | 10/27/14 15:04 | 99 | 99 | 100 | 99 | 100 |
| S 6020-MS2 | 10/27/14 15:06 | 98 | 100 | 100 | 100 | 101 |
| S 6020-MS3 | 10/27/14 15:08 | 98 | 100 | 96 | 101 | 100 |
| S 6020-MS4 | 10/27/14 15:10 | 96 | 98 | 97 | 99 | 97 |
| S 6020-MS5 | 10/27/14 15:12 | 92 | 96 | 95 | 98 | 96 |
| LLICV | 10/27/14 15:16 | 97 | 99 | 98 | 97 | 96 |
| ICV | 10/27/14 15:18 | 97 | 98 | 100 | 100 | 98 |
| ICB | 10/27/14 15:20 | 97 | 100 | 100 | 100 | 99 |
| ICSA | 10/27/14 15:22 | 97 | 102 | 98 | 102 | 100 |
| ICSAB | 10/27/14 15:24 | 98 | 101 | 101 | 101 | 99 |
| LLCCV | 10/27/14 15:26 | 99 | 100 | 99 | 101 | 101 |
| CCV | 10/27/14 15:29 | 96 | 100 | 97 | 100 | 98 |
| CCB | 10/27/14 15:31 | 98 | 99 | 99 | 98 | 99 |
| PBWKL | 10/27/14 15:39 | 97 | 98 | 98 | 98 | 98 |
| MLCSKL | 10/27/14 15:41 | 96 | 100 | 96 | 100 | 99 |
| MLCSDKL | 10/27/14 15:43 | 94 | 98 | 94 | 97 | 96 |
| CCV | 10/27/14 16:00 | 96 | 92 | 97 | 98 | 96 |
| CCB | 10/27/14 16:02 | 100 | 94 | 95 | 98 | 98 |
| 16-2 | 10/27/14 16:13 | 99 | 92 | 94 | 96 | 92 |
| 16-2L | 10/27/14 16:15 | 101 | 92 | 96 | 97 | 95 |
| 16-2A | 10/27/14 16:17 | 96 | 89 | 90 | 94 | 90 |
| 16-3 | 10/27/14 16:19 | 97 | 90 | 93 | 94 | 91 |
| 16-5 | 10/27/14 16:21 | 101 | 95 | 96 | 98 | 95 |
| LLCCV | 10/27/14 16:24 | 103 | 94 | 98 | 99 | 98 |
| CCV | 10/27/14 16:26 | 98 | 89 | 93 | 98 | 95 |
| CCB | 10/27/14 16:28 | 99 | 90 | 96 | 98 | 97 |
| 16WC2B | 10/27/14 16:39 | 99 | 89 | 91 | 96 | 90 |
| 16SPRING | 10/27/14 16:41 | 96 | 88 | 89 | 92 | 90 |

# ICPMS Internal Standards Relative Intensity Summary

*EPA 6020A*

Client: DRAPER

Work Order: 1410147

Sequence: 4J27013

Project: RAAP 2013 UNIT 16 & 10/B03204-12

Instrument: PEMS

| Sample No. | Time | Internal Standards %RI For: Lithium6 | Scandium45 | Indium115 | Terbium159 | Bismuth209 |
|---|---|---|---|---|---|---|
| CCV | 10/27/14 17:00 | 93 | 89 | 94 | 98 | 94 |
| CCB | 10/27/14 17:03 | 96 | 88 | 94 | 97 | 94 |
| LLCCV | 10/27/14 17:20 | 97 | 91 | 96 | 98 | 97 |
| CCV | 10/27/14 17:22 | 94 | 89 | 95 | 99 | 95 |
| CCB | 10/27/14 17:24 | 97 | 93 | 95 | 100 | 98 |
| 16-3 | 10/27/14 17:36 | 99 | 89 | 95 | 98 | 94 |
| LLCCV | 10/27/14 17:53 | 96 | 90 | 94 | 98 | 98 |
| CCV | 10/27/14 17:55 | 93 | 88 | 93 | 97 | 93 |
| CCB | 10/27/14 17:57 | 95 | 90 | 93 | 97 | 95 |

# BLANKS

*EPA 7470A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J25003 Instrument ID: V4

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4J25003-ICB1 | Mercury | 0.0200 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4J25003-CCB1 | Mercury | -0.0280 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| PBWKM | 4102402-BLK1 | Mercury | -0.0280 | | 2.00 | ug/L | *J* | EPA 7470A |
| CCB | 4J25003-CCB2 | Mercury | -0.0330 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |
| CCB | 4J25003-CCB3 | Mercury | -0.0250 | 0.200 | 2.00 | ug/L | *U* | EPA 7470A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| ICB | 4J27013-ICB1 | Arsenic | 0.135 | 0.140 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Barium | 0.0346 | 0.100 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Beryllium | 0.0666 | 0.0330 | 1.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Cadmium | 0.0502 | 0.0110 | 1.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Chromium | 0.0735 | 0.0680 | 5.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Cobalt | 0.0968 | 0.00950 | 5.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Copper | 0.108 | 0.120 | 5.00 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Lead | 0.0300 | 0.0210 | 1.00 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Nickel | 0.102 | 0.00910 | 10.0 | ug/L | J | EPA 6020A |
| ICB | 4J27013-ICB1 | Vanadium | 0.0261 | 0.0560 | 10.0 | ug/L | U | EPA 6020A |
| ICB | 4J27013-ICB1 | Zinc | 0.119 | 0.120 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Arsenic | 0.00240 | 0.140 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Barium | 0.0155 | 0.100 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Beryllium | 0.0133 | 0.0330 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Cadmium | 0.0123 | 0.0110 | 1.00 | ug/L | J | EPA 6020A |
| CCB | 4J27013-CCB1 | Chromium | 0.0195 | 0.0680 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Cobalt | 0.00292 | 0.00950 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Copper | 0.0431 | 0.120 | 5.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Lead | 0.00913 | 0.0210 | 1.00 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Nickel | 0.0152 | 0.00910 | 10.0 | ug/L | J | EPA 6020A |
| CCB | 4J27013-CCB1 | Vanadium | 0.0219 | 0.0560 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB1 | Zinc | 0.0151 | 0.120 | 10.0 | ug/L | U | EPA 6020A |
| PBWKL | 4102401-BLK1 | Arsenic | 0.0143 | | 10.0 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Barium | -0.000410 | | 10.0 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Beryllium | 0.0182 | | 1.00 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Cadmium | 0.00769 | | 1.00 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Chromium | 0.0264 | | 5.00 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Cobalt | 0.000880 | | 5.00 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Copper | 0.0264 | | 5.00 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Lead | 0.00354 | | 1.00 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Nickel | 0.0136 | | 10.0 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Vanadium | 0.0169 | | 10.0 | ug/L | J | EPA 6020A |
| PBWKL | 4102401-BLK1 | Zinc | 0.0652 | | 10.0 | ug/L | J | EPA 6020A |
| CCB | 4J27013-CCB2 | Arsenic | 0.0533 | 0.140 | 10.0 | ug/L | U | EPA 6020A |
| CCB | 4J27013-CCB2 | Barium | 0.121 | 0.100 | 10.0 | ug/L | J | EPA 6020A |
| CCB | 4J27013-CCB2 | Beryllium | 0.0206 | 0.0330 | 1.00 | ug/L | U | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4J27013-CCB2 | Cadmium | 0.0533 | 0.0110 | 1.00 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Chromium | 0.0234 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB2 | Cobalt | 0.0197 | 0.00950 | 5.00 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Copper | 0.0547 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB2 | Lead | 0.0326 | 0.0210 | 1.00 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Nickel | 0.0226 | 0.00910 | 10.0 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB2 | Vanadium | 0.0441 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB2 | Zinc | 0.0187 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Arsenic | 0.0511 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Barium | 0.0207 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Beryllium | -0.00739 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Cadmium | 0.00527 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Chromium | 0.000950 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Cobalt | 0.00274 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Copper | 0.0421 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Lead | 0.00277 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Nickel | 0.00450 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Vanadium | 0.0247 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB3 | Zinc | 0.0106 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Arsenic | 0.0360 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Barium | 0.0139 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Beryllium | -0.00351 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Cadmium | 0.00957 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Chromium | 0.0255 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Cobalt | 0.00526 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Copper | 0.0495 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Lead | 0.00430 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Nickel | 0.00983 | 0.00910 | 10.0 | ug/L | *J* | EPA 6020A |
| CCB | 4J27013-CCB4 | Vanadium | 0.0221 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB4 | Zinc | 0.0379 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Arsenic | 0.0385 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Barium | 0.0161 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Beryllium | -0.00677 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Cadmium | 0.00341 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Chromium | 0.0147 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Cobalt | 0.00414 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |

# BLANKS

*EPA 6020A*

Client: DRAPER SDG: 1410147 Project: RAAP 2013 UNIT 16 & 10/B03204-12

Sequence: 4J27013 Instrument ID: PEMS

| Client ID | Lab Sample ID | Analyte | Found | MDL | RL | Units | Q | Method |
|---|---|---|---|---|---|---|---|---|
| CCB | 4J27013-CCB5 | Copper | 0.0404 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Lead | 0.00280 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Nickel | 0.00875 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Vanadium | 0.00750 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB5 | Zinc | 0.0245 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Arsenic | 0.0249 | 0.140 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Barium | 0.0162 | 0.100 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Beryllium | 0.0309 | 0.0330 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Cadmium | 0.00734 | 0.0110 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Chromium | 0.0120 | 0.0680 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Cobalt | 0.00350 | 0.00950 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Copper | 0.0476 | 0.120 | 5.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Lead | 0.00151 | 0.0210 | 1.00 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Nickel | 0.00457 | 0.00910 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Vanadium | 0.0158 | 0.0560 | 10.0 | ug/L | *U* | EPA 6020A |
| CCB | 4J27013-CCB6 | Zinc | 0.0408 | 0.120 | 10.0 | ug/L | *U* | EPA 6020A |

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 10-24-14
Preparation Time: 0950
Batch Number: 4102401/02
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4102401/02-BLK1 | PBWKL/KM | MB | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BS1 | MLCSKL/KM | LCS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BSD1 | MLCSDKL/KM | LCSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-DUP1 | 16WC1AD | DUP | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MS1 | 16WC1AS | MS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MSD1 | 16WC1ASD | MSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-01 | 16WC1A | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-02 | 16C1 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-03 | 16MW8 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-04 | 16MW9 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-05 | 16WDUP | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-06 | 16WC1B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-01 | 16-2 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-02 | 16-3 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-03 | 16-5 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-04 | 16WC2B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-05 | 16SPRING | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard/QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

| Record of Tempature/Time | |
|---|---|
| Hot Block Temp In: | 95 C |
| Hot Block Temp Out: | 95 C |
| Hot Block Identifier | HOTBLOCK#1 |
| Time Hg in water bath: | 1025 |
| Time Hg out water bath: | 1225 |
| Water Bath Temp In: | 95 C |
| Water Bath Temp Out: | 95 C |
| Water Bath Identifier | HGBATH#1 |

**MS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GO1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 1.0mL 100ppb Hg
Ref# 4J24005

**LCS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GO1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 0.4 mL of MSHG-1PPM
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Bolton
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

***Reviewed By:*** MP
***Date:*** 10/28/14

111611 JCF

# METALS/MERCURY PREPARATION LOG

Metals Method: 3005A / 6020A
Mercury Method: 7470A
Prepared By: SAB

CompuChem — A Division Of Liberty Analytical Corp.

Preparation Date: 10-24-14
Preparation Time: 0950
Batch Number: 4102401/02
Purple Water

| COMPUCHEM SAMPLE ID | CLIENT SAMPLE ID | SAMPLE TYPE | ICP Initial (mL) | ICP Final (mL) | HG Initial (mL) | HG Final (mL) | *Description Before | *Description After ICP | pH |
|---|---|---|---|---|---|---|---|---|---|
| 4102401/02-BLK1 | PBWKL/KM | MB | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BS1 | MLCSKL/KM | LCS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-BSD1 | MLCSDKL/KM | LCSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | N/A |
| 4102401/02-DUP1 | 16WC1AD | DUP | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MS1 | 16WC1AS | MS | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 4102401/02-MSD1 | 16WC1ASD | MSD | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-01 | 16WC1A | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-02 | 16C1 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-03 | 16MW8 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-04 | 16MW9 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-05 | 16WDUP | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410146-06 | 16WC1B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-01 | 16-2 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-02 | 16-3 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-03 | 16-5 | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-04 | 16WC2B | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |
| 1410147-05 | 16SPRING | SAMPLE | 50 | 50 | 100 | 100 | CS / CL | CS / CL | CL |

**Mercury Standards and QC** S0 S0.2 S0.5S1 S5 S10 ICV ICB CRI CCV CCB

NOTE: All standards and QC for mercury were prepared at the same day as the associated samples. Refer to the attached.

Standard QC Preparation Log, with date matching the above preparation date, for preparation method and instruction.

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| Hot Block Temp Out: | 95 C |
| Hot Block Identifier | HOTBLOCK#1 |
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| Time Hg out water bath: | 1225 |
| Water Bath Temp In: | 95 C |
| Water Bath Temp Out: | 95 C |
| Water Bath Identifier | HGBATH#1 |

**MS Reference**
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0.1 mL for 50 ml prep
Ref #: 4GO1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 1.0mL 100ppb Hg
Ref# 4J24005

**LCS Reference**
ICAP: 0.2 mL of ICCV-6
0.1 mL for 50 ml prep
Ref #: 4GO1019
ICAP: 0.2 mL of ICCV-4
0.1 mL for 50 ml prep
Ref #: 4DO1014
HG: 0.4 mL of MSHG-1PPM
Ref# 4A24021

* R=red, BL=blue, Y=yellow, G=green, O=orange, V=violet, W=white, CS=colorless, BR=brown, BK=black
GY= grey, F=fine, M=medium, C=coarse, CL=clear, CY=cloudy, OP=opaque

***Shading has been applied to unused portions of this worksheet as a substitute for 'Z-out'.***

"The presence of the Chemist's/analyst's employee ID number, or signature, on this log attests that strict compliance with the method's SOP has occurred. Any SOP deviations requires documentation by the chemist/analyst together with the chemist's/analyst's initials and the initials of the lab supervisor and a QA department representative, signifying approval of the deviation."

**Sample Verification Signature:** S. Baltzer
This signature corroborates that the sample idenification numbers appearing on the digestion cups are the same as those appearing on the field sample containers.

**Reviewed By:** [signature]
**Date:** 10/28/14

111611 JCF

# Data Validation Report

**Draper Aden Associates**
Engineering • Surveying • Environmental Services
www.daa.com

# *Data Validation Summary*
# *Fourth Quarter 2014*
# *Semiannual Groundwater Monitoring Event for HWMU 16 and*
# *Corrective Action Semiannual Groundwater Monitoring Event for HWMU 5*

## *Post Closure Care Permit Hazardous Waste Management Units 5 and 16*
## *Radford Facility Army Ammunition Plant, Radford, Virginia*
## *EPA ID# VA1210020730*

Draper Aden Associates performed data validation of the analytical results for the Fourth Quarter 2014 semiannual groundwater monitoring event at Hazardous Waste Management Unit (HWMU) 5 and 16 located at the Radford Facility Army Ammunition Plant (RFAAP) in Radford, Virginia. Groundwater monitoring activities were conducted in accordance with the *Final Hazardous Waste Management Post-Closure Care Permit* (Permit) for HWMUs 5 and 16 (original effective date October 4, 2002, reissued August 16, 2014 and VDEQ approved Class 1 Permit Modification dated September 12, 2014). The Fourth Quarter 2014 event served as the tenth semiannual Corrective Action (CA) groundwater monitoring event for HWMU-5 conducted in accordance with the Permit. The following information summarizes the findings of the Fourth Quarter 2014 semiannual activities at each Unit. Additionally, no groundwater sampling was conducted at HWMU-7 or at HWMU-10 during Fourth Quarter 2014; the VDEQ issued approval of clean closure for groundwater with immediate cessation of groundwater post-closure related activities for both Units in correspondence dated June 26, 2013 (HWMU-7) and dated April 2, 2014 (HWMU-10).

### *Sample Collection/Analytical Services*

Draper Aden Associates, of Blacksburg, Virginia, collected groundwater samples during October 14 through October 22, 2014. Samples were submitted for laboratory analysis via courier to CompuChem, a Division of Liberty Analytical (CompuChem), of Cary, North Carolina; or Eurofins Lancaster Laboratories Environmental, LLC (ELLE), of Lancaster, Pennsylvania. A summary table of the required analyses and identification of the analyzing laboratory is provided below. Each laboratory is a VELAP accredited laboratory for the analytes, methods, and matrix as listed on each certificate of analysis, except if noted below.

### *Verification Event*

No verification sampling was required.

***Receipt of Monitoring Event Data***

On behalf of BAE SYSTEMS, Ordnance Systems, Inc., each laboratory submitted results to Draper Aden Associates in a final certificate of analysis which included analytical results as well as relevant documentation to verify and validate the results as discussed below. The final certificate of analysis for this event was received November 6, 2014.

***Summary of Monitoring Event Data by Analytical Method***

Certificates of analysis were received from each laboratory in the following sample delivery groups (SDGs):

***Summary of Required Analytical Methods and SDGs***

| Analytical Method | Hazardous Waste Management Unit (HWMU) | | Laboratory |
|---|---|---|---|
| | HWMU 5 | HWMU 16 | |
| *8260C Volatiles* | RAE26 | RAE30 | ELLE |
| *8270D Semivolatiles* | NA | 1410146/1410147 | CompuChem |
| *6020A Inorganics* | 1410123 | 1410146/1410147 | CompuChem |
| *7470A Mercury* | NA | 1410146/1410147 | CompuChem |

*NA - Denotes analysis not applicable/analysis not required.*

Each final certificate of analysis was complete in its presentation and the data were of acceptable quality. Chains of custody and permit required target analyte lists are provided in each SDG.

***Data Analysis and Validation***

Samples were analyzed by *SW-846 Method requirements (Test Methods for Evaluating Solid Wastes - Physical and Chemical Methods, USEPA SW-846, 3rd edition - Final Update I, II/IIA and III).* Data, except where noted below, were evaluated in accordance with:

- *USEPA Region III Modifications to The Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses*, April 1993.
- *USEPA Region III Modifications to The National Functional Guidelines for Organic Data Review,* September 1994.
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* June 2008.
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* October 2004 *and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review,* January 2010, where applicable.
- *USEPA Region III Innovative Approaches for Validation of Organic and Inorganic Data Standard Operating Procedures M-1 and IM-1,* June 1995, modified, and the analytical method.

Draper Aden Associates, of Blacksburg, Virginia, performed data validation as detailed in the attached data validation reports. For each HWMU, data validation reports and a summary table of data validation results are provided as an attachment. (Appendix A – data validation summary tables, Appendix B – data validation reports and laboratory data).

Review was limited to the following items, where applicable:

- Data package completeness
- Chain of custody
- Holding time/preservation
- Initial and continuing calibrations
- Blanks
- Interference check sample (inorganics)
- Surrogates
- Matrix spike/matrix spike duplicate/(MS/MSD) samples
- Laboratory control samples (LCS)
- Internal standards
- Field duplicate
- Laboratory duplicate (inorganics)
- Serial dilution (inorganics)
- Target analyte identification and quantitation
- Other – as noted

***Reporting of Results***

For HWMU 5, results were reported to at or above the laboratory method detection limit (MDL). The MDL was at or below the permit detection limit and permit quantitation limit (QL) listed in Appendix J or Module VI-Groundwater Corrective Action & Monitoring Program for Unit 5. Results reported between the MDL and QL should be considered estimated concentrations.

For this event, point of compliance well and plume well results for HWMU 16 were reported to at or above the permit QL, except where noted.

***Summary of Data Validation Results***

The data validation results are summarized below and on the attached reports and table. Each final certificate of analysis was complete in its presentation and the data were of acceptable quality. The chain of custody documentation was complete, except where noted below. The laboratory received the samples on ice and in good condition, with custody seals intact, except as noted below. Technical holding time and preservation criteria were met, except where noted. The data set demonstrated the laboratory's ability to achieve the permit QL, unless noted below.

***SW-846 Method 8260C/5030C-Volatile Organic Analytes- 25 ml purge volume***

Instrument calibration, blank, surrogate, MS/MSD, LCS, internal standards, sample/blind field sample duplicate results, and target analyte identification and quantitation were met, except where noted below. The MS/MSD samples were analyzed on project samples as noted on the chain of custody. A trip blank was analyzed for each day of sample collection. A blind field duplicate was collected and analyzed for the required target analytes. No target analytes were detected in the sample/field duplicate sample unless noted below. Deviations from specific QA/QC criteria that were identified during the data review process are summarized below.

HWMU 5

- Sample/Field Sample Duplicate results - 5WC21/5WDUP - Trichloroethene was reported above the QL in both the sample and blind field duplicate (3.9/4 µg/l). The RPD criteria were met.
- Laboratory reported to laboratory QL instead of permit specified QL. Laboratory QL below permit specified QL. No revision was requested.
- Initial calibration data not provided in SDG. Information was presented in SDG RAE 30.
- Laboratory verified independent source was used for LCS (see attached email dated 1-9-2015.

HWMU 16

- Sample/Field Sample Duplicate results – 16WC1A/16WDUP - 1,1-Dichloroethane (1.7/1.5 µg/l) were reported above the QL in both the sample and blind field duplicate. The RPD criteria were met.
- Samples 16C1 and 16MW9 were analyzed in dilution to obtain the final result for diethyl ether.
- The permit required QL is 12.5 µg/l for both diethyl ether and dimethyl ether. The laboratory reported the QL for each analyte as 13 µg/l due to the laboratory rounding policy. Draper Aden Associates revised the QL to 12.5 µg/l and no revision was requested.

***SW-846 Method 8270D/3510C- Semivolatile Organic Analytes***

Calibration, blank, surrogate, MS/MSD, LCS, internal standards, sample/field sample duplicate results, and target analyte identification and quantitation criteria were met, except where noted below. The MS/MSD samples were analyzed on project samples as noted on the chain of custody. No target analytes were detected at or above the permit QL in the sample/field duplicate sample. Deviations from specific QA/QC criteria that were identified during the data review process are summarized below.

HWMU 16

- The tune amount (50 ng) was not noted in the certificate of analysis. The tune amount has been 50 ng historically and no data qualification was required.

- A footnote presented in Appendix G to Attachment 3, Groundwater Corrective Action Annual Monitoring List, of Permit Module V – *Groundwater Compliance Monitoring for Unit 16* indicates that verification is required for constituents detected at concentrations less than the Limit of Quantitation (LOQ)/QL if their associated groundwater protection standard (GPS) is based on the LOQ/QL. This footnote applies to 2,4-dinitrotoluene and 2,6-dinitrotoluene detected below the LOQ/QL only in compliance wells.

During Fourth Quarter 2014, 2,4-dinitrotoluene and 2,6-dinitrotoluene were not detected at or above the MDL or QL and no additional evaluation was required.

***SW-846 Method 6020A/3005A–Inorganics-total***

Calibration, blank, interference check sample, MS/MSD/DUP, LCS, internal standards, serial dilution, sample/field sample duplicate results, and target analyte quantitation were met, except where noted below. MS/MSD analyses were performed on project samples as noted on the chain of

custody. Deviations from specific QA/QC criteria that were identified during the data review process are summarized below. The field duplicate/sample results exhibited acceptable precision, where applicable, except where noted.

HWMU 5

- Sample/Blind Field Sample Duplicate results – 5WC21/5WDUP – Cobalt was reported above the QL in both the sample and blind field duplicate (69.9/72.7µg/l). The RPD criteria were met.

HWMU 16

- Sample/Blind Field Sample Duplicate results – 16WC1A/16WDUP - Barium was reported above the QL in both the sample and blind field duplicate (262/263 µg/l). The RPD criteria were met.
- Samples 16-3 and 16MW9 were analyzed in dilution to obtain the final result for barium.
- Cobalt was detected above the QL in sample 16WC1B. A verification event to confirm the detection was performed on December 5, 2013. A second verification event was performed for both total and dissolved on December 20, 2013. Both verification events confirmed the original cobalt result and the original result was reported as the final result.
- A comprehensive data validation was performed on the December 5, 2013 verification result and included review of instrument data and recalculation of 10% of results.

***SW-846 Method 7470A– Mercury-total***

Calibration, blank, MS/MSD, LCS, sample/field sample duplicate results were within control limits except where noted below. MS/MSD analyses were performed on project samples as noted on the chain of custody. Mercury was not detected in the sample/blind field duplicate sample. No deviations from specific QA/QC criteria were identified during the data review process.

## A. QC DELIVERABLES PACKAGE – SAMPLE PAPERWORK:

| | | |
|---|---|---|
| 1. | Was the chain of custody included in the data deliverable package? | ☑ YES ☐ NO |
| 2. | Was custody transfer between different parties dated and signed? | ☑ YES ☐ NO |
| 2. | Did the chain of custody document sampler signature, sample locations, date and time of sampling and analyses requested? | ☑ YES ☐ NO |
| 3. | Were the sample results included for each sample location? | ☑ YES ☐ NO |
| 4. | Did the laboratory report the required target analytes? | ☑ YES ☐ NO |

**End of page**

## *DATA EVALUATION FOR SW-846 METHOD 8260C (GC/MS) VOLATILE ORGANICS*

**A. QC DELIVERABLES PACKAGE:**

- ☑ Project specific target analytes reported at or above required permit QL
  MDL study performed for target analytes and supports required QL-not reviewed
- ☑ Passed single blind performance evaluation sample within 12 months, electronic data file reviewed

**B. TECHNICAL HOLDING TIME AND PRESERVATION REVIEW CRITERIA:**

- ☑ 14-day sample holding time, pH <2
- ☑ Samples received at ≤6°C, zero headspace
- ☑ Preparation Method 5030C, 25 ml purge volume

**C. GC/MS INSTRUMENT PERFORMANCE CHECK REVIEW CRITERIA:**

- ☑ Instrument performance check solution was analyzed at the beginning of each 12-hour period of standard and/or sample analysis

**D. INITIAL GC/MS CALIBRATION REVIEW CRITERIA:**

- ☑ Target analytes included in the ICAL
- ☑ ICAL consisted of 5 calibration standards (or more, as needed)
- ☑ Lowest concentration calibration standard at or below the associated MCL, regulatory compliance, action limit, or required QL
- ☑ No calibration standards were removed from curve that would negatively impact the data integrity
- ☑ Each target analyte %RSD ≤ 20%
- ☑ Correlation coefficient or coefficient of determination >0.99 for target analytes with ≥20 % RSD
- ☑ Initial calibration verification analytes have % Difference/Drift within ± 30.0%

**E. CALIBRATION VERIFICATION REVIEW CRITERIA:**

- ☑ Calibration verification standard analyzed at the beginning of each 12-hour period following the instrument performance check analysis and prior to the method blank and sample analysis
- ☑ % Difference/Drift of target analytes within ± 20%

**F. BLANK REVIEW CRITERIA:**

- ☑ Method/extraction blank analyzed on each GC/MS system used for sample analysis
- ☑ Trip Blank-one per day of collection.

**G. SURROGATE REVIEW CRITERIA:**

- ☑ The following surrogates (or others as allowed) were used and within the specified range
  - dibromofluoromethane (80-120%), 4-bromofluorobenzene (80-120%)
  - toluene-$d_8$ (80-120%), 1,2-dichloroethane-$d_4$ (80-120%)

**H. MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD) / LABORATORY CONTROL SAMPLE (LCS) REVIEW CRITERIA:**

- ☑ MS/MSD and LCS analyzed; MS/MSD and LCS within range
- ☑ Project specific analytes -%R 70-130%, RPD <10
- ☑ Independent source

**I. INTERNAL STANDARDS REVIEW CRITERIA:**

- ☑ The following internal standards (or others as allowed) were used
  -fluorobenzene or 1,4-difluorobenzene, chlorobenzene-$d_5$, 1,4-dichlorobenzene-$d_4$
- ☑ Internal standard areas within ± 50% of last calibration verification
- ☑ Internal standard retention times within ± 30 seconds of last calibration verification

**J. TARGET ANALYTE IDENTIFICATION REVIEW CRITERIA:**

- ☑ Results were consistent with historical data. New detections evaluated as follows:
- ☑ RRTs of the reported analytes within ± 0.06 RRT units of the standard RRT
- ☑ Sample spectra versus laboratory standard spectra criteria were evaluated:
  -Characteristic ions maximized in the same scan or within one scan of each other
  -Characteristic ions present in the standard spectra were present in the sample spectra for analytes detected above the QL
  -Relative intensities of the ions between the standard and sample spectra were within ±30%.

**K. TARGET ANALYTE QUANTITATION REVIEW CRITERIA:**

- ☑ Results are consistent with historical data. New detections evaluated as follows:
  - If analyte %RSD was 20% or less, use average relative response factor for quantitation.
  - If analyte %RSD was greater than 20%, use first or higher order regression fit of five calibration points (6 calibration points for 2nd order)
- ☑ Results that exceed the initial calibration range were reanalyzed at a higher dilution
- ☑ Analyte concentrations recorded on the sample quantitation reports were accurately transferred to the sample summary sheets (laboratory report)

**L. REPORTING:**

- ☑ Detected analytes or results requiring validation are presented on the attached data validation report
- ☑ Results reported at or above permit QL (HWMU16)
- ☑ Results reported at or above permit DL and QL (HWMU5)
- ☑ Results reported within instrument calibration range
- ☑ Sample/blind field duplicate RPD <20, where applicable

**A. QC DELIVERABLES PACKAGE:**

Passed single blind performance evaluation sample within 12 months (not evaluated)

☑ Electronic data file reviewed

**B. TECHNICAL HOLDING TIME AND PRESERVATION REVIEW CRITERIA:**

☑ Holding time: 7-day sample collection to extraction / 40-day extraction to analysis

☑ Samples received at ≤6°C)

☑ Extraction Method 3510C used

**C. GC/MS INSTRUMENT PERFORMANCE CHECK REVIEW CRITERIA:**

☑ Instrument performance check solution analyzed at the beginning of each 12-hour period of standard and/or sample analysis

**D. INITIAL GC/MS CALIBRATION REVIEW CRITERIA:**

☑ Target analytes included in the ICAL

☑ ICAL consisted of a minimum of 5 calibration standards (or more, as needed)

☑ Lowest concentration calibration standard at or below the associated MCL, regulatory compliance, action limit, or permit QL

☑ No calibration standards were removed that would negatively impact the data integrity

☑ Each target analyte RSD ≤ 20%

☑ Correlation coefficient or coefficient of determination >0.99 for target analytes with ≥20 % RSD

☑ Initial calibration verification analytes have % Difference/Drift within ± 30.0%

**E. CALIBRATION VERIFICATION REVIEW CRITERIA:**

☑ Calibration verification standard analyzed at the beginning of each 12-hour period following the instrument performance check analysis and prior to the method blank and sample analysis

☑ Analytes have % Difference/Drift within ± 20.0%

**F. BLANK REVIEW CRITERIA:**

☑ Method/extraction blank analyzed on each GC/MS system used for sample analysis

**G. SURROGATE REVIEW CRITERIA:**

☑ The following surrogates (or others, as allowed ) were used and within the specified range

- phenol - $d_6$ (10-94%), - 2-fluorophenol (21-100%), - 2,4,6-tribromophenol (10-123%),
- nitrobenzene – $d_5$ (43-108%), - 2-fluorobiphenyl (43-116%), - terphenyl - $d_{14}$ (33-141%)

**H. MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD) / LABORATORY CONTROL SAMPLE (LCS) REVIEW CRITERIA:**

☑ MS/MSD and LCS analyzed with target analytes

☑ MS/MSD and LCS recovered at or above 45%, RPD <40

**I. INTERNAL STANDARDS REVIEW CRITERIA:**

☑ The following internal standards were used (or others as allowed)

-1,4-Dichlorobenzene-$d_4$, Naphthalene-$d_8$, Acenapththene-$d_{10}$, Phenanthrene-$d_{10}$, Chrysene-$d_{12}$, Perylene-$d_{12}$

☑ Internal standard areas within ± 50% of last calibration verification

☑ Internal standard retention times within ± 30 seconds of last calibration verification

**J. TARGET ANALYTE IDENTIFICATION REVIEW CRITERIA:**

☑ Results were consistent with historical data. New detections evaluated as follows:

☑ RRTs of the reported analytes within ± 0.06 RRT units of the standard RRT

☑ Sample spectra versus laboratory standard spectra criteria were evaluated:

Characteristic ions maximized in the same scan or within one scan of each other

- Characteristic ions present in the standard spectra were present in the sample spectra for analytes detected above the permit QL
- Relative intensities of the ions between the standard and sample spectra were within ±30%.

**K. TARGET ANALYTE QUANTITATION REVIEW CRITERIA:**

- ☑ Results were consistent with historical data. New detections evaluated as follows:
  -If analyte %RSD was 20% or less, use average relative response factor for quantitation.
  -If analyte %RSD was greater than 20%, use first or higher order regression fit of five calibration points (6 calibration points for 2nd order).
- ☑ Results that exceed the initial calibration range were reanalyzed at a higher dilution.
- ☑ Analyte concentrations recorded on the sample quantitation reports were accurately transferred to the sample summary sheets (laboratory report).

**L. REPORTING:**

- ☑ Detected analytes or results requiring validation are presented on the attached data validation report
- ☑ Results reported at or above permit QL (HWMU16) except 2,4-DNT and 2,6-DNT reviewed and validated to at or above DL.
- ☑ Results reported at or above permit DL and QL (HWMU5)

## *DATA EVALUATION FOR INORGANICS BY SW-846 METHOD 6020A (ICP/MS)*

**A. QC DELIVERABLES PACKAGE:**

- ☑ Sample results included for sample locations
- ☑ Target analyte QLs reported at permit required QL
- ☑ Sample digestion method: 3005A
- ☑ Electronic data file reviewed

**B. TECHNICAL HOLDING TIMES / PRESERVATION REVIEW CRITERIA:**

- ☑ 6 month holding time, pH<2 with Nitric Acid (HNO3)

**C. INSTRUMENT CALIBRATION/TUNE CRITERIA:**

- Target analytes, 1 calibration blank and at least 1 standard
  Or
- ☑ 1 calibration blank and at least 5 standards and
  Instrument calibrated for every analytical sequence, r>0.995
- ☑ Instrument tuned prior to analysis (%RSD <5%)

**D. INSTRUMENT CALIBRATION CRITERIA:**

- ☑ 10 sample frequency
- ☑ Use of calibration blank and check standard
- ☑ Recovery within 90-110%
- ☑ LLICV and LLCCV within 70-130% Recovery

**E. BLANK CRITERIA:**

- N/A Trip Blank (check only if analyzed)
- N/A Equipment Blank
- ☑ Method/Other Lab Blanks (check only if analyzed)
- ☑ Interference free
- ☑ CCB 10 sample frequency

**F. INTERFERENCE CHECK SAMPLES (ICS) CRITERIA:**

- ☑ At beginning of batch or every 12 hours (80-120%)

**G. MATRIX SPIKE DUPLICATE (MSD) CRITERIA:**

- ☑ One MSD or sample duplicate per batch of 20 samples
- ☑ RPD $\leq$ 20 between MS and MSD results or sample and duplicate results
- ☑ Control limit is ± QL when sample values are less than 5 times QL (sample duplicate).

**H. MATRIX SPIKE (MS) CRITERIA:**

- ☑ 75-125% recovery, all analytes
- ☑ All analytes, spiked prior to digestion
- ☑ One matrix spike per analytical batch
- ☑ No more than 20 samples per analytical batch

**I. BLIND FIELD SAMPLE DUPLICATE CRITERIA:**

- ☑ 10% RPD for concentrations > QL

**J. SAMPLE RESULTS CRITERIA:**

- ☑ Results reported within instrument linear range

**K. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:**

- ☑ All target analytes, 1 LCS per 20 samples, (80-120% Recovery)

**L. INTERNAL STANDARDS (IS) CRITERIA:**

- ☑ IS intensities; 70-125% RI

**M. SERIAL DILUTION CRITERIA:**

- ☑ Similar matrix
- ☑ If concentration >10 times QL, %Difference must be within 10%

**N. REPORTING:**

- ☑ Detected analytes or results requiring validation are presented on the attached data validation report
- ☑ Results reported at or above permit QL (HWMU16)
- ☑ Results reported at or above permit DL and QL (HWMU5)

**A. QC DELIVERABLES PACKAGE:**

☑ Mercury QL reported at permit required QL
☑ Electronic data file reviewed

**B. TECHNICAL HOLDING TIME / PRESERVATION REVIEW CRITERIA:**

☑ 28 day holding time, Adjust pH <2 w/ $HNO_3$

**C. INSTRUMENT CALIBRATION CRITERIA:**

☑ 1 calibration blank and at least 5 standards
☑ ICAL standards within 5% of true value
☑ Instrument calibrated for every analytical sequence, r>0.995
☑ ICAL standard analyzed at the permit QL
☑ QL standard analyzed at or less than the permit required QL (70-130%R)
☑ QL standard analyzed at beginning of run, following ICV/ICB

**D. INITIAL / CONTINUING CALIBRATION VERIFICATION CRITERIA:**

☑ 10 sample frequency for CCV; recovery within 80-120%

**E. BLANK CRITERIA:**

N/A Trip Blank (check only if analyzed)
N/A Equipment Blank (check only if analyzed)
☑ Method/other laboratory blanks (check only if analyzed), Interference free

**F. MATRIX SPIKE DUPLICATE (MSD) CRITERIA:**

☑ One MSD or sample duplicate per batch of 20 samples
☑ RPD ≤ 20 between MS and MSD results or sample and duplicate results
☑ Control limit is ± QL when sample values are less than 5 times QL.

**H. MATRIX SPIKE (MS) CRITERIA:**

☑ 75-125% recovery
☑ MS spiked prior to digestion, One MS per analytical batch of 20 samples

**H. FIELD SAMPLE DUPLICATE CRITERIA:**

☑ Target analyte: mercury, Difference <10RPD

**I. LABORATORY CONTROL SAMPLE (LCS) CRITERIA:**

☑ Recovery within 80-120% range. Independent source from calibration standards.

**J. SAMPLE RESULTS CRITERIA:**

☑ Results reported within instrument calibration range

**K. REPORTING:**

☑ Detected analytes reported to at or above the permit QL. When applicable, results requiring validation are presented on the attached data validation report.

**LIMITATIONS:**

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Draper Aden Associates
Engineering • Surveying • Environmental Services

**This Report has been prepared by:**

Kathy Olsen, Environmental Scientist
2206 South Main Street
Blacksburg, Virginia 24060
540-552-0444,
kolsen@daa.com
www.daa.com

Date: 2/18/2015

**This Report has been subjected to technical and quality review by:**

Janet C. Frazier, Project Manager
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Blacksburg, Virginia 24060
540-552-0444,
Jfrazier@daa.com
www.daa.com

Date: 2/19/2015

# Revisions to Data Set

## Janet Frazier

**From:** Kathy Olsen
**Sent:** Friday, January 09, 2015 12:17 PM
**To:** Janet Frazier
**Subject:** FW: LCS for 8260C

fyi

Thanks,

Kathy Olsen
Phone: 540-552-0444 / Fax: 540-552-0291

**From:** Barbara Weyandt [mailto:BarbaraWeyandt@eurofinsUS.com]
**Sent:** Friday, January 09, 2015 12:05 PM
**To:** Kathy Olsen
**Subject:** FW: LCS for 8260C

Hi Kathy,

Yes…Our LCS is prepared from an independent source other than that of the calibration standards.

*Barb*

# Comprehensive Data Validation Report

## Sample/Blind Field Duplicate Results Greater Than the Quantitation Limit

Draper Aden Associates
Engineering ♦ Surveying ♦ Environmental Services

## Facility: HWMU-5 Monitoring Event: Fourth Quarter 2014

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| Cobalt | 5WC21 | 63 | | 63 | | 5 | No action taken. Blind field duplicate 5WC21. RPD <20. |
| | 5WDUP | 64.1 | | 64.1 | | 5 | No action taken. Blind field duplicate for 5WC21. RPD <20. |
| **Method: 8260C** | | | | | | | |
| ***Laboratory: ELLE, Lancaster, PA*** | | | | | | | |
| Trichloroethene | 5WC21 | 3.9 | | 3.9 | | 0.5 | No action taken. |
| | 5WDUP | 4 | | 4 | | 0.5 | No action taken. Blind field duplicate for 5WC21. RPD <20. |

**Definitions:**

**Data Validation Qualifiers:**

QL Denotes permit quantitation limit. Q Denotes data qualifier.

J Denotes analyte reported at or above quantitation limit and associated result is estimated.



*See last page of this report for definitions.*

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | | | | | |
| Cobalt | 5W8B | 1 | U | U | | 5 | 1 | 5 | 1 | ug/l | Not detected at or above MDL or QL. |
| | 5W5B | 1 | U | U | | 5 | 1 | 5 | 1 | UG/L | Not detected at or above MDL or QL. |
| | 5W7B | 3.18 | J | 3.18 | J | 5 | 1 | 5 | 1 | ug/l | Result < QL. |
| | 5WC21 | 63 | | 63 | | 5 | 1 | 5 | 1 | ug/l | No action taken. Blind field duplicate 5WC21. RPD <20. |
| | 5WC22 | 4.26 | J | 4.26 | J | 5 | 1 | 5 | 1 | ug/l | Result < QL. |
| | 5WC23 | 2 | J | 2 | J | 5 | 1 | 5 | 1 | ug/l | Result < QL. |
| | 5WDUP | 64.1 | | 64.1 | | 5 | 1 | 5 | 1 | ug/l | No action taken. Blind field duplicate for 5WC21. RPD <20. |
| | 5W12A | 1 | U | U | | 5 | 1 | 5 | 1 | ug/l | Not detected at or above MDL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | | | | | |
| ***Laboratory: ELLE, Lancaster, PA*** | | | | | | | | | | | |
| **1,1-Dichloroethene** | 5W8B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W5B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W7B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC21 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC22 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC23 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WDUP | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. Blind field duplicate for 5WC21 |
| | 5W12A | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 1 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.44 | ug/l | Not detected at or above permit MDL or QL. |
| **cis-1,2-Dichloroethene** | 5W8B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W5B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W7B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC21 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC22 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC23 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WDUP | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. Blind field duplicate for 5WC21 |
| | 5W12A | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 1 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| **trans-1,2-Dichloroethene** | 5W8B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W5B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W7B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC21 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC22 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC23 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | | | | | |
| ***Laboratory: ELLE, Lancaster, PA*** | | | | | | | | | | | |
| **trans-1,2-Dichloroethene** | 5WDUP | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. Blind field duplicate for 5WC21 |
| | 5W12A | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 1 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.8 | ug/l | Not detected at or above permit MDL or QL. |
| **Trichloroethene** | 5W8B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.177 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W5B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.177 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W7B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.177 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC21 | 3.9 | | 3.9 | | 0.5 | 0.1 | 1 | 0.177 | ug/l | No action taken. |
| | 5WC22 | 4.2 | | 4.2 | | 0.5 | 0.1 | 1 | 0.177 | ug/l | No action taken. |
| | 5WC23 | 5.2 | | 5.2 | | 0.5 | 0.1 | 1 | 0.177 | ug/l | No action taken. |
| | 5WDUP | 4 | | 4 | | 0.5 | 0.1 | 1 | 0.177 | ug/l | No action taken. Blind field duplicate for 5WC21. RPD <20. |
| | 5W12A | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.177 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 1 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.177 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.177 | ug/l | Not detected at or above permit MDL or QL. |
| **Vinyl chloride** | 5W8B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W5B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5W7B | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC21 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC22 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WC23 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | 5WDUP | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. Blind field duplicate for 5WC21 |
| | 5W12A | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 1 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |
| | Trip Blank 2 | 0.1 | U | U | | 0.5 | 0.1 | 1 | 0.1 | ug/l | Not detected at or above permit MDL or QL. |

| Analyte | Sample ID | Lab Result | Q | Validated Result | Q | QL | DL | Permit QL-Appendix J Analytes | Permit DL-Appendix J Analytes | Unit | Validation Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Definitions:**

**QL** Denotes quantitation limit.
**DL** Denotes detection limit
**Q** Denotes data qualifier.
**U** Denotes analyte not detected at or above Detection Limit (DL) or Quantitation Limit (QL).
**UA** Denotes analyte not detected at or above adjusted sample DL or QL.
**J** Denotes analyte reported at or above the DL and associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above DL and QL and DL and QL are estimated. When used with "UA" (i.e., "**UAJ**"), denotes analyte not detected at or above adjusted DL and QL and adjusted DL and QL are estimated.
**R** Denotes result rejected.
**Laboratory Data Qualifiers**, "U" and "<", denote not detected at or above the QL.

# Comprehensive Data Validation Report

## Sample/Blind Field Duplicate Results Greater Than the Quantitation Limit

## Facility: HWMU-16 Monitoring Event: Fourth Quarter 2014

Draper Aden Associates
Engineering ♦ Surveying ♦ Environmental Services

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | |
| **Barium** | 16WC1A | 231 | | 231 | | 10 | No action taken. RPD < 20. |
| | 16WDUP | 237 | | 237 | | 10 | No action taken. RPD < 20. Blind field duplicate for 16WC1A. |
| **Zinc** | 16WDUP | 36.5 | | 36.5 | | 10 | No action taken. Not detected in field sample above QL. RPD not calculated. Blind field duplicate for 16WC1A. |
| **Method: 8260C** | | | | | | | |
| *Laboratory: ELLE, LLC, Lancaster, PA* | | | | | | | |
| **1,1-Dichloroethane** | 16WC1A | 1.7 | | 1.7 | | 1 | No action taken. RPD < 20. |
| | 16WDUP | 1.5 | | 1.5 | | 1 | No action taken. RPD < 20. Blind field duplicate for 16WC1A. |

**Definitions:**
**Data Validation Qualifiers:**
QL Denotes permit quantitation limit. Q Denotes data qualifier.
J Denotes analyte reported at or above quantitation limit and associated result is estimated.

# Comprehensive Data Validation Report

## Facility: HWMU-16 Monitoring Event: Fourth Quarter 2014

Draper Aden Associates
Engineering ♦ Surveying ♦ Environmental Services

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | |
| **Arsenic** | 16C1 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW8 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW9 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1A | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC2B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-2 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-3 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-5 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16SPRING | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WDUP | 10 | U | U | | 10 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| **Barium** | 16C1 | 200 | | 200 | | 10 | No action taken. |
| | 16MW8 | 125 | | 125 | | 10 | No action taken. |
| | 16MW9 | 519 | | 519 | | 10 | No action taken. |
| | 16WC1A | 231 | | 231 | | 10 | No action taken. RPD < 20. |
| | 16WC1B | 138 | | 138 | | 10 | No action taken. |
| | 16WC2B | 116 | | 116 | | 10 | No action taken. |
| | 16-2 | 242 | | 242 | | 10 | No action taken. |
| | 16-3 | 745 | | 745 | | 10 | No action taken. |
| | 16-5 | 171 | | 171 | | 10 | No action taken. |
| | 16SPRING | 219 | | 219 | | 10 | No action taken. |
| | 16WDUP | 237 | | 237 | | 10 | No action taken. RPD < 20. Blind field duplicate for 16WC1A. |
| **Beryllium** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |



1/15/15

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | |
| **Cadmium** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| **Chromium** | 16C1 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16MW8 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16MW9 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC1A | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC1B | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC2B | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-2 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-3 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-5 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16SPRING | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WDUP | 5 | U | U | | 5 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| **Cobalt** | 16C1 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16MW8 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16MW9 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC1A | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC1B | 13.4 | | 13.4 | | 5 | No action taken. |
| | 16WC2B | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-2 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-3 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-5 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16SPRING | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WDUP | 5 | U | U | | 5 | Not detected at or above QL. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | |
| Copper | 16C1 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16MW8 | 25.6 | | 25.6 | | 5 | No action taken. |
| | 16MW9 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC1A | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC1B | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WC2B | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-2 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-3 | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16-5 | 0.12 | U | U | | 5 | Not detected at or above QL. |
| | 16SPRING | 5 | U | U | | 5 | Not detected at or above QL. |
| | 16WDUP | 5 | U | U | | 5 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| Lead | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1.1 | | 1.1 | | 1 | No action taken. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| Nickel | 16C1 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW8 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW9 | 13.9 | | 13.9 | | 10 | No action taken. |
| | 16WC1A | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC2B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-2 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-3 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-5 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16SPRING | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WDUP | 10 | U | U | | 10 | Not detected at or above QL. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 6020A** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Vanadium** | 16C1 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW8 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW9 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1A | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC2B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-2 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-3 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-5 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16SPRING | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WDUP | 10 | U | U | | 10 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| **Zinc** | 16C1 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW8 | 56.1 | | 56.1 | | 10 | No action taken. |
| | 16MW9 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1A | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC2B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-2 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-3 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-5 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16SPRING | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WDUP | 36.5 | | 36.5 | | 10 | No action taken. Not detected in field sample above QL. RPD not calculated. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 7470A** | | | | | | | |
| *Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC* | | | | | | | |
| Mercury | 16C1 | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16MW8 | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16MW9 | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16WC1A | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16WC1B | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16WC2B | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16-2 | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16-3 | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16-5 | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16SPRING | 2 | U | U | | 2 | Not detected at or above QL. |
| | 16WDUP | 2 | U | U | | 2 | Not detected at or above QL. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: ELLE, LLC, Lancaster, PA*** | | | | | | | |
| **Benzene** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **2-Butanone** | 16C1 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW8 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16MW9 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1A | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC1B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WC2B | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-2 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-3 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16-5 | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16SPRING | 10 | U | U | | 10 | Not detected at or above QL. |
| | 16WDUP | 10 | U | U | | 10 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 10 | U | U | | 10 | Not detected at or above QL. |
| | Trip_Blank_2 | 10 | U | U | | 10 | Not detected at or above QL. |
| | Trip_Blank_3 | 10 | U | U | | 10 | Not detected at or above QL. |
| **Carbon tetrachloride** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| *Laboratory: ELLE, LLC, Lancaster, PA* | | | | | | | |
| **Carbon tetrachloride** | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Chloroethane** | 16C1 | 4.6 | | 4.6 | | 1 | No action taken. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 2.4 | | 2.4 | | 1 | No action taken. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Dichlorodifluoromethane** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: ELLE, LLC, Lancaster, PA*** | | | | | | | |
| **Dichlorodifluoromethane** | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **1,1-Dichloroethane** | 16C1 | 8.2 | | 8.2 | | 1 | No action taken. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 7.3 | | 7.3 | | 1 | No action taken. |
| | 16WC1A | 1.7 | | 1.7 | | 1 | No action taken. RPD < 20. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1.5 | | 1.5 | | 1 | No action taken. RPD < 20. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **1,1-Dichloroethene** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Diethyl ether** | 16C1 | 44.3 | | 44.3 | | 12.5 | Analyzed in dilution (1:10). Actual lab QL is 5 ug/l; DL is 1 ug/l. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| *Laboratory: ELLE, LLC, Lancaster, PA* | | | | | | | |
| **Diethyl ether** | 16MW8 | 12.5 | U | U | | 12.5 | Not detected at or above QL. |
| | 16MW9 | 42.4 | | 42.4 | | 12.5 | Analyzed in dilution (1:10). Actual lab QL is 5 ug/l; DL is 1 ug/l. |
| | 16WC1A | 12.5 | U | U | | 12.5 | Not detected at or above QL. |
| | 16WC1B | 12.5 | U | U | | 12.5 | Not detected at or above QL. |
| | 16WC2B | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16-2 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16-3 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16-5 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16SPRING | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16WDUP | 12.5 | U | U | | 12.5 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | Trip_Blank_2 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | Trip_Blank_3 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| **Dimethyl ether** | 16C1 | 12.5 | U | U | | 12.5 | Not detected at or above QL. |
| | 16MW8 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16MW9 | 12.5 | U | U | | 12.5 | Not detected at or above QL. |
| | 16WC1A | 12.5 | U | U | | 12.5 | Not detected at or above QL. |
| | 16WC1B | 12.5 | U | U | | 12.5 | Not detected at or above QL. |
| | 16WC2B | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16-2 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16-3 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16-5 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16SPRING | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | 16WDUP | 12.5 | U | U | | 12.5 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | Trip_Blank_2 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| | Trip_Blank_3 | 13 | U | U | | 12.5 | Not detected at or above QL. |
| **Ethylbenzene** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| *Laboratory: ELLE, LLC, Lancaster, PA* | | | | | | | |
| **Ethylbenzene** | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Chloromethane** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Methylene chloride** | 16C1 | 3.4 | | 3.4 | | 1 | No action taken. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| *Laboratory: ELLE, LLC, Lancaster, PA* | | | | | | | |
| **Methylene chloride** | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Tetrachloroethene** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Toluene** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **1,1,1-Trichloroethane** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: ELLE, LLC, Lancaster, PA*** | | | | | | | |
| **1,1,1-Trichloroethane** | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Trichloroethene** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Trichlorofluoromethane** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: ELLE, LLC, Lancaster, PA*** | | | | | | | |
| **Trichlorofluoromethane** | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **1,1,2-Trichloro-1,2,2-Trifluoroethane** | 16C1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW8 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16MW9 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1A | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC1B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WC2B | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-3 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16-5 | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16SPRING | 1 | U | U | | 1 | Not detected at or above QL. |
| | 16WDUP | 1 | U | U | | 1 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_2 | 1 | U | U | | 1 | Not detected at or above QL. |
| | Trip_Blank_3 | 1 | U | U | | 1 | Not detected at or above QL. |
| **Xylenes (Total)** | 16C1 | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16MW8 | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16MW9 | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16WC1A | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16WC1B | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16WC2B | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16-2 | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16-3 | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16-5 | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16SPRING | 3 | U | U | | 3 | Not detected at or above QL. |
| | 16WDUP | 3 | U | U | | 3 | Not detected at or above QL. Blind field duplicate for 16WC1A. |
| | Trip_Blank_1 | 3 | U | U | | 3 | Not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8260C** | | | | | | | |
| ***Laboratory: ELLE, LLC, Lancaster, PA*** | | | | | | | |
| Xylenes (Total) | Trip_Blank_2 | 3 | U | U | | 3 | Not detected at or above QL. |
| | Trip_Blank_3 | 3 | U | U | | 3 | Not detected at or above QL. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|
| **Method: 8270D** | | | | | | | |
| ***Laboratory: CompuChem, a Division of Liberty Analytical, Cary, NC*** | | | | | | | |
| **Diethyl phthalate** | 16C1 | 5.3 | U | U | | 5 | Not detected at or above permit QL. |
| | 16MW8 | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16MW9 | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16WC1A | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16WC1B | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16WC2B | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16-2 | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16-3 | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16-5 | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16SPRING | 5 | U | U | | 5 | Not detected at or above permit QL. |
| | 16WDUP | 5 | U | U | | 5 | Not detected at or above permit QL. Blind field duplicate for 16WC1A. |
| **2,4-Dinitrotoluene** | 16C1 | 5.3 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16MW8 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16MW9 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WC1A | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WC1B | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WC2B | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16-2 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16-3 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16-5 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16SPRING | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WDUP | 5 | U | U | | 5 | Not detected at or above DL or permit QL. Blind field duplicate for 16WC1A. |
| **2,6-Dinitrotoluene** | 16C1 | 5.3 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16MW8 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16MW9 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WC1A | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WC1B | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WC2B | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16-2 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16-3 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16-5 | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16SPRING | 5 | U | U | | 5 | Not detected at or above DL or permit QL. |
| | 16WDUP | 5 | U | U | | 5 | Not detected at or above DL or permit QL. Blind field duplicate for 16WC1A. |

| Analyte | Sample ID | Laboratory Result (ug/L) | Q | Validated Result (ug/L) | Q | QL (ug/L) | Validation Notes |
|---|---|---|---|---|---|---|---|

**Definitions:**

**Appendix IX monitoring events and compliance monitoring wells:**

**For Appendix IX monitoring events, all compliance well results evaluated to the project detection limit.**

**See separate table for Appendix IX monitoring event detection limits.**

**QL**Denotes permit quantitation limit.

**Q** Denotes data qualifier.

**U** Denotes analyte not detected at or above laboratory detection limit (DL) or QL.

**J** Denotes analyte reported at or above laboratory detection limit and associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above laboratory detection limit and project required quantitation limit/detection limit is estimated.

**UA** Denotes analyte not detected at or above adjusted sample detection limit /QL.

**UN** Denotes analyte concentration is less than the quantitation limit and five times the blank concentration. Analyte was not reliably detected due to blank contamination.

**R** Denotes result rejected.

**Laboratory Data Qualifiers**,

"U" and "<", denote not detected at or above the detection limit or QL.

B or J denote result detected between DL and QL, associated value should be considered an estimated concentration.

***Appendix IX monitoring events:***

Third Quarter 2003, Second Quarter 2004, Second Quarter 2005, Third Quarter 2006, Second Quarter 2007, Second Quarter 2008, Second Quarter 2009, Second Quarter 2010, Second Quarter 2011, Second Quarter 2012, Second Quarter 2013. Second Quarter 2014

**Definitions for Non-Appendix IX Monitoring Events and plume monitoring wells:**

**QL** Denotes permit quantitation limit.

**Q** Denotes data qualifier.

**U** Denotes analyte not detected at or above QL.

**UA** Denotes analyte not detected at or above adjusted sample QL. See data validation report for further explanation.

**J** Denotes analyte reported at or above QL and associated result is estimated. When used with "U" (i.e., "UJ"), denotes analyte not detected at or above QL and QL is estimated. When used with "UA"(i.e., "**UAJ**"), denotes analyte not detected at or above adjusted QL and adjusted QL is estimated.

**R** Denotes result rejected. See data validation report for further explanation.

**Laboratory Data Qualifiers**, "U" and "<", denote not detected at or above the QL.

# COMMONWEALTH OF VIRGINIA
# DEPARTMENT OF GENERAL SERVICES
# DIVISION OF CONSOLIDATED LABORATORY SERVICES

## Certifies that

## VA Laboratory ID#: 460188
## Compuchem, A Division of Liberty Analytical

501 Madison Avenue
Cary, NC 27513

**Owner:** JOSEPH WORTLEY
**Responsible Official:** WILLIAM WARING

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard
is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **September 15, 2014**
Expiration Date: **September 14, 2015**
**Certificate # 6537**

Denise M. Toney

Denise M. Toney, Ph.D., HCLD
DGS Deputy Director for Laboratories

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 6537

**Compuchem, A Division of Liberty Analytical**
501 Madison Avenue
Cary, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: September 15, 2014
Expiration Date: September 14, 2015

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 1010 A | FLASHPOINT | FL |
| EPA 1664 A | OIL AND GREASE (AS HEM) | FL |
| EPA 300.0 REV 2.1 | CHLORIDE | FL |
| EPA 300.0 REV 2.1 | NITRATE AS N | FL |
| EPA 300.0 REV 2.1 | NITRITE AS N | FL |
| EPA 300.0 REV 2.1 | SULFATE | FL |
| EPA 335.4 REV 1.0 | CYANIDE | FL |
| EPA 351.2 REV 2 | KJELDAHL NITROGEN - TOTAL | FL |
| EPA 353.2 (AS LACHAT 10-107-04-1-C) | NITRATE/NITRITE | FL |
| EPA 365.4 | PHOSPHORUS, TOTAL | FL |
| EPA 6010 C | ALUMINUM | FL |
| EPA 6010 C | ARSENIC | FL |
| EPA 6010 C | BERYLLIUM | FL |
| EPA 6010 C | CADMIUM | FL |
| EPA 6010 C | CHROMIUM | FL |
| EPA 6010 C | COPPER | FL |
| EPA 6010 C | LEAD | FL |
| EPA 6010 C | MANGANESE | FL |
| EPA 6010 C | NICKEL | FL |
| EPA 6010 C | SELENIUM | FL |
| EPA 6010 C | SODIUM | FL |
| EPA 6010 C | TIN | FL |
| EPA 6010 C | VANADIUM | FL |
| EPA 6020 A | ANTIMONY | FL |
| EPA 6020 A | BARIUM | FL |
| EPA 6020 A | CADMIUM | FL |
| EPA 6020 A | COBALT | FL |
| EPA 6020 A | LEAD | FL |
| EPA 6020 A | NICKEL | FL |
| EPA 6020 A | SILVER | FL |
| EPA 6020 A | VANADIUM | FL |
| EPA 7470 A | MERCURY | FL |
| EPA 8015 C | GASOLINE RANGE ORGANICS (GRO) | FL |
| EPA 8081 B | 4,4'-DDE | FL |
| EPA 130.1 | TOTAL HARDNESS AS CACO3 | FL |
| EPA 1664 A | TOTAL PETROLEUM HYDROCARBONS (TPH) (AS NONPOLAR MATERIAL, SGT-HEM) | FL |
| EPA 300.0 REV 2.1 | FLUORIDE | FL |
| EPA 300.0 REV 2.1 | NITRATE/NITRITE | FL |
| EPA 300.0 REV 2.1 | ORTHOPHOSPHATE AS P | FL |
| EPA 310.2 (AS LACHAT 10-303-31-1-A) | ALKALINITY AS CACO3 | FL |
| EPA 350.1 REV 2 | AMMONIA AS N | FL |
| EPA 353.2 (AS LACHAT 10-107-04-1-C) | NITRATE AS N | FL |
| EPA 353.2 (AS LACHAT 10-107-04-1-C) | NITRITE AS N | FL |
| EPA 420.4 REV 1 | TOTAL PHENOLICS | FL |
| EPA 6010 C | ANTIMONY | FL |
| EPA 6010 C | BARIUM | FL |
| EPA 6010 C | BORON | FL |
| EPA 6010 C | CALCIUM | FL |
| EPA 6010 C | COBALT | FL |
| EPA 6010 C | IRON | FL |
| EPA 6010 C | MAGNESIUM | FL |
| EPA 6010 C | MOLYBDENUM | FL |
| EPA 6010 C | POTASSIUM | FL |
| EPA 6010 C | SILVER | FL |
| EPA 6010 C | THALLIUM | FL |
| EPA 6010 C | TITANIUM | FL |
| EPA 6010 C | ZINC | FL |
| EPA 6020 A | ARSENIC | FL |
| EPA 6020 A | BERYLLIUM | FL |
| EPA 6020 A | CHROMIUM | FL |
| EPA 6020 A | COPPER | FL |
| EPA 6020 A | MANGANESE | FL |
| EPA 6020 A | SELENIUM | FL |
| EPA 6020 A | THALLIUM | FL |
| EPA 6020 A | ZINC | FL |
| EPA 8015 C | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8081 B | 4,4'-DDD | FL |
| EPA 8081 B | 4,4'-DDT | FL |

## Scope of Accreditation

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Cary, NC 27513

**Virginia Laboratory ID: 460188**
Effective Date: September 15, 2014
Expiration Date: September 14, 2015

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8081 B | ALDRIN | FL | EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL | EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B | CHLORDANE (TECH.) | FL | EPA 8081 B | DELTA-BHC | FL |
| EPA 8081 B | DIELDRIN | FL | EPA 8081 B | ENDOSULFAN I | FL |
| EPA 8081 B | ENDOSULFAN II | FL | EPA 8081 B | ENDOSULFAN SULFATE | FL |
| EPA 8081 B | ENDRIN | FL | EPA 8081 B | ENDRIN ALDEHYDE | FL |
| EPA 8081 B | ENDRIN KETONE | FL | EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL | EPA 8081 B | HEPTACHLOR | FL |
| EPA 8081 B | HEPTACHLOR EPOXIDE | FL | EPA 8081 B | METHOXYCHLOR | FL |
| EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | FL | EPA 8082 A | AROCLOR-1016 (PCB-1016) | FL |
| EPA 8082 A | AROCLOR-1221 (PCB-1221) | FL | EPA 8082 A | AROCLOR-1232 (PCB-1232) | FL |
| EPA 8082 A | AROCLOR-1242 (PCB-1242) | FL | EPA 8082 A | AROCLOR-1248 (PCB-1248) | FL |
| EPA 8082 A | AROCLOR-1254 (PCB-1254) | FL | EPA 8082 A | AROCLOR-1260 (PCB-1260) | FL |
| EPA 8151 A | 2,4,5-T | FL | EPA 8151 A | 2,4-D | FL |
| EPA 8151 A | 2,4-DB | FL | EPA 8151 A | 4-NITROPHENOL | FL |
| EPA 8151 A | DALAPON | FL | EPA 8151 A | DICAMBA | FL |
| EPA 8151 A | DICHLOROPROP (DICHLORPROP) | FL | EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8151 A | PENTACHLOROPHENOL | FL | EPA 8151 A | SILVEX (2,4,5-TP) | FL |
| EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | FL | EPA 8260 B | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | FL | EPA 8260 B | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 B | 1,1-DICHLOROETHANE | FL | EPA 8260 B | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 B | 1,1-DICHLOROPROPENE | FL | EPA 8260 B | 1,2,3-TRICHLOROBENZENE | FL |
| EPA 8260 B | 1,2,3-TRICHLOROPROPANE | FL | EPA 8260 B | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | FL | EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL | EPA 8260 B | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL | EPA 8260 B | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | FL | EPA 8260 B | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,3-DICHLOROPROPANE | FL | EPA 8260 B | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL | EPA 8260 B | 1-CHLOROHEXANE | FL |
| EPA 8260 B | 2,2-DICHLOROPROPANE | FL | | | |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL | EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | FL |
| EPA 8260 B | 2-CHLOROTOLUENE | FL | EPA 8260 B | 2-HEXANONE | FL |
| EPA 8260 B | 4-CHLOROTOLUENE | FL | EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | FL |
| EPA 8260 B | ACETONE | FL | EPA 8260 B | ACETONITRILE | FL |
| EPA 8260 B | ACROLEIN (PROPENAL) | FL | EPA 8260 B | ACRYLONITRILE | FL |
| EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL | EPA 8260 B | BENZENE | FL |
| EPA 8260 B | BROMOBENZENE | FL | EPA 8260 B | BROMOCHLOROMETHANE | FL |
| EPA 8260 B | BROMODICHLOROMETHANE | FL | EPA 8260 B | BROMOFORM | FL |
| EPA 8260 B | CARBON DISULFIDE | FL | EPA 8260 B | CARBON TETRACHLORIDE | FL |
| EPA 8260 B | CHLOROBENZENE | FL | EPA 8260 B | CHLORODIBROMOMETHANE | FL |
| EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | FL | EPA 8260 B | CHLOROFORM | FL |
| EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL | EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | FL |
| EPA 8260 B | CIS-1,3-DICHLOROPROPENE | FL | EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | FL |
| EPA 8260 B | ETHYL METHACRYLATE | FL | EPA 8260 B | ETHYLBENZENE | FL |
| EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL | EPA 8260 B | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL | EPA 8260 B | ISOPROPYLBENZENE | FL |
| EPA 8260 B | METHACRYLONITRILE | FL | EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | FL | EPA 8260 B | METHYL METHACRYLATE | FL |
| EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | FL | EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B | N-BUTYLBENZENE | FL | EPA 8260 B | N-PROPYLBENZENE | FL |
| EPA 8260 B | NAPHTHALENE | FL | EPA 8260 B | PENTACHLOROETHANE | FL |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | FL | EPA 8260 B | SEC-BUTYLBENZENE | FL |
| EPA 8260 B | STYRENE | FL | EPA 8260 B | TERT-BUTYLBENZENE | FL |
| EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | FL | EPA 8260 B | TOLUENE | FL |
| EPA 8260 B | TRANS-1,2-DICHLOROETHENE | FL | EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | FL | EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL | EPA 8260 B | VINYL ACETATE | FL |
| EPA 8260 B | VINYL CHLORIDE | FL | EPA 8260 B | XYLENE (TOTAL) | FL |
| EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUORO ETHANE (FREON 113) | FL | EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 D | 1,2,4-TRICHLOROBENZENE | FL | EPA 8270 D | 1,2-DICHLOROBENZENE | FL |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 6537

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501 Madison Avenue
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**Virginia Laboratory ID: 460188**
Effective Date: September 15, 2014
Expiration Date: September 14, 2015

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | FL | EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 D | 1,3-DICHLOROBENZENE | FL | EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8270 D | 1,4-DICHLOROBENZENE | FL | EPA 8270 D | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | FL | EPA 8270 D | 1-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | FL | EPA 8270 D | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D | 2,4,6-TRICHLOROPHENOL | FL | EPA 8270 D | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DIMETHYLPHENOL | FL | EPA 8270 D | 2,4-DINITROPHENOL | FL |
| EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | FL | EPA 8270 D | 2,6-DICHLOROPHENOL | FL |
| EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | FL | EPA 8270 D | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 D | 2-CHLORONAPHTHALENE | FL | EPA 8270 D | 2-CHLOROPHENOL | FL |
| EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL | EPA 8270 D | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | FL | EPA 8270 D | 2-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2-NITROANILINE | FL | EPA 8270 D | 2-NITROPHENOL | FL |
| EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | FL | EPA 8270 D | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | FL | EPA 8270 D | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 D | 3-NITROANILINE | FL | EPA 8270 D | 4-AMINOBIPHENYL | FL |
| EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | FL | EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 D | 4-CHLOROANILINE | FL | EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | FL | EPA 8270 D | 4-NITROANILINE | FL |
| EPA 8270 D | 4-NITROPHENOL | FL | EPA 8270 D | 5-NITRO-O-TOLUIDINE | FL |
| EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL | EPA 8270 D | A-A-DIMETHYLPHENETHYLAMINE | FL |
| EPA 8270 D | ACENAPHTHENE | FL | EPA 8270 D | ACENAPHTHYLENE | FL |
| EPA 8270 D | ACETOPHENONE | FL | EPA 8270 D | ANILINE | FL |
| EPA 8270 D | ANTHRACENE | FL | EPA 8270 D | ARAMITE | FL |
| EPA 8270 D | BENZIDINE | FL | EPA 8270 D | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D | BENZO(A)PYRENE | FL | EPA 8270 D | BENZO(B)FLUORANTHENE | FL |
| EPA 8270 D | BENZO(G,H,I)PERYLENE | FL | EPA 8270 D | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D | BENZOIC ACID | FL | EPA 8270 D | BENZYL ALCOHOL | FL |
| EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | FL | EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | FL |
| EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | FL | EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL |
| EPA 8270 D | BUTYL BENZYL PHTHALATE | FL | EPA 8270 D | CHLOROBENZILATE | FL |
| EPA 8270 D | CHRYSENE | FL | EPA 8270 D | DI-N-BUTYL PHTHALATE | FL |
| EPA 8270 D | DI-N-OCTYL PHTHALATE | FL | EPA 8270 D | DIALLATE | FL |
| EPA 8270 D | DIBENZO(A,H) ANTHRACENE | FL | EPA 8270 D | DIBENZOFURAN | FL |
| EPA 8270 D | DIETHYL PHTHALATE | FL | EPA 8270 D | DIMETHOATE | FL |
| EPA 8270 D | DIMETHYL PHTHALATE | FL | | | |

**Commonwealth of Virginia**

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | DISULFOTON | FL | EPA 8270 D | ETHYL METHANESULFONATE | FL |
| EPA 8270 D | FAMPHUR | FL | EPA 8270 D | FLUORANTHENE | FL |
| EPA 8270 D | FLUORENE | FL | EPA 8270 D | HEXACHLOROBENZENE | FL |
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL | EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 D | HEXACHLOROETHANE | FL | EPA 8270 D | HEXACHLOROPHENE | FL |
| EPA 8270 D | HEXACHLOROPROPENE | FL | EPA 8270 D | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D | ISODRIN | FL | EPA 8270 D | ISOPHORONE | FL |
| EPA 8270 D | ISOSAFROLE | FL | EPA 8270 D | KEPONE | FL |
| EPA 8270 D | METHAPYRILENE | FL | EPA 8270 D | METHYL METHANESULFONATE | FL |
| EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | FL | EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | FL |
| EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | FL | EPA 8270 D | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 D | N-NITROSODIMETHYLAMINE | FL | EPA 8270 D | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | FL | EPA 8270 D | N-NITROSOMORPHOLINE | FL |
| EPA 8270 D | N-NITROSOPIPERIDINE | FL | EPA 8270 D | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 D | NAPHTHALENE | FL | EPA 8270 D | NITROBENZENE | FL |
| EPA 8270 D | NITROQUINOLINE-1-OXIDE | FL | EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | FL | EPA 8270 D | PARATHION (PARATHION - ETHYL) | FL |
| EPA 8270 D | PENTACHLOROBENZENE | FL | EPA 8270 D | PENTACHLORONITROBENZENE | FL |
| EPA 8270 D | PENTACHLOROPHENOL | FL | EPA 8270 D | PHENACETIN | FL |
| EPA 8270 D | PHENANTHRENE | FL | EPA 8270 D | PHENOL | FL |
| EPA 8270 D | PHORATE | FL | EPA 8270 D | PRONAMIDE (KERB) | FL |
| EPA 8270 D | PYRENE | FL | EPA 8270 D | SAFROLE | FL |
| EPA 8270 D | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL | EPA 8270 D | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 D - EXTENDED | 2,2'-OXYBIS(1-CHLOROPROPANE) | FL | EPA 8270 D - EXTENDED | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8270 D - EXTENDED | CARBAZOLE | FL | EPA 8270 D - EXTENDED | PYRIDINE | FL |
| EPA 8270 D SIM | 2-METHYLNAPHTHALENE | FL | EPA 8270 D SIM | ACENAPHTHENE | FL |
| EPA 8270 D SIM | ACENAPHTHYLENE | FL | EPA 8270 D SIM | ANTHRACENE | FL |
| EPA 8270 D SIM | BENZO(A)ANTHRACENE | FL | EPA 8270 D SIM | BENZO(A)PYRENE | FL |
| EPA 8270 D SIM | BENZO(B)FLUORANTHENE | FL | EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D SIM | BENZO(K)FLUORANTHENE | FL | EPA 8270 D SIM | CHRYSENE | FL |
| EPA 8270 D SIM | DIBENZO(A,H) ANTHRACENE | FL | EPA 8270 D SIM | FLUORANTHENE | FL |
| EPA 8270 D SIM | FLUORENE | FL | EPA 8270 D SIM | HEXACHLOROBENZENE | FL |
| EPA 8270 D SIM | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL | EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D SIM | NAPHTHALENE | FL | EPA 8270 D SIM | PENTACHLOROPHENOL | FL |
| EPA 8270 D SIM | PHENANTHRENE | FL | EPA 8270 D SIM | PYRENE | FL |

**Commonwealth of Virginia**

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8310 | ACENAPHTHENE | FL | EPA 8310 | ACENAPHTHYLENE | FL |
| EPA 8310 | ANTHRACENE | FL | EPA 8310 | BENZO(A)ANTHRACENE | FL |
| EPA 8310 | BENZO(A)PYRENE | FL | EPA 8310 | BENZO(B)FLUORANTHENE | FL |
| EPA 8310 | BENZO(G,H,I)PERYLENE | FL | EPA 8310 | BENZO(K)FLUORANTHENE | FL |
| EPA 8310 | CHRYSENE | FL | EPA 8310 | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8310 | FLUORANTHENE | FL | EPA 8310 | FLUORENE | FL |
| EPA 8310 | INDENO(1,2,3-CD) PYRENE | FL | EPA 8310 | NAPHTHALENE | FL |
| EPA 8310 | PHENANTHRENE | FL | EPA 8310 | PYRENE | FL |
| EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL | EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | FL | EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | FL | EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | FL |
| EPA 8330 A | 2-NITROTOLUENE | FL | EPA 8330 A | 3-NITROTOLUENE | FL |
| EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | FL | EPA 8330 A | 4-NITROTOLUENE | FL |
| EPA 8330 A | NITROBENZENE | FL | EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO-1 ,3,5,7-TETRAZOCINE (HMX) | FL |
| EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | FL | EPA 8330 B | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8330 B | 1,3-DINITROBENZENE (1,3-DNB) | FL | EPA 8330 B | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | FL |
| EPA 8330 B | 2,4-DINITROTOLUENE (2,4-DNT) | FL | EPA 8330 B | 2,6-DINITROTOLUENE (2,6-DNT) | FL |
| EPA 8330 B | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | FL | EPA 8330 B | 2-NITROTOLUENE | FL |
| EPA 8330 B | 3-NITROTOLUENE | FL | EPA 8330 B | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | FL |
| EPA 8330 B | 4-NITROTOLUENE | FL | EPA 8330 B | NITROBENZENE | FL |
| EPA 8330 B | OCTAHYDRO-1,3,5,7-TETRANITRO-1 ,3,5,7-TETRAZOCINE (HMX) | FL | EPA 8330 B | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | FL |
| EPA 8332 | NITROGLYCERIN | FL | EPA 9010 B | PREP: CYANIDE DISTILLATION | FL |
| EPA 9010 C | PREP: CYANIDE DISTILLATION | FL | EPA 9012 A | AMENABLE CYANIDE | FL |
| EPA 9012 A | TOTAL CYANIDE | FL | EPA 9012 B | AMENABLE CYANIDE | FL |
| EPA 9012 B | TOTAL CYANIDE | FL | EPA 9040 B | PH | FL |
| EPA 9040 C | PH | FL | SM 2540 B-2011 | RESIDUE-TOTAL | FL |
| SM 2540 C-2011 | RESIDUE-FILTERABLE (TDS) | FL | SM 2540 D-2011 | RESIDUE-NONFILTERABLE (TSS) | FL |
| SM 3500-CR B-2011 | CHROMIUM VI | FL | SM 4500-$CN^-$ G-2011 | AMENABLE CYANIDE | FL |
| SM 4500-$S2^-$ F-2011 | SULFIDE | FL | SM 5310 B-2011 | TOTAL ORGANIC CARBON | FL |

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1010 A | FLASHPOINT | FL | | | |

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|---|---|---|---|---|---|
| EPA 1311 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | FL | EPA 1312 | PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE | FL |
| EPA 6010 C | ALUMINUM | FL | EPA 6010 C | ANTIMONY | FL |
| EPA 6010 C | ARSENIC | FL | EPA 6010 C | BARIUM | FL |
| EPA 6010 C | BERYLLIUM | FL | EPA 6010 C | BORON | FL |
| EPA 6010 C | CADMIUM | FL | EPA 6010 C | CALCIUM | FL |
| EPA 6010 C | CHROMIUM | FL | EPA 6010 C | COBALT | FL |
| EPA 6010 C | COPPER | FL | EPA 6010 C | IRON | FL |
| EPA 6010 C | LEAD | FL | EPA 6010 C | MAGNESIUM | FL |
| EPA 6010 C | MANGANESE | FL | EPA 6010 C | MOLYBDENUM | FL |
| EPA 6010 C | NICKEL | FL | EPA 6010 C | POTASSIUM | FL |
| EPA 6010 C | SELENIUM | FL | EPA 6010 C | SILVER | FL |
| EPA 6010 C | SODIUM | FL | EPA 6010 C | THALLIUM | FL |
| EPA 6010 C | TIN | FL | EPA 6010 C | TITANIUM | FL |
| EPA 6010 C | VANADIUM | FL | EPA 6010 C | ZINC | FL |
| EPA 6020 A | ANTIMONY | FL | EPA 6020 A | ARSENIC | FL |
| EPA 6020 A | BARIUM | FL | EPA 6020 A | BERYLLIUM | FL |
| EPA 6020 A | CADMIUM | FL | EPA 6020 A | CHROMIUM | FL |
| EPA 6020 A | COBALT | FL | EPA 6020 A | COPPER | FL |
| EPA 6020 A | LEAD | FL | EPA 6020 A | MANGANESE | FL |
| EPA 6020 A | NICKEL | FL | EPA 6020 A | SELENIUM | FL |
| EPA 6020 A | SILVER | FL | EPA 6020 A | THALLIUM | FL |
| EPA 6020 A | VANADIUM | FL | EPA 6020 A | ZINC | FL |
| EPA 7196 A | CHROMIUM VI | FL | EPA 7471 A | MERCURY | FL |
| EPA 7471 B | MERCURY | FL | EPA 8015 C | DIESEL RANGE ORGANICS (DRO) | FL |
| EPA 8015 C | GASOLINE RANGE ORGANICS (GRO) | FL | EPA 8081 B | 4,4'-DDD | FL |
| EPA 8081 B | 4,4'-DDE | FL | EPA 8081 B | 4,4'-DDT | FL |
| EPA 8081 B | ALDRIN | FL | EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | FL | EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | FL |
| EPA 8081 B | CHLORDANE (TECH.) | FL | EPA 8081 B | DELTA-BHC | FL |
| EPA 8081 B | DIELDRIN | FL | EPA 8081 B | ENDOSULFAN I | FL |
| EPA 8081 B | ENDOSULFAN II | FL | EPA 8081 B | ENDOSULFAN SULFATE | FL |
| EPA 8081 B | ENDRIN | FL | EPA 8081 B | ENDRIN ALDEHYDE | FL |
| EPA 8081 B | ENDRIN KETONE | FL | EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | FL |

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|---|---|---|---|---|---|
| EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | FL | EPA 8081 B | HEPTACHLOR | FL |
| EPA 8081 B | HEPTACHLOR EPOXIDE | FL | EPA 8081 B | METHOXYCHLOR | FL |
| EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | FL | EPA 8082 A | AROCLOR-1016 (PCB-1016) | FL |
| EPA 8082 A | AROCLOR-1221 (PCB-1221) | FL | EPA 8082 A | AROCLOR-1232 (PCB-1232) | FL |
| EPA 8082 A | AROCLOR-1242 (PCB-1242) | FL | EPA 8082 A | AROCLOR-1248 (PCB-1248) | FL |
| EPA 8082 A | AROCLOR-1254 (PCB-1254) | FL | EPA 8082 A | AROCLOR-1260 (PCB-1260) | FL |
| EPA 8151 A | 2,4,5-T | FL | EPA 8151 A | 2,4-D | FL |
| EPA 8151 A | 2,4-DB | FL | EPA 8151 A | 4-NITROPHENOL | FL |
| EPA 8151 A | DALAPON | FL | EPA 8151 A | DICAMBA | FL |
| EPA 8151 A | DICHLOROPROP (DICHLORPROP) | FL | EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | FL |
| EPA 8151 A | PENTACHLOROPHENOL | FL | EPA 8151 A | SILVEX (2,4,5-TP) | FL |
| EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | FL | EPA 8260 B | 1,1,1-TRICHLOROETHANE | FL |
| EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | FL | EPA 8260 B | 1,1,2-TRICHLOROETHANE | FL |
| EPA 8260 B | 1,1-DICHLOROETHANE | FL | EPA 8260 B | 1,1-DICHLOROETHYLENE | FL |
| EPA 8260 B | 1,1-DICHLOROPROPENE | FL | EPA 8260 B | 1,2,3-TRICHLOROBENZENE | FL |
| EPA 8260 B | 1,2,3-TRICHLOROPROPANE | FL | EPA 8260 B | 1,2,4-TRICHLOROBENZENE | FL |
| EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | FL | EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | FL |
| EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | FL | EPA 8260 B | 1,2-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | FL | EPA 8260 B | 1,2-DICHLOROPROPANE | FL |
| EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | FL | EPA 8260 B | 1,3-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,3-DICHLOROPROPANE | FL | EPA 8260 B | 1,4-DICHLOROBENZENE | FL |
| EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | FL | EPA 8260 B | 1-CHLOROHEXANE | FL |
| EPA 8260 B | 2,2-DICHLOROPROPANE | FL | EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | FL |
| EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | FL | EPA 8260 B | 2-CHLOROTOLUENE | FL |
| EPA 8260 B | 2-HEXANONE | FL | EPA 8260 B | 4-CHLOROTOLUENE | FL |
| EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | FL | EPA 8260 B | ACETONE | FL |
| EPA 8260 B | ACETONITRILE | FL | EPA 8260 B | ACROLEIN (PROPENAL) | FL |
| EPA 8260 B | ACRYLONITRILE | FL | EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | FL |
| EPA 8260 B | BENZENE | FL | EPA 8260 B | BROMOBENZENE | FL |
| EPA 8260 B | BROMOCHLOROMETHANE | FL | EPA 8260 B | BROMODICHLOROMETHANE | FL |
| EPA 8260 B | BROMOFORM | FL | EPA 8260 B | CARBON DISULFIDE | FL |
| EPA 8260 B | CARBON TETRACHLORIDE | FL | EPA 8260 B | CHLOROBENZENE | FL |

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|---|---|---|---|---|---|
| EPA 8260 B | CHLORODIBROMOMETHANE | FL | EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | FL |
| EPA 8260 B | CHLOROFORM | FL | EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | FL |
| EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | FL | EPA 8260 B | CIS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | FL | EPA 8260 B | DICHLORODIFLUOROMETHANE (FREON-12) | FL |
| EPA 8260 B | ETHYL METHACRYLATE | FL | EPA 8260 B | ETHYLBENZENE | FL |
| EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL | EPA 8260 B | IODOMETHANE (METHYL IODIDE) | FL |
| EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | FL | EPA 8260 B | ISOPROPYLBENZENE | FL |
| EPA 8260 B | METHACRYLONITRILE | FL | EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | FL |
| EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | FL | EPA 8260 B | METHYL METHACRYLATE | FL |
| EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | FL | EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | FL |
| EPA 8260 B | N-BUTYLBENZENE | FL | EPA 8260 B | N-PROPYLBENZENE | FL |
| EPA 8260 B | NAPHTHALENE | FL | EPA 8260 B | PENTACHLOROETHANE | FL |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | FL | EPA 8260 B | SEC-BUTYLBENZENE | FL |
| EPA 8260 B | STYRENE | FL | EPA 8260 B | TERT-BUTYLBENZENE | FL |
| EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | FL | EPA 8260 B | TOLUENE | FL |
| EPA 8260 B | TRANS-1,2-DICHLOROETHENE | FL | EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | FL |
| EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | FL | EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | FL |
| EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | FL | EPA 8260 B | VINYL ACETATE | FL |
| EPA 8260 B | VINYL CHLORIDE | FL | EPA 8260 B | XYLENE (TOTAL) | FL |
| EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUORO ETHANE (FREON 113) | FL | EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | FL |
| EPA 8270 D | 1,2,4-TRICHLOROBENZENE | FL | EPA 8270 D | 1,2-DICHLOROBENZENE | FL |
| EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | FL | EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 D | 1,3-DICHLOROBENZENE | FL | EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | FL |
| EPA 8270 D | 1,4-DICHLOROBENZENE | FL | EPA 8270 D | 1,4-NAPHTHOQUINONE | FL |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | FL | EPA 8270 D | 1-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | FL | EPA 8270 D | 2,4,5-TRICHLOROPHENOL | FL |
| EPA 8270 D | 2,4,6-TRICHLOROPHENOL | FL | EPA 8270 D | 2,4-DICHLOROPHENOL | FL |
| EPA 8270 D | 2,4-DIMETHYLPHENOL | FL | EPA 8270 D | 2,4-DINITROPHENOL | FL |
| EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | FL | EPA 8270 D | 2,6-DICHLOROPHENOL | FL |
| EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | FL | EPA 8270 D | 2-ACETYLAMINOFLUORENE | FL |
| EPA 8270 D | 2-CHLORONAPHTHALENE | FL | EPA 8270 D | 2-CHLOROPHENOL | FL |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 6537

**Compuchem, A Division of Liberty Analytical**
501 Madison Avenue
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**Virginia Laboratory ID: 460188**
Effective Date: September 15, 2014
Expiration Date: September 14, 2015

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | FL | EPA 8270 D | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | FL | EPA 8270 D | 2-NAPHTHYLAMINE | FL |
| EPA 8270 D | 2-NITROANILINE | FL | EPA 8270 D | 2-NITROPHENOL | FL |
| EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | FL | EPA 8270 D | 3,3'-DICHLOROBENZIDINE | FL |
| EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | FL | EPA 8270 D | 3-METHYLCHOLANTHRENE | FL |
| EPA 8270 D | 3-NITROANILINE | FL | EPA 8270 D | 4-AMINOBIPHENYL | FL |
| EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | FL | EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | FL |
| EPA 8270 D | 4-CHLOROANILINE | FL | EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | FL |
| EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | FL | EPA 8270 D | 4-METHYLPHENOL (P-CRESOL) | FL |
| EPA 8270 D | 4-NITROANILINE | FL | EPA 8270 D | 4-NITROPHENOL | FL |
| EPA 8270 D | 5-NITRO-O-TOLUIDINE | FL | EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | FL |
| EPA 8270 D | A-A-DIMETHYLPHENETHYLAMINE | FL | EPA 8270 D | ACENAPHTHENE | FL |
| EPA 8270 D | ACENAPHTHYLENE | FL | EPA 8270 D | ACETOPHENONE | FL |
| EPA 8270 D | ANILINE | FL | EPA 8270 D | ANTHRACENE | FL |
| EPA 8270 D | ARAMITE | FL | EPA 8270 D | BENZIDINE | FL |
| EPA 8270 D | BENZO(A)ANTHRACENE | FL | EPA 8270 D | BENZO(A)PYRENE | FL |
| EPA 8270 D | BENZO(B)FLUORANTHENE | FL | EPA 8270 D | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D | BENZO(K)FLUORANTHENE | FL | EPA 8270 D | BENZOIC ACID | FL |
| EPA 8270 D | BENZYL ALCOHOL | FL | EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | FL |
| EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | FL | EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | FL |
| EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | FL | EPA 8270 D | BUTYL BENZYL PHTHALATE | FL |
| EPA 8270 D | CHLOROBENZILATE | FL | EPA 8270 D | CHRYSENE | FL |
| EPA 8270 D | DI-N-BUTYL PHTHALATE | FL | EPA 8270 D | DI-N-OCTYL PHTHALATE | FL |
| EPA 8270 D | DIALLATE | FL | EPA 8270 D | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D | DIBENZOFURAN | FL | EPA 8270 D | DIETHYL PHTHALATE | FL |
| EPA 8270 D | DIMETHOATE | FL | EPA 8270 D | DIMETHYL PHTHALATE | FL |
| EPA 8270 D | DISULFOTON | FL | EPA 8270 D | ETHYL METHANESULFONATE | FL |
| EPA 8270 D | FAMPHUR | FL | EPA 8270 D | FLUORANTHENE | FL |
| EPA 8270 D | FLUORENE | FL | EPA 8270 D | HEXACHLOROBENZENE | FL |
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL | EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | FL |
| EPA 8270 D | HEXACHLOROETHANE | FL | EPA 8270 D | HEXACHLOROPHENE | FL |
| EPA 8270 D | HEXACHLOROPROPENE | FL | EPA 8270 D | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D | ISODRIN | FL | EPA 8270 D | ISOPHORONE | FL |
| EPA 8270 D | ISOSAFROLE | FL | EPA 8270 D | KEPONE | FL |
| EPA 8270 D | METHAPYRILENE | FL | EPA 8270 D | METHYL METHANESULFONATE | FL |

**Commonwealth of Virginia**

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY |
|---|---|---|
| EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | FL |
| EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | FL |
| EPA 8270 D | N-NITROSODIMETHYLAMINE | FL |
| EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | FL |
| EPA 8270 D | N-NITROSOPIPERIDINE | FL |
| EPA 8270 D | NAPHTHALENE | FL |
| EPA 8270 D | NITROQUINOLINE-1-OXIDE | FL |
| EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | FL |
| EPA 8270 D | PENTACHLOROBENZENE | FL |
| EPA 8270 D | PENTACHLOROPHENOL | FL |
| EPA 8270 D | PHENANTHRENE | FL |
| EPA 8270 D | PHORATE | FL |
| EPA 8270 D | PYRENE | FL |
| EPA 8270 D | SULFOTEPP (TETRAETHYL DITHIOPYROPHOSPHATE) | FL |
| EPA 8270 D - EXTENDED | 2,2'-OXYBIS(1-CHLOROPROPANE) | FL |
| EPA 8270 D - EXTENDED | CARBAZOLE | FL |
| EPA 8270 D SIM | 2-METHYLNAPHTHALENE | FL |
| EPA 8270 D SIM | ACENAPHTHYLENE | FL |
| EPA 8270 D SIM | BENZO(A)ANTHRACENE | FL |
| EPA 8270 D SIM | BENZO(B)FLUORANTHENE | FL |
| EPA 8270 D SIM | BENZO(K)FLUORANTHENE | FL |
| EPA 8270 D SIM | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8270 D SIM | FLUORENE | FL |
| EPA 8270 D SIM | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | FL |
| EPA 8270 D SIM | NAPHTHALENE | FL |
| EPA 8270 D SIM | PHENANTHRENE | FL |
| EPA 8310 | ACENAPHTHENE | FL |
| EPA 8310 | ANTHRACENE | FL |
| EPA 8310 | BENZO(A)PYRENE | FL |
| EPA 8310 | BENZO(G,H,I)PERYLENE | FL |
| EPA 8310 | CHRYSENE | FL |
| EPA 8310 | FLUORANTHENE | FL |
| EPA 8310 | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8310 | PHENANTHRENE | FL |
| EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | FL |
| EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | FL |
| EPA 8270 D | N-NITROSODIETHYLAMINE | FL |
| EPA 8270 D | N-NITROSODIPHENYLAMINE | FL |
| EPA 8270 D | N-NITROSOMORPHOLINE | FL |
| EPA 8270 D | N-NITROSOPYRROLIDINE | FL |
| EPA 8270 D | NITROBENZENE | FL |
| EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | FL |
| EPA 8270 D | PARATHION (PARATHION - ETHYL) | FL |
| EPA 8270 D | PENTACHLORONITROBENZENE | FL |
| EPA 8270 D | PHENACETIN | FL |
| EPA 8270 D | PHENOL | FL |
| EPA 8270 D | PRONAMIDE (KERB) | FL |
| EPA 8270 D | SAFROLE | FL |
| EPA 8270 D | THIONAZIN (ZINOPHOS) | FL |
| EPA 8270 D - EXTENDED | 3+4-METHYL PHENOL (M+P CRESOL) | FL |
| EPA 8270 D - EXTENDED | PYRIDINE | FL |
| EPA 8270 D SIM | ACENAPHTHENE | FL |
| EPA 8270 D SIM | ANTHRACENE | FL |
| EPA 8270 D SIM | BENZO(A)PYRENE | FL |
| EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | FL |
| EPA 8270 D SIM | CHRYSENE | FL |
| EPA 8270 D SIM | FLUORANTHENE | FL |
| EPA 8270 D SIM | HEXACHLOROBENZENE | FL |
| EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | FL |
| EPA 8270 D SIM | PENTACHLOROPHENOL | FL |
| EPA 8270 D SIM | PYRENE | FL |
| EPA 8310 | ACENAPHTHYLENE | FL |
| EPA 8310 | BENZO(A)ANTHRACENE | FL |
| EPA 8310 | BENZO(B)FLUORANTHENE | FL |
| EPA 8310 | BENZO(K)FLUORANTHENE | FL |
| EPA 8310 | DIBENZO(A,H) ANTHRACENE | FL |
| EPA 8310 | FLUORENE | FL |
| EPA 8310 | NAPHTHALENE | FL |
| EPA 8310 | PYRENE | FL |
| EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | FL |

**Commonwealth of Virginia**

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## Scope of Accreditation

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | FL | EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | FL |
| EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | FL | EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | FL |
| EPA 8330 A | 2-NITROTOLUENE | FL | EPA 8330 A | 3-NITROTOLUENE | FL |
| EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | FL | EPA 8330 A | 4-NITROTOLUENE | FL |
| EPA 8330 A | NITROBENZENE | FL | EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO-1 ,3,5,7-TETRAZOCINE (HMX) | FL |
| EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | FL | EPA 8332 | NITROGLYCERIN | FL |
| EPA 9010 B | CYANIDE | FL | EPA 9010 B | PREP: CYANIDE DISTILLATION | FL |
| EPA 9010 C | PREP: CYANIDE DISTILLATION | FL | EPA 9012 A | CYANIDE | FL |
| EPA 9012 B | TOTAL CYANIDE | FL | EPA 9045 C | PH | FL |
| EPA 9060 A | TOTAL ORGANIC CARBON | FL | EPA 9071 B | OIL AND GREASE (AS HEM) | FL |

# COMMONWEALTH OF VIRGINIA
# DEPARTMENT OF GENERAL SERVICES
# DIVISION OF CONSOLIDATED LABORATORY SERVICES

## Certifies that

## VA Laboratory ID#: 460182
## EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC

2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Owner:** EUROFINS SCIENTIFIC
**Operator:** J. WILSON HERSHEY
**Responsible Official:** J. WILSON HERSHEY

Having met the requirements of 1 VAC 30-46
and the National Environmental Laboratory Accreditation Conference 2003 Standard

is hereby approved as an

Accredited Laboratory

As more fully described in the attached Scope of Accreditation

Effective Date: **June 15, 2014**
Expiration Date: **June 14, 2015**
**Certificate # 2914**

Denise M. Toney, Ph.D.
DGS Deputy Director for Laboratories, Acting

Continued accreditation status depends on successful ongoing participation in the program.
Certificate to be conspicuously displayed at the laboratory.
Not valid unless accompanied by a valid Virginia Environmental Laboratory Accreditation Program (VELAP) Scope of Accreditation.
Customers are urged to verify the laboratory's current accreditation status.

Certificate Not Transferable

Surrender Upon Revocation

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2914

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: June 15, 2014
Expiration Date: June 14, 2015

### AIR

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA TO-14A REV 2 | 1,1,1-TRICHLOROETHANE | LA DEQ | EPA TO-14A REV 2 | 1,1,2,2-TETRACHLOROETHANE | LA DEQ |
| EPA TO-14A REV 2 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | LA DEQ | EPA TO-14A REV 2 | 1,1,2-TRICHLOROETHANE | LA DEQ |
| EPA TO-14A REV 2 | 1,1-DICHLOROETHANE | LA DEQ | EPA TO-14A REV 2 | 1,1-DICHLOROETHYLENE | LA DEQ |
| EPA TO-14A REV 2 | 1,2,4-TRICHLOROBENZENE | LA DEQ | EPA TO-14A REV 2 | 1,2,4-TRIMETHYLBENZENE | LA DEQ |
| EPA TO-14A REV 2 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | LA DEQ | EPA TO-14A REV 2 | 1,2-DICHLOROBENZENE | LA DEQ |
| EPA TO-14A REV 2 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | LA DEQ | EPA TO-14A REV 2 | 1,2-DICHLOROPROPANE | LA DEQ |
| EPA TO-14A REV 2 | 1,3,5-TRIMETHYLBENZENE | LA DEQ | EPA TO-14A REV 2 | 1,3-DICHLOROBENZENE | LA DEQ |
| EPA TO-14A REV 2 | 1,4-DICHLOROBENZENE | LA DEQ | EPA TO-14A REV 2 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | LA DEQ |
| EPA TO-14A REV 2 | BENZENE | LA DEQ | EPA TO-14A REV 2 | BROMOFORM | LA DEQ |
| EPA TO-14A REV 2 | CARBON TETRACHLORIDE | LA DEQ | EPA TO-14A REV 2 | CHLOROBENZENE | LA DEQ |
| EPA TO-14A REV 2 | CHLOROETHANE (ETHYL CHLORIDE) | LA DEQ | EPA TO-14A REV 2 | CHLOROFORM | LA DEQ |
| EPA TO-14A REV 2 | CIS-1,2-DICHLOROETHYLENE | LA DEQ | EPA TO-14A REV 2 | CIS-1,3-DICHLOROPROPENE | LA DEQ |
| EPA TO-14A REV 2 | ETHYLBENZENE | LA DEQ | EPA TO-14A REV 2 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | LA DEQ |
| EPA TO-14A REV 2 | M+P-XYLENE | LA DEQ | EPA TO-14A REV 2 | METHYL BROMIDE (BROMOMETHANE) | LA DEQ |
| EPA TO-14A REV 2 | METHYL CHLORIDE (CHLOROMETHANE) | LA DEQ | EPA TO-14A REV 2 | METHYLENE CHLORIDE (DICHLOROMETHANE) | LA DEQ |
| EPA TO-14A REV 2 | O-XYLENE | LA DEQ | EPA TO-14A REV 2 | STYRENE | LA DEQ |
| EPA TO-14A REV 2 | TETRACHLOROETHENE (PERCHLOROETHENE) | LA DEQ | EPA TO-14A REV 2 | TOLUENE | LA DEQ |
| EPA TO-14A REV 2 | TRANS-1,2-DICHLOROETHENE | LA DEQ | EPA TO-14A REV 2 | TRANS-1,3-DICHLOROPROPENE | LA DEQ |
| EPA TO-14A REV 2 | TRICHLOROETHENE (TRICHLOROETHYLENE) | LA DEQ | EPA TO-14A REV 2 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | LA DEQ |
| EPA TO-14A REV 2 | VINYL CHLORIDE | LA DEQ | EPA TO-14A REV 2 - EXTENDED | 4-METHYL-2-PENTANONE (MIBK) | LA DEQ |
| EPA TO-14A REV 2 - EXTENDED | BROMODICHLOROMETHANE | LA DEQ | EPA TO-14A REV 2 - EXTENDED | CARBON DISULFIDE | LA DEQ |
| EPA TO-14A REV 2 - EXTENDED | METHYL TERT-BUTYL ETHER (MTBE) | LA DEQ | EPA TO-14A REV 2 - EXTENDED | XYLENE (TOTAL) | LA DEQ |
| EPA TO-15 | 1,1,1-TRICHLOROETHANE | LA DEQ | EPA TO-15 | 1,1,2,2-TETRACHLOROETHANE | LA DEQ |
| EPA TO-15 | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | LA DEQ | EPA TO-15 | 1,1,2-TRICHLOROETHANE | LA DEQ |
| EPA TO-15 | 1,1-DICHLOROETHANE | LA DEQ | EPA TO-15 | 1,1-DICHLOROETHYLENE | LA DEQ |
| EPA TO-15 | 1,2,4-TRICHLOROBENZENE | LA DEQ | EPA TO-15 | 1,2,4-TRIMETHYLBENZENE | LA DEQ |
| EPA TO-15 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | LA DEQ | EPA TO-15 | 1,2-DICHLOROBENZENE | LA DEQ |
| EPA TO-15 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | LA DEQ | EPA TO-15 | 1,2-DICHLOROPROPANE | LA DEQ |
| EPA TO-15 | 1,3,5-TRIMETHYLBENZENE | LA DEQ | EPA TO-15 | 1,3-BUTADIENE | LA DEQ |

## Commonwealth of Virginia

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### AIR

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA TO-15 | 1,3-DICHLOROBENZENE | LA DEQ | EPA TO-15 | 1,4-DICHLOROBENZENE | LA DEQ |
| EPA TO-15 | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | LA DEQ | EPA TO-15 | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | LA DEQ |
| EPA TO-15 | 4-METHYL-2-PENTANONE (MIBK) | LA DEQ | EPA TO-15 | ACETONITRILE | LA DEQ |
| EPA TO-15 | ACROLEIN (PROPENAL) | LA DEQ | EPA TO-15 | ACRYLONITRILE | LA DEQ |
| EPA TO-15 | ALLYL CHLORIDE (3-CHLOROPROPENE) | LA DEQ | EPA TO-15 | BENZENE | LA DEQ |
| EPA TO-15 | BROMODICHLOROMETHANE | LA DEQ | EPA TO-15 | BROMOFORM | LA DEQ |
| EPA TO-15 | CARBON DISULFIDE | LA DEQ | EPA TO-15 | CARBON TETRACHLORIDE | LA DEQ |
| EPA TO-15 | CHLOROBENZENE | LA DEQ | EPA TO-15 | CHLOROETHANE (ETHYL CHLORIDE) | LA DEQ |
| EPA TO-15 | CHLOROFORM | LA DEQ | EPA TO-15 | CIS-1,2-DICHLOROETHYLENE | LA DEQ |
| EPA TO-15 | CIS-1,3-DICHLOROPROPENE | LA DEQ | EPA TO-15 | CYCLOHEXANE | LA DEQ |
| EPA TO-15 | ETHYL ACRYLATE | LA DEQ | EPA TO-15 | ETHYLBENZENE | LA DEQ |
| EPA TO-15 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | LA DEQ | EPA TO-15 | HEXACHLOROETHANE | LA DEQ |
| EPA TO-15 | IODOMETHANE (METHYL IODIDE) | LA DEQ | EPA TO-15 | ISOPROPYLBENZENE | LA DEQ |
| EPA TO-15 | M+P-XYLENE | LA DEQ | EPA TO-15 | METHYL BROMIDE (BROMOMETHANE) | LA DEQ |
| EPA TO-15 | METHYL CHLORIDE (CHLOROMETHANE) | LA DEQ | EPA TO-15 | METHYL METHACRYLATE | LA DEQ |
| EPA TO-15 | METHYL TERT-BUTYL ETHER (MTBE) | LA DEQ | EPA TO-15 | METHYLENE CHLORIDE (DICHLOROMETHANE) | LA DEQ |
| EPA TO-15 | O-XYLENE | LA DEQ | EPA TO-15 | PROPYLENE | LA DEQ |
| EPA TO-15 | STYRENE | LA DEQ | EPA TO-15 | TETRACHLOROETHENE (PERCHLOROETHENE) | LA DEQ |
| EPA TO-15 | TOLUENE | LA DEQ | EPA TO-15 | TRANS-1,2-DICHLOROETHENE | LA DEQ |
| EPA TO-15 | TRANS-1,3-DICHLOROPROPENE | LA DEQ | EPA TO-15 | TRICHLOROETHENE (TRICHLOROETHYLENE) | LA DEQ |
| EPA TO-15 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | LA DEQ | EPA TO-15 | VINYL ACETATE | LA DEQ |
| EPA TO-15 | VINYL CHLORIDE | LA DEQ | EPA TO-15 | XYLENE (TOTAL) | LA DEQ |
| EPA TO-15 - EXTENDED | 2-CHLOROTOLUENE | LA DEQ | EPA TO-15 - EXTENDED | 2-HEXANONE | LA DEQ |
| EPA TO-15 - EXTENDED | 4-ETHYLTOLUENE | LA DEQ | EPA TO-15 - EXTENDED | ACETONE | LA DEQ |
| EPA TO-15 - EXTENDED | CHLORODIFLUOROMETHANE (FREON-22) | LA DEQ | EPA TO-15 - EXTENDED | NAPHTHALENE | LA DEQ |
| EPA TO-15 - EXTENDED | TERT-BUTYL ALCOHOL | LA DEQ | | | |

### DRINKING WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 180.1 REV 2 | TURBIDITY | PA | EPA 200.7 REV 4.4 | ALUMINUM | PA |
| EPA 200.7 REV 4.4 | BARIUM | PA | EPA 200.7 REV 4.4 | BERYLLIUM | PA |
| EPA 200.7 REV 4.4 | CADMIUM | PA | EPA 200.7 REV 4.4 | CALCIUM | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2914

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: June 15, 2014
Expiration Date: June 14, 2015

### DRINKING WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 200.7 REV 4.4 | CHROMIUM | PA | EPA 200.7 REV 4.4 | COPPER | PA |
| EPA 200.7 REV 4.4 | IRON | PA | EPA 200.7 REV 4.4 | MAGNESIUM | PA |
| EPA 200.7 REV 4.4 | MANGANESE | PA | EPA 200.7 REV 4.4 | NICKEL | PA |
| EPA 200.7 REV 4.4 | SILVER | PA | EPA 200.7 REV 4.4 | SODIUM | PA |
| EPA 200.7 REV 4.4 | ZINC | PA | EPA 200.8 REV 5.4 | ANTIMONY | PA |
| EPA 200.8 REV 5.4 | ARSENIC | PA | EPA 200.8 REV 5.4 | BERYLLIUM | PA |
| EPA 200.8 REV 5.4 | CADMIUM | PA | EPA 200.8 REV 5.4 | CHROMIUM | PA |
| EPA 200.8 REV 5.4 | COPPER | PA | EPA 200.8 REV 5.4 | LEAD | PA |
| EPA 200.8 REV 5.4 | NICKEL | PA | EPA 200.8 REV 5.4 | SELENIUM | PA |
| EPA 200.8 REV 5.4 | THALLIUM | PA | EPA 245.1 REV 3 | MERCURY | PA |
| EPA 300.0 REV 2.1 | CHLORIDE | PA | EPA 300.0 REV 2.1 | FLUORIDE | PA |
| EPA 300.0 REV 2.1 | NITRATE AS N | PA | EPA 300.0 REV 2.1 | NITRITE AS N | PA |
| EPA 300.0 REV 2.1 | SULFATE | PA | EPA 335.4 REV 1.0 | CYANIDE | PA |
| EPA 353.2 REV 2 | NITRATE AS N | PA | EPA 353.2 REV 2 | NITRATE/NITRITE | PA |
| EPA 353.2 REV 2 | NITRITE AS N | PA | EPA 504.1 REV 1.1 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA |
| EPA 504.1 REV 1.1 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 507 REV 2.1 | ALACHLOR | PA |
| EPA 507 REV 2.1 | ATRAZINE | PA | EPA 507 REV 2.1 | SIMAZINE | PA |
| EPA 508 REV 3.1 | AROCLOR-1016 (PCB-1016) | PA | EPA 508 REV 3.1 | AROCLOR-1221 (PCB-1221) | PA |
| EPA 508 REV 3.1 | AROCLOR-1232 (PCB-1232) | PA | EPA 508 REV 3.1 | AROCLOR-1242 (PCB-1242) | PA |
| EPA 508 REV 3.1 | AROCLOR-1248 (PCB-1248) | PA | EPA 508 REV 3.1 | AROCLOR-1254 (PCB-1254) | PA |
| EPA 508 REV 3.1 | AROCLOR-1260 (PCB-1260) | PA | EPA 508 REV 3.1 | CHLORDANE (TECH.) | PA |
| EPA 508 REV 3.1 | ENDRIN | PA | EPA 508 REV 3.1 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 508 REV 3.1 | HEPTACHLOR | PA | EPA 508 REV 3.1 | HEPTACHLOR EPOXIDE | PA |
| EPA 508 REV 3.1 | HEXACHLOROBENZENE | PA | EPA 508 REV 3.1 | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 508 REV 3.1 | METHOXYCHLOR | PA | EPA 508 REV 3.1 | TOXAPHENE (CHLORINATED CAMPHENE) | PA |
| EPA 515.1 REV 4 | 2,4-D | PA | EPA 515.1 REV 4 | DALAPON | PA |
| EPA 515.1 REV 4 | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 515.1 REV 4 | PENTACHLOROPHENOL | PA |
| EPA 515.1 REV 4 | PICLORAM | PA | EPA 515.1 REV 4 | SILVEX (2,4,5-TP) | PA |
| EPA 524.2 REV 4.1 | 1,1,1-TRICHLOROETHANE | PA | EPA 524.2 REV 4.1 | 1,1,2-TRICHLOROETHANE | PA |
| EPA 524.2 REV 4.1 | 1,1-DICHLOROETHYLENE | PA | EPA 524.2 REV 4.1 | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 524.2 REV 4.1 | 1,2-DICHLOROBENZENE | PA | EPA 524.2 REV 4.1 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA |
| EPA 524.2 REV 4.1 | 1,2-DICHLOROPROPANE | PA | EPA 524.2 REV 4.1 | 1,4-DICHLOROBENZENE | PA |
| EPA 524.2 REV 4.1 | BENZENE | PA | EPA 524.2 REV 4.1 | BROMODICHLOROMETHANE | PA |
| EPA 524.2 REV 4.1 | BROMOFORM | PA | EPA 524.2 REV 4.1 | CARBON TETRACHLORIDE | PA |

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|---|---|---|---|---|---|
| EPA 524.2 REV 4.1 | CHLOROBENZENE | PA | EPA 524.2 REV 4.1 | CHLORODIBROMOMETHANE | PA |
| EPA 524.2 REV 4.1 | CHLOROFORM | PA | EPA 524.2 REV 4.1 | CIS-1,2-DICHLOROETHYLENE | PA |
| EPA 524.2 REV 4.1 | ETHYLBENZENE | PA | EPA 524.2 REV 4.1 | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA |
| EPA 524.2 REV 4.1 | STYRENE | PA | EPA 524.2 REV 4.1 | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 524.2 REV 4.1 | TOLUENE | PA | EPA 524.2 REV 4.1 | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 524.2 REV 4.1 | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 524.2 REV 4.1 | VINYL CHLORIDE | PA |
| EPA 524.2 REV 4.1 | XYLENE (TOTAL) | PA | EPA 525.2 REV 2 | ALACHLOR | PA |
| EPA 525.2 REV 2 | ATRAZINE | PA | EPA 525.2 REV 2 | BENZO(A)PYRENE | PA |
| EPA 525.2 REV 2 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA | EPA 525.2 REV 2 | BIS(2-ETHYLHEXYL)ADIPATE (DI(2-ETHYLHEXYL)ADIPATE) | PA |
| EPA 525.2 REV 2 | ENDRIN | PA | EPA 525.2 REV 2 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 525.2 REV 2 | HEPTACHLOR | PA | EPA 525.2 REV 2 | HEPTACHLOR EPOXIDE | PA |
| EPA 525.2 REV 2 | HEXACHLOROBENZENE | PA | EPA 525.2 REV 2 | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 525.2 REV 2 | METHOXYCHLOR | PA | EPA 531.1 REV 3.1 | CARBOFURAN (FURADEN) | PA |
| EPA 531.1 REV 3.1 | OXAMYL | PA | SM 2320 B-1997 | ALKALINITY AS CACO3 | PA |
| SM 2510 B-1997 | CONDUCTIVITY | PA | SM 2540 C-1997 | RESIDUE-FILTERABLE (TDS) | PA |
| SM 4500-F⁻ C-1997 | FLUORIDE | PA | SM 4500-H+ B-2000 | PH | PA |
| SM 4500-P E-1999 | ORTHOPHOSPHATE AS P | PA | SM 5540 C-2000 | SURFACTANTS - MBAS | PA |
| SM 9215 B-1994 | HETEROTROPHIC PLATE COUNT | PA | SM 9223 COLILERT P/A | ESCHERICHIA COLI | PA |
| SM 9223 COLILERT P/A | TOTAL COLIFORMS | PA | | | |

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1010 | FLASHPOINT | PA | EPA 1311 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | PA |
| EPA 1312 | PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE | PA | EPA 160.4 | RESIDUE-VOLATILE | PA |
| EPA 1613 B | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | PA | EPA 1613 B | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | PA |
| EPA 1613 B | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | PA | EPA 1613 B | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | PA |
| EPA 1613 B | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | PA | EPA 1613 B | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | PA |
| EPA 1613 B | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | PA | EPA 1613 B | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | PA |
| EPA 1613 B | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | PA | EPA 1613 B | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | PA |

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|---|---|---|---|---|---|
| EPA 1613 B | 1,2,3,7,8,9-HEXACHLORODIBENZO FURAN (1,2,3,7,8,9-HXCDF) | PA | EPA 1613 B | 1,2,3,7,8-PENTACHLORODIBENZO -P-DIOXIN (1,2,3,7,8-PECDD) | PA |
| EPA 1613 B | 1,2,3,7,8-PENTACHLORODIBENZO FURAN (1,2,3,7,8-PECDF) | PA | EPA 1613 B | 2,3,4,6,7,8-HEXACHLORODIBENZO FURAN (2,3,4,6,7,8-HXCDF) | PA |
| EPA 1613 B | 2,3,4,7,8-PENTACHLORODIBENZO FURAN | PA | EPA 1613 B | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | PA |
| EPA 1613 B | 2,3,7,8-TETRACHLORODIBENZOF URAN (2,3,7,8-TCDF) | PA | EPA 1631 E | MERCURY | PA |
| EPA 1664 A | OIL AND GREASE (AS HEM) | PA | EPA 1664 A | TOTAL PETROLEUM HYDROCARBONS (TPH) (AS NONPOLAR MATERIAL, SGT-HEM) | PA |
| EPA 1666 A | 4-METHYL-2-PENTANONE (MIBK) | PA | EPA 1666 A | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA |
| EPA 1666 A | ETHYL ACETATE | PA | EPA 1666 A | ISOBUTYRALDEHYDE | PA |
| EPA 1666 A | ISOPROPYL ACETATE | PA | EPA 1666 A | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 1666 A | METHYL FORMATE | PA | EPA 1666 A | N-AMYL ACETATE | PA |
| EPA 1666 A | N-AMYL ALCOHOL | PA | EPA 1666 A | N-BUTYL-ACETATE | PA |
| EPA 1666 A | N-HEPTANE | PA | EPA 1666 A | N-HEXANE | PA |
| EPA 1666 A | TERT-BUTYL ALCOHOL | PA | EPA 1666 A | TETRAHYDROFURAN (THF) | PA |
| EPA 1666 A | XYLENE (TOTAL) | PA | EPA 1668 A | 2,2',3,3',4,4',5,5',6-NONACHLOROBI PHENYL (BZ-206) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,5'-OCTACHLOROBIP HENYL (BZ-194) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6'-OCTACHLOROBIP HENYL (BZ-196) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,6,6'-NONACHLOROBI PHENYL (BZ-207) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6-OCTACHLOROBIP HENYL BZ-195) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5-HEPTACHLOROBIPH ENYL (BZ-170) | PA | EPA 1668 A | 2,2',3,3',4,4',6,6'-OCTACHLOROBIP HENYL (BZ-197) | PA |
| EPA 1668 A | 2,2',3,3',4,4',6-HEPTACHLOROBIPH ENYL (BZ-171) | PA | EPA 1668 A | 2,2',3,3',4,4'-HEXACHLOROBIPHEN YL (BZ-128) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6'-HEPTACHLOROBIP HENYL (BZ-177) | PA | EPA 1668 A | 2,2',3,3',4,5',6,6'-OCTACHLOROBIP HENYL (BZ-201) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6-HEPTACHLOROBIPH ENYL (BZ-175) | PA | EPA 1668 A | 2,2',3,3',4,5'-HEXACHLOROBIPHEN YL (BZ-130) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6'-OCTACHLOROBIP HENYL (BZ-199) | PA | EPA 1668 A | 2,2',3,3',4,5,5',6,6'-NONACHLOROBI PHENYL (BZ-208) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6-OCTACHLOROBIP HENYL (BZ-198) | PA | EPA 1668 A | 2,2',3,3',4,5,5'-HEPTACHLOROBIPH ENYL (BZ-172) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6'-HEPTACHLOROBIPH ENYL (BZ-174) | PA | EPA 1668 A | 2,2',3,3',4,5,6,6'-OCTACHLOROBIP HENYL (BZ-200) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6-HEPTACHLOROBIPH ENYL (BZ-173) | PA | EPA 1668 A | 2,2',3,3',4,5-HEXACHLOROBIPHEN YL (BZ-129) | PA |
| EPA 1668 A | 2,2',3,3',4,6'-HEXACHLOROBIPHEN YL (BZ-132) | PA | EPA 1668 A | 2,2',3,3',4,6,6'-HEPTACHLOROBIPH ENYL (BZ-176) | PA |
| EPA 1668 A | 2,2',3,3',4,6-HEXACHLOROBIPHEN YL (BZ-131) | PA | EPA 1668 A | 2,2',3,3',4-PENTACHLOROBIPHEN YL (BZ-82) | PA |
| EPA 1668 A | 2,2',3,3',5,5',6,6'-OCTACHLOROBIP HENYL (BZ-202) | PA | EPA 1668 A | 2,2',3,3',5,5',6-HEPTACHLOROBIPH ENYL (BZ-178) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,2',3,3',5,5'-HEXACHLOROBIPHENYL (BZ-133) | PA | EPA 1668 A | 2,2',3,3',5,6'-HEXACHLOROBIPHENYL (BZ-135) | PA |
| EPA 1668 A | 2,2',3,3',5,6,6'-HEPTACHLOROBIPHENYL (BZ-179) | PA | EPA 1668 A | 2,2',3,3',5,6-HEXACHLOROBIPHENYL (BZ-134) | PA |
| EPA 1668 A | 2,2',3,3',5-PENTACHLOROBIPHENYL (BZ-83) | PA | EPA 1668 A | 2,2',3,3',6,6'-HEXACHLOROBIPHENYL (BZ-136) | PA |
| EPA 1668 A | 2,2',3,3',6-PENTACHLOROBIPHENYL (BZ-84) | PA | EPA 1668 A | 2,2',3,3'-TETRACHLOROBIPHENYL (BZ-40) | PA |
| EPA 1668 A | 2,2',3,4',5',6-HEXACHLOROBIPHENYL (BZ-149) | PA | EPA 1668 A | 2,2',3,4',5'-PENTACHLOROBIPHENYL (BZ-97) | PA |
| EPA 1668 A | 2,2',3,4',5,5',6-HEPTACHLOROBIPHENYL (BZ-187) | PA | EPA 1668 A | 2,2',3,4',5,5'-HEXACHLOROBIPHENYL (BZ-146) | PA |
| EPA 1668 A | 2,2',3,4',5,6'-HEXACHLOROBIPHENYL (BZ-148) | PA | EPA 1668 A | 2,2',3,4',5,6,6'-HEPTACHLOROBIPHENYL (BZ-188) | PA |
| EPA 1668 A | 2,2',3,4',5,6-HEXACHLOROBIPHENYL (BZ-147) | PA | EPA 1668 A | 2,2',3,4',5-PENTACHLOROBIPHENYL (BZ-90) | PA |
| EPA 1668 A | 2,2',3,4',6'-PENTACHLOROBIPHENYL (BZ-98) | PA | EPA 1668 A | 2,2',3,4',6,6'-HEXACHLOROBIPHENYL (BZ-150) | PA |
| EPA 1668 A | 2,2',3,4',6-PENTACHLOROBIPHENYL (BZ-91) | PA | EPA 1668 A | 2,2',3,4'-TETRACHLOROBIPHENYL (BZ-42) | PA |
| EPA 1668 A | 2,2',3,4,4',5',6-HEPTACHLOROBIPHENYL (BZ-183) | PA | EPA 1668 A | 2,2',3,4,4',5'-HEXACHLOROBIPHENYL (BZ-138) | PA |
| EPA 1668 A | 2,2',3,4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-203) | PA | EPA 1668 A | 2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-180) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6'-HEPTACHLOROBIPHENYL (BZ-182) | PA | EPA 1668 A | 2,2',3,4,4',5,6,6'-OCTACHLOROBIPHENYL (BZ-204) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6-HEPTACHLOROBIPHENYL (BZ-181) | PA | EPA 1668 A | 2,2',3,4,4',5-HEXACHLOROBIPHENYL (BZ-137) | PA |
| EPA 1668 A | 2,2',3,4,4',6'-HEXACHLOROBIPHENYL (BZ-140) | PA | EPA 1668 A | 2,2',3,4,4',6,6'-HEPTACHLOROBIPHENYL (BZ-184) | PA |
| EPA 1668 A | 2,2',3,4,4',6-HEXACHLOROBIPHENYL (BZ-139) | PA | EPA 1668 A | 2,2',3,4,4'-PENTACHLOROBIPHENYL (BZ-85) | PA |
| EPA 1668 A | 2,2',3,4,5',6-HEXACHLOROBIPHENYL (BZ-144) | PA | EPA 1668 A | 2,2',3,4,5'-PENTACHLOROBIPHENYL (BZ-87) | PA |
| EPA 1668 A | 2,2',3,4,5,5',6-HEPTACHLOROBIPHENYL (BZ-185) | PA | EPA 1668 A | 2,2',3,4,5,5'-HEXACHLOROBIPHENYL (BZ-141) | PA |
| EPA 1668 A | 2,2',3,4,5,6'-HEXACHLOROBIPHENYL (BZ-143) | PA | EPA 1668 A | 2,2',3,4,5,6,6'-HEPTACHLOROBIPHENYL (BZ-186) | PA |
| EPA 1668 A | 2,2',3,4,5,6-HEXACHLOROBIPHENYL (BZ-142) | PA | EPA 1668 A | 2,2',3,4,5-PENTACHLOROBIPHENYL (BZ-86) | PA |
| EPA 1668 A | 2,2',3,4,6'-PENTACHLOROBIPHENYL (BZ-89) | PA | EPA 1668 A | 2,2',3,4,6,6'-HEXACHLOROBIPHENYL (BZ-145) | PA |
| EPA 1668 A | 2,2',3,4,6-PENTACHLOROBIPHENYL (BZ-88) | PA | EPA 1668 A | 2,2',3,4-TETRACHLOROBIPHENYL (BZ-41) | PA |
| EPA 1668 A | 2,2',3,5',6-PENTACHLOROBIPHENYL (BZ-95) | PA | EPA 1668 A | 2,2',3,5'-TETRACHLOROBIPHENYL (BZ-44) | PA |
| EPA 1668 A | 2,2',3,5,5',6-HEXACHLOROBIPHENYL (BZ-151) | PA | EPA 1668 A | 2,2',3,5,5'-PENTACHLOROBIPHENYL (BZ-92) | PA |
| EPA 1668 A | 2,2',3,5,6'-PENTACHLOROBIPHENYL (BZ-94) | PA | EPA 1668 A | 2,2',3,5,6,6'-HEXACHLOROBIPHENYL (BZ-152) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,2',3,5,6-PENTACHLOROBIPHENYL (BZ-93) | PA | EPA 1668 A | 2,2',3,5-TETRACHLOROBIPHENYL (BZ-43) | PA |
| EPA 1668 A | 2,2',3,6'-TETRACHLOROBIPHENYL (BZ-46) | PA | EPA 1668 A | 2,2',3,6,6'-PENTACHLOROBIPHENYL (BZ-96) | PA |
| EPA 1668 A | 2,2',3,6-TETRACHLOROBIPHENYL (BZ-45) | PA | EPA 1668 A | 2,2',3-TRICHLOROBIPHENYL (BZ-16) | PA |
| EPA 1668 A | 2,2',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-153) | PA | EPA 1668 A | 2,2',4,4',5,6'-HEXACHLOROBIPHENYL (BZ-154) | PA |
| EPA 1668 A | 2,2',4,4',5-PENTACHLOROBIPHENYL (BZ-99) | PA | EPA 1668 A | 2,2',4,4',6,6'-HEXACHLOROBIPHENYL (BZ-155) | PA |
| EPA 1668 A | 2,2',4,4',6-PENTACHLOROBIPHENYL (BZ-100) | PA | EPA 1668 A | 2,2',4,4'-TETRACHLOROBIPHENYL (BZ-47) | PA |
| EPA 1668 A | 2,2',4,5',6-PENTACHLOROBIPHENYL (BZ-103) | PA | EPA 1668 A | 2,2',4,5'-TETRACHLOROBIPHENYL (BZ-49) | PA |
| EPA 1668 A | 2,2',4,5,5'-PENTACHLOROBIPHENYL (BZ-101) | PA | EPA 1668 A | 2,2',4,5,6'-PENTACHLOROBIPHENYL (BZ-102) | PA |
| EPA 1668 A | 2,2',4,5-TETRACHLOROBIPHENYL (BZ-48) | PA | EPA 1668 A | 2,2',4,6'-TETRACHLOROBIPHENYL (BZ-51) | PA |
| EPA 1668 A | 2,2',4,6,6'-PENTACHLOROBIPHENYL (BZ-104) | PA | EPA 1668 A | 2,2',4,6-TETRACHLOROBIPHENYL (BZ-50) | PA |
| EPA 1668 A | 2,2',4-TRICHLOROBIPHENYL (BZ-17) | PA | EPA 1668 A | 2,2',5,5'-TETRACHLOROBIPHENYL (BZ-52) | PA |
| EPA 1668 A | 2,2',5,6'-TETRACHLOROBIPHENYL (BZ-53) | PA | EPA 1668 A | 2,2',5-TRICHLOROBIPHENYL (BZ-18) | PA |
| EPA 1668 A | 2,2',6,6'-TETRACHLOROBIPHENYL (BZ-54) | PA | EPA 1668 A | 2,2',6-TRICHLOROBIPHENYL (BZ-19) | PA |
| EPA 1668 A | 2,2'-DICHLOROBIPHENYL (BZ-4) | PA | EPA 1668 A | 2,3',4',5,6-PENTACHLOROBIPHENYL (BZ-125) | PA |
| EPA 1668 A | 2,3',4',5'-TETRACHLOROBIPHENYL (BZ-76) | PA | EPA 1668 A | 2,3',4',5,5'-PENTACHLOROBIPHENYL (BZ-124) | PA |
| EPA 1668 A | 2,3',4',5-TETRACHLOROBIPHENYL (BZ-70) | PA | EPA 1668 A | 2,3',4',6-TETRACHLOROBIPHENYL (BZ-71) | PA |
| EPA 1668 A | 2,3',4'-TRICHLOROBIPHENYL (BZ-33) | PA | EPA 1668 A | 2,3',4,4',5',6-HEXACHLOROBIPHENYL (BZ-168) | PA |
| EPA 1668 A | 2,3',4,4',5'-PENTACHLOROBIPHENYL (BZ-123) | PA | EPA 1668 A | 2,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-167) | PA |
| EPA 1668 A | 2,3',4,4',5-PENTACHLOROBIPHENYL (BZ-118) | PA | EPA 1668 A | 2,3',4,4',6-PENTACHLOROBIPHENYL (BZ-119) | PA |
| EPA 1668 A | 2,3',4,4'-TETRACHLOROBIPHENYL (BZ-66) | PA | EPA 1668 A | 2,3',4,5',6-PENTACHLOROBIPHENYL (BZ-121) | PA |
| EPA 1668 A | 2,3',4,5'-TETRACHLOROBIPHENYL (BZ-68) | PA | EPA 1668 A | 2,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-120) | PA |
| EPA 1668 A | 2,3',4,5-TETRACHLOROBIPHENYL (BZ-67) | PA | EPA 1668 A | 2,3',4,6-TETRACHLOROBIPHENYL (BZ-69) | PA |
| EPA 1668 A | 2,3',4-TRICHLOROBIPHENYL (BZ-25) | PA | EPA 1668 A | 2,3',5',6-TETRACHLOROBIPHENYL (BZ-73) | PA |
| EPA 1668 A | 2,3',5'-TRICHLOROBIPHENYL (BZ-34) | PA | EPA 1668 A | 2,3',5,5'-TETRACHLOROBIPHENYL (BZ-72) | PA |
| EPA 1668 A | 2,3',5-TRICHLOROBIPHENYL (BZ-26) | PA | EPA 1668 A | 2,3',6-TRICHLOROBIPHENYL (BZ-27) | PA |

**Commonwealth of Virginia**

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## Scope of Accreditation

VELAP Certificate No.: 2914

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**Virginia Laboratory ID: 460182**
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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1668 A | 2,3'-DICHLOROBIPHENYL (BZ-6) | PA | EPA 1668 A | 2,3,3',4',5',6-HEXACHLOROBIPHENYL (BZ-164) | PA |
| EPA 1668 A | 2,3,3',4',5'-PENTACHLOROBIPHENYL (BZ-122) | PA | EPA 1668 A | 2,3,3',4',5,5',6-HEPTACHLOROBIPHENYL (BZ-193) | PA |
| EPA 1668 A | 2,3,3',4',5,5'-HEXACHLOROBIPHENYL (BZ-162) | PA | EPA 1668 A | 2,3,3',4',5,6-HEXACHLOROBIPHENYL (BZ-163) | PA |
| EPA 1668 A | 2,3,3',4',5-PENTACHLOROBIPHENYL (BZ-107) | PA | EPA 1668 A | 2,3,3',4',6-PENTACHLOROBIPHENYL (BZ-110) | PA |
| EPA 1668 A | 2,3,3',4'-TETRACHLOROBIPHENYL (BZ-56) | PA | EPA 1668 A | 2,3,3',4,4',5',6-HEPTACHLOROBIPHENYL (BZ-191) | PA |
| EPA 1668 A | 2,3,3',4,4',5'-HEXACHLOROBIPHENYL (BZ-157) | PA | EPA 1668 A | 2,3,3',4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-205) | PA |
| EPA 1668 A | 2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-189) | PA | EPA 1668 A | 2,3,3',4,4',5,6-HEPTACHLOROBIPHENYL (BZ-190) | PA |
| EPA 1668 A | 2,3,3',4,4',5-HEXACHLOROBIPHENYL (BZ-156) | PA | EPA 1668 A | 2,3,3',4,4',6-HEXACHLOROBIPHENYL (BZ-158) | PA |
| EPA 1668 A | 2,3,3',4,4'-PENTACHLOROBIPHENYL (BZ-105) | PA | EPA 1668 A | 2,3,3',4,5',6-HEXACHLOROBIPHENYL (BZ-161) | PA |
| EPA 1668 A | 2,3,3',4,5'-PENTACHLOROBIPHENYL (BZ-108) | PA | EPA 1668 A | 2,3,3',4,5,5',6-HEPTACHLOROBIPHENYL (BZ-192) | PA |
| EPA 1668 A | 2,3,3',4,5,5'-HEXACHLOROBIPHENYL (BZ-159) | PA | EPA 1668 A | 2,3,3',4,5,6-HEXACHLOROBIPHENYL (BZ-160) | PA |
| EPA 1668 A | 2,3,3',4,5-PENTACHLOROBIPHENYL (BZ-106) | PA | EPA 1668 A | 2,3,3',4,6-PENTACHLOROBIPHENYL (BZ-109) | PA |
| EPA 1668 A | 2,3,3',4-TETRACHLOROBIPHENYL (BZ-55) | PA | EPA 1668 A | 2,3,3',5',6-PENTACHLOROBIPHENYL (BZ-113) | PA |
| EPA 1668 A | 2,3,3',5'-TETRACHLOROBIPHENYL (BZ-58) | PA | EPA 1668 A | 2,3,3',5,5',6-HEXACHLOROBIPHENYL (BZ-165) | PA |
| EPA 1668 A | 2,3,3',5,5'-PENTACHLOROBIPHENYL (BZ-111) | PA | EPA 1668 A | 2,3,3',5,6-PENTACHLOROBIPHENYL (BZ-112) | PA |
| EPA 1668 A | 2,3,3',5-TETRACHLOROBIPHENYL (BZ-57) | PA | EPA 1668 A | 2,3,3',6-TETRACHLOROBIPHENYL (BZ-59) | PA |
| EPA 1668 A | 2,3,3'-TRICHLOROBIPHENYL (BZ-20) | PA | EPA 1668 A | 2,3,4',5,6-PENTACHLOROBIPHENYL (BZ-117) | PA |
| EPA 1668 A | 2,3,4',5-TETRACHLOROBIPHENYL (BZ-63) | PA | EPA 1668 A | 2,3,4',6-TETRACHLOROBIPHENYL (BZ-64) | PA |
| EPA 1668 A | 2,3,4'-TRICHLOROBIPHENYL (BZ-22) | PA | EPA 1668 A | 2,3,4,4',5,6-HEXACHLOROBIPHENYL (BZ-166) | PA |
| EPA 1668 A | 2,3,4,4',5-PENTACHLOROBIPHENYL (BZ-114) | PA | EPA 1668 A | 2,3,4,4',6-PENTACHLOROBIPHENYL (BZ-115) | PA |
| EPA 1668 A | 2,3,4,4'-TETRACHLOROBIPHENYL (BZ-60) | PA | EPA 1668 A | 2,3,4,5,6-PENTACHLOROBIPHENYL (BZ-116) | PA |
| EPA 1668 A | 2,3,4,5-TETRACHLOROBIPHENYL (BZ-61) | PA | EPA 1668 A | 2,3,4,6-TETRACHLOROBIPHENYL (BZ-62) | PA |
| EPA 1668 A | 2,3,4-TRICHLOROBIPHENYL (BZ-21) | PA | EPA 1668 A | 2,3,5,6-TETRACHLOROBIPHENYL (BZ-65) | PA |
| EPA 1668 A | 2,3,5-TRICHLOROBIPHENYL (BZ-23) | PA | EPA 1668 A | 2,3,6-TRICHLOROBIPHENYL (BZ-24) | PA |
| EPA 1668 A | 2,3-DICHLOROBIPHENYL (BZ-5) | PA | EPA 1668 A | 2,4',5-TRICHLOROBIPHENYL (BZ-31) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,4',6-TRICHLOROBIPHENYL (BZ-32) | PA | EPA 1668 A | 2,4'-DICHLOROBIPHENYL (BZ-8) | PA |
| EPA 1668 A | 2,4,4',5-TETRACHLOROBIPHENYL (BZ-74) | PA | EPA 1668 A | 2,4,4',6-TETRACHLOROBIPHENYL (BZ-75) | PA |
| EPA 1668 A | 2,4,4'-TRICHLOROBIPHENYL (BZ-28) | PA | EPA 1668 A | 2,4,5-TRICHLOROBIPHENYL (BZ-29) | PA |
| EPA 1668 A | 2,4,6-TRICHLOROBIPHENYL (BZ-30) | PA | EPA 1668 A | 2,4-DICHLOROBIPHENYL (BZ-7) | PA |
| EPA 1668 A | 2,5-DICHLOROBIPHENYL (BZ-9) | PA | EPA 1668 A | 2,6-DICHLOROBIPHENYL (BZ-10) | PA |
| EPA 1668 A | 2-CHLOROBIPHENYL (BZ-1) | PA | EPA 1668 A | 3,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-169) | PA |
| EPA 1668 A | 3,3',4,4',5-PENTACHLOROBIPHENYL (BZ-126) | PA | EPA 1668 A | 3,3',4,4'-TETRACHLOROBIPHENYL (BZ-77) | PA |
| EPA 1668 A | 3,3',4,5'-TETRACHLOROBIPHENYL (BZ-79) | PA | EPA 1668 A | 3,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-127) | PA |
| EPA 1668 A | 3,3',4,5-TETRACHLOROBIPHENYL (BZ-78) | PA | EPA 1668 A | 3,3',4-TRICHLOROBIPHENYL (BZ-35) | PA |
| EPA 1668 A | 3,3',5,5'-TETRACHLOROBIPHENYL (BZ-80) | PA | EPA 1668 A | 3,3',5-TRICHLOROBIPHENYL (BZ-36) | PA |
| EPA 1668 A | 3,3'-DICHLOROBIPHENYL (BZ-11) | PA | EPA 1668 A | 3,4',5-TRICHLOROBIPHENYL (BZ-39) | PA |
| EPA 1668 A | 3,4'-DICHLOROBIPHENYL (BZ-13) | PA | EPA 1668 A | 3,4,4',5-TETRACHLOROBIPHENYL (BZ-81) | PA |
| EPA 1668 A | 3,4,4'-TRICHLOROBIPHENYL (BZ-37) | PA | EPA 1668 A | 3,4,5-TRICHLOROBIPHENYL (BZ-38) | PA |
| EPA 1668 A | 3,4-DICHLOROBIPHENYL (BZ-12) | PA | EPA 1668 A | 3,5-DICHLOROBIPHENYL (BZ-14) | PA |
| EPA 1668 A | 3-CHLOROBIPHENYL (BZ-2) | PA | EPA 1668 A | 4,4'-DICHLOROBIPHENYL (BZ-15) | PA |
| EPA 1668 A | 4-CHLOROBIPHENYL (BZ-3) | PA | EPA 1668 A | DECACHLOROBIPHENYL (BZ-209) | PA |
| EPA 1671 A | ACETONITRILE | PA | EPA 1671 A | DIETHYLAMINE | PA |
| EPA 1671 A | DIMETHYL SULFOXIDE | PA | EPA 1671 A | ETHANOL | PA |
| EPA 1671 A | METHANOL | PA | EPA 1671 A | METHYL CELLOSOLVE | PA |
| EPA 1671 A | N-PROPANOL (1-PROPANOL) | PA | EPA 1671 A | TRIETHYLAMINE | PA |
| EPA 180.1 REV 2 | TURBIDITY | PA | EPA 200.2 REV 2.8 | PREP: SAMPLE PREPARATION PROCEDURE FOR SPECTROCHEMICAL DETERMINATION OF TOTAL RECOVERABLE ELEMENTS | PA |
| EPA 200.7 REV 4.4 | ALUMINUM | PA | EPA 200.7 REV 4.4 | ANTIMONY | PA |
| EPA 200.7 REV 4.4 | ARSENIC | PA | EPA 200.7 REV 4.4 | BARIUM | PA |
| EPA 200.7 REV 4.4 | BERYLLIUM | PA | EPA 200.7 REV 4.4 | BORON | PA |
| EPA 200.7 REV 4.4 | CADMIUM | PA | EPA 200.7 REV 4.4 | CALCIUM | PA |
| EPA 200.7 REV 4.4 | CHROMIUM | PA | EPA 200.7 REV 4.4 | COBALT | PA |
| EPA 200.7 REV 4.4 | COPPER | PA | EPA 200.7 REV 4.4 | IRON | PA |
| EPA 200.7 REV 4.4 | LEAD | PA | EPA 200.7 REV 4.4 | MAGNESIUM | PA |
| EPA 200.7 REV 4.4 | MANGANESE | PA | EPA 200.7 REV 4.4 | MOLYBDENUM | PA |
| EPA 200.7 REV 4.4 | NICKEL | PA | EPA 200.7 REV 4.4 | POTASSIUM | PA |

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|---|---|---|---|---|---|
| EPA 200.7 REV 4.4 | SELENIUM | PA | EPA 200.7 REV 4.4 | SILVER | PA |
| EPA 200.7 REV 4.4 | SODIUM | PA | EPA 200.7 REV 4.4 | THALLIUM | PA |
| EPA 200.7 REV 4.4 | TIN | PA | EPA 200.7 REV 4.4 | TITANIUM | PA |
| EPA 200.7 REV 4.4 | VANADIUM | PA | EPA 200.7 REV 4.4 | ZINC | PA |
| EPA 200.8 REV 5.4 | ALUMINUM | PA | EPA 200.8 REV 5.4 | ANTIMONY | PA |
| EPA 200.8 REV 5.4 | ARSENIC | PA | EPA 200.8 REV 5.4 | BARIUM | PA |
| EPA 200.8 REV 5.4 | BERYLLIUM | PA | EPA 200.8 REV 5.4 | CADMIUM | PA |
| EPA 200.8 REV 5.4 | CHROMIUM | PA | EPA 200.8 REV 5.4 | COBALT | PA |
| EPA 200.8 REV 5.4 | COPPER | PA | EPA 200.8 REV 5.4 | LEAD | PA |
| EPA 200.8 REV 5.4 | MANGANESE | PA | EPA 200.8 REV 5.4 | MOLYBDENUM | PA |
| EPA 200.8 REV 5.4 | NICKEL | PA | EPA 200.8 REV 5.4 | SELENIUM | PA |
| EPA 200.8 REV 5.4 | SILVER | PA | EPA 200.8 REV 5.4 | THALLIUM | PA |
| EPA 200.8 REV 5.4 | VANADIUM | PA | EPA 200.8 REV 5.4 | ZINC | PA |
| EPA 200.8 REV 5.4 - EXTENDED | BORON | PA | EPA 200.8 REV 5.4 - EXTENDED | CALCIUM | PA |
| EPA 200.8 REV 5.4 - EXTENDED | IRON | PA | EPA 200.8 REV 5.4 - EXTENDED | MAGNESIUM | PA |
| EPA 200.8 REV 5.4 - EXTENDED | POTASSIUM | PA | EPA 200.8 REV 5.4 - EXTENDED | SODIUM | PA |
| EPA 200.8 REV 5.4 - EXTENDED | TIN | PA | EPA 200.8 REV 5.4 - EXTENDED | TITANIUM | PA |
| EPA 245.1 REV 3 | MERCURY | PA | EPA 300.0 REV 2.1 | BROMIDE | PA |
| EPA 300.0 REV 2.1 | CHLORIDE | PA | EPA 300.0 REV 2.1 | FLUORIDE | PA |
| EPA 300.0 REV 2.1 | NITRATE AS N | PA | EPA 300.0 REV 2.1 | NITRITE AS N | PA |
| EPA 300.0 REV 2.1 | ORTHOPHOSPHATE AS P | PA | EPA 300.0 REV 2.1 | SULFATE | PA |
| EPA 3005 A | PREP: ACID DIGESTION OF WATERS FOR TOTAL RECOVERABLE OR DISSOLVED METALS | PA | EPA 3010 A | PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS | PA |
| EPA 3020 A | PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS | PA | EPA 335.4 REV 1.0 | CYANIDE | PA |
| EPA 351.2 REV 2 | KJELDAHL NITROGEN - TOTAL | PA | EPA 3510 C | PREP: LIQUID-LIQUID EXTRACTION | PA |
| EPA 3511 | PREP: ORGANIC EXTRACTION AND SAMPLE PREPARATION | PA | EPA 3520 C | PREP: CONTINUOUS LIQUID-LIQUID EXTRACTION | PA |
| EPA 353.2 REV 2 | NITRATE AS N | PA | EPA 353.2 REV 2 | NITRATE/NITRITE | PA |
| EPA 353.2 REV 2 | NITRITE AS N | PA | EPA 3620 C | PREP: FLORISIL CLEANUP | PA |
| EPA 3630 C | PREP: SILICA GEL CLEANUP | PA | EPA 365.1 REV 2 | PHOSPHORUS, TOTAL | PA |
| EPA 365.3 | ORTHOPHOSPHATE AS P | PA | EPA 410.4 REV 2 | CHEMICAL OXYGEN DEMAND | PA |
| EPA 420.4 REV 1 | TOTAL PHENOLICS | PA | EPA 5030 | PREP: PURGE AND TRAP FOR AQUEOUS SAMPLES | PA |
| EPA 6010 B | ALUMINUM | PA | EPA 6010 B | ANTIMONY | PA |
| EPA 6010 B | ARSENIC | PA | EPA 6010 B | BARIUM | PA |

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| EPA 6010 B | BERYLLIUM | PA | EPA 6010 B | BORON | PA |
| EPA 6010 B | CADMIUM | PA | EPA 6010 B | CALCIUM | PA |
| EPA 6010 B | CHROMIUM | PA | EPA 6010 B | COBALT | PA |
| EPA 6010 B | COPPER | PA | EPA 6010 B | IRON | PA |
| EPA 6010 B | LEAD | PA | EPA 6010 B | LITHIUM | PA |
| EPA 6010 B | MAGNESIUM | PA | EPA 6010 B | MANGANESE | PA |
| EPA 6010 B | MOLYBDENUM | PA | EPA 6010 B | NICKEL | PA |
| EPA 6010 B | POTASSIUM | PA | EPA 6010 B | SELENIUM | PA |
| EPA 6010 B | SILVER | PA | EPA 6010 B | SODIUM | PA |
| EPA 6010 B | STRONTIUM | PA | EPA 6010 B | THALLIUM | PA |
| EPA 6010 B | TIN | PA | EPA 6010 B | TITANIUM | PA |
| EPA 6010 B | VANADIUM | PA | EPA 6010 B | ZINC | PA |
| EPA 6010 C | ALUMINUM | PA | EPA 6010 C | ANTIMONY | PA |
| EPA 6010 C | ARSENIC | PA | EPA 6010 C | BARIUM | PA |
| EPA 6010 C | BERYLLIUM | PA | EPA 6010 C | BORON | PA |
| EPA 6010 C | CADMIUM | PA | EPA 6010 C | CALCIUM | PA |
| EPA 6010 C | CHROMIUM | PA | EPA 6010 C | COBALT | PA |
| EPA 6010 C | COPPER | PA | EPA 6010 C | IRON | PA |
| EPA 6010 C | LEAD | PA | EPA 6010 C | LITHIUM | PA |
| EPA 6010 C | MAGNESIUM | PA | EPA 6010 C | MANGANESE | PA |
| EPA 6010 C | MOLYBDENUM | PA | EPA 6010 C | NICKEL | PA |
| EPA 6010 C | POTASSIUM | PA | EPA 6010 C | SELENIUM | PA |
| EPA 6010 C | SILVER | PA | EPA 6010 C | SODIUM | PA |
| EPA 6010 C | STRONTIUM | PA | EPA 6010 C | THALLIUM | PA |
| EPA 6010 C | TIN | PA | EPA 6010 C | TITANIUM | PA |
| EPA 6010 C | VANADIUM | PA | EPA 6010 C | ZINC | PA |
| EPA 602 | BENZENE | PA | EPA 602 | ETHYLBENZENE | PA |
| EPA 602 | TOLUENE | PA | EPA 602 | XYLENE (TOTAL) | PA |
| EPA 6020 A | ALUMINUM | PA | EPA 6020 A | ANTIMONY | PA |
| EPA 6020 A | ARSENIC | PA | EPA 6020 A | BARIUM | PA |
| EPA 6020 A | BERYLLIUM | PA | EPA 6020 A | CADMIUM | PA |
| EPA 6020 A | CALCIUM | PA | EPA 6020 A | CHROMIUM | PA |
| EPA 6020 A | COBALT | PA | EPA 6020 A | COPPER | PA |
| EPA 6020 A | IRON | PA | EPA 6020 A | LEAD | PA |
| EPA 6020 A | MAGNESIUM | PA | EPA 6020 A | MANGANESE | PA |
| EPA 6020 A | NICKEL | PA | EPA 6020 A | POTASSIUM | PA |
| EPA 6020 A | SELENIUM | PA | EPA 6020 A | SILVER | PA |
| EPA 6020 A | SODIUM | PA | EPA 6020 A | THALLIUM | PA |
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| EPA 6020 A - EXTENDED | STRONTIUM | PA | EPA 6020 A - EXTENDED | TIN | PA |
| EPA 6020 A - EXTENDED | TITANIUM | PA | EPA 608 | 4,4'-DDD | PA |
| EPA 608 | 4,4'-DDE | PA | EPA 608 | 4,4'-DDT | PA |
| EPA 608 | ALDRIN | PA | EPA 608 | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 608 | AROCLOR-1016 (PCB-1016) | PA | EPA 608 | AROCLOR-1221 (PCB-1221) | PA |
| EPA 608 | AROCLOR-1232 (PCB-1232) | PA | EPA 608 | AROCLOR-1242 (PCB-1242) | PA |
| EPA 608 | AROCLOR-1248 (PCB-1248) | PA | EPA 608 | AROCLOR-1254 (PCB-1254) | PA |
| EPA 608 | AROCLOR-1260 (PCB-1260) | PA | EPA 608 | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 608 | CHLORDANE (TECH.) | PA | EPA 608 | DELTA-BHC | PA |
| EPA 608 | DIELDRIN | PA | EPA 608 | ENDOSULFAN I | PA |
| EPA 608 | ENDOSULFAN II | PA | EPA 608 | ENDOSULFAN SULFATE | PA |
| EPA 608 | ENDRIN | PA | EPA 608 | ENDRIN ALDEHYDE | PA |
| EPA 608 | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA | EPA 608 | HEPTACHLOR | PA |
| EPA 608 | HEPTACHLOR EPOXIDE | PA | EPA 608 | TOXAPHENE (CHLORINATED CAMPHENE) | PA |
| EPA 610 (HPLC) | ACENAPHTHENE | PA | EPA 610 (HPLC) | ACENAPHTHYLENE | PA |
| EPA 610 (HPLC) | ANTHRACENE | PA | EPA 610 (HPLC) | BENZO(A)ANTHRACENE | PA |
| EPA 610 (HPLC) | BENZO(A)PYRENE | PA | EPA 610 (HPLC) | BENZO(G,H,I)PERYLENE | PA |
| EPA 610 (HPLC) | BENZO(K)FLUORANTHENE | PA | EPA 610 (HPLC) | BENZO[B]FLUORANTHENE | PA |
| EPA 610 (HPLC) | CHRYSENE | PA | EPA 610 (HPLC) | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 610 (HPLC) | FLUORANTHENE | PA | EPA 610 (HPLC) | FLUORENE | PA |
| EPA 610 (HPLC) | INDENO(1,2,3-CD) PYRENE | PA | EPA 610 (HPLC) | NAPHTHALENE | PA |
| EPA 610 (HPLC) | PHENANTHRENE | PA | EPA 610 (HPLC) | PYRENE | PA |
| EPA 622 | AZINPHOS-METHYL (GUTHION) | PA | EPA 622 | BOLSTAR (SULPROFOS) | PA |
| EPA 622 | CHLORPYRIFOS | PA | EPA 622 | DEMETON-O | PA |
| EPA 622 | DEMETON-S | PA | EPA 622 | DIAZINON | PA |
| EPA 622 | DICHLOROVOS (DDVP, DICHLORVOS) | PA | EPA 622 | DISULFOTON | PA |
| EPA 622 | ETHOPROP | PA | EPA 622 | FENSULFOTHION | PA |
| EPA 622 | FENTHION | PA | EPA 622 | MERPHOS | PA |
| EPA 622 | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 622 | MEVINPHOS | PA |
| EPA 622 | NALED | PA | EPA 622 | PHORATE | PA |
| EPA 622 | STIROFOS | PA | EPA 624 | 1,1,1-TRICHLOROETHANE | PA |

## Scope of Accreditation

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2425 NEW HOLLAND PIKE
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Effective Date: June 15, 2014
Expiration Date: June 14, 2015

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 624 | 1,1,2,2-TETRACHLOROETHANE | PA | EPA 624 | 1,1,2-TRICHLOROETHANE | PA |
| EPA 624 | 1,1-DICHLOROETHANE | PA | EPA 624 | 1,2-DICHLOROBENZENE | PA |
| EPA 624 | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA | EPA 624 | 1,2-DICHLOROPROPANE | PA |
| EPA 624 | 1,3-DICHLOROBENZENE | PA | EPA 624 | 1,4-DICHLOROBENZENE | PA |
| EPA 624 | 2-CHLOROETHYL VINYL ETHER | PA | EPA 624 | ACROLEIN (PROPENAL) | PA |
| EPA 624 | ACRYLONITRILE | PA | EPA 624 | BENZENE | PA |
| EPA 624 | BROMODICHLOROMETHANE | PA | EPA 624 | BROMOFORM | PA |
| EPA 624 | CARBON TETRACHLORIDE | PA | EPA 624 | CHLOROBENZENE | PA |
| EPA 624 | CHLORODIBROMOMETHANE | PA | EPA 624 | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 624 | CHLOROFORM | PA | EPA 624 | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 624 | ETHYLBENZENE | PA | EPA 624 | METHYL BROMIDE (BROMOMETHANE) | PA |
| EPA 624 | METHYL CHLORIDE (CHLOROMETHANE) | PA | EPA 624 | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA |
| EPA 624 | TETRACHLOROETHENE (PERCHLOROETHENE) | PA | EPA 624 | TOLUENE | PA |
| EPA 624 | TRANS-1,2-DICHLOROETHENE | PA | EPA 624 | TRANS-1,3-DICHLOROPROPENE | PA |
| EPA 624 | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 624 | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 624 | VINYL CHLORIDE | PA | EPA 624 - EXTENDED | 1,1-DICHLOROETHYLENE | PA |
| EPA 625 | 1,2,4-TRICHLOROBENZENE | PA | EPA 625 | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 625 | 2,4-DICHLOROPHENOL | PA | EPA 625 | 2,4-DIMETHYLPHENOL | PA |
| EPA 625 | 2,4-DINITROPHENOL | PA | EPA 625 | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 625 | 2,6-DINITROTOLUENE (2,6-DNT) | PA | EPA 625 | 2-CHLORONAPHTHALENE | PA |
| EPA 625 | 2-CHLOROPHENOL | PA | EPA 625 | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 625 | 2-METHYLPHENOL (O-CRESOL) | PA | EPA 625 | 2-NITROPHENOL | PA |
| EPA 625 | 3,3'-DICHLOROBENZIDINE | PA | EPA 625 | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 625 | 4-CHLORO-3-METHYLPHENOL | PA | EPA 625 | 4-CHLOROPHENYL PHENYLETHER | PA |
| EPA 625 | 4-NITROPHENOL | PA | EPA 625 | ACENAPHTHENE | PA |
| EPA 625 | ACENAPHTHYLENE | PA | EPA 625 | ANTHRACENE | PA |
| EPA 625 | BENZIDINE | PA | EPA 625 | BENZO(A)ANTHRACENE | PA |
| EPA 625 | BENZO(A)PYRENE | PA | EPA 625 | BENZO(G,H,I)PERYLENE | PA |
| EPA 625 | BENZO(K)FLUORANTHENE | PA | EPA 625 | BENZO[B]FLUORANTHENE | PA |
| EPA 625 | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 625 | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 625 | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 625 | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 625 | BUTYL BENZYL PHTHALATE | PA | EPA 625 | CHRYSENE | PA |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 625 | DI-N-BUTYL PHTHALATE | PA | EPA 625 | DI-N-OCTYL PHTHALATE | PA |
| EPA 625 | DIBENZO(A,H) ANTHRACENE | PA | EPA 625 | DIETHYL PHTHALATE | PA |
| EPA 625 | DIMETHYL PHTHALATE | PA | EPA 625 | FLUORANTHENE | PA |
| EPA 625 | FLUORENE | PA | EPA 625 | HEXACHLOROBENZENE | PA |
| EPA 625 | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 625 | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 625 | HEXACHLOROETHANE | PA | EPA 625 | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 625 | ISOPHORONE | PA | EPA 625 | N-NITROSODI-N-PROPYLAMINE | PA |
| EPA 625 | N-NITROSODIMETHYLAMINE | PA | EPA 625 | N-NITROSODIPHENYLAMINE | PA |
| EPA 625 | NAPHTHALENE | PA | EPA 625 | NITROBENZENE | PA |
| EPA 625 | PENTACHLOROPHENOL | PA | EPA 625 | PHENANTHRENE | PA |
| EPA 625 | PHENOL | PA | EPA 625 | PYRENE | PA |
| EPA 625 - EXTENDED | 1,2-DIPHENYLHYDRAZINE | PA | EPA 625 - EXTENDED | 4-METHYLPHENOL (P-CRESOL) | PA |
| EPA 625 - EXTENDED | ACETOPHENONE | PA | EPA 625 - EXTENDED | ANILINE | PA |
| EPA 625 - EXTENDED | CARBAZOLE | PA | EPA 625 - EXTENDED | N-DECANE | PA |
| EPA 625 - EXTENDED | N-OCTADECANE | PA | EPA 625 - EXTENDED | PYRIDINE | PA |
| EPA 6850 | PERCHLORATE | PA | EPA 7196 A | CHROMIUM VI | PA |
| EPA 7470 A | MERCURY | PA | EPA 8011 | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA |
| EPA 8011 | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 8015 B | DIESEL RANGE ORGANICS (DRO) | PA |
| EPA 8015 B | ETHANOL | PA | EPA 8015 B | ETHYLENE GLYCOL | PA |
| EPA 8015 B | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8015 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 8015 B | METHANOL | PA | EPA 8015 C | DIESEL RANGE ORGANICS (DRO) | PA |
| EPA 8015 C | ETHANOL | PA | EPA 8015 C | ETHYLENE GLYCOL | PA |
| EPA 8015 C | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8015 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 8015 C | METHANOL | PA | EPA 8015 D - EXTENDED | FORMIC ACID | PA |
| EPA 8021 B | BENZENE | PA | EPA 8021 B | ETHYLBENZENE | PA |
| EPA 8021 B | ISOPROPYLBENZENE | PA | EPA 8021 B | M+P-XYLENE | PA |
| EPA 8021 B | NAPHTHALENE | PA | EPA 8021 B | O-XYLENE | PA |
| EPA 8021 B | TOLUENE | PA | EPA 8021 B | XYLENE (TOTAL) | PA |
| EPA 8021 B - EXTENDED | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8081 A | 4,4'-DDD | PA |
| EPA 8081 A | 4,4'-DDE | PA | EPA 8081 A | 4,4'-DDT | PA |
| EPA 8081 A | ALDRIN | PA | EPA 8081 A | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 A | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | CHLORDANE (TECH.) | PA | EPA 8081 A | DELTA-BHC | PA |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8081 A | DIELDRIN | PA | EPA 8081 A | ENDOSULFAN I | PA |
| EPA 8081 A | ENDOSULFAN II | PA | EPA 8081 A | ENDOSULFAN SULFATE | PA |
| EPA 8081 A | ENDRIN | PA | EPA 8081 A | ENDRIN ALDEHYDE | PA |
| EPA 8081 A | ENDRIN KETONE | PA | EPA 8081 A | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 A | HEPTACHLOR | PA |
| EPA 8081 A | HEPTACHLOR EPOXIDE | PA | EPA 8081 A | METHOXYCHLOR | PA |
| EPA 8081 A | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8081 B | 4,4'-DDD | PA |
| EPA 8081 B | 4,4'-DDE | PA | EPA 8081 B | 4,4'-DDT | PA |
| EPA 8081 B | ALDRIN | PA | EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | CHLORDANE (TECH.) | PA | EPA 8081 B | DELTA-BHC | PA |
| EPA 8081 B | DIELDRIN | PA | EPA 8081 B | ENDOSULFAN I | PA |
| EPA 8081 B | ENDOSULFAN II | PA | EPA 8081 B | ENDOSULFAN SULFATE | PA |
| EPA 8081 B | ENDRIN | PA | EPA 8081 B | ENDRIN ALDEHYDE | PA |
| EPA 8081 B | ENDRIN KETONE | PA | EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 B | HEPTACHLOR | PA |
| EPA 8081 B | HEPTACHLOR EPOXIDE | PA | EPA 8081 B | METHOXYCHLOR | PA |
| EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8082 A | AROCLOR-1016 (PCB-1016) | PA |
| EPA 8082 A | AROCLOR-1221 (PCB-1221) | PA | EPA 8082 A | AROCLOR-1232 (PCB-1232) | PA |
| EPA 8082 A | AROCLOR-1242 (PCB-1242) | PA | EPA 8082 A | AROCLOR-1248 (PCB-1248) | PA |
| EPA 8082 A | AROCLOR-1254 (PCB-1254) | PA | EPA 8082 A | AROCLOR-1260 (PCB-1260) | PA |
| EPA 8082 A - EXTENDED | AROCLOR-1262 (PCB-1262) | PA | EPA 8082 A - EXTENDED | AROCLOR-1268 (PCB-1268) | PA |
| EPA 8141 A | ATRAZINE | PA | EPA 8141 A | BOLSTAR (SULPROFOS) | PA |
| EPA 8141 A | CHLORPYRIFOS | PA | EPA 8141 A | COUMAPHOS | PA |
| EPA 8141 A | DEMETON-O | PA | EPA 8141 A | DEMETON-S | PA |
| EPA 8141 A | DIAZINON | PA | EPA 8141 A | DICHLOROVOS (DDVP, DICHLORVOS) | PA |
| EPA 8141 A | DISULFOTON | PA | EPA 8141 A | ETHION | PA |
| EPA 8141 A | ETHOPROP | PA | EPA 8141 A | FAMPHUR | PA |
| EPA 8141 A | FENSULFOTHION | PA | EPA 8141 A | FENTHION | PA |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8141 A | MALATHION | PA | EPA 8141 A | MERPHOS | PA |
| EPA 8141 A | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8141 A | MEVINPHOS | PA |
| EPA 8141 A | NALED | PA | EPA 8141 A | PARATHION (PARATHION - ETHYL) | PA |
| EPA 8141 A | PHORATE | PA | EPA 8141 A | RONNEL | PA |
| EPA 8141 A | SIMAZINE | PA | EPA 8141 A | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA |
| EPA 8141 A | TOKUTHION (PROTHIOPHOS) | PA | EPA 8141 A | TRICHLORONATE | PA |
| EPA 8141 B | ATRAZINE | PA | EPA 8141 B | AZINPHOS-METHYL (GUTHION) | PA |
| EPA 8141 B | BOLSTAR (SULPROFOS) | PA | EPA 8141 B | CHLORPYRIFOS | PA |
| EPA 8141 B | COUMAPHOS | PA | EPA 8141 B | DEMETON-O | PA |
| EPA 8141 B | DEMETON-S | PA | EPA 8141 B | DICHLOROVOS (DDVP, DICHLORVOS) | PA |
| EPA 8141 B | DISULFOTON | PA | EPA 8141 B | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | PA |
| EPA 8141 B | ETHION | PA | EPA 8141 B | ETHOPROP | PA |
| EPA 8141 B | FAMPHUR | PA | EPA 8141 B | FENSULFOTHION | PA |
| EPA 8141 B | FENTHION | PA | EPA 8141 B | MALATHION | PA |
| EPA 8141 B | MERPHOS | PA | EPA 8141 B | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8141 B | MEVINPHOS | PA | EPA 8141 B | NALED | PA |
| EPA 8141 B | PARATHION (PARATHION - ETHYL) | PA | EPA 8141 B | PHORATE | PA |
| EPA 8141 B | RONNEL | PA | EPA 8141 B | SIMAZINE | PA |
| EPA 8141 B | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA | EPA 8141 B | TOKUTHION (PROTHIOPHOS) | PA |
| EPA 8141 B | TRICHLORONATE | PA | EPA 8151 A | 2,4,5-T | PA |
| EPA 8151 A | 2,4-D | PA | EPA 8151 A | 2,4-DB | PA |
| EPA 8151 A | DALAPON | PA | EPA 8151 A | DICAMBA | PA |
| EPA 8151 A | DICHLOROPROP (DICHLORPROP) | PA | EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA |
| EPA 8151 A | MCPA | PA | EPA 8151 A | MCPP | PA |
| EPA 8151 A | PENTACHLOROPHENOL | PA | EPA 8151 A | PICLORAM | PA |
| EPA 8151 A | SILVEX (2,4,5-TP) | PA | EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | PA |
| EPA 8260 B | 1,1,1-TRICHLOROETHANE | PA | EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | PA |
| EPA 8260 B | 1,1,2-TRICHLOROETHANE | PA | EPA 8260 B | 1,1-DICHLOROETHANE | PA |
| EPA 8260 B | 1,1-DICHLOROETHYLENE | PA | EPA 8260 B | 1,1-DICHLOROPROPENE | PA |
| EPA 8260 B | 1,2,3-TRICHLOROBENZENE | PA | EPA 8260 B | 1,2,3-TRICHLOROPROPANE | PA |
| EPA 8260 B | 1,2,4-TRICHLOROBENZENE | PA | EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | PA |

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| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA | EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA |
| EPA 8260 B | 1,2-DICHLOROBENZENE | PA | EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA |
| EPA 8260 B | 1,2-DICHLOROPROPANE | PA | EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | PA |
| EPA 8260 B | 1,3-DICHLOROBENZENE | PA | EPA 8260 B | 1,3-DICHLOROPROPANE | PA |
| EPA 8260 B | 1,4-DICHLOROBENZENE | PA | EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA |
| EPA 8260 B | 1-BUTANOL (N-BUTANOL) | PA | EPA 8260 B | 2,2-DICHLOROPROPANE | PA |
| EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA | EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | PA |
| EPA 8260 B | 2-CHLOROTOLUENE | PA | EPA 8260 B | 2-HEXANONE | PA |
| EPA 8260 B | 2-NITROPROPANE | PA | EPA 8260 B | 4-CHLOROTOLUENE | PA |
| EPA 8260 B | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA | EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | PA |
| EPA 8260 B | ACETONE | PA | EPA 8260 B | ACETONITRILE | PA |
| EPA 8260 B | ACROLEIN (PROPENAL) | PA | EPA 8260 B | ACRYLONITRILE | PA |
| EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA | EPA 8260 B | BENZENE | PA |
| EPA 8260 B | BENZYL CHLORIDE | PA | EPA 8260 B | BROMOBENZENE | PA |
| EPA 8260 B | BROMOCHLOROMETHANE | PA | EPA 8260 B | BROMODICHLOROMETHANE | PA |
| EPA 8260 B | BROMOFORM | PA | EPA 8260 B | CARBON DISULFIDE | PA |
| EPA 8260 B | CARBON TETRACHLORIDE | PA | EPA 8260 B | CHLOROBENZENE | PA |
| EPA 8260 B | CHLORODIBROMOMETHANE | PA | EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 8260 B | CHLOROFORM | PA | EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA |
| EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | PA | EPA 8260 B | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | PA | EPA 8260 B | DICHLORODIFLUOROMETHANE (FREON-12) | PA |
| EPA 8260 B | DIETHYL ETHER | PA | EPA 8260 B | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA |
| EPA 8260 B | ETHANOL | PA | EPA 8260 B | ETHYL ACETATE | PA |
| EPA 8260 B | ETHYL METHACRYLATE | PA | EPA 8260 B | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA |
| EPA 8260 B | ETHYLBENZENE | PA | EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA |
| EPA 8260 B | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 B | ISOPROPYLBENZENE | PA |
| EPA 8260 B | M+P-XYLENE | PA | EPA 8260 B | METHACRYLONITRILE | PA |
| EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | PA | EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | PA |
| EPA 8260 B | METHYL METHACRYLATE | PA | EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | PA |

## Scope of Accreditation

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| | | | EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA |
| EPA 8260 B | N-BUTYLBENZENE | PA | EPA 8260 B | N-PROPYLAMINE | PA |
| EPA 8260 B | N-PROPYLBENZENE | PA | EPA 8260 B | NAPHTHALENE | PA |
| EPA 8260 B | O-XYLENE | PA | EPA 8260 B | PENTACHLOROETHANE | PA |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | PA | EPA 8260 B | SEC-BUTYLBENZENE | PA |
| EPA 8260 B | STYRENE | PA | EPA 8260 B | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 B | TERT-BUTYLBENZENE | PA | EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 8260 B | TOLUENE | PA | EPA 8260 B | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | PA | EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | PA |
| EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 8260 B | VINYL ACETATE | PA | EPA 8260 B | VINYL CHLORIDE | PA |
| EPA 8260 B | XYLENE (TOTAL) | PA | EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA |
| EPA 8260 B - EXTENDED | 1,3,5-TRICHLOROBENZENE | PA | EPA 8260 B - EXTENDED | CYCLOHEXANE | PA |
| EPA 8260 B - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA | EPA 8260 B - EXTENDED | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA |
| EPA 8260 B - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8260 B - EXTENDED | METHYL ACETATE | PA |
| EPA 8260 B - EXTENDED | METHYLCYCLOHEXANE | PA | EPA 8260 B - EXTENDED | N-HEXANE | PA |
| EPA 8260 B - EXTENDED | T-AMYL ALCOHOL (TAA) | PA | EPA 8260 B - EXTENDED | T-AMYLMETHYLETHER (TAME) | PA |
| EPA 8260 B - EXTENDED | TETRAHYDROFURAN (THF) | PA | EPA 8260 C | 1,1,1,2-TETRACHLOROETHANE | PA |
| EPA 8260 C | 1,1,1-TRICHLOROETHANE | PA | EPA 8260 C | 1,1,2,2-TETRACHLOROETHANE | PA |
| EPA 8260 C | 1,1,2-TRICHLOROETHANE | PA | EPA 8260 C | 1,1-DICHLOROETHANE | PA |
| EPA 8260 C | 1,1-DICHLOROETHYLENE | PA | EPA 8260 C | 1,1-DICHLOROPROPENE | PA |
| EPA 8260 C | 1,2,3-TRICHLOROBENZENE | PA | EPA 8260 C | 1,2,3-TRICHLOROPROPANE | PA |
| EPA 8260 C | 1,2,4-TRICHLOROBENZENE | PA | EPA 8260 C | 1,2,4-TRIMETHYLBENZENE | PA |
| EPA 8260 C | 1,2-DIBROMO-3-CHLOROPROPAN E (DBCP) | PA | EPA 8260 C | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA |
| EPA 8260 C | 1,2-DICHLOROBENZENE | PA | EPA 8260 C | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA |
| EPA 8260 C | 1,2-DICHLOROPROPANE | PA | EPA 8260 C | 1,3,5-TRIMETHYLBENZENE | PA |
| EPA 8260 C | 1,3-DICHLOROBENZENE | PA | EPA 8260 C | 1,3-DICHLOROPROPANE | PA |
| EPA 8260 C | 1,4-DICHLOROBENZENE | PA | EPA 8260 C | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA |
| EPA 8260 C | 1-BUTANOL (N-BUTANOL) | PA | EPA 8260 C | 2,2-DICHLOROPROPANE | PA |

## Scope of Accreditation

VELAP Certificate No.: 2914

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: June 15, 2014
Expiration Date: June 14, 2015

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 C | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA | EPA 8260 C | 2-CHLOROETHYL VINYL ETHER | PA |
| EPA 8260 C | 2-CHLOROTOLUENE | PA | EPA 8260 C | 2-HEXANONE | PA |
| EPA 8260 C | 2-NITROPROPANE | PA | EPA 8260 C | 4-CHLOROTOLUENE | PA |
| EPA 8260 C | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA | EPA 8260 C | 4-METHYL-2-PENTANONE (MIBK) | PA |
| EPA 8260 C | ACETONE | PA | EPA 8260 C | ACETONITRILE | PA |
| EPA 8260 C | ACROLEIN (PROPENAL) | PA | EPA 8260 C | ACRYLONITRILE | PA |
| EPA 8260 C | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA | EPA 8260 C | BENZENE | PA |
| EPA 8260 C | BENZYL CHLORIDE | PA | EPA 8260 C | BROMOBENZENE | PA |
| EPA 8260 C | BROMOCHLOROMETHANE | PA | EPA 8260 C | BROMODICHLOROMETHANE | PA |
| EPA 8260 C | BROMOFORM | PA | EPA 8260 C | CARBON DISULFIDE | PA |
| EPA 8260 C | CARBON TETRACHLORIDE | PA | EPA 8260 C | CHLOROBENZENE | PA |
| EPA 8260 C | CHLORODIBROMOMETHANE | PA | EPA 8260 C | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 8260 C | CHLOROFORM | PA | EPA 8260 C | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA |
| EPA 8260 C | CIS-1,2-DICHLOROETHYLENE | PA | EPA 8260 C | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 C | CYCLOHEXANE | PA | EPA 8260 C | DIBROMOMETHANE (METHYLENE BROMIDE) | PA |
| EPA 8260 C | DICHLORODIFLUOROMETHANE (FREON-12) | PA | EPA 8260 C | DIETHYL ETHER | PA |
| EPA 8260 C | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA | EPA 8260 C | ETHANOL | PA |
| EPA 8260 C | ETHYL ACETATE | PA | EPA 8260 C | ETHYL METHACRYLATE | PA |
| EPA 8260 C | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA | EPA 8260 C | ETHYLBENZENE | PA |
| EPA 8260 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8260 C | HEXACHLOROETHANE | PA |
| EPA 8260 C | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 C | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 C | ISOPROPYLBENZENE | PA |
| EPA 8260 C | METHACRYLONITRILE | PA | EPA 8260 C | METHYL BROMIDE (BROMOMETHANE) | PA |
| EPA 8260 C | METHYL CHLORIDE (CHLOROMETHANE) | PA | EPA 8260 C | METHYL METHACRYLATE | PA |
| EPA 8260 C | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8260 C | METHYLCYCLOHEXANE | PA |
| EPA 8260 C | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA | EPA 8260 C | N-BUTYLBENZENE | PA |
| EPA 8260 C | N-PROPYLBENZENE | PA | EPA 8260 C | NAPHTHALENE | PA |
| EPA 8260 C | PENTACHLOROETHANE | PA | EPA 8260 C | PROPIONITRILE (ETHYL CYANIDE) | PA |
| EPA 8260 C | SEC-BUTYLBENZENE | PA | EPA 8260 C | STYRENE | PA |

**Commonwealth of Virginia**

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2914

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2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: June 15, 2014
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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 C | T-AMYLMETHYLETHER (TAME) | PA | EPA 8260 C | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 C | TERT-BUTYLBENZENE | PA | EPA 8260 C | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 8260 C | TOLUENE | PA | EPA 8260 C | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 8260 C | TRANS-1,3-DICHLOROPROPENE | PA | EPA 8260 C | TRANS-1,4-DICHLORO-2-BUTENE | PA |
| EPA 8260 C | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 8260 C | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 8260 C | VINYL ACETATE | PA | EPA 8260 C | VINYL CHLORIDE | PA |
| EPA 8260 C | XYLENE (TOTAL) | PA | EPA 8260 C - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA |
| EPA 8260 C - EXTENDED | CYCLOHEXANONE | PA | EPA 8260 C - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA |
| EPA 8260 C - EXTENDED | DIMETHYL ETHER | PA | EPA 8260 C - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA |
| EPA 8260 C - EXTENDED | METHYL ACETATE | PA | EPA 8260 C - EXTENDED | N-HEPTANE | PA |
| EPA 8260 C - EXTENDED | T-AMYL ALCOHOL (TAA) | PA | EPA 8260 C - EXTENDED | TETRAHYDROFURAN (THF) | PA |
| EPA 8270 C | 1,2,4,5-TETRACHLOROBENZENE | PA | EPA 8270 C | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8270 C | 1,2-DICHLOROBENZENE | PA | EPA 8270 C | 1,2-DIPHENYLHYDRAZINE | PA |
| EPA 8270 C | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8270 C | 1,3-DICHLOROBENZENE | PA |
| EPA 8270 C | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8270 C | 1,4-DICHLOROBENZENE | PA |
| EPA 8270 C | 1,4-DINITROBENZENE | PA | EPA 8270 C | 1,4-NAPHTHOQUINONE | PA |
| EPA 8270 C | 1,4-PHENYLENEDIAMINE | PA | EPA 8270 C | 1-CHLORONAPHTHALENE | PA |
| EPA 8270 C | 1-NAPHTHYLAMINE | PA | EPA 8270 C | 2,3,4,6-TETRACHLOROPHENOL | PA |
| EPA 8270 C | 2,4,5-TRICHLOROPHENOL | PA | EPA 8270 C | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 8270 C | 2,4-DICHLOROPHENOL | PA | EPA 8270 C | 2,4-DIMETHYLPHENOL | PA |
| EPA 8270 C | 2,4-DINITROPHENOL | PA | EPA 8270 C | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8270 C | 2,6-DICHLOROPHENOL | PA | EPA 8270 C | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8270 C | 2-ACETYLAMINOFLUORENE | PA | EPA 8270 C | 2-CHLORONAPHTHALENE | PA |
| EPA 8270 C | 2-CHLOROPHENOL | PA | EPA 8270 C | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 8270 C | 2-METHYLNAPHTHALENE | PA | EPA 8270 C | 2-METHYLPHENOL (O-CRESOL) | PA |
| EPA 8270 C | 2-NAPHTHYLAMINE | PA | EPA 8270 C | 2-NITROANILINE | PA |
| EPA 8270 C | 2-NITROPHENOL | PA | EPA 8270 C | 2-PICOLINE (2-METHYLPYRIDINE) | PA |
| EPA 8270 C | 3,3'-DICHLOROBENZIDINE | PA | EPA 8270 C | 3,3'-DIMETHYLBENZIDINE | PA |
| EPA 8270 C | 3-METHYLCHOLANTHRENE | PA | EPA 8270 C | 3-METHYLPHENOL (M-CRESOL) | PA |
| EPA 8270 C | 3-NITROANILINE | PA | EPA 8270 C | 4,4'-METHYLENEBIS(2-CHLOROAN ILINE) | PA |
| EPA 8270 C | 4-AMINOBIPHENYL | PA | EPA 8270 C | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 8270 C | 4-CHLORO-3-METHYLPHENOL | PA | EPA 8270 C | 4-CHLOROANILINE | PA |

VELAP Certificate No.: 2914

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**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 C | 4-CHLOROPHENYL PHENYLETHER | PA | EPA 8270 C | 4-DIMETHYL AMINOAZOBENZENE | PA |
| EPA 8270 C | 4-METHYLPHENOL (P-CRESOL) | PA | EPA 8270 C | 4-NITROANILINE | PA |
| EPA 8270 C | 4-NITROPHENOL | PA | EPA 8270 C | 5-NITRO-O-TOLUIDINE | PA |
| EPA 8270 C | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA | EPA 8270 C | A-A-DIMETHYLPHENETHYLAMINE | PA |
| EPA 8270 C | ACENAPHTHENE | PA | EPA 8270 C | ACENAPHTHYLENE | PA |
| EPA 8270 C | ACETOPHENONE | PA | EPA 8270 C | ANILINE | PA |
| EPA 8270 C | ANTHRACENE | PA | EPA 8270 C | ARAMITE | PA |
| EPA 8270 C | BENZIDINE | PA | EPA 8270 C | BENZO(A)ANTHRACENE | PA |
| EPA 8270 C | BENZO(A)PYRENE | PA | EPA 8270 C | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 C | BENZO(K)FLUORANTHENE | PA | EPA 8270 C | BENZOIC ACID | PA |
| EPA 8270 C | BENZO[B]FLUORANTHENE | PA | EPA 8270 C | BENZYL ALCOHOL | PA |
| EPA 8270 C | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 8270 C | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 8270 C | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 8270 C | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 8270 C | BUTYL BENZYL PHTHALATE | PA | EPA 8270 C | CHLOROBENZILATE | PA |
| EPA 8270 C | CHRYSENE | PA | EPA 8270 C | DI-N-BUTYL PHTHALATE | PA |
| EPA 8270 C | DI-N-OCTYL PHTHALATE | PA | EPA 8270 C | DIALLATE | PA |
| EPA 8270 C | DIBENZ(A, J) ACRIDINE | PA | EPA 8270 C | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 C | DIBENZOFURAN | PA | EPA 8270 C | DIETHYL PHTHALATE | PA |
| EPA 8270 C | DIMETHOATE | PA | EPA 8270 C | DIMETHYL PHTHALATE | PA |
| EPA 8270 C | DIPHENYLAMINE | PA | EPA 8270 C | DISULFOTON | PA |
| EPA 8270 C | ETHYL METHANESULFONATE | PA | EPA 8270 C | FAMPHUR | PA |
| EPA 8270 C | FLUORANTHENE | PA | EPA 8270 C | FLUORENE | PA |
| EPA 8270 C | HEXACHLOROBENZENE | PA | EPA 8270 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA |
| EPA 8270 C | HEXACHLOROCYCLOPENTADIEN E | PA | EPA 8270 C | HEXACHLOROETHANE | PA |
| EPA 8270 C | HEXACHLOROPROPENE | PA | EPA 8270 C | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 C | ISODRIN | PA | EPA 8270 C | ISOPHORONE | PA |
| EPA 8270 C | ISOSAFROLE | PA | EPA 8270 C | KEPONE | PA |
| EPA 8270 C | METHAPYRILENE | PA | EPA 8270 C | METHYL METHANESULFONATE | PA |
| EPA 8270 C | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8270 C | N-NITROSO-DI-N-BUTYLAMINE | PA |
| EPA 8270 C | N-NITROSODI-N-PROPYLAMINE | PA | EPA 8270 C | N-NITROSODIETHYLAMINE | PA |
| EPA 8270 C | N-NITROSODIMETHYLAMINE | PA | EPA 8270 C | N-NITROSODIPHENYLAMINE | PA |
| EPA 8270 C | N-NITROSOMETHYLETHYLAMINE | PA | EPA 8270 C | N-NITROSOMORPHOLINE | PA |
| EPA 8270 C | N-NITROSOPIPERIDINE | PA | EPA 8270 C | N-NITROSOPYRROLIDINE | PA |
| EPA 8270 C | NAPHTHALENE | PA | EPA 8270 C | NITROBENZENE | PA |
| EPA 8270 C | NITROQUINOLINE-1-OXIDE | PA | EPA 8270 C | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA |

## Scope of Accreditation

VELAP Certificate No.: 2914

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2425 NEW HOLLAND PIKE
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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| | | | EPA 8270 C | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 C | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 C | PENTACHLOROBENZENE | PA |
| EPA 8270 C | PENTACHLORONITROBENZENE | PA | EPA 8270 C | PENTACHLOROPHENOL | PA |
| EPA 8270 C | PHENACETIN | PA | EPA 8270 C | PHENANTHRENE | PA |
| EPA 8270 C | PHENOL | PA | EPA 8270 C | PHORATE | PA |
| EPA 8270 C | PHTHALIC ANHYDRIDE | PA | EPA 8270 C | PRONAMIDE (KERB) | PA |
| EPA 8270 C | PYRENE | PA | EPA 8270 C | PYRIDINE | PA |
| EPA 8270 C | SAFROLE | PA | EPA 8270 C | THIONAZIN (ZINOPHOS) | PA |
| EPA 8270 C | THIOPHENOL (BENZENETHIOL) | PA | EPA 8270 C | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA |
| EPA 8270 C SIM | 2-METHYLNAPHTHALENE | PA | EPA 8270 C SIM | ACENAPHTHENE | PA |
| EPA 8270 C SIM | ACENAPHTHYLENE | PA | EPA 8270 C SIM | ANTHRACENE | PA |
| EPA 8270 C SIM | BENZO(A)ANTHRACENE | PA | EPA 8270 C SIM | BENZO(A)PYRENE | PA |
| EPA 8270 C SIM | BENZO(G,H,I)PERYLENE | PA | EPA 8270 C SIM | BENZO(K)FLUORANTHENE | PA |
| EPA 8270 C SIM | BENZO[B]FLUORANTHENE | PA | EPA 8270 C SIM | CHRYSENE | PA |
| EPA 8270 C SIM | DIBENZO(A,H) ANTHRACENE | PA | EPA 8270 C SIM | FLUORANTHENE | PA |
| EPA 8270 C SIM | FLUORENE | PA | EPA 8270 C SIM | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 C SIM | NAPHTHALENE | PA | EPA 8270 C SIM | PHENANTHRENE | PA |
| EPA 8270 C SIM | PYRENE | PA | EPA 8270 C SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | PA | EPA 8270 D | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8270 D | 1,2-DICHLOROBENZENE | PA | EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | PA |
| EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8270 D | 1,3-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8270 D | 1,4-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,4-DINITROBENZENE | PA | EPA 8270 D | 1,4-NAPHTHOQUINONE | PA |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | PA | EPA 8270 D | 1-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 1-NAPHTHYLAMINE | PA | EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | PA |
| EPA 8270 D | 2,4,5-TRICHLOROPHENOL | PA | EPA 8270 D | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 8270 D | 2,4-DICHLOROPHENOL | PA | EPA 8270 D | 2,4-DIMETHYLPHENOL | PA |
| EPA 8270 D | 2,4-DINITROPHENOL | PA | EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8270 D | 2,6-DICHLOROPHENOL | PA | EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8270 D | 2-ACETYLAMINOFLUORENE | PA | EPA 8270 D | 2-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 2-CHLOROPHENOL | PA | EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 8270 D | 2-METHYLNAPHTHALENE | PA | EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | PA |
| EPA 8270 D | 2-NAPHTHYLAMINE | PA | EPA 8270 D | 2-NITROANILINE | PA |
| EPA 8270 D | 2-NITROPHENOL | PA | EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | PA |
| EPA 8270 D | 3,3'-DICHLOROBENZIDINE | PA | EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | PA |
| EPA 8270 D | 3-METHYLCHOLANTHRENE | PA | EPA 8270 D | 3-METHYLPHENOL (M-CRESOL) | PA |

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**NON-POTABLE WATER**

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | 3-NITROANILINE | PA | EPA 8270 D | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | PA |
| EPA 8270 D | 4-AMINOBIPHENYL | PA | EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | PA | EPA 8270 D | 4-CHLOROANILINE | PA |
| EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | PA | EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | PA |
| EPA 8270 D | 4-METHYLPHENOL (P-CRESOL) | PA | EPA 8270 D | 4-NITROANILINE | PA |
| EPA 8270 D | 4-NITROPHENOL | PA | EPA 8270 D | 5-NITRO-O-TOLUIDINE | PA |
| EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA | EPA 8270 D | A-A-DIMETHYLPHENETHYLAMINE | PA |
| EPA 8270 D | ACENAPHTHENE | PA | EPA 8270 D | ACENAPHTHYLENE | PA |
| EPA 8270 D | ACETOPHENONE | PA | EPA 8270 D | ANILINE | PA |
| EPA 8270 D | ANTHRACENE | PA | EPA 8270 D | ARAMITE | PA |
| EPA 8270 D | BENZIDINE | PA | EPA 8270 D | BENZO(A)ANTHRACENE | PA |
| EPA 8270 D | BENZO(A)PYRENE | PA | EPA 8270 D | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 D | BENZO(K)FLUORANTHENE | PA | EPA 8270 D | BENZOIC ACID | PA |
| EPA 8270 D | BENZO[B]FLUORANTHENE | PA | EPA 8270 D | BENZYL ALCOHOL | PA |
| EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 8270 D | BUTYL BENZYL PHTHALATE | PA | EPA 8270 D | CHLOROBENZILATE | PA |
| EPA 8270 D | CHRYSENE | PA | EPA 8270 D | DI-N-BUTYL PHTHALATE | PA |
| EPA 8270 D | DI-N-OCTYL PHTHALATE | PA | EPA 8270 D | DIALLATE | PA |
| EPA 8270 D | DIBENZ(A, J) ACRIDINE | PA | EPA 8270 D | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 D | DIBENZOFURAN | PA | EPA 8270 D | DIETHYL PHTHALATE | PA |
| EPA 8270 D | DIMETHOATE | PA | EPA 8270 D | DIMETHYL PHTHALATE | PA |
| EPA 8270 D | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8270 D | DIPHENYLAMINE | PA |
| EPA 8270 D | DISULFOTON | PA | EPA 8270 D | ETHYL METHANESULFONATE | PA |
| EPA 8270 D | FAMPHUR | PA | EPA 8270 D | FLUORANTHENE | PA |
| EPA 8270 D | FLUORENE | PA | EPA 8270 D | HEXACHLOROBENZENE | PA |
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 8270 D | HEXACHLOROETHANE | PA | EPA 8270 D | HEXACHLOROPROPENE | PA |
| EPA 8270 D | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 D | ISODRIN | PA |
| EPA 8270 D | ISOPHORONE | PA | EPA 8270 D | ISOSAFROLE | PA |
| EPA 8270 D | KEPONE | PA | EPA 8270 D | METHAPYRILENE | PA |
| EPA 8270 D | METHYL METHANESULFONATE | PA | EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | PA | EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | PA |

## Scope of Accreditation

VELAP Certificate No.: 2914

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: June 15, 2014
Expiration Date: June 14, 2015

### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 D | N-NITROSODIETHYLAMINE | PA | EPA 8270 D | N-NITROSODIMETHYLAMINE | PA |
| EPA 8270 D | N-NITROSODIPHENYLAMINE | PA | EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | PA |
| EPA 8270 D | N-NITROSOMORPHOLINE | PA | EPA 8270 D | N-NITROSOPIPERIDINE | PA |
| EPA 8270 D | N-NITROSOPYRROLIDINE | PA | EPA 8270 D | NAPHTHALENE | PA |
| EPA 8270 D | NITROBENZENE | PA | EPA 8270 D | NITROQUINOLINE-1-OXIDE | PA |
| EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA | EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 D | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 D | PENTACHLOROBENZENE | PA |
| EPA 8270 D | PENTACHLORONITROBENZENE | PA | EPA 8270 D | PENTACHLOROPHENOL | PA |
| EPA 8270 D | PHENACETIN | PA | EPA 8270 D | PHENANTHRENE | PA |
| EPA 8270 D | PHENOL | PA | EPA 8270 D | PHORATE | PA |
| EPA 8270 D | PHTHALIC ANHYDRIDE | PA | EPA 8270 D | PRONAMIDE (KERB) | PA |
| EPA 8270 D | PYRENE | PA | EPA 8270 D | SAFROLE | PA |
| EPA 8270 D | THIONAZIN (ZINOPHOS) | PA | EPA 8270 D | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA |
| EPA 8270 D - EXTENDED | 1,1-BIPHENYL | PA | EPA 8270 D - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D - EXTENDED | ATRAZINE | PA | EPA 8270 D - EXTENDED | BENZALDEHYDE | PA |
| EPA 8270 D - EXTENDED | CAPROLACTAM | PA | EPA 8270 D - EXTENDED | CARBAZOLE | PA |
| EPA 8270 D - EXTENDED | PYRIDINE | PA | EPA 8270 D SIM | 2-METHYLNAPHTHALENE | PA |
| EPA 8270 D SIM | ACENAPHTHENE | PA | EPA 8270 D SIM | ACENAPHTHYLENE | PA |
| EPA 8270 D SIM | ANTHRACENE | PA | EPA 8270 D SIM | BENZO(A)ANTHRACENE | PA |
| EPA 8270 D SIM | BENZO(A)PYRENE | PA | EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 D SIM | BENZO(K)FLUORANTHENE | PA | EPA 8270 D SIM | BENZO[B]FLUORANTHENE | PA |
| EPA 8270 D SIM | CHRYSENE | PA | EPA 8270 D SIM | FLUORANTHENE | PA |
| EPA 8270 D SIM | FLUORENE | PA | EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 D SIM | NAPHTHALENE | PA | EPA 8270 D SIM | PHENANTHRENE | PA |
| EPA 8270 D SIM | PYRENE | PA | EPA 8270 D SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D SIM - EXTENDED | DIBENZO(A, H) PYRENE | PA | EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | PA |
| EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | PA | EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | PA |
| EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | PA | EPA 8290 A | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | PA |
| EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | PA | EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | PA |
| EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | PA | EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | PA |
| EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | PA | EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

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### NON-POTABLE WATER

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|---|---|---|---|---|---|
| EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZO -P-DIOXIN (1,2,3,7,8-PECDD) | PA | EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZO FURAN (1,2,3,7,8-PECDF) | PA |
| EPA 8290 A | 2,3,4,6,7,8-HEXACHLORODIBENZO FURAN (2,3,4,6,7,8-HXCDF) | PA | EPA 8290 A | 2,3,4,7,8-PENTACHLORODIBENZO FURAN | PA |
| EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | PA | EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZOF URAN (2,3,7,8-TCDF) | PA |
| EPA 8315 A | ACETALDEHYDE | PA | EPA 8315 A | ACROLEIN (PROPENAL) | PA |
| EPA 8315 A | BENZALDEHYDE | PA | EPA 8315 A | BUTYLALDEHYDE (BUTANAL) | PA |
| EPA 8315 A | CROTONALDEHYDE | PA | EPA 8315 A | FORMALDEHYDE | PA |
| EPA 8315 A | HEXANALDEHYDE (HEXANAL) | PA | EPA 8315 A | ISOVALERALDEHYDE | PA |
| EPA 8315 A | M-TOLUALDEHYDE (1,3-TOLUALDEHYDE) | PA | EPA 8315 A | O-TOLUALDEHYDE (1,2-TOLUALDEHYDE) | PA |
| EPA 8315 A | P-TOLUALDEHYDE (1,4-TOLUALDEHYDE) | PA | EPA 8315 A | PENTANAL (VALERALDEHYDE) | PA |
| EPA 8315 A | PROPIONALDEHYDE (PROPANAL) | PA | EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA |
| EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | PA |
| EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | PA | EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | PA | EPA 8330 A | 2-NITROTOLUENE | PA |
| EPA 8330 A | 3-NITROTOLUENE | PA | EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | PA |
| EPA 8330 A | 4-NITROTOLUENE | PA | EPA 8330 A | METHYL-2,4,6-TRINITROPHENYLN ITRAMINE (TETRYL) | PA |
| EPA 8330 A | NITROBENZENE | PA | EPA 8330 A | NITROGLYCERIN | PA |
| EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO -1,3,5,7-TETRAZOCINE (HMX) | PA | EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3, 5-TRIAZINE) | PA |
| EPA 9012 A | TOTAL CYANIDE | PA | EPA 9012 B | TOTAL CYANIDE | PA |
| EPA 9040 C | PH | PA | EPA 9050 A | CONDUCTIVITY | PA |
| EPA 9056 A | BROMIDE | PA | EPA 9056 A | CHLORIDE | PA |
| EPA 9056 A | FLUORIDE | PA | EPA 9056 A | NITRATE AS N | PA |
| EPA 9056 A | NITRITE | PA | EPA 9056 A | ORTHOPHOSPHATE AS P | PA |
| EPA 9056 A | SULFATE | PA | EPA 9066 | TOTAL PHENOLICS | PA |
| EPA 9095 B | FREE LIQUID | PA | RSK-175 | ETHANE | PA |
| RSK-175 | ETHENE | PA | RSK-175 | METHANE | PA |
| SM 2120 B-2001 | COLOR | PA | SM 2310 B-1997 | ACIDITY, AS CACO3 | PA |
| SM 2320 B-1997 | ALKALINITY AS CACO3 | PA | SM 2340 B-1997 | TOTAL HARDNESS AS CACO3 | PA |
| SM 2340 C-1997 | TOTAL HARDNESS AS CACO3 | PA | SM 2510 B-1997 | CONDUCTIVITY | PA |
| SM 2540 B-1997 | RESIDUE-TOTAL | PA | SM 2540 C-1997 | RESIDUE-FILTERABLE (TDS) | PA |
| SM 2540 D-1997 | RESIDUE-NONFILTERABLE (TSS) | PA | SM 2540 F-1997 | RESIDUE-SETTLEABLE | PA |
| SM 3500-CR B-2009 | CHROMIUM VI | PA | SM 4500-$CN^-$ C-1999 | CYANIDE | PA |
| SM 4500-$CN^-$ E-1999 | CYANIDE | PA | SM 4500-$F^-$ B-1997 | FLUORIDE | PA |

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### NON-POTABLE WATER

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| SM 4500-F⁻ C-1997 | FLUORIDE | PA | SM 4500-NH3 B-1997 | AMMONIA AS N | PA |
| SM 4500-NH3 D-1997 | AMMONIA AS N | PA | SM 4500-P E-1999 | ORTHOPHOSPHATE AS P | PA |
| SM 4500-P F-1999 | PHOSPHORUS, TOTAL | PA | SM 4500-S2⁻ D-2000 | SULFIDE | PA |
| SM 4500-SIO2 C-1997 | SILICA AS SIO2 | PA | SM 5210 B-2001 | BIOCHEMICAL OXYGEN DEMAND | PA |
| SM 5210 B-2001 | CARBONACEOUS BOD, CBOD | PA | SM 5310 C-2000 | TOTAL ORGANIC CARBON | PA |
| SM 5540 C-2000 | SURFACTANTS - MBAS | PA | SM 9222 D-1997 | FECAL COLIFORMS | PA |

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1010 A | FLASHPOINT | PA | EPA 1311 | PREP: TOXICITY CHARACTERISTIC LEACHING PROCEDURE | PA |
| EPA 1312 | PREP: SYNTHETIC PRECIPITATION LEACHING PROCEDURE | PA | EPA 1668 A | 2,2',3,3',4,4',5,5',6-NONACHLOROBIPHENYL (BZ-206) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,5'-OCTACHLOROBIPHENYL (BZ-194) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6'-OCTACHLOROBIPHENYL (BZ-196) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5,6,6'-NONACHLOROBIPHENYL (BZ-207) | PA | EPA 1668 A | 2,2',3,3',4,4',5,6-OCTACHLOROBIPHENYL BZ-195) | PA |
| EPA 1668 A | 2,2',3,3',4,4',5-HEPTACHLOROBIPHENYL (BZ-170) | PA | EPA 1668 A | 2,2',3,3',4,4',6,6'-OCTACHLOROBIPHENYL (BZ-197) | PA |
| EPA 1668 A | 2,2',3,3',4,4',6-HEPTACHLOROBIPHENYL (BZ-171) | PA | EPA 1668 A | 2,2',3,3',4,4'-HEXACHLOROBIPHENYL (BZ-128) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6'-HEPTACHLOROBIPHENYL (BZ-177) | PA | EPA 1668 A | 2,2',3,3',4,5',6,6'-OCTACHLOROBIPHENYL (BZ-201) | PA |
| EPA 1668 A | 2,2',3,3',4,5',6-HEPTACHLOROBIPHENYL (BZ-175) | PA | EPA 1668 A | 2,2',3,3',4,5'-HEXACHLOROBIPHENYL (BZ-130) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6'-OCTACHLOROBIPHENYL (BZ-199) | PA | EPA 1668 A | 2,2',3,3',4,5,5',6,6'-NONACHLOROBIPHENYL (BZ-208) | PA |
| EPA 1668 A | 2,2',3,3',4,5,5',6-OCTACHLOROBIPHENYL (BZ-198) | PA | EPA 1668 A | 2,2',3,3',4,5,5'-HEPTACHLOROBIPHENYL (BZ-172) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6'-HEPTACHLOROBIPHENYL (BZ-174) | PA | EPA 1668 A | 2,2',3,3',4,5,6,6'-OCTACHLOROBIPHENYL (BZ-200) | PA |
| EPA 1668 A | 2,2',3,3',4,5,6-HEPTACHLOROBIPHENYL (BZ-173) | PA | EPA 1668 A | 2,2',3,3',4,5-HEXACHLOROBIPHENYL (BZ-129) | PA |
| EPA 1668 A | 2,2',3,3',4,6'-HEXACHLOROBIPHENYL (BZ-132) | PA | EPA 1668 A | 2,2',3,3',4,6,6'-HEPTACHLOROBIPHENYL (BZ-176) | PA |
| EPA 1668 A | 2,2',3,3',4,6-HEXACHLOROBIPHENYL (BZ-131) | PA | EPA 1668 A | 2,2',3,3',4-PENTACHLOROBIPHENYL (BZ-82) | PA |
| EPA 1668 A | 2,2',3,3',5,5',6,6'-OCTACHLOROBIPHENYL (BZ-202) | PA | EPA 1668 A | 2,2',3,3',5,5',6-HEPTACHLOROBIPHENYL (BZ-178) | PA |
| EPA 1668 A | 2,2',3,3',5,5'-HEXACHLOROBIPHENYL (BZ-133) | PA | EPA 1668 A | 2,2',3,3',5,6'-HEXACHLOROBIPHENYL (BZ-135) | PA |
| EPA 1668 A | 2,2',3,3',5,6,6'-HEPTACHLOROBIPHENYL (BZ-179) | PA | EPA 1668 A | 2,2',3,3',5,6-HEXACHLOROBIPHENYL (BZ-134) | PA |
| EPA 1668 A | 2,2',3,3',5-PENTACHLOROBIPHENYL (BZ-83) | PA | EPA 1668 A | 2,2',3,3',6,6'-HEXACHLOROBIPHENYL (BZ-136) | PA |

## Commonwealth of Virginia

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1668 A | 2,2',3,3',6-PENTACHLOROBIPHENYL (BZ-84) | PA | EPA 1668 A | 2,2',3,3'-TETRACHLOROBIPHENYL (BZ-40) | PA |
| EPA 1668 A | 2,2',3,4',5',6-HEXACHLOROBIPHENYL (BZ-149) | PA | EPA 1668 A | 2,2',3,4',5'-PENTACHLOROBIPHENYL (BZ-97) | PA |
| EPA 1668 A | 2,2',3,4',5,5',6-HEPTACHLOROBIPHENYL (BZ-187) | PA | EPA 1668 A | 2,2',3,4',5,5'-HEXACHLOROBIPHENYL (BZ-146) | PA |
| EPA 1668 A | 2,2',3,4',5,6'-HEXACHLOROBIPHENYL (BZ-148) | PA | EPA 1668 A | 2,2',3,4',5,6,6'-HEPTACHLOROBIPHENYL (BZ-188) | PA |
| EPA 1668 A | 2,2',3,4',5,6-HEXACHLOROBIPHENYL (BZ-147) | PA | EPA 1668 A | 2,2',3,4',5-PENTACHLOROBIPHENYL (BZ-90) | PA |
| EPA 1668 A | 2,2',3,4',6'-PENTACHLOROBIPHENYL (BZ-98) | PA | EPA 1668 A | 2,2',3,4',6,6'-HEXACHLOROBIPHENYL (BZ-150) | PA |
| EPA 1668 A | 2,2',3,4',6-PENTACHLOROBIPHENYL (BZ-91) | PA | EPA 1668 A | 2,2',3,4'-TETRACHLOROBIPHENYL (BZ-42) | PA |
| EPA 1668 A | 2,2',3,4,4',5',6-HEPTACHLOROBIPHENYL (BZ-183) | PA | EPA 1668 A | 2,2',3,4,4',5'-HEXACHLOROBIPHENYL (BZ-138) | PA |
| EPA 1668 A | 2,2',3,4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-203) | PA | EPA 1668 A | 2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-180) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6'-HEPTACHLOROBIPHENYL (BZ-182) | PA | EPA 1668 A | 2,2',3,4,4',5,6,6'-OCTACHLOROBIPHENYL (BZ-204) | PA |
| EPA 1668 A | 2,2',3,4,4',5,6-HEPTACHLOROBIPHENYL (BZ-181) | PA | EPA 1668 A | 2,2',3,4,4',5-HEXACHLOROBIPHENYL (BZ-137) | PA |
| EPA 1668 A | 2,2',3,4,4',6'-HEXACHLOROBIPHENYL (BZ-140) | PA | EPA 1668 A | 2,2',3,4,4',6,6'-HEPTACHLOROBIPHENYL (BZ-184) | PA |
| EPA 1668 A | 2,2',3,4,4',6-HEXACHLOROBIPHENYL (BZ-139) | PA | EPA 1668 A | 2,2',3,4,4'-PENTACHLOROBIPHENYL (BZ-85) | PA |
| EPA 1668 A | 2,2',3,4,5',6-HEXACHLOROBIPHENYL (BZ-144) | PA | EPA 1668 A | 2,2',3,4,5'-PENTACHLOROBIPHENYL (BZ-87) | PA |
| EPA 1668 A | 2,2',3,4,5,5',6-HEPTACHLOROBIPHENYL (BZ-185) | PA | EPA 1668 A | 2,2',3,4,5,5'-HEXACHLOROBIPHENYL (BZ-141) | PA |
| EPA 1668 A | 2,2',3,4,5,6'-HEXACHLOROBIPHENYL (BZ-143) | PA | EPA 1668 A | 2,2',3,4,5,6,6'-HEPTACHLOROBIPHENYL (BZ-186) | PA |
| EPA 1668 A | 2,2',3,4,5,6-HEXACHLOROBIPHENYL (BZ-142) | PA | EPA 1668 A | 2,2',3,4,5-PENTACHLOROBIPHENYL (BZ-86) | PA |
| EPA 1668 A | 2,2',3,4,6'-PENTACHLOROBIPHENYL (BZ-89) | PA | EPA 1668 A | 2,2',3,4,6,6'-HEXACHLOROBIPHENYL (BZ-145) | PA |
| EPA 1668 A | 2,2',3,4,6-PENTACHLOROBIPHENYL (BZ-88) | PA | EPA 1668 A | 2,2',3,4-TETRACHLOROBIPHENYL (BZ-41) | PA |
| EPA 1668 A | 2,2',3,5',6-PENTACHLOROBIPHENYL (BZ-95) | PA | EPA 1668 A | 2,2',3,5'-TETRACHLOROBIPHENYL (BZ-44) | PA |
| EPA 1668 A | 2,2',3,5,5',6-HEXACHLOROBIPHENYL (BZ-151) | PA | EPA 1668 A | 2,2',3,5,5'-PENTACHLOROBIPHENYL (BZ-92) | PA |
| EPA 1668 A | 2,2',3,5,6'-PENTACHLOROBIPHENYL (BZ-94) | PA | EPA 1668 A | 2,2',3,5,6,6'-HEXACHLOROBIPHENYL (BZ-152) | PA |
| EPA 1668 A | 2,2',3,5,6-PENTACHLOROBIPHENYL (BZ-93) | PA | EPA 1668 A | 2,2',3,5-TETRACHLOROBIPHENYL (BZ-43) | PA |
| EPA 1668 A | 2,2',3,6'-TETRACHLOROBIPHENYL (BZ-46) | PA | EPA 1668 A | 2,2',3,6,6'-PENTACHLOROBIPHENYL (BZ-96) | PA |
| EPA 1668 A | 2,2',3,6-TETRACHLOROBIPHENYL (BZ-45) | PA | EPA 1668 A | 2,2',3-TRICHLOROBIPHENYL (BZ-16) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,2',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-153) | PA | EPA 1668 A | 2,2',4,4',5,6'-HEXACHLOROBIPHENYL (BZ-154) | PA |
| EPA 1668 A | 2,2',4,4',5-PENTACHLOROBIPHENYL (BZ-99) | PA | EPA 1668 A | 2,2',4,4',6,6'-HEXACHLOROBIPHENYL (BZ-155) | PA |
| EPA 1668 A | 2,2',4,4',6-PENTACHLOROBIPHENYL (BZ-100) | PA | EPA 1668 A | 2,2',4,4'-TETRACHLOROBIPHENYL (BZ-47) | PA |
| EPA 1668 A | 2,2',4,5',6-PENTACHLOROBIPHENYL (BZ-103) | PA | EPA 1668 A | 2,2',4,5'-TETRACHLOROBIPHENYL (BZ-49) | PA |
| EPA 1668 A | 2,2',4,5,5'-PENTACHLOROBIPHENYL (BZ-101) | PA | EPA 1668 A | 2,2',4,5,6'-PENTACHLOROBIPHENYL (BZ-102) | PA |
| EPA 1668 A | 2,2',4,5-TETRACHLOROBIPHENYL (BZ-48) | PA | EPA 1668 A | 2,2',4,6'-TETRACHLOROBIPHENYL (BZ-51) | PA |
| EPA 1668 A | 2,2',4,6,6'-PENTACHLOROBIPHENYL (BZ-104) | PA | EPA 1668 A | 2,2',4,6-TETRACHLOROBIPHENYL (BZ-50) | PA |
| EPA 1668 A | 2,2',4-TRICHLOROBIPHENYL (BZ-17) | PA | EPA 1668 A | 2,2',5,5'-TETRACHLOROBIPHENYL (BZ-52) | PA |
| EPA 1668 A | 2,2',5,6'-TETRACHLOROBIPHENYL (BZ-53) | PA | EPA 1668 A | 2,2',5-TRICHLOROBIPHENYL (BZ-18) | PA |
| EPA 1668 A | 2,2',6,6'-TETRACHLOROBIPHENYL (BZ-54) | PA | EPA 1668 A | 2,2',6-TRICHLOROBIPHENYL (BZ-19) | PA |
| EPA 1668 A | 2,2'-DICHLOROBIPHENYL (BZ-4) | PA | EPA 1668 A | 2,3',4',5',6-PENTACHLOROBIPHENYL (BZ-125) | PA |
| EPA 1668 A | 2,3',4',5'-TETRACHLOROBIPHENYL (BZ-76) | PA | EPA 1668 A | 2,3',4',5,5'-PENTACHLOROBIPHENYL (BZ-124) | PA |
| EPA 1668 A | 2,3',4',5-TETRACHLOROBIPHENYL (BZ-70) | PA | EPA 1668 A | 2,3',4',6-TETRACHLOROBIPHENYL (BZ-71) | PA |
| EPA 1668 A | 2,3',4'-TRICHLOROBIPHENYL (BZ-33) | PA | EPA 1668 A | 2,3',4,4',5',6-HEXACHLOROBIPHENYL (BZ-168) | PA |
| EPA 1668 A | 2,3',4,4',5'-PENTACHLOROBIPHENYL (BZ-123) | PA | EPA 1668 A | 2,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-167) | PA |
| EPA 1668 A | 2,3',4,4',5-PENTACHLOROBIPHENYL (BZ-118) | PA | EPA 1668 A | 2,3',4,4',6-PENTACHLOROBIPHENYL (BZ-119) | PA |
| EPA 1668 A | 2,3',4,4'-TETRACHLOROBIPHENYL (BZ-66) | PA | EPA 1668 A | 2,3',4,5',6-PENTACHLOROBIPHENYL (BZ-121) | PA |
| EPA 1668 A | 2,3',4,5'-TETRACHLOROBIPHENYL (BZ-68) | PA | EPA 1668 A | 2,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-120) | PA |
| EPA 1668 A | 2,3',4,5-TETRACHLOROBIPHENYL (BZ-67) | PA | EPA 1668 A | 2,3',4,6-TETRACHLOROBIPHENYL (BZ-69) | PA |
| EPA 1668 A | 2,3',4-TRICHLOROBIPHENYL (BZ-25) | PA | EPA 1668 A | 2,3',5',6-TETRACHLOROBIPHENYL (BZ-73) | PA |
| EPA 1668 A | 2,3',5'-TRICHLOROBIPHENYL (BZ-34) | PA | EPA 1668 A | 2,3',5,5'-TETRACHLOROBIPHENYL (BZ-72) | PA |
| EPA 1668 A | 2,3',5-TRICHLOROBIPHENYL (BZ-26) | PA | EPA 1668 A | 2,3',6-TRICHLOROBIPHENYL (BZ-27) | PA |
| EPA 1668 A | 2,3'-DICHLOROBIPHENYL (BZ-6) | PA | EPA 1668 A | 2,3,3',4',5',6-HEXACHLOROBIPHENYL (BZ-164) | PA |
| EPA 1668 A | 2,3,3',4',5'-PENTACHLOROBIPHENYL (BZ-122) | PA | EPA 1668 A | 2,3,3',4',5,5',6-HEPTACHLOROBIPHENYL (BZ-193) | PA |
| EPA 1668 A | 2,3,3',4',5,5'-HEXACHLOROBIPHENYL (BZ-162) | PA | EPA 1668 A | 2,3,3',4',5,6-HEXACHLOROBIPHENYL (BZ-163) | PA |

## Scope of Accreditation

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 1668 A | 2,3,3',4',5-PENTACHLOROBIPHENYL (BZ-107) | PA | EPA 1668 A | 2,3,3',4',6-PENTACHLOROBIPHENYL (BZ-110) | PA |
| EPA 1668 A | 2,3,3',4'-TETRACHLOROBIPHENYL (BZ-56) | PA | EPA 1668 A | 2,3,3',4,4',5',6-HEPTACHLOROBIPHENYL (BZ-191) | PA |
| EPA 1668 A | 2,3,3',4,4',5'-HEXACHLOROBIPHENYL (BZ-157) | PA | EPA 1668 A | 2,3,3',4,4',5,5',6-OCTACHLOROBIPHENYL (BZ-205) | PA |
| EPA 1668 A | 2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (BZ-189) | PA | EPA 1668 A | 2,3,3',4,4',5,6-HEPTACHLOROBIPHENYL (BZ-190) | PA |
| EPA 1668 A | 2,3,3',4,4',5-HEXACHLOROBIPHENYL (BZ-156) | PA | EPA 1668 A | 2,3,3',4,4',6-HEXACHLOROBIPHENYL (BZ-158) | PA |
| EPA 1668 A | 2,3,3',4,4'-PENTACHLOROBIPHENYL (BZ-105) | PA | EPA 1668 A | 2,3,3',4,5',6-HEXACHLOROBIPHENYL (BZ-161) | PA |
| EPA 1668 A | 2,3,3',4,5'-PENTACHLOROBIPHENYL (BZ-108) | PA | EPA 1668 A | 2,3,3',4,5,5',6-HEPTACHLOROBIPHENYL (BZ-192) | PA |
| EPA 1668 A | 2,3,3',4,5,5'-HEXACHLOROBIPHENYL (BZ-159) | PA | EPA 1668 A | 2,3,3',4,5,6-HEXACHLOROBIPHENYL (BZ-160) | PA |
| EPA 1668 A | 2,3,3',4,5-PENTACHLOROBIPHENYL (BZ-106) | PA | EPA 1668 A | 2,3,3',4,6-PENTACHLOROBIPHENYL (BZ-109) | PA |
| EPA 1668 A | 2,3,3',4-TETRACHLOROBIPHENYL (BZ-55) | PA | EPA 1668 A | 2,3,3',5',6-PENTACHLOROBIPHENYL (BZ-113) | PA |
| EPA 1668 A | 2,3,3',5'-TETRACHLOROBIPHENYL (BZ-58) | PA | EPA 1668 A | 2,3,3',5,5',6-HEXACHLOROBIPHENYL (BZ-165) | PA |
| EPA 1668 A | 2,3,3',5,5'-PENTACHLOROBIPHENYL (BZ-111) | PA | EPA 1668 A | 2,3,3',5,6-PENTACHLOROBIPHENYL (BZ-112) | PA |
| EPA 1668 A | 2,3,3',5-TETRACHLOROBIPHENYL (BZ-57) | PA | EPA 1668 A | 2,3,3',6-TETRACHLOROBIPHENYL (BZ-59) | PA |
| EPA 1668 A | 2,3,3'-TRICHLOROBIPHENYL (BZ-20) | PA | EPA 1668 A | 2,3,4',5,6-PENTACHLOROBIPHENYL (BZ-117) | PA |
| EPA 1668 A | 2,3,4',5-TETRACHLOROBIPHENYL (BZ-63) | PA | EPA 1668 A | 2,3,4',6-TETRACHLOROBIPHENYL (BZ-64) | PA |
| EPA 1668 A | 2,3,4'-TRICHLOROBIPHENYL (BZ-22) | PA | EPA 1668 A | 2,3,4,4',5,6-HEXACHLOROBIPHENYL (BZ-166) | PA |
| EPA 1668 A | 2,3,4,4',5-PENTACHLOROBIPHENYL (BZ-114) | PA | EPA 1668 A | 2,3,4,4',6-PENTACHLOROBIPHENYL (BZ-115) | PA |
| EPA 1668 A | 2,3,4,4'-TETRACHLOROBIPHENYL (BZ-60) | PA | EPA 1668 A | 2,3,4,5,6-PENTACHLOROBIPHENYL (BZ-116) | PA |
| EPA 1668 A | 2,3,4,5-TETRACHLOROBIPHENYL (BZ-61) | PA | EPA 1668 A | 2,3,4,6-TETRACHLOROBIPHENYL (BZ-62) | PA |
| EPA 1668 A | 2,3,4-TRICHLOROBIPHENYL (BZ-21) | PA | EPA 1668 A | 2,3,5,6-TETRACHLOROBIPHENYL (BZ-65) | PA |
| EPA 1668 A | 2,3,5-TRICHLOROBIPHENYL (BZ-23) | PA | EPA 1668 A | 2,3,6-TRICHLOROBIPHENYL (BZ-24) | PA |
| EPA 1668 A | 2,3-DICHLOROBIPHENYL (BZ-5) | PA | EPA 1668 A | 2,4',5-TRICHLOROBIPHENYL (BZ-31) | PA |
| EPA 1668 A | 2,4',6-TRICHLOROBIPHENYL (BZ-32) | PA | EPA 1668 A | 2,4'-DICHLOROBIPHENYL (BZ-8) | PA |
| EPA 1668 A | 2,4,4',5-TETRACHLOROBIPHENYL (BZ-74) | PA | EPA 1668 A | 2,4,4',6-TETRACHLOROBIPHENYL (BZ-75) | PA |
| EPA 1668 A | 2,4,4'-TRICHLOROBIPHENYL (BZ-28) | PA | EPA 1668 A | 2,4,5-TRICHLOROBIPHENYL (BZ-29) | PA |

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|---|---|---|---|---|---|
| EPA 1668 A | 2,4,6-TRICHLOROBIPHENYL (BZ-30) | PA | EPA 1668 A | 2,4-DICHLOROBIPHENYL (BZ-7) | PA |
| EPA 1668 A | 2,5-DICHLOROBIPHENYL (BZ-9) | PA | EPA 1668 A | 2,6-DICHLOROBIPHENYL (BZ-10) | PA |
| EPA 1668 A | 2-CHLOROBIPHENYL (BZ-1) | PA | EPA 1668 A | 3,3',4,4',5,5'-HEXACHLOROBIPHENYL (BZ-169) | PA |
| EPA 1668 A | 3,3',4,4',5-PENTACHLOROBIPHENYL (BZ-126) | PA | EPA 1668 A | 3,3',4,4'-TETRACHLOROBIPHENYL (BZ-77) | PA |
| EPA 1668 A | 3,3',4,5'-TETRACHLOROBIPHENYL (BZ-79) | PA | EPA 1668 A | 3,3',4,5,5'-PENTACHLOROBIPHENYL (BZ-127) | PA |
| EPA 1668 A | 3,3',4,5-TETRACHLOROBIPHENYL (BZ-78) | PA | EPA 1668 A | 3,3',4-TRICHLOROBIPHENYL (BZ-35) | PA |
| EPA 1668 A | 3,3',5,5'-TETRACHLOROBIPHENYL (BZ-80) | PA | EPA 1668 A | 3,3',5-TRICHLOROBIPHENYL (BZ-36) | PA |
| EPA 1668 A | 3,3'-DICHLOROBIPHENYL (BZ-11) | PA | EPA 1668 A | 3,4',5-TRICHLOROBIPHENYL (BZ-39) | PA |
| EPA 1668 A | 3,4'-DICHLOROBIPHENYL (BZ-13) | PA | EPA 1668 A | 3,4,4',5-TETRACHLOROBIPHENYL (BZ-81) | PA |
| EPA 1668 A | 3,4,4'-TRICHLOROBIPHENYL (BZ-37) | PA | EPA 1668 A | 3,4,5-TRICHLOROBIPHENYL (BZ-38) | PA |
| EPA 1668 A | 3,4-DICHLOROBIPHENYL (BZ-12) | PA | EPA 1668 A | 3,5-DICHLOROBIPHENYL (BZ-14) | PA |
| EPA 1668 A | 3-CHLOROBIPHENYL (BZ-2) | PA | EPA 1668 A | 4,4'-DICHLOROBIPHENYL (BZ-15) | PA |
| EPA 1668 A | 4-CHLOROBIPHENYL (BZ-3) | PA | EPA 1668 A | DECACHLOROBIPHENYL (BZ-209) | PA |
| EPA 3010 A | PREP: ACID DIGESTION OF AQUEOUS SAMPLES AND EXTRACTS FOR TOTAL METALS | PA | EPA 3050 B | PREP: ACID DIGESTION OF SEDIMENTS, SLUDGES, AND SOILS | PA |
| EPA 3540 C | PREP: SOXHLET EXTRACTION | PA | EPA 3546 | PREP: MICROWAVE EXTRACTION | PA |
| EPA 3550 B | PREP: ULTRASONIC EXTRACTION | PA | EPA 3620 B | PREP: FLORISIL CLEANUP | PA |
| EPA 3630 C | PREP: SILICA GEL CLEANUP | PA | EPA 3640 A | PREP: GEL PERMEATION CLEANUP | PA |
| EPA 3660 B | PREP: SULFUR CLEANUP | PA | EPA 3665 A | SULFURIC ACID/PERMANGANATE CLEAN-UP | PA |
| EPA 5030 B | PREP: PURGE AND TRAP FOR AQUEOUS SAMPLES | PA | EPA 5035 | PREP: CLOSED-SYSTEM PURGE AND TRAP AND EXTRACTION | PA |
| EPA 6010 B | ALUMINUM | PA | EPA 6010 B | ANTIMONY | PA |
| EPA 6010 B | ARSENIC | PA | EPA 6010 B | BARIUM | PA |
| EPA 6010 B | BERYLLIUM | PA | EPA 6010 B | BORON | PA |
| EPA 6010 B | CADMIUM | PA | EPA 6010 B | CALCIUM | PA |
| EPA 6010 B | CHROMIUM | PA | EPA 6010 B | COBALT | PA |
| EPA 6010 B | COPPER | PA | EPA 6010 B | IRON | PA |
| EPA 6010 B | LEAD | PA | EPA 6010 B | MAGNESIUM | PA |
| EPA 6010 B | MANGANESE | PA | EPA 6010 B | MOLYBDENUM | PA |
| EPA 6010 B | NICKEL | PA | EPA 6010 B | POTASSIUM | PA |
| EPA 6010 B | SELENIUM | PA | EPA 6010 B | SILVER | PA |
| EPA 6010 B | SODIUM | PA | EPA 6010 B | STRONTIUM | PA |
| EPA 6010 B | THALLIUM | PA | EPA 6010 B | TIN | PA |

## Scope of Accreditation

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 6010 B | TITANIUM | PA | EPA 6010 B | VANADIUM | PA |
| EPA 6010 B | ZINC | PA | EPA 6010 C | ALUMINUM | PA |
| EPA 6010 C | ANTIMONY | PA | EPA 6010 C | ARSENIC | PA |
| EPA 6010 C | BARIUM | PA | EPA 6010 C | BERYLLIUM | PA |
| EPA 6010 C | BORON | PA | EPA 6010 C | CADMIUM | PA |
| EPA 6010 C | CALCIUM | PA | EPA 6010 C | CHROMIUM | PA |
| EPA 6010 C | COBALT | PA | EPA 6010 C | COPPER | PA |
| EPA 6010 C | IRON | PA | EPA 6010 C | LEAD | PA |
| EPA 6010 C | MAGNESIUM | PA | EPA 6010 C | MANGANESE | PA |
| EPA 6010 C | MOLYBDENUM | PA | EPA 6010 C | NICKEL | PA |
| EPA 6010 C | POTASSIUM | PA | EPA 6010 C | SELENIUM | PA |
| EPA 6010 C | SILVER | PA | EPA 6010 C | SODIUM | PA |
| EPA 6010 C | STRONTIUM | PA | EPA 6010 C | THALLIUM | PA |
| EPA 6010 C | TIN | PA | EPA 6010 C | TITANIUM | PA |
| EPA 6010 C | VANADIUM | PA | EPA 6010 C | ZINC | PA |
| EPA 6020 A | ALUMINUM | PA | EPA 6020 A | ANTIMONY | PA |
| EPA 6020 A | ARSENIC | PA | EPA 6020 A | BERYLLIUM | PA |
| EPA 6020 A | CADMIUM | PA | EPA 6020 A | CALCIUM | PA |
| EPA 6020 A | CHROMIUM | PA | EPA 6020 A | COBALT | PA |
| EPA 6020 A | COPPER | PA | EPA 6020 A | IRON | PA |
| EPA 6020 A | LEAD | PA | EPA 6020 A | MAGNESIUM | PA |
| EPA 6020 A | MANGANESE | PA | EPA 6020 A | NICKEL | PA |
| EPA 6020 A | POTASSIUM | PA | EPA 6020 A | SELENIUM | PA |
| EPA 6020 A | SILVER | PA | EPA 6020 A | SODIUM | PA |
| EPA 6020 A | THALLIUM | PA | EPA 6020 A | VANADIUM | PA |
| EPA 6020 A | ZINC | PA | EPA 6020 A - EXTENDED | BORON | PA |
| EPA 6020 A - EXTENDED | STRONTIUM | PA | EPA 6020 A - EXTENDED | TIN | PA |
| EPA 6020 A - EXTENDED | TITANIUM | PA | EPA 6850 | PERCHLORATE | PA |
| EPA 7196 A | CHROMIUM VI | PA | EPA 7471 A | MERCURY | PA |
| EPA 7471 B | MERCURY | PA | EPA 8015 B | DIESEL RANGE ORGANICS (DRO) | PA |
| EPA 8015 B | ETHANOL | PA | EPA 8015 B | ETHYLENE GLYCOL | PA |
| EPA 8015 B | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8015 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA |
| EPA 8015 B | METHANOL | PA | EPA 8015 B | TERT-BUTYL ALCOHOL | PA |
| EPA 8015 C | ETHANOL | PA | EPA 8015 C | ETHYLENE GLYCOL | PA |
| EPA 8015 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8015 C | METHANOL | PA |
| EPA 8015 C | TERT-BUTYL ALCOHOL | PA | EPA 8015 D - EXTENDED | FORMIC ACID | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

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|---|---|---|---|---|---|
| EPA 8021 B | BENZENE | PA | EPA 8021 B | ETHYLBENZENE | PA |
| EPA 8021 B | ISOPROPYLBENZENE | PA | EPA 8021 B | M+P-XYLENE | PA |
| EPA 8021 B | NAPHTHALENE | PA | EPA 8021 B | O-XYLENE | PA |
| EPA 8021 B | TOLUENE | PA | EPA 8021 B | XYLENE (TOTAL) | PA |
| EPA 8021 B - EXTENDED | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8081 A | 4,4'-DDD | PA |
| EPA 8081 A | 4,4'-DDE | PA | EPA 8081 A | 4,4'-DDT | PA |
| EPA 8081 A | ALDRIN | PA | EPA 8081 A | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 A | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | CHLORDANE (TECH.) | PA | EPA 8081 A | DELTA-BHC | PA |
| EPA 8081 A | DIELDRIN | PA | EPA 8081 A | ENDOSULFAN I | PA |
| EPA 8081 A | ENDOSULFAN II | PA | EPA 8081 A | ENDOSULFAN SULFATE | PA |
| EPA 8081 A | ENDRIN | PA | EPA 8081 A | ENDRIN ALDEHYDE | PA |
| EPA 8081 A | ENDRIN KETONE | PA | EPA 8081 A | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 A | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 A | HEPTACHLOR | PA |
| EPA 8081 A | HEPTACHLOR EPOXIDE | PA | EPA 8081 A | METHOXYCHLOR | PA |
| EPA 8081 A | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8081 B | 4,4'-DDD | PA |
| EPA 8081 B | 4,4'-DDE | PA | EPA 8081 B | 4,4'-DDT | PA |
| EPA 8081 B | ALDRIN | PA | EPA 8081 B | ALPHA-BHC (ALPHA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | ALPHA-CHLORDANE [CIS-CHLORDANE] | PA | EPA 8081 B | BETA-BHC (BETA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | CHLORDANE (TECH.) | PA | EPA 8081 B | DELTA-BHC | PA |
| EPA 8081 B | DIELDRIN | PA | EPA 8081 B | ENDOSULFAN I | PA |
| EPA 8081 B | ENDOSULFAN II | PA | EPA 8081 B | ENDOSULFAN SULFATE | PA |
| EPA 8081 B | ENDRIN | PA | EPA 8081 B | ENDRIN ALDEHYDE | PA |
| EPA 8081 B | ENDRIN KETONE | PA | EPA 8081 B | GAMMA-BHC (LINDANE, GAMMA-HEXACHLOROCYCLOHEXANE) | PA |
| EPA 8081 B | GAMMA-CHLORDANE [BETA-CHLORDANE, TRANS-CHLORDANE] | PA | EPA 8081 B | HEPTACHLOR | PA |
| EPA 8081 B | HEPTACHLOR EPOXIDE | PA | EPA 8081 B | METHOXYCHLOR | PA |
| EPA 8081 B | TOXAPHENE (CHLORINATED CAMPHENE) | PA | EPA 8081 B - EXTENDED | KEPONE | PA |

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|---|---|---|---|---|---|
| EPA 8081 B - EXTENDED | MIREX | PA | EPA 8082 - OIL A | AROCLOR-1016 (PCB-1016) | PA |
| EPA 8082 - OIL A | AROCLOR-1221 (PCB-1221) | PA | EPA 8082 - OIL A | AROCLOR-1232 (PCB-1232) | PA |
| EPA 8082 - OIL A | AROCLOR-1242 (PCB-1242) | PA | EPA 8082 - OIL A | AROCLOR-1248 (PCB-1248) | PA |
| EPA 8082 - OIL A | AROCLOR-1254 (PCB-1254) | PA | EPA 8082 - OIL A | AROCLOR-1260 (PCB-1260) | PA |
| EPA 8082 A | AROCLOR-1016 (PCB-1016) | PA | EPA 8082 A | AROCLOR-1221 (PCB-1221) | PA |
| EPA 8082 A | AROCLOR-1232 (PCB-1232) | PA | EPA 8082 A | AROCLOR-1242 (PCB-1242) | PA |
| EPA 8082 A | AROCLOR-1248 (PCB-1248) | PA | EPA 8082 A | AROCLOR-1254 (PCB-1254) | PA |
| EPA 8082 A | AROCLOR-1260 (PCB-1260) | PA | EPA 8082 A - EXTENDED | AROCLOR-1262 (PCB-1262) | PA |
| EPA 8082 A - EXTENDED | AROCLOR-1268 (PCB-1268) | PA | EPA 8141 A | ATRAZINE | PA |
| EPA 8141 A | BOLSTAR (SULPROFOS) | PA | EPA 8141 A | CHLORPYRIFOS | PA |
| EPA 8141 A | COUMAPHOS | PA | EPA 8141 A | DEMETON-O | PA |
| EPA 8141 A | DEMETON-S | PA | EPA 8141 A | DIAZINON | PA |
| EPA 8141 A | DICHLOROVOS (DDVP, DICHLORVOS) | PA | EPA 8141 A | DISULFOTON | PA |
| EPA 8141 A | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | PA | EPA 8141 A | ETHION | PA |
| EPA 8141 A | ETHOPROP | PA | EPA 8141 A | FAMPHUR | PA |
| EPA 8141 A | FENSULFOTHION | PA | EPA 8141 A | FENTHION | PA |
| EPA 8141 A | MALATHION | PA | EPA 8141 A | MERPHOS | PA |
| EPA 8141 A | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8141 A | MEVINPHOS | PA |
| EPA 8141 A | NALED | PA | EPA 8141 A | PARATHION (PARATHION - ETHYL) | PA |
| EPA 8141 A | PHORATE | PA | EPA 8141 A | RONNEL | PA |
| EPA 8141 A | SIMAZINE | PA | EPA 8141 A | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA |
| EPA 8141 A | TOKUTHION (PROTHIOPHOS) | PA | EPA 8141 A | TRICHLORONATE | PA |
| EPA 8141 B | ATRAZINE | PA | EPA 8141 B | BOLSTAR (SULPROFOS) | PA |
| EPA 8141 B | COUMAPHOS | PA | EPA 8141 B | DEMETON-O | PA |
| EPA 8141 B | DEMETON-S | PA | EPA 8141 B | DIAZINON | PA |
| EPA 8141 B | DICHLOROVOS (DDVP, DICHLORVOS) | PA | EPA 8141 B | DISULFOTON | PA |
| EPA 8141 B | EPN (PHOSPHONOTHIOIC ACID, PHENYL-, O-ETHYL O-(P-NITROPHENYL) ESTER) | PA | EPA 8141 B | ETHION | PA |
| EPA 8141 B | ETHOPROP | PA | EPA 8141 B | FAMPHUR | PA |
| EPA 8141 B | FENSULFOTHION | PA | EPA 8141 B | FENTHION | PA |
| EPA 8141 B | MALATHION | PA | EPA 8141 B | MERPHOS | PA |
| EPA 8141 B | METHYL PARATHION (PARATHION, METHYL) | PA | EPA 8141 B | MEVINPHOS | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2914

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: June 15, 2014
Expiration Date: June 14, 2015

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8141 B | NALED | PA | EPA 8141 B | PARATHION (PARATHION - ETHYL) | PA |
| EPA 8141 B | PHORATE | PA | EPA 8141 B | RONNEL | PA |
| EPA 8141 B | SIMAZINE | PA | EPA 8141 B | TETRACHLORVINPHOS (STIROPHOS, GARDONA) Z-ISOMER | PA |
| EPA 8141 B | TOKUTHION (PROTHIOPHOS) | PA | EPA 8141 B | TRICHLORONATE | PA |
| EPA 8151 A | 2,4,5-T | PA | EPA 8151 A | 2,4-D | PA |
| EPA 8151 A | 2,4-DB | PA | EPA 8151 A | DALAPON | PA |
| EPA 8151 A | DICAMBA | PA | EPA 8151 A | DICHLOROPROP (DICHLORPROP) | PA |
| EPA 8151 A | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8151 A | MCPA | PA |
| EPA 8151 A | MCPP | PA | EPA 8151 A | PENTACHLOROPHENOL | PA |
| EPA 8151 A | PICLORAM | PA | EPA 8151 A | SILVEX (2,4,5-TP) | PA |
| EPA 8260 B | 1,1,1,2-TETRACHLOROETHANE | PA | EPA 8260 B | 1,1,1-TRICHLOROETHANE | PA |
| EPA 8260 B | 1,1,2,2-TETRACHLOROETHANE | PA | EPA 8260 B | 1,1,2-TRICHLOROETHANE | PA |
| EPA 8260 B | 1,1-DICHLOROETHANE | PA | EPA 8260 B | 1,1-DICHLOROETHYLENE | PA |
| EPA 8260 B | 1,1-DICHLOROPROPENE | PA | EPA 8260 B | 1,2,3-TRICHLOROBENZENE | PA |
| EPA 8260 B | 1,2,3-TRICHLOROPROPANE | PA | EPA 8260 B | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8260 B | 1,2,4-TRIMETHYLBENZENE | PA | EPA 8260 B | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA |
| EPA 8260 B | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 8260 B | 1,2-DICHLOROBENZENE | PA |
| EPA 8260 B | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA | EPA 8260 B | 1,2-DICHLOROPROPANE | PA |
| EPA 8260 B | 1,3,5-TRIMETHYLBENZENE | PA | EPA 8260 B | 1,3-DICHLOROBENZENE | PA |
| EPA 8260 B | 1,3-DICHLOROPROPANE | PA | EPA 8260 B | 1,4-DICHLOROBENZENE | PA |
| EPA 8260 B | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA | EPA 8260 B | 1-BUTANOL (N-BUTANOL) | PA |
| EPA 8260 B | 2,2-DICHLOROPROPANE | PA | EPA 8260 B | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA |
| EPA 8260 B | 2-CHLOROETHYL VINYL ETHER | PA | EPA 8260 B | 2-CHLOROTOLUENE | PA |
| EPA 8260 B | 2-HEXANONE | PA | EPA 8260 B | 4-CHLOROTOLUENE | PA |
| EPA 8260 B | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA | EPA 8260 B | 4-METHYL-2-PENTANONE (MIBK) | PA |
| EPA 8260 B | ACETONE | PA | EPA 8260 B | ACETONITRILE | PA |
| EPA 8260 B | ACROLEIN (PROPENAL) | PA | EPA 8260 B | ACRYLONITRILE | PA |
| EPA 8260 B | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA | EPA 8260 B | BENZENE | PA |
| EPA 8260 B | BENZYL CHLORIDE | PA | EPA 8260 B | BROMOBENZENE | PA |
| EPA 8260 B | BROMOCHLOROMETHANE | PA | EPA 8260 B | BROMODICHLOROMETHANE | PA |
| EPA 8260 B | BROMOFORM | PA | EPA 8260 B | CARBON DISULFIDE | PA |
| EPA 8260 B | CARBON TETRACHLORIDE | PA | EPA 8260 B | CHLOROBENZENE | PA |

**Commonwealth of Virginia**

Department of General Services
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## Scope of Accreditation

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**Virginia Laboratory ID: 460182**
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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 B | CHLORODIBROMOMETHANE | PA | EPA 8260 B | CHLOROETHANE (ETHYL CHLORIDE) | PA |
| EPA 8260 B | CHLOROFORM | PA | EPA 8260 B | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA |
| EPA 8260 B | CIS-1,2-DICHLOROETHYLENE | PA | EPA 8260 B | CIS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 B | DIBROMOMETHANE (METHYLENE BROMIDE) | PA | EPA 8260 B | DICHLORODIFLUOROMETHANE (FREON-12) | PA |
| EPA 8260 B | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA | EPA 8260 B | ETHANOL | PA |
| EPA 8260 B | ETHYL ACETATE | PA | EPA 8260 B | ETHYL METHACRYLATE | PA |
| EPA 8260 B | ETHYLBENZENE | PA | EPA 8260 B | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA |
| EPA 8260 B | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 B | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 B | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 B | ISOPROPYLBENZENE | PA |
| EPA 8260 B | M+P-XYLENE | PA | EPA 8260 B | METHACRYLONITRILE | PA |
| EPA 8260 B | METHYL BROMIDE (BROMOMETHANE) | PA | EPA 8260 B | METHYL CHLORIDE (CHLOROMETHANE) | PA |
| EPA 8260 B | METHYL METHACRYLATE | PA | EPA 8260 B | METHYL TERT-BUTYL ETHER (MTBE) | PA |
| EPA 8260 B | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA | EPA 8260 B | N-BUTYLBENZENE | PA |
| EPA 8260 B | N-PROPYLBENZENE | PA | EPA 8260 B | NAPHTHALENE | PA |
| EPA 8260 B | O-XYLENE | PA | EPA 8260 B | PENTACHLOROETHANE | PA |
| EPA 8260 B | PROPIONITRILE (ETHYL CYANIDE) | PA | EPA 8260 B | SEC-BUTYLBENZENE | PA |
| EPA 8260 B | STYRENE | PA | EPA 8260 B | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 B | TERT-BUTYLBENZENE | PA | EPA 8260 B | TETRACHLOROETHENE (PERCHLOROETHENE) | PA |
| EPA 8260 B | TOLUENE | PA | EPA 8260 B | TRANS-1,2-DICHLOROETHENE | PA |
| EPA 8260 B | TRANS-1,3-DICHLOROPROPENE | PA | EPA 8260 B | TRANS-1,4-DICHLORO-2-BUTENE | PA |
| EPA 8260 B | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA | EPA 8260 B | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA |
| EPA 8260 B | VINYL ACETATE | PA | EPA 8260 B | VINYL CHLORIDE | PA |
| EPA 8260 B | XYLENE (TOTAL) | PA | EPA 8260 B - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA |
| EPA 8260 B - EXTENDED | CYCLOHEXANE | PA | EPA 8260 B - EXTENDED | CYCLOHEXANONE | PA |
| EPA 8260 B - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA | EPA 8260 B - EXTENDED | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA |
| EPA 8260 B - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8260 B - EXTENDED | METHYL ACETATE | PA |
| EPA 8260 B - EXTENDED | METHYLCYCLOHEXANE | PA | EPA 8260 B - EXTENDED | T-AMYL ALCOHOL (TAA) | PA |

## Scope of Accreditation

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 B - EXTENDED | T-AMYLMETHYLETHER (TAME) | PA | EPA 8260 B - EXTENDED | TETRAHYDROFURAN (THF) | PA |
| EPA 8260 C | 1,1,1,2-TETRACHLOROETHANE | PA | EPA 8260 C | 1,1,1-TRICHLOROETHANE | PA |
| EPA 8260 C | 1,1,2,2-TETRACHLOROETHANE | PA | EPA 8260 C | 1,1,2-TRICHLOROETHANE | PA |
| EPA 8260 C | 1,1-DICHLOROETHANE | PA | EPA 8260 C | 1,1-DICHLOROETHYLENE | PA |
| EPA 8260 C | 1,1-DICHLOROPROPENE | PA | EPA 8260 C | 1,2,3-TRICHLOROBENZENE | PA |
| EPA 8260 C | 1,2,3-TRICHLOROPROPANE | PA | EPA 8260 C | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8260 C | 1,2,4-TRIMETHYLBENZENE | PA | EPA 8260 C | 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) | PA |
| EPA 8260 C | 1,2-DIBROMOETHANE (EDB, ETHYLENE DIBROMIDE) | PA | EPA 8260 C | 1,2-DICHLOROBENZENE | PA |
| EPA 8260 C | 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) | PA | EPA 8260 C | 1,2-DICHLOROPROPANE | PA |
| EPA 8260 C | 1,3,5-TRIMETHYLBENZENE | PA | EPA 8260 C | 1,3-DICHLOROBENZENE | PA |
| EPA 8260 C | 1,3-DICHLOROPROPANE | PA | EPA 8260 C | 1,4-DICHLOROBENZENE | PA |
| EPA 8260 C | 1,4-DIOXANE (1,4-DIETHYLENEOXIDE) | PA | EPA 8260 C | 2,2-DICHLOROPROPANE | PA |
| EPA 8260 C | 2-BUTANONE (METHYL ETHYL KETONE, MEK) | PA | EPA 8260 C | 2-CHLOROETHYL VINYL ETHER | PA |
| EPA 8260 C | 2-CHLOROTOLUENE | PA | EPA 8260 C | 2-HEXANONE | PA |
| EPA 8260 C | 4-CHLOROTOLUENE | PA | EPA 8260 C | 4-ISOPROPYLTOLUENE (P-CYMENE) | PA |
| EPA 8260 C | 4-METHYL-2-PENTANONE (MIBK) | PA | EPA 8260 C | ACETONE | PA |
| EPA 8260 C | ACETONITRILE | PA | EPA 8260 C | ACROLEIN (PROPENAL) | PA |
| EPA 8260 C | ACRYLONITRILE | PA | EPA 8260 C | ALLYL CHLORIDE (3-CHLOROPROPENE) | PA |
| EPA 8260 C | BENZENE | PA | EPA 8260 C | BENZYL CHLORIDE | PA |
| EPA 8260 C | BROMOBENZENE | PA | EPA 8260 C | BROMOCHLOROMETHANE | PA |
| EPA 8260 C | BROMODICHLOROMETHANE | PA | EPA 8260 C | BROMOFORM | PA |
| EPA 8260 C | CARBON DISULFIDE | PA | EPA 8260 C | CARBON TETRACHLORIDE | PA |
| EPA 8260 C | CHLOROBENZENE | PA | EPA 8260 C | CHLORODIBROMOMETHANE | PA |
| EPA 8260 C | CHLOROETHANE (ETHYL CHLORIDE) | PA | EPA 8260 C | CHLOROFORM | PA |
| EPA 8260 C | CHLOROPRENE (2-CHLORO-1,3-BUTADIENE) | PA | EPA 8260 C | CIS-1,2-DICHLOROETHYLENE | PA |
| EPA 8260 C | CIS-1,3-DICHLOROPROPENE | PA | EPA 8260 C | CYCLOHEXANE | PA |
| EPA 8260 C | DIBROMOMETHANE (METHYLENE BROMIDE) | PA | EPA 8260 C | DICHLORODIFLUOROMETHANE (FREON-12) | PA |
| EPA 8260 C | EPICHLOROHYDRIN (1-CHLORO-2,3-EPOXYPROPANE) | PA | EPA 8260 C | ETHANOL | PA |
| EPA 8260 C | ETHYL ACETATE | PA | EPA 8260 C | ETHYL METHACRYLATE | PA |
| EPA 8260 C | ETHYL-T-BUTYLETHER (2-ETHOXY-2-METHYLPROPANE, ETBE) | PA | EPA 8260 C | ETHYLBENZENE | PA |
| EPA 8260 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8260 C | HEXACHLOROETHANE | PA |

## Scope of Accreditation

VELAP Certificate No.: 2914

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2425 NEW HOLLAND PIKE
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Effective Date: June 15, 2014
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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8260 C | IODOMETHANE (METHYL IODIDE) | PA | EPA 8260 C | ISOBUTYL ALCOHOL (2-METHYL-1-PROPANOL) | PA |
| EPA 8260 C | ISOPROPYL ALCOHOL (2-PROPANOL, ISOPROPANOL) | PA | EPA 8260 C | ISOPROPYLBENZENE | PA |
| EPA 8260 C | METHACRYLONITRILE | PA | EPA 8260 C | METHYL BROMIDE (BROMOMETHANE) | PA |
| EPA 8260 C | METHYL CHLORIDE (CHLOROMETHANE) | PA | EPA 8260 C | METHYL METHACRYLATE | PA |
| EPA 8260 C | METHYL TERT-BUTYL ETHER (MTBE) | PA | EPA 8260 C | METHYLCYCLOHEXANE | PA |
| EPA 8260 C | METHYLENE CHLORIDE (DICHLOROMETHANE) | PA | EPA 8260 C | N-BUTYLBENZENE | PA |
| EPA 8260 C | N-PROPYLBENZENE | PA | EPA 8260 C | NAPHTHALENE | PA |
| EPA 8260 C | PENTACHLOROETHANE | PA | EPA 8260 C | PROPIONITRILE (ETHYL CYANIDE) | PA |
| EPA 8260 C | SEC-BUTYLBENZENE | PA | EPA 8260 C | STYRENE | PA |
| EPA 8260 C | T-AMYLMETHYLETHER (TAME) | PA | EPA 8260 C | TERT-BUTYL ALCOHOL | PA |
| EPA 8260 C | TETRACHLOROETHENE (PERCHLOROETHENE) | PA | EPA 8260 C | TOLUENE | PA |
| EPA 8260 C | TRANS-1,2-DICHLOROETHENE | PA | EPA 8260 C | TRANS-1,3-DICHLOROPROPENE | PA |
| EPA 8260 C | TRANS-1,4-DICHLORO-2-BUTENE | PA | EPA 8260 C | TRICHLOROETHENE (TRICHLOROETHYLENE) | PA |
| EPA 8260 C | TRICHLOROFLUOROMETHANE (FLUOROTRICHLOROMETHANE, FREON 11) | PA | EPA 8260 C | VINYL ACETATE | PA |
| EPA 8260 C | VINYL CHLORIDE | PA | EPA 8260 C | XYLENE (TOTAL) | PA |
| EPA 8260 C - EXTENDED | 1,1,2-TRICHLORO-1,2,2-TRIFLUOR OETHANE (FREON 113) | PA | EPA 8260 C - EXTENDED | DI-ISOPROPYLETHER (DIPE, ISOPROPYL ETHER) | PA |
| EPA 8260 C - EXTENDED | GASOLINE RANGE ORGANICS (GRO) | PA | EPA 8260 C - EXTENDED | METHYL ACETATE | PA |
| EPA 8260 C - EXTENDED | T-AMYL ALCOHOL (TAA) | PA | EPA 8260 C - EXTENDED | TETRAHYDROFURAN (THF) | PA |
| EPA 8270 C | 1,2,4,5-TETRACHLOROBENZENE | PA | EPA 8270 C | 1,2,4-TRICHLOROBENZENE | PA |
| EPA 8270 C | 1,2-DICHLOROBENZENE | PA | EPA 8270 C | 1,2-DINITROBENZENE | PA |
| EPA 8270 C | 1,2-DIPHENYLHYDRAZINE | PA | EPA 8270 C | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA |
| EPA 8270 C | 1,3-DICHLOROBENZENE | PA | EPA 8270 C | 1,3-DINITROBENZENE (1,3-DNB) | PA |
| EPA 8270 C | 1,4-DICHLOROBENZENE | PA | EPA 8270 C | 1,4-DINITROBENZENE | PA |
| EPA 8270 C | 1,4-NAPHTHOQUINONE | PA | EPA 8270 C | 1,4-PHENYLENEDIAMINE | PA |
| EPA 8270 C | 1-CHLORONAPHTHALENE | PA | EPA 8270 C | 1-NAPHTHYLAMINE | PA |
| EPA 8270 C | 2,3,4,6-TETRACHLOROPHENOL | PA | EPA 8270 C | 2,4,5-TRICHLOROPHENOL | PA |
| EPA 8270 C | 2,4,6-TRICHLOROPHENOL | PA | EPA 8270 C | 2,4-DICHLOROPHENOL | PA |
| EPA 8270 C | 2,4-DIMETHYLPHENOL | PA | EPA 8270 C | 2,4-DINITROPHENOL | PA |
| EPA 8270 C | 2,4-DINITROTOLUENE (2,4-DNT) | PA | EPA 8270 C | 2,6-DICHLOROPHENOL | PA |
| EPA 8270 C | 2,6-DINITROTOLUENE (2,6-DNT) | PA | EPA 8270 C | 2-ACETYLAMINOFLUORENE | PA |
| EPA 8270 C | 2-CHLORONAPHTHALENE | PA | EPA 8270 C | 2-CHLOROPHENOL | PA |

## Scope of Accreditation

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### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 C | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA | EPA 8270 C | 2-METHYLNAPHTHALENE | PA |
| EPA 8270 C | 2-METHYLPHENOL (O-CRESOL) | PA | EPA 8270 C | 2-NAPHTHYLAMINE | PA |
| EPA 8270 C | 2-NITROANILINE | PA | EPA 8270 C | 2-NITROPHENOL | PA |
| EPA 8270 C | 2-PICOLINE (2-METHYLPYRIDINE) | PA | EPA 8270 C | 3,3'-DICHLOROBENZIDINE | PA |
| EPA 8270 C | 3,3'-DIMETHOXYBENZIDINE | PA | EPA 8270 C | 3,3'-DIMETHYLBENZIDINE | PA |
| EPA 8270 C | 3-METHYLCHOLANTHRENE | PA | EPA 8270 C | 3-METHYLPHENOL (M-CRESOL) | PA |
| EPA 8270 C | 3-NITROANILINE | PA | EPA 8270 C | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | PA |
| EPA 8270 C | 4-AMINOBIPHENYL | PA | EPA 8270 C | 4-BROMOPHENYL PHENYL ETHER | PA |
| EPA 8270 C | 4-CHLORO-3-METHYLPHENOL | PA | EPA 8270 C | 4-CHLOROANILINE | PA |
| EPA 8270 C | 4-CHLOROPHENYL PHENYLETHER | PA | EPA 8270 C | 4-DIMETHYL AMINOAZOBENZENE | PA |
| EPA 8270 C | 4-METHYLPHENOL (P-CRESOL) | PA | EPA 8270 C | 4-NITROANILINE | PA |
| EPA 8270 C | 4-NITROPHENOL | PA | EPA 8270 C | 5-NITRO-O-TOLUIDINE | PA |
| EPA 8270 C | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA | EPA 8270 C | A-A-DIMETHYLPHENETHYLAMINE | PA |
| EPA 8270 C | ACENAPHTHENE | PA | EPA 8270 C | ACENAPHTHYLENE | PA |
| EPA 8270 C | ACETOPHENONE | PA | EPA 8270 C | ANILINE | PA |
| EPA 8270 C | ANTHRACENE | PA | EPA 8270 C | ARAMITE | PA |
| EPA 8270 C | BENZIDINE | PA | EPA 8270 C | BENZO(A)ANTHRACENE | PA |
| EPA 8270 C | BENZO(A)PYRENE | PA | EPA 8270 C | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 C | BENZO(K)FLUORANTHENE | PA | EPA 8270 C | BENZOIC ACID | PA |
| EPA 8270 C | BENZO[B]FLUORANTHENE | PA | EPA 8270 C | BENZYL ALCOHOL | PA |
| EPA 8270 C | BIS(2-CHLOROETHOXY)METHANE | PA | EPA 8270 C | BIS(2-CHLOROETHYL) ETHER | PA |
| EPA 8270 C | BIS(2-CHLOROISOPROPYL) ETHER | PA | EPA 8270 C | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA |
| EPA 8270 C | BUTYL BENZYL PHTHALATE | PA | EPA 8270 C | CHLOROBENZILATE | PA |
| EPA 8270 C | CHRYSENE | PA | EPA 8270 C | DI-N-BUTYL PHTHALATE | PA |
| EPA 8270 C | DI-N-OCTYL PHTHALATE | PA | EPA 8270 C | DIALLATE | PA |
| EPA 8270 C | DIBENZ(A, J) ACRIDINE | PA | EPA 8270 C | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 C | DIBENZOFURAN | PA | EPA 8270 C | DIETHYL PHTHALATE | PA |
| EPA 8270 C | DIMETHOATE | PA | EPA 8270 C | DIMETHYL PHTHALATE | PA |
| EPA 8270 C | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8270 C | DIPHENYLAMINE | PA |
| EPA 8270 C | DISULFOTON | PA | EPA 8270 C | ETHYL METHANESULFONATE | PA |
| EPA 8270 C | FAMPHUR | PA | EPA 8270 C | FLUORANTHENE | PA |
| EPA 8270 C | FLUORENE | PA | EPA 8270 C | HEXACHLOROBENZENE | PA |
| EPA 8270 C | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8270 C | HEXACHLOROCYCLOPENTADIENE | PA |

## Commonwealth of Virginia

Department of General Services
Division of Consolidated Laboratory Services

## Scope of Accreditation

VELAP Certificate No.: 2914

**EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC**
2425 NEW HOLLAND PIKE
LANCASTER, PA 17601

**Virginia Laboratory ID: 460182**
Effective Date: June 15, 2014
Expiration Date: June 14, 2015

### SOLID AND CHEMICAL MATERIALS

| METHOD | ANALYTE | PRIMARY | METHOD | ANALYTE | PRIMARY |
|---|---|---|---|---|---|
| EPA 8270 C | HEXACHLOROETHANE | PA | EPA 8270 C | HEXACHLOROPROPENE | PA |
| EPA 8270 C | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 C | ISODRIN | PA |
| EPA 8270 C | ISOPHORONE | PA | EPA 8270 C | ISOSAFROLE | PA |
| EPA 8270 C | KEPONE | PA | EPA 8270 C | METHAPYRILENE | PA |
| EPA 8270 C | METHYL METHANESULFONATE | PA | EPA 8270 C | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8270 C | N-NITROSO-DI-N-BUTYLAMINE | PA | EPA 8270 C | N-NITROSODI-N-PROPYLAMINE | PA |
| EPA 8270 C | N-NITROSODIETHYLAMINE | PA | EPA 8270 C | N-NITROSODIMETHYLAMINE | PA |
| EPA 8270 C | N-NITROSODIPHENYLAMINE | PA | EPA 8270 C | N-NITROSOMETHYLETHYLAMINE | PA |
| EPA 8270 C | N-NITROSOMORPHOLINE | PA | EPA 8270 C | N-NITROSOPIPERIDINE | PA |
| EPA 8270 C | N-NITROSOPYRROLIDINE | PA | EPA 8270 C | NAPHTHALENE | PA |
| EPA 8270 C | NITROBENZENE | PA | EPA 8270 C | NITROQUINOLINE-1-OXIDE | PA |
| EPA 8270 C | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA | EPA 8270 C | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 C | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 C | PENTACHLOROBENZENE | PA |
| EPA 8270 C | PENTACHLORONITROBENZENE | PA | EPA 8270 C | PENTACHLOROPHENOL | PA |
| EPA 8270 C | PHENACETIN | PA | EPA 8270 C | PHENANTHRENE | PA |
| EPA 8270 C | PHENOL | PA | EPA 8270 C | PHORATE | PA |
| EPA 8270 C | PHTHALIC ANHYDRIDE | PA | EPA 8270 C | PRONAMIDE (KERB) | PA |
| EPA 8270 C | PYRENE | PA | EPA 8270 C | PYRIDINE | PA |
| EPA 8270 C | SAFROLE | PA | EPA 8270 C | THIONAZIN (ZINOPHOS) | PA |
| EPA 8270 C | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA | EPA 8270 C SIM | 2-METHYLNAPHTHALENE | PA |
| EPA 8270 C SIM | ACENAPHTHENE | PA | EPA 8270 C SIM | ACENAPHTHYLENE | PA |
| EPA 8270 C SIM | ANTHRACENE | PA | EPA 8270 C SIM | BENZO(A)ANTHRACENE | PA |
| EPA 8270 C SIM | BENZO(A)PYRENE | PA | EPA 8270 C SIM | BENZO(G,H,I)PERYLENE | PA |
| EPA 8270 C SIM | BENZO(K)FLUORANTHENE | PA | EPA 8270 C SIM | BENZO[B]FLUORANTHENE | PA |
| EPA 8270 C SIM | CHRYSENE | PA | EPA 8270 C SIM | DIBENZO(A,H) ANTHRACENE | PA |
| EPA 8270 C SIM | FLUORANTHENE | PA | EPA 8270 C SIM | FLUORENE | PA |
| EPA 8270 C SIM | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 C SIM | NAPHTHALENE | PA |
| EPA 8270 C SIM | PHENANTHRENE | PA | EPA 8270 C SIM | PYRENE | PA |
| EPA 8270 C SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA | EPA 8270 D | 1,2,4,5-TETRACHLOROBENZENE | PA |
| EPA 8270 D | 1,2,4-TRICHLOROBENZENE | PA | EPA 8270 D | 1,2-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,2-DINITROBENZENE | PA | EPA 8270 D | 1,2-DIPHENYLHYDRAZINE | PA |
| EPA 8270 D | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8270 D | 1,3-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,3-DINITROBENZENE (1,3-DNB) | PA | EPA 8270 D | 1,4-DICHLOROBENZENE | PA |
| EPA 8270 D | 1,4-DINITROBENZENE | PA | EPA 8270 D | 1,4-NAPHTHOQUINONE | PA |
| EPA 8270 D | 1,4-PHENYLENEDIAMINE | PA | EPA 8270 D | 1-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 1-NAPHTHYLAMINE | PA | EPA 8270 D | 2,3,4,6-TETRACHLOROPHENOL | PA |

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|---|---|---|---|---|---|
| EPA 8270 D | 2,4,5-TRICHLOROPHENOL | PA | EPA 8270 D | 2,4,6-TRICHLOROPHENOL | PA |
| EPA 8270 D | 2,4-DICHLOROPHENOL | PA | EPA 8270 D | 2,4-DIMETHYLPHENOL | PA |
| EPA 8270 D | 2,4-DINITROPHENOL | PA | EPA 8270 D | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8270 D | 2,6-DICHLOROPHENOL | PA | EPA 8270 D | 2,6-DINITROTOLUENE (2,6-DNT) | PA |
| EPA 8270 D | 2-ACETYLAMINOFLUORENE | PA | EPA 8270 D | 2-CHLORONAPHTHALENE | PA |
| EPA 8270 D | 2-CHLOROPHENOL | PA | EPA 8270 D | 2-METHYL-4,6-DINITROPHENOL (4,6-DINITRO-2-METHYLPHENOL) | PA |
| EPA 8270 D | 2-METHYLNAPHTHALENE | PA | EPA 8270 D | 2-METHYLPHENOL (O-CRESOL) | PA |
| EPA 8270 D | 2-NAPHTHYLAMINE | PA | EPA 8270 D | 2-NITROANILINE | PA |
| EPA 8270 D | 2-NITROPHENOL | PA | EPA 8270 D | 2-PICOLINE (2-METHYLPYRIDINE) | PA |
| EPA 8270 D | 3,3'-DICHLOROBENZIDINE | PA | EPA 8270 D | 3,3'-DIMETHOXYBENZIDINE | PA |
| EPA 8270 D | 3,3'-DIMETHYLBENZIDINE | PA | EPA 8270 D | 3-METHYLCHOLANTHRENE | PA |
| EPA 8270 D | 3-METHYLPHENOL (M-CRESOL) | PA | EPA 8270 D | 3-NITROANILINE | PA |
| EPA 8270 D | 4,4'-METHYLENEBIS(2-CHLOROANILINE) | PA | EPA 8270 D | 4-AMINOBIPHENYL | PA |
| EPA 8270 D | 4-BROMOPHENYL PHENYL ETHER | PA | EPA 8270 D | 4-CHLORO-3-METHYLPHENOL | PA |
| EPA 8270 D | 4-CHLOROANILINE | PA | EPA 8270 D | 4-CHLOROPHENYL PHENYLETHER | PA |
| EPA 8270 D | 4-DIMETHYL AMINOAZOBENZENE | PA | EPA 8270 D | 4-METHYLPHENOL (P-CRESOL) | PA |
| EPA 8270 D | 4-NITROANILINE | PA | EPA 8270 D | 4-NITROPHENOL | PA |
| EPA 8270 D | 5-NITRO-O-TOLUIDINE | PA | EPA 8270 D | 7,12-DIMETHYLBENZ(A) ANTHRACENE | PA |
| EPA 8270 D | A-A-DIMETHYLPHENETHYLAMINE | PA | EPA 8270 D | ACENAPHTHENE | PA |
| EPA 8270 D | ACENAPHTHYLENE | PA | EPA 8270 D | ACETOPHENONE | PA |
| EPA 8270 D | ANILINE | PA | EPA 8270 D | ANTHRACENE | PA |
| EPA 8270 D | ARAMITE | PA | EPA 8270 D | BENZIDINE | PA |
| EPA 8270 D | BENZO(A)ANTHRACENE | PA | EPA 8270 D | BENZO(A)PYRENE | PA |
| EPA 8270 D | BENZO(G,H,I)PERYLENE | PA | EPA 8270 D | BENZO(K)FLUORANTHENE | PA |
| EPA 8270 D | BENZOIC ACID | PA | EPA 8270 D | BENZO[B]FLUORANTHENE | PA |
| EPA 8270 D | BENZYL ALCOHOL | PA | EPA 8270 D | BIS(2-CHLOROETHOXY)METHANE | PA |
| EPA 8270 D | BIS(2-CHLOROETHYL) ETHER | PA | EPA 8270 D | BIS(2-CHLOROISOPROPYL) ETHER | PA |
| EPA 8270 D | BIS(2-ETHYLHEXYL) PHTHALATE (DI(2-ETHYLHEXYL)PHTHALATE), (DEHP) | PA | EPA 8270 D | BUTYL BENZYL PHTHALATE | PA |
| EPA 8270 D | CHLOROBENZILATE | PA | EPA 8270 D | CHRYSENE | PA |
| EPA 8270 D | DI-N-BUTYL PHTHALATE | PA | EPA 8270 D | DI-N-OCTYL PHTHALATE | PA |
| EPA 8270 D | DIALLATE | PA | EPA 8270 D | DIBENZ(A, J) ACRIDINE | PA |
| EPA 8270 D | DIBENZO(A,H) ANTHRACENE | PA | EPA 8270 D | DIBENZOFURAN | PA |
| EPA 8270 D | DIETHYL PHTHALATE | PA | EPA 8270 D | DIMETHOATE | PA |
| EPA 8270 D | DIMETHYL PHTHALATE | PA | | | |

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|---|---|---|---|---|---|
| EPA 8270 D | DINOSEB (2-SEC-BUTYL-4,6-DINITROPHENOL, DNBP) | PA | EPA 8270 D | DIPHENYLAMINE | PA |
| EPA 8270 D | DISULFOTON | PA | EPA 8270 D | ETHYL METHANESULFONATE | PA |
| EPA 8270 D | FAMPHUR | PA | EPA 8270 D | FLUORANTHENE | PA |
| EPA 8270 D | FLUORENE | PA | EPA 8270 D | HEXACHLOROBENZENE | PA |
| EPA 8270 D | HEXACHLOROBUTADIENE (1,3-HEXACHLOROBUTADIENE) | PA | EPA 8270 D | HEXACHLOROCYCLOPENTADIENE | PA |
| EPA 8270 D | HEXACHLOROETHANE | PA | EPA 8270 D | HEXACHLOROPROPENE | PA |
| EPA 8270 D | INDENO(1,2,3-CD) PYRENE | PA | EPA 8270 D | ISODRIN | PA |
| EPA 8270 D | ISOPHORONE | PA | EPA 8270 D | ISOSAFROLE | PA |
| EPA 8270 D | KEPONE | PA | EPA 8270 D | METHAPYRILENE | PA |
| EPA 8270 D | METHYL METHANESULFONATE | PA | EPA 8270 D | METHYL PARATHION (PARATHION, METHYL) | PA |
| EPA 8270 D | N-NITROSO-DI-N-BUTYLAMINE | PA | EPA 8270 D | N-NITROSODI-N-PROPYLAMINE | PA |
| EPA 8270 D | N-NITROSODIETHYLAMINE | PA | EPA 8270 D | N-NITROSODIMETHYLAMINE | PA |
| EPA 8270 D | N-NITROSODIPHENYLAMINE | PA | EPA 8270 D | N-NITROSOMETHYLETHYLAMINE | PA |
| EPA 8270 D | N-NITROSOMORPHOLINE | PA | EPA 8270 D | N-NITROSOPIPERIDINE | PA |
| EPA 8270 D | N-NITROSOPYRROLIDINE | PA | EPA 8270 D | NAPHTHALENE | PA |
| EPA 8270 D | NITROBENZENE | PA | EPA 8270 D | NITROQUINOLINE-1-OXIDE | PA |
| EPA 8270 D | O,O,O-TRIETHYL PHOSPHOROTHIOATE | PA | EPA 8270 D | O-TOLUIDINE (2-METHYLANILINE) | PA |
| EPA 8270 D | PARATHION (PARATHION - ETHYL) | PA | EPA 8270 D | PENTACHLOROBENZENE | PA |
| EPA 8270 D | PENTACHLORONITROBENZENE | PA | EPA 8270 D | PENTACHLOROPHENOL | PA |
| EPA 8270 D | PHENACETIN | PA | EPA 8270 D | PHENANTHRENE | PA |
| EPA 8270 D | PHENOL | PA | EPA 8270 D | PHORATE | PA |
| EPA 8270 D | PHTHALIC ANHYDRIDE | PA | EPA 8270 D | PRONAMIDE (KERB) | PA |
| EPA 8270 D | PYRENE | PA | EPA 8270 D | SAFROLE | PA |
| EPA 8270 D | THIONAZIN (ZINOPHOS) | PA | EPA 8270 D | TRIS-(2,3-DIBROMOPROPYL) PHOSPHATE (TRIS-BP) | PA |
| EPA 8270 D - EXTENDED | 1,1-BIPHENYL | PA | EPA 8270 D - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8270 D - EXTENDED | ATRAZINE | PA | EPA 8270 D - EXTENDED | BENZALDEHYDE | PA |
| EPA 8270 D - EXTENDED | BIS(2-ETHYLHEXYL)ADIPATE (DI(2-ETHYLHEXYL)ADIPATE) | PA | EPA 8270 D - EXTENDED | CAPROLACTAM | PA |
| EPA 8270 D - EXTENDED | CARBAZOLE | PA | EPA 8270 D - EXTENDED | PYRIDINE | PA |
| EPA 8270 D SIM | 2-METHYLNAPHTHALENE | PA | EPA 8270 D SIM | ACENAPHTHENE | PA |
| EPA 8270 D SIM | ACENAPHTHYLENE | PA | EPA 8270 D SIM | ANTHRACENE | PA |
| EPA 8270 D SIM | BENZO(A)ANTHRACENE | PA | EPA 8270 D SIM | BENZO(A)PYRENE | PA |
| EPA 8270 D SIM | BENZO(G,H,I)PERYLENE | PA | EPA 8270 D SIM | BENZO(K)FLUORANTHENE | PA |
| EPA 8270 D SIM | BENZO[B]FLUORANTHENE | PA | EPA 8270 D SIM | CHRYSENE | PA |

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|---|---|---|---|---|---|
| EPA 8270 D SIM | DIBENZO(A,H) ANTHRACENE | PA | EPA 8270 D SIM | FLUORANTHENE | PA |
| EPA 8270 D SIM | FLUORENE | PA | EPA 8270 D SIM | INDENO(1,2,3-CD) PYRENE | PA |
| EPA 8270 D SIM | NAPHTHALENE | PA | EPA 8270 D SIM | PHENANTHRENE | PA |
| EPA 8270 D SIM | PYRENE | PA | EPA 8270 D SIM - EXTENDED | 1-METHYLNAPHTHALENE | PA |
| EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN (OCDD) | PA | EPA 8290 A | 1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN (OCDF) | PA |
| EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN (1,2,3,4,6,7,8-HPCDD) | PA | EPA 8290 A | 1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN (1,2,3,4,6,7,8-HPCDF) | PA |
| EPA 8290 A | 1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN (1,2,3,4,7,8,9-HPCDF) | PA | EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,4,7,8-HXCDD) | PA |
| EPA 8290 A | 1,2,3,4,7,8-HEXACHLORODIBENZOFURAN (1,2,3,4,7,8-HXCDF) | PA | EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN(1,2,3,6,7,8-HXCDD) | PA |
| EPA 8290 A | 1,2,3,6,7,8-HEXACHLORODIBENZOFURAN (1,2,3,6,7,8-HXCDF) | PA | EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN (1,2,3,7,8,9-HXCDD) | PA |
| EPA 8290 A | 1,2,3,7,8,9-HEXACHLORODIBENZOFURAN (1,2,3,7,8,9-HXCDF) | PA | EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN (1,2,3,7,8-PECDD) | PA |
| EPA 8290 A | 1,2,3,7,8-PENTACHLORODIBENZOFURAN (1,2,3,7,8-PECDF) | PA | EPA 8290 A | 2,3,4,6,7,8-HEXACHLORODIBENZOFURAN (2,3,4,6,7,8-HXCDF) | PA |
| EPA 8290 A | 2,3,4,7,8-PENTACHLORODIBENZOFURAN | PA | EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN (2,3,7,8-TCDD) | PA |
| EPA 8290 A | 2,3,7,8-TETRACHLORODIBENZOFURAN (2,3,7,8-TCDF) | PA | EPA 8315 A | 2,5-DIMETHYLBENZALDEHYDE | PA |
| EPA 8315 A | ACETALDEHYDE | PA | EPA 8315 A | ACROLEIN (PROPENAL) | PA |
| EPA 8315 A | BENZALDEHYDE | PA | EPA 8315 A | BUTYLALDEHYDE (BUTANAL) | PA |
| EPA 8315 A | CROTONALDEHYDE | PA | EPA 8315 A | FORMALDEHYDE | PA |
| EPA 8315 A | HEXANALDEHYDE (HEXANAL) | PA | EPA 8315 A | ISOVALERALDEHYDE | PA |
| EPA 8315 A | M-TOLUALDEHYDE (1,3-TOLUALDEHYDE) | PA | EPA 8315 A | O-TOLUALDEHYDE (1,2-TOLUALDEHYDE) | PA |
| EPA 8315 A | P-TOLUALDEHYDE (1,4-TOLUALDEHYDE) | PA | EPA 8315 A | PENTANAL (VALERALDEHYDE) | PA |
| EPA 8315 A | PROPIONALDEHYDE (PROPANAL) | PA | EPA 8330 | NITROGLYCERIN | PA |
| EPA 8330 A | 1,3,5-TRINITROBENZENE (1,3,5-TNB) | PA | EPA 8330 A | 1,3-DINITROBENZENE (1,3-DNB) | PA |
| EPA 8330 A | 2,4,6-TRINITROTOLUENE (2,4,6-TNT) | PA | EPA 8330 A | 2,4-DINITROTOLUENE (2,4-DNT) | PA |
| EPA 8330 A | 2,6-DINITROTOLUENE (2,6-DNT) | PA | EPA 8330 A | 2-AMINO-4,6-DINITROTOLUENE (2-AM-DNT) | PA |
| EPA 8330 A | 2-NITROTOLUENE | PA | EPA 8330 A | 3-NITROTOLUENE | PA |
| EPA 8330 A | 4-AMINO-2,6-DINITROTOLUENE (4-AM-DNT) | PA | EPA 8330 A | 4-NITROTOLUENE | PA |
| EPA 8330 A | METHYL-2,4,6-TRINITROPHENYLNITRAMINE (TETRYL) | PA | EPA 8330 A | NITROBENZENE | PA |
| EPA 8330 A | OCTAHYDRO-1,3,5,7-TETRANITRO-1,3,5,7-TETRAZOCINE (HMX) | PA | EPA 8330 A | RDX (HEXAHYDRO-1,3,5-TRINITRO-1,3,5-TRIAZINE) | PA |
| EPA 9012 A | CYANIDE | PA | EPA 9040 B | PH | PA |
| EPA 9045 C | PH | PA | | | |

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|---|---|---|---|---|---|
| EPA 9045 D | PH | PA | EPA 9050 A | CONDUCTIVITY | PA |
| EPA 9060 | TOTAL ORGANIC CARBON | PA | EPA 9066 | TOTAL PHENOLICS | PA |
| EPA 9071 B | OIL AND GREASE (AS HEM) | PA | EPA 9081 | CATION EXCHANGE CAPACITY | PA |
| EPA 9095 B | FREE LIQUID | PA | | | |

# APPENDIX D

# FIELD NOTES (CD-ROM)

B#11 4/21/14 RFAAP B03204-12 KFC/TEJ FB#11

## General Notes

Weather: 50's, sunny, warming up throughday
PPE: eye protection, nitrile gloves
Calibrations - YSI 556 MPS
- pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.03
- conductivity reads 1413µs in a 1413µs std
- DO% = 99.7

HACH 2100P Turbidimeter: 0.02-1000ntu
* Dedicated well skirts and tubing used at each well
* All equipment decon'ed before and after each use
* All purge water disposed of at dedicated location onsite.
* All samples collected, stored, and transported in coolers on ice.

## Static Water Level Table - Unit 5

| Well | DTW | PostPurgeDTW | Notes |
|---|---|---|---|
| 5W8B | 14.68 | 14.68 | |
| 5W7B | 8.93 | 9.04 | |
| 5W5B | 8.73 | 9.04 | |
| 5WC21 | 8.99 | 9.02 | *Need to replace tubing connector |
| 5WC22 | 8.93 | 8.97 | |
| 5WC23 | 8.30 | 8.45 | |
| 5W12A | 10.73 | 10.80 | |
| S5W7 | 11.32 | SWL ONLY | |
| S5W5 | 8.26 | | |
| 5W9A | 1.25 | | |
| 5W10A | 13.08 | | |
| 5W11A | 10.46 | | Added well port cover |
| 5WCA | 12.60 | | |
| S5W6 | 6.60 | | |
| S5W8 | 11.84 | | No well cap |
| 5WC11 | 16.16 | | No well cap |
| 5WC12 | 15.89 | | No well cap |

4/21/14 RFAAP B03204-12 KFC/TEJ FB#11

## SW8B

DTW: 14.08 Begin Purge (0957)
PostPurgeDTW: 14.08 Initial Purge - clear

| Time | Temp(°C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1000) | 13.04 | 57 | 6.62 | 5.76 | 157.7 | 0.57 | 0.3%/min | clear |
| (1005) | 13.30 | 57 | 4.09 | 5.04 | 206.1 | 0.30 | " | clear |
| (1010) | 13.30 | 57 | 3.97 | 4.90 | 230.2 | 1.05 | " | clear |
| (1015) | 13.34 | 57 | 3.90 | 4.81 | 247.8 | 0.34 | " | clear |
| (1020) | 13.36 | 56 | 3.84 | 4.78 | 258.3 | 0.32 | " | clear |
| (1025) | 13.38 | 57 | 3.78 | 4.76 | 268.6 | 0.34 | " | clear |
| (1030) | 13.39 | 56 | 3.77 | 4.75 | 272.8 | 0.35 | " | clear |
| (1035) | 13.39 | 56 | 3.75 | 4.74 | 278.1 | 0.21 | " | clear |
| (1035) | Readings Stable | | | | | | | |
| (1045) | 13.57 | 57 | 4.07 | 4.77 | 280.4 | 0.36 | PostPurgeReadings | |

Sample Time (1040)
Samples Collected: (3) 8260C, (1) 6020A - cobalt

## SWSB

DTW: 8.73 Begin Purge (1058)
Post PurgeDTW: 9.04 Initial Purge - clear

| Time | Temp(°C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1100) | 11.70 | 481 | 4.45 | 5.35 | 220.3 | 0.67 | 0.3%/min | clear |
| (1105) | 11.39 | 463 | 1.89 | 5.23 | 227.6 | 0.21 | " | clear |
| (1110) | 11.18 | 452 | 1.38 | 5.24 | 230.2 | 0.28 | " | clear |
| (1115) | 11.12 | 450 | 1.31 | 5.27 | 230.6 | 0.17 | " | clear |
| (1120) | 11.04 | 450 | 1.27 | 5.28 | 230.3 | 0.38 | " | clear |
| (1125) | 10.90 | 449 | 1.24 | 5.29 | 230.2 | 0.16 | " | clear |
| (1130) | 10.97 | 449 | 1.21 | 5.30 | 229.6 | 0.13 | " | clear |
| (1130) | Readings Stable | | | | | | | |
| (1144) | 12.89 | 452 | 2.11 | 5.41 | 221.3 | 0.22 | PostPurge Reading | clear |

Sample Time (1135)
Samples Collected: (3) 8260C, (1) 8270D
(1) TM

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ICFC/TEJ

SW7B
DTW: 8.93 Begin Purge (1153)
Post Purge DTW: 9.04 Initial Purge - Clear

| Time | Temp(°C) | Cond(µs) | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. | DO mg/L |
|---|---|---|---|---|---|---|---|---|
| (1155) | 10.14 | 119 | 6.02 | 201.8 | 0.44 | 0.3 L/min | clear | 8.18 |
| (1200) | 9.162 | 119 | 5.16 | 230.6 | 0.28 | " | clear | 7.56 |
| (1205) | 9.72 | 118 | 4.83 | 239.0 | 0.51 | " | clear | 7.66 |
| (1210) | 9.69 | 118 | 4.77 | 240.0 | 0.54 | " | clear | 7.54 |
| (1215) | 9.75 | 118 | 4.73 | 242.2 | 0.76 | " | clear | 7.48 |
| (1220) | 9.83 | 119 | 4.73 | 243.5 | 0.59 | " | clear | 7.32 |
| (1225) | 9.85 | 120 | 4.73 | 243.8 | 0.69 | " | clear | 7.44 |
| (1225) | Readings Stable | | | | | Tej 4/21/14 | | |
| (1243) | 11.46 | 123 | 4.85 | 237.7 | 0.69 | Post Purge Reading | | |

Sample Time (1230)
Samples Collected: (9) 8260C, (10) 8270D, (3) TM

5WC21 - Replaced well port plug - Tubing connector is cracked
DTW: 8.99 Begin Purge (1253)
Post Purge DTW: 9.02 Initial Purge - Clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1255) | 13.87 | 740 | 3.97 | 4.93 | 229.9 | 1.59 | 0.3 L/min | clear |
| (1300) | 13.71 | 722 | 1.26 | 4.55 | 237.6 | 68.9 | " | sl. cloudy |
| (1305) | 13.81 | 712 | 0.49 | 4.44 | 243.1 | 93.0 | " | cloudy |
| (1310) | 14.92 | 709 | 0.40 | 4.48 | 243.9 | 72.8 | " | sl. cloudy |
| (1315) | 15.25 | 709 | 0.45 | 4.49 | 245.7 | 70.5 | " | sl. cloudy |
| (1320) | 15.47 | 710 | 0.55 | 4.50 | 246.8 | 69.5 | " | sl. cloudy |
| (1325) | 16.24 | 707 | 0.58 | 4.50 | 247.1 | 64.8 | " | sl. cloudy |
| (1330) | 17.13 | 708 | 0.67 | 4.53 | 246.0 | 56.0 | " | sl. cloudy |
| (1335) | 16.70 | 710 | 0.71 | 4.54 | 246.2 | 50.6 | " | sl. cloudy |
| (1335) | Readings Stable | | | | | | | |
| (1359) | 17.24 | 710 | 1.21 | 4.59 | 241.9 | 47.6 | Post Purge Reading | |

Sample Time (1340)
Samples Collected: (3) 8260, (1) TM, (6) 8270D

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~~5WC22~~ Tej 4/21/14

5WDUP

Collected at monitoring well 5WC21

Sample Time (1355)

Samples Collected: (3)8260C, (2)8270D, (1)TM

5WC22

DTW: 8.93 Begin Purge (1413)

PostPurgeDTW: 8.97 Initial Purge - Clear

| Time | Temp(°) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1415) | 13.93 | 922 | 3.67 | 7.20 | 153.1 | 0.83 | 0.3%/min | clear |
| (1420) | 13.89 | 989 | 1.54 | 6.66 | 160.7 | 1.19 | " | clear |
| (1425) | 13.96 | 1000 | 1.46 | 6.62 | 158.4 | 2.85 | " | clear |
| (1430) | 14.13 | 1000 | 1.55 | 6.61 | 154.8 | 5.71 | " | clear |
| (1435) | 14.13 | 1000 | 1.43 | 6.61 | 151.7 | 7.72 | " | clear |
| (1440) | 14.23 | 1002 | 1.31 | 6.61 | 149.0 | 7.28 | " | clear |
| (1445) | 14.22 | 1001 | 1.20 | 6.61 | 147.8 | 6.23 | " | clear |
| (1445) | Readings Stable | | | | | | | |
| (1455) | 16.46 | 1016 | 1.15 | 6.68 | 139.7 | 6.32 | PostPurgeReading | |

Sample Time (1450)

Samples Collected: (3)8260C, (2)8270D, (1)TM

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## General Notes

Weather: 50's, sunny
PPE: eye protection, nitrile gloves
Calibrations - YSI 556 MPS
- pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.03
- Conductivity reads 1413 us in 1413 us std.
- DO% = 99.8

HACH 2100P Turbidimeter: 0.02-1000 ntu
* Dedicated tubing and well skirts used at each well
* All equipment decon'ed before and after each use
* All purge water disposed of at dedicated location onsite.
* All samples collected, stored, and transported in coolers on ice

## SWC23

DTW: 8.30 — Begin Purge (0847)
Post Purge DTW: 8.45 — Initial Purge - clear

| Time | Temp(°C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (0850) | 10.75 | 987 | 6.65 | 6.46 | 156.3 | 1.02 | 0.3 L/min | clear |
| (0855) | 12.22 | 1241 | 2.55 | 6.65 | 153.6 | 3.44 | " | clear |
| (0900) | 12.43 | 1256 | 2.42 | 6.76 | 148.1 | 5.25 | " | clear |
| (0905) | 12.48 | 1255 | 2.12 | 6.81 | 144.0 | 4.99 | " | clear |
| (0910) | 12.53 | 1255 | 1.82 | 6.83 | 141.8 | 5.19 | " | clear |
| (0915) | 12.58 | 1253 | 1.80 | 6.85 | 138.4 | 4.94 | " | clear |
| (0920) | 12.62 | 1250 | 1.85 | 6.85 | 135.3 | 5.01 | " | clear |
| (0925) | 12.53 | 1250 | 1.87 | 6.84 | 134.1 | 4.41 | " | clear |
| (0925) Readings Stable | | | | | | | | |
| (0935) | 12.73 | 1247 | 1.95 | 6.87 | 129.5 | 4.65 | Post Purge Reading | |

Sample Time (0930)
Samples Collected: (3) 82160C, (6) 82710D, (1) DTM

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## SW12A

DTW: 10.73
PostPurgeDTW: 10.80

Begin Purge (0948)
Initial Purge - clear

| Time | Temp(°C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (0950) | 13.59 | 259 | 6.44 | 7.90 | 89.2 | 1.09 | 0.3l/min | clear |
| (0955) | 13.74 | 210 | 5.20 | 7.16 | 102.8 | 3.75 | " | clear |
| (1000) | 13.88 | 214 | 5.02 | 7.16 | 100.3 | 4.05 | " | clear |
| (1005) | 13.81 | 223 | 4.91 | 7.15 | 99.8 | 4.50 | " | clear |
| (1010) | 13.77 | 231 | 4.89 | 7.14 | 99.9 | 4.23 | " | clear |
| (1015) | 13.76 | 238 | 4.83 | 7.16 | 98.2 | 4.12 | " | clear |
| (1020) | 13.78 | 237 | 4.85 | 7.16 | 97.6 | 4.42 | " | clear |
| (1020) | Readings Stable | | | | | | | |
| (1030) | 14.06 | 243 | 4.90 | 7.16 | 96.9 | 4.45 | Post Purge Reading | |

Sample Time (1025)
Samples Collected: (3) 8260C, (1) TM

#11

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## General Notes:

- Weather - sunny, 50's
- PPE - Eye protection, nitrile gloves & steel toe boots
- Calibrations: - YSI 556 MPS
  - pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.03
  - Conductivity reads 1413 µs in a 1413 µs std.
  - DO% = 99.5 %
  - HACH 2100P Turbidimeter: 0.02 - 1000 ntu
- * Dedicated tubing and well skirts used at ea. well.
- * All equip. decon'ed before & after each use.
- * All purge water disposed of at dedicated location onsite
- * All samples collected, stored, and transported on ice in coolers

## Static Water Level Table - Unit 16

| Well | DTW | Post Purge DTW | Notes |
|---|---|---|---|
| | | To top of pump | |
| 16-1 | 41.75 | | |
| 16-2 | 55.90 | 55.97 | |
| 16-3 | 56.02 | 66.93 | |
| 16-5 | 4.02 | 9.36 | |
| 16WC2B | 51.85 | 64.00 | |
| 16MW8 | 71.57 | 74.81 | |
| 16WC1B | 64.62 | 65.28 | |
| 16WC1A | 64.62 | 67.05 | |
| 16MW9 | 62.77 | 63.81 | |
| 16C1 | 47.57 | | |
| 16C3 | 63.28 | | Sign not attached |
| 16DDH3 | DRY | | |
| 16WC2A | DRY | | |

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16-1

DTW: 41.75 Begin Purge (0843)

PostPurgeDTW: To top of pump Initial Purge - clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (0845) | 12.16 | 407 | 6.37 | 6.34 | 160.1 | 0.92 | 0.3 4/min | clear |
| (0850) | 12.57 | 449 | 5.51 | 6.92 | 138.2 | 0.53 | " | clear |
| (0855) | 12.52 | 443 | 5.50 | 6.99 | 135.5 | 0.49 | " | clear |
| (0900) | 12.59 | 437 | 5.51 | 7.03 | 132.9 | 0.58 | " | clear |
| (0905) | 12.61 | 420 | 5.72 | 7.03 | 129.9 | 0.81 | " | clear |
| (0910) | 12.59 | 403 | 5.58 | 7.02 | 129.1 | 2.91 | " | clear |
| (0915) | 12.62 | 389 | 5.25 | 6.99 | 126.8 | 6.24 | " | clear |
| (0920) | 12.50 | 392 | 5.68 | 6.94 | 126.5 | 4.86 | " | clear |
| (0920) | Readings Stable | | | | | | | |
| (0930) | 12.65 | 391 | 6.02 | 6.96 | 123.9 | 5.94 | Post Purge Reading | |

Sample Time (0925)

Samples Collected: (3) 8260C, (2) 8270D, (1) TM

16-2

DTW: 55.90 Begin Purge (0938)

PostPurgeDTW: 55.97 Initial Purge - Clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (0940) | 12.19 | 579 | 6.69 | 7.02 | 126.6 | 0.51 | 0.3 4/min | clear |
| (0945) | 12.94 | 587 | 4.99 | 6.99 | 123.6 | 0.20 | " | clear |
| (0950) | 13.05 | 582 | 4.97 | 7.01 | 121.0 | 0.12 | " | clear |
| (0955) | 13.08 | 578 | 4.93 | 7.02 | 119.3 | 0.16 | " | clear |
| (1000) | 13.20 | 574 | 5.11 | 7.03 | 117.5 | 0.12 | " | clear |
| (1005) | 13.26 | 570 | 5.09 | 7.03 | 116.2 | 0.22 | " | clear |
| (1010) | 13.33 | 566 | 5.09 | 7.03 | 115.5 | 0.11 | " | clear |
| (1010) | Readings Stable | | | | | | | |
| (1020) | 14.02 | 564 | 4.92 | 7.03 | 115.6 | 0.39 | Post Purge Read. | |

Sample Time (1015)

Samples Collected: (3) 8260C, (2) 8270D, (1) TM

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16-3

DTW: 56.02 Begin Purge (1033)

PostPurgeDTW: 66.93 Initial Purge - clear

| Time | Temp(°C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(ntu) | PurgeIL | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1035) | 12.65 | 232 | 7.24 | 8.13 | 80.0 | 0.83 | 0.3 L/min | clear |
| (1040) | 13.45 | 234 | 5.65 | 7.93 | 77.9 | 0.78 | " | clear |
| (1045) | 13.44 | 234 | 5.55 | 7.92 | 77.5 | 0.71 | " | clear |
| (1050) | 13.50 | 232 | 5.66 | 7.97 | 74.8 | 0.56 | " | clear |
| (1055) | 13.66 | 233 | 5.78 | 8.07 | 68.1 | 0.57 | " | clear |
| (1100) | 13.46 | 232 | 5.85 | 8.05 | 69.6 | 0.52 | " | clear |
| (1105) | 13.53 | 231 | 5.64 | 7.95 | 74.7 | 1.02 | " | clear |
| (1110) | 13.54 | 230 | 5.56 | 7.98 | 72.7 | 0.76 | " | clear |
| (1110) Readings Stable | | | | | | | | |
| (1120) | 14.03 | 231 | 5.70 | 8.02 | 77.1 | 1.35 | Post Purge Reading | |

Sample Time (1115)

Samples Collected: (3) 8260C, (2) 8270D, (1) TM

16-5

DTW: 4.02 Begin Purge (1128)

PostPurgeDTW: 9.36 Initial Purge - clear

| Time | Temp(°C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(ntu) | PurgeIL | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1130) | 12.08 | 521 | 3.97 | 7.163 | 89.1 | 5.52 | 0.3 L/min | clear |
| (1135) | 12.02 | 523 | 1.53 | 7.41 | 94.1 | 1.21 | " | clear |
| (1140) | 12.09 | 524 | 1.00 | 7.37 | 92.2 | 0.53 | " | clear |
| (1145) | 12.12 | 525 | 0.71 | 7.36 | 89.6 | 0.43 | " | clear |
| (1150) | 12.19 | 524 | 0.59 | 7.35 | 88.9 | 0.46 | " | clear |
| (1155) | 12.22 | 525 | 0.52 | 7.35 | 87.5 | 0.32 | " | clear |
| (1200) | 12.17 | 525 | 0.65 | 7.35 | 86.0 | 0.45 | " | clear |
| (1200) Readings Stable | | | | | | | | |
| (1211) | 13.23 | 525 | 2.52 | 7.19 | 110.2 | 1.99 | Post Purge Readings | |

Sample Time (1205)

Samples Collected - (3) 8260C, (2) 8270D, (1) TM

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16SPRING

| Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) |
|---|---|---|---|---|---|
| 12.65 | 556 | 6.32 | 7.52 | 94.0 | 0.93 |

Sample Time (1225)
Samples Collected: (3)8260C, (2)8270D, (1)TM

16WC2B

DTW: 51.85
PostPurgeDTW: 64.00

Begin Purge (1252)
Initial Purge - clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge IL | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1255) | 13.65 | 312 | 7.54 | 7.75 | 65.8 | 0.43 | 0.3 l/min | clear |
| (1300) | 13.94 | 317 | 1.66 | 7.77 | 65.2 | 0.20 | " | clear |
| (1305) | 13.94 | 318 | 0.83 | 7.79 | 61.7 | 0.20 | " | clear |
| (1310) | 14.04 | 317 | 0.71 | 7.81 | 59.0 | 0.28 | " | clear |
| (1315) | 14.07 | 317 | 0.68 | 7.81 | 56.3 | 0.17 | " | clear |
| (1320) | 14.04 | 317 | 0.67 | 7.79 | 55.7 | 0.24 | " | clear |
| (1325) | 14.02 | 317 | 0.68 | 7.79 | 55.3 | 0.18 | " | clear |
| (1325) | Readings Stable | | | | | | | |
| (1335) | 15.28 | 319 | 1.34 | 7.75 | 67.2 | 0.47 | Post Purge Reading | |

Sample Time (1330)
Samples Collected: (3)8260C, (2)8270D, (1)TM

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## General Notes

- Weather: overcast, 40's-50's
- PPE: eye protection, nitrile gloves
- Calibrations – YSI 556 MPS
  - pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.03
  - conductivity reads 1413 µs in a 1413 µs std.
  - DO% = 99.9

HACH 2100Q Turbidimeter: 0.02-1000ntu

* Dedicated tubing and well skirts used at each well
* All equipment deconned before and after each use
* All purge water disposed of at dedicated location onsite
* All samples collected, stored, and transported on ice in coolers

## 16MW8

DTW: 71.57 Begin Purge (0837)

Post Purge DTW: 74.81 Initial Purge - clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge IL | Descr. |
|---|---|---|---|---|---|---|---|---|
| (0840) | 11.78 | 137 | 3.18 | 5.09 | 169.1 | 3.29 | 0.3 L/min | clear |
| (0845) | 12.59 | 129 | 0.62 | 5.21 | 149.6 | 0.80 | " | clear |
| (0850) | 12.70 | 133 | 0.48 | 5.15 | 152.1 | 0.62 | " | clear |
| (0855) | 12.74 | 135 | 0.41 | 5.15 | 144.5 | 0.49 | " | clear |
| (0900) | 12.85 | 133 | 0.35 | 5.17 | 138.5 | 0.67 | " | clear |
| (0905) | 12.87 | 127 | 0.39 | 5.19 | 133.3 | 0.53 | " | clear |
| (0910) | 12.90 | 127 | 0.47 | 5.17 | 136.1 | 0.46 | " | clear |
| (0910) | Readings Stable | | | | | | | |
| (0942) | 13.59 | 133 | 1.35 | 5.13 | 144.0 | 0.58 | Post Purge Reading | |

Sample Time (0915)

Samples Collected: (6) 8260C, (2) Phenolics, (1) TM, (1) Cyanide, (2) 8151A, (2) 8270D, (2) 8081B, (2) Sulfide

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## 16MW9

DTW: 62.77 — Begin Purge (0952)

PostPurgeDTW: 63.81 — Initial Purge - Clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (0955) | 12.28 | 778 | 7.81 | 6.42 | 100.8 | 0.66 | 0.3 L/min | clear |
| (1000) | 12.54 | 951 | 1.25 | 6.44 | 57.0 | 0.22 | " | clear |
| (1005) | 12.38 | 974 | 0.91 | 6.50 | 42.3 | 0.17 | " | clear |
| (1010) | 12.32 | 977 | 0.90 | 6.51 | 39.7 | 0.16 | " | clear |
| (1015) | 12.35 | 978 | 0.90 | 6.52 | 35.4 | 0.57 | " | clear |
| (1020) | 12.38 | 979 | 0.86 | 6.54 | 33.0 | 0.20 | " | clear |
| (1025) | 12.41 | 977 | 0.92 | 6.54 | 33.0 | 0.16 | " | clear |
| (1025) | Readings Stable | | | | | | | |
| (1100) | 14.02 | 984 | 1.06 | 6.62 | 17.5 | 0.20 | | Post Purge Read. |

Sample Time (1030)

Samples Collected: (6) 8260C, (2) Phenolics, (1) TM, (1) Cyanide, (2) 8151A, (2) 8270D, (2) 8081B, (2) Sulfide

## 16WC1A

DTW: 64.62 — Begin Purge (1107)

PostPurge DTW: 67.05 — Initial Purge - clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1110) | 11.96 | 618 | 6.20 | 7.43 | 12.3 | 1.20 | 0.3 L/min | clear |
| (1115) | 12.69 | 737 | 1.60 | 6.99 | 20.9 | 0.26 | " | clear |
| (1120) | 12.79 | 733 | 0.66 | 6.97 | 22.8 | 0.15 | " | clear |
| (1125) | 12.85 | 750 | 0.20 | 6.84 | 9.8 | 0.18 | " | clear |
| (1130) | 12.86 | 756 | 0.03 | 6.81 | 5.6 | 0.15 | " | clear |
| (1135) | 12.92 | 758 | 0.01 | 6.76 | 1.7 | 0.16 | " | clear |
| (1140) | 12.95 | 756 | -0.01 | 6.75 | 1.0 | 0.14 | " | clear |
| (1140) | Readings Stable | | | | | | | |
| (1325) | 14.12 | 768 | 0.43 | 6.65 | 59 | .0.18 | | Post Purge Read. |

Sample Time (1145)

Samples Collected: (18) 8260C, (6) Phenolics, (3) TM, (3) CN, (6) 8151A, (6) 8270D, (6) 8081B, (4) Sulfides (52) (120)

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16WDUP

* Samples collected at 16WC1A
Sample Time (1200)
Samples Collected: (6) 8260C, (2) Phenolics, (1) TM, (1) CN, (2) 8151A, (2) 8270D, (2) 8081B, (2) Sulfide

** Berm created near wells 16WC1A and 16WC1B. (Approx. 10' long x 2' wide - mounded) Grass seed was planted with hay, lime pellets, and possibly pesticides. Berm was built to divert surface water away from monitoring wells.

16WC1B

DTW: 64.62 Begin Purge (1328)
Post Purge DTW: 65.28 Initial Purge - clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | Turb(ntu) | ORP(mv) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1330) | 13.90 | 346 | 3.53 | 6.49 | 0.32 | 40.2 | 0.3 L/min | clear |
| (1335) | 14.24 | 346 | 2.50 | 6.38 | 0.28 | 42.0 | " | clear |
| (1340) | 14.47 | 346 | 1.14 | 6.26 | 0.40 | 42.4 | " | clear |
| (1345) | 15.02 | 346 | 0.81 | 6.23 | 0.56 | 40.9 | " | clear |
| (1350) | 16.20 | 345 | 0.75 | 6.20 | 0.52 | 42.3 | " | Clear |
| (1355) | 15.32 | 345 | 0.78 | 6.18 | 0.51 | 42.8 | " | Clear |
| (1400) | 15.35 | 346 | 0.75 | 6.17 | 1.04 | 43.1 | " | clear |
| (1400) | Readings Stable | | | | | | | |
| (1440) | 14.58 | 358 | 2.38 | 6.50 | 1.73 | 37.0 | Post purge Reading | |

Sample Time (1405)
Samples collected: (6) 8260C, (2) Phenolics, (1) TM, (2) DM, (1) CN, (2) 8151A, (2) 8270D, (4) 8081B, (2) Sulfide

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16CI

DTW: 47.57

PostPurgeDTW: 47.83

Begin Purge (1448)

Initial Purge - Clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mV) | Turb(ntu) | Purge/L | Descr. |
|---|---|---|---|---|---|---|---|---|
| (1450) | 13.69 | 615 | 5.74 | 6.77 | 38.0 | 0.89 | 0.3 l/min | clear |
| (1455) | 13.44 | 651 | 1.07 | 6.37 | 55.8 | 0.41 | " | clear |
| (1500) | 13.50 | 636 | 0.59 | 6.32 | 60.4 | 0.26 | " | clear |
| (1505) | 13.55 | 631 | 0.46 | 6.32 | 65.2 | 0.15 | " | clear |
| (1510) | 13.59 | 626 | 0.42 | 6.32 | 67.5 | 0.19 | " | clear |
| (1515) | 13.54 | 621 | 0.39 | 6.31 | 71.3 | 0.19 | " | clear |
| (1520) | 13.56 | 619 | 0.35 | 6.28 | 76.2 | 0.19 | " | clear |
| (1520) | Readings Stable | | | | | | | |
| (1544) | 14.74 | 623 | 2.95 | 6.42 | 80.2 | 0.29 | | PostPurgeReading |

Sample Time (1525)

Samples Collected: (6) 8260C, (2) Phenolics, (1) TM, (1) Cyanide, (2) 8151A, (2) 8270D, (2) 8081B, (2) Sulfide

6/12/14

RFAAP
BO3204-12
TCE / LFC

FB# 12

General Notes - Verification Event

- Weather - Overcast, 70's humid
- PPE - Eye protection, nitrile gloves
- Calibrations: YSI 650 MDS
  pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.00
  Conductivity reads 1413 µs in a 1413 µs standard
  DO% = 99.9
  HACH 2100P Turbidimeter: 0.02 - 1000 ntu
- Dedicated tubing + well skirts used at each well
- All equipment decon'ed before & after each use.
- All purge water dispped off at dedicated location onsite.
- All samples collected, stored & transported on ice in coolers.

16WC1A

DTW: 66.18

Begin Purge (0830)

Initial Purge: Clear

Postpurge DTW: 67.72

| Time | Temp (°C) | Cond (µs) | DO (mg/L) | pH | ORP (mv) | Turb (ntu) | Purge/L | Desc. |
|---|---|---|---|---|---|---|---|---|
| (0835) | 14.37 | 922 | 9.55 | 6.57 | 195.8 | 1.46 | ≥0.3%/min | clear |
| (0840) | 13.77 | 912 | 2.75 | 6.72 | 181.3 | 0.66 | " | clear |
| (0845) | 13.71 | 893 | 0.88 | 6.83 | 164.9 | 0.77 | " | clear |
| (0850) | 13.66 | 916 | 0.64 | 6.80 | 128.5 | 0.81 | " | clear |
| (0855) | 13.67 | 940 | 0.51 | 6.75 | 51.0 | 0.72 | " | clear |
| (0900) | 13.58 | 946 | 0.44 | 6.75 | 11.3 | 0.69 | " | clear |
| (0905) | 13.61 | 932 | 0.37 | 6.74 | -11.9 | 0.66 | " | clear |
| (0910) | 13.68 | 924 | 0.35 | 6.74 | -16.1 | 0.60 | " | clear |
| (0915) | 13.68 | 920 | 0.34 | 6.74 | -19.1 | 0.67 | " | clear |
| (0915) | Readings Stable | | | | | | | |
| (0930) | 13.85 | 923 | 0.65 | 6.75 | -26.4 | 0.89 | Post Purge Reading | |

Sample Time (0920)

Samples Collected: (2) TM - Cobalt Only

6/12/14 RFAAP 80520M-12 TOE/KFL FB#18

16DUP3 - Taken from 16WCIA

Sample Time (0925)
Samples Collected: (2) TM - Cobalt Only

16MW8
DTW: 72.48
Post-Purge DTW: 73.62

Begin Purge (0942)
Initial Purge: clear

| Time | Temp(C) | Cond(us) | DO mg/L | pH | ORP(mV) | Turb(NTU) | Purge L/min | Desc |
|---|---|---|---|---|---|---|---|---|
| (0945) | 15.98 | 384 | 8.59 | 6.61 | 112.9 | 2.41 | 0.3 L/min | clear |
| (0950) | 15.43 | 361 | 3.58 | 5.51 | 158.0 | 1.61 | " | clear |
| (0955) | 15.20 | 340 | 1.30 | 5.32 | 169.7 | 1.28 | " | clear |
| (1000) | 15.03 | 329 | 0.75 | 5.27 | 174.6 | 1.28 | " | clear |
| (1005) | 15.08 | 321 | 0.42 | 5.28 | 172.1 | 1.25 | " | clear |
| (1010) | 15.09 | 318 | 0.36 | 5.27 | 167.8 | 1.27 | " | clear |
| (1015) | 15.21 | 317 | 0.30 | 5.27 | 164.4 | 1.38 | " | clear |
| (1020) | 15.23 | 316 | 0.29 | 5.26 | 163.9 | 1.22 | " | clear |
| (1025) | 15.19 | 314 | 0.27 | 5.24 | 164.5 | 1.14 | " | clear |
| (1025) | Readings Stable | | | | | | | |
| (1042) | 15.65 | 312 | 0.38 | 5.26 | 169.2 | 1.26 | Post Purge Reading | |

Sample Time (1030)
Samples Collected: (2) TM - Silver Only

16DUP1 - Taken From 16MW8

Sample Time (1035)
Samples Collected: (2) TM - Silver Only

6/12/14

RFAAP
B03204-12
TREICFL

FB#11

16MW9

DTW: 64.19

Post Purge DTW: 64.51

Begin Purge (1055)

Initial Purge: clear

| Time | Temp(°C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(NTU) | Purge L | Desc |
|---|---|---|---|---|---|---|---|---|
| (1100) | 14.59 | 970 | 7.61 | 6.68 | 133.4 | 1.39 | ≥0.3 L/min | clear |
| (1105) | 15.03 | 1066 | 1.69 | 6.59 | 46.3 | 0.64 | " | clear |
| (1110) | 15.31 | 1085 | 1.07 | 6.62 | 17.4 | 0.77 | " | clear |
| (1115) | 15.72 | 1082 | 0.77 | 6.63 | 14.7 | 0.54 | " | clear |
| (1120) | 15.81 | 1084 | 0.78 | 6.65 | 24.2 | 0.57 | " | clear |
| (1125) | 15.75 | 1086 | 0.72 | 6.65 | 27.3 | 0.60 | " | clear |
| (1130) | 15.65 | 1084 | 0.69 | 6.66 | 22.2 | 0.60 | " | clear |
| (1130) | Readings Stable | | | | | | | |
| (1145) | 15.91 | 1083 | 0.70 | 6.66 | 27.6 | 0.54 | Post Sample Reading | |

Sample Time (1130)
Samples Collected: (6)8260

16DUP2 - Taken From 16MW09

Sample Time (1135)
Samples Collected: (6)8260

7/10/14 RFARP B0320[illegible]-12 TQE/IKF-2 F.B.#1

General Notes:
- Weather - Sunny, clear & 70's
- PPE - Nitrile gloves & Eye protection
- Calibrations: YSI 650 MDS
  pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.00
  Conductivity reads 1413 µs in a 1413 stnd.
  DO% = 100 %
  HACH 2100Q Turbidimeter: 0.02 - 1000 ntu
- Dedicated tubing & well skirts used at each well
- All equipment decon'ed after each use.
- All purge water disposed of at dedicated facility on-site.
- All samples collected, stored & transported on ice in coolers.

16WC9B

DTW: 67.47 Begin Purge (0750)

Post purge DTW: 67.61 Initial Purge - clear

| Time | Temp(°C) | Cond(µs) | DO mg/L | pH | Turb (ntu) | ORP (mV) | Purge/L | Desc. |
|---|---|---|---|---|---|---|---|---|
| (0755) | 14.09 | 430 | 4.37 | 6.05 | 28.6 | 4.0 | ≥0.3%/min | clear |
| (0800) | 14.04 | 456 | 2.00 | 6.11 | ~~38.6~~ 10.5 | 33.6 | " | clear |
| (0805) | 14.08 | 463 | 1.32 | 6.13 | 7.10 | -47.1 | " | clear |
| (0810) | 14.13 | 468 | 0.92 | 6.16 | 4.14 | -67.2 | " | clear |
| (0815) | 14.14 | 469 | 0.91 | 6.17 | 3.45 | -70.2 | " | clear |
| (0820) | 14.27 | 468 | 0.72 | 6.19 | 2.19 | -78.0 | " | Clear |
| (0825) | 14.36 | 467 | 0.65 | 6.19 | 2.09 | -84.5 | " | clear |
| (0830) | 14.40 | 468 | 0.59 | 6.18 | 1.71 | -90.8 | " | clear |
| (0835) | 14.46 | 467 | 0.55 | 6.20 | 1.91 | -94.4 | " | clear |
| (0840) | 14.66 | 466 | 0.56 | 6.20 | 1.75 | -100.1 | " | clear |
| (0845) | 14.67 | 465 | 0.52 | 6.20 | 1.28 | -100.9 | " | clear |
| (0845) | Readings Stable | | | | | | | |

Sample Time (0850)

Samples Collected: (1) TM

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (0905) | 14.77 | 465 | 0.58 | 6.19 | 1.73 | -99.2 | Post Sample Reading |

7/10/14

RFAAP
B03204-12
TQB11CFC

FB#11

16 DUP - Taken From 16WC1B

Sample Time (0900)
Samples Collected: (1) TM

10/14/14 RFAAP UNIT-5 BOS204-12 Life/Lima F.B. # 11

GENERAL NOTES -

- Weather - 70's - overcast - storm rolling in

PPE: Eye protection, nitrile gloves, steel toe boots

Calibrations: YSI ~~556 MPS~~ 650 MDS (TAE 10/14/14)

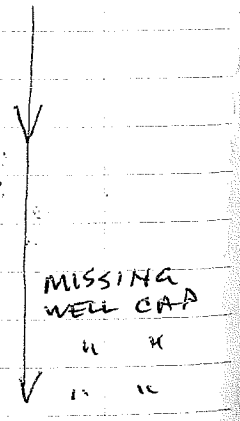
- ph: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.00
- Conductivity reads 1413 µs in a 1413 µs solution
- DO% = ~~9.99~~ 99.9% (WMD 10/14/14)

HACH 2100P Turbidmeter = 0.02 - 1000 NTU

* Dedicated well skirts and tubing used on each well
* All equipment decanned before and after each use
* All purge water disposed of at dedicated location onsite
* All samples collected, stored, and transported in coolers on ice

## STATIC WATER LEVEL TABLE - UNIT 5

| WELL | DTW | Post Purge DTW | NOTES |
|---|---|---|---|
| 5W8B | 13.78 (WMD/10/14/14) | 14.21 | |
| 5W7B | ~~7.38~~ 7.72 | 7.76 | |
| 5W5B | 7.38 | 7.61 | |
| 5WC21 | 7.71 (6.07) | 6.13 | |
| 5WC22 | 7.61 (5.99) | 6.08 | |
| 5WC23 | 6.99 (5.48) | 5.48 | |
| 5W12A | 10.01 (7.21) | 7.28 | |
| S5W7 | 9.73 | | Static level only |
| S5W5 | 6.38 | | |
| 5W9A | 1.15 | | |
| 5W10A | 13.82 | | |
| 5W11A | 9.40 | | |
| 5WCA | 11.20 | | |
| S5W6 | 5.35 | | |
| S5W8 | 10.91 | | |
| 5WC11 | 14.90 | | |
| 5WC12 | 15.20 | | |



F.B. # 11

10/14/14

RFAAP
UNIT-5
B03204-12
KFC/WMD

F.B. # 11

## 5W8B

DTW: 13.78

Post Purge DTW: 14.21

Begin Purge (0909)

Initial Purge: clear

| TIME | Temp(°C) | Cond(us) | DO(mg/L) | pH | ORP(mV) | Turb(ntu) | Purge(L/min) | Desc |
|---|---|---|---|---|---|---|---|---|
| (0910) | 16.30 | 79 | 6.28 | 6.85 | 74.0 | 1.25 | ~~≤0.3~~ ≤0.3 L/min | clear |
| (0915) | 15.82 | 71 | 5.48 | 5.74 | 135.5 | 0.52 | " | clear |
| (0920) | 16.00 | 68 | 5.24 | 5.14 | 161.6 | 0.77 | " | clear |
| (0925) | 16.04 | 68 | 5.11 | 5.03 | 170.8 | 0.48 | " | clear |
| (0930) | 16.13 | 67 | 5.02 | 4.96 | 176.9 | 0.60 | " | clear |
| (0935) | 16.12 | 67 | 4.94 | 4.91 | 182.4 | 0.40 | " | clear |
| (0940) | 16.10 | 66 | 4.91 | 4.89 | 184.7 | 0.64 | " | clear |
| (0940) | Readings Stable | | | | | | | |
| (0950) | 16.33 | 66 | 5.52 | 4.88 | 184.6 | 0.64 | Post Purge Reading | |

Sample Time (0945)

Samples Collected: (3) 8260, (1) TM

## 5W5B

DTW: 7.38

Post Purge DTW: 7.61

Begin Purge (1004)

Initial Purge: clear

| TIME | Temp(°C) | Cond(us) | DO(mg/L) | pH | ORP(mV) | Turb(ntu) | Purge(L/min) | Desc |
|---|---|---|---|---|---|---|---|---|
| (1005) | 16.17 | 439 | 5.59 | 5.39 | 152.7 | 0.69 | ≤0.3 L/min | clear |
| (1010) | 16.04 | 439 | 3.12 | 5.31 | 159.5 | 0.39 | " | clear |
| (1015) | 16.25 | 438 | 2.50 | 5.30 | 162.5 | 0.43 | " | clear |
| (1020) | 16.39 | 434 | 2.29 | 5.30 | 163.2 | 0.34 | " | clear |
| (1025) | 16.39 | 436 | 2.15 | 5.30 | 164.3 | 0.27 | " | clear |
| (1030) | 16.46 | 436 | 2.19 | 5.29 | 164.3 | 0.30 | " | clear |
| (1035) | 16.44 | 437 | 2.30 | 5.30 | 164.6 | 0.39 | " | clear |
| (1040) | 16.45 | 434 | 2.43 | 5.30 | 165.0 | 0.72 | " | clear |
| (1040) | Readings stable | | | ~~5.33~~ WMD 10/14/14 | | | | |
| (1050) | 16.48 | 433 | 2.83 | 5.33 | 163.2 | 0.43 | " | clear |

Sample time (1045)

Samples collected: (3) 8260, (1) TM (147)

---

...ing in
, steel toe boots
DS TAE 10/14/14
0.00

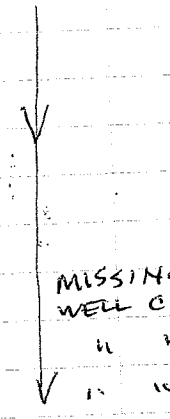
3 ms solution

- 1000 NTU

d out each well
after each use
ated location onsite
orted in coolers on ice

UNIT 5
NOTES

Static level only



10/14/14

RFAAP
UNIT-5
B032-H-12
KFC/WMD

F.B. # 11

~~7.72~~ SW7B

DTW: 7.72

Post Purge DTW: 7.76

Begin Purge (1124)

Initial Purge: clear

| TIME | Temp(°C) | Cond(µs) | DO(mg/L) | pH | ORP(mv) | Turb(nta) | Purge(L/min) | Desc |
|---|---|---|---|---|---|---|---|---|
| (1125) | 19.95 | 142 | 5.00 | 4.67 | 183.8 | 0.45 | ≤0.3 L/min | clear |
| (1130) | 19.90 | 152 | 3.69 | 4.32 | 208.8 | 2.76 | " | clear |
| (1135) | 19.93 | 152 | 3.52 | 4.30 | 214.8 | 3.97 | " | clear |
| (1140) | 19.92 | 151 | 3.44 | 4.28 | 218.7 | 3.40 | " | clear |
| (1145) | 19.91 | 151 | 3.46 | 4.27 | 220.6 | 2.59 | " | clear |
| (1150) | 19.90 | 151 | 3.47 | 4.27 | 221.7 | 2.02 | " | clear |
| (1155) | 19.90 | 151 | 3.47 | 4.27 | 222.5 | 2.06 | " | clear |
| (1155) | Readings Stable | | | | | | | |
| (1210) | 19.92 | 151 | 3.65 | 4.27 | 223.2 | 1.45 | Post Purge Reading | |

Sample Time (1200)

Samples Collected: (9) 8260, (3) TM

Completed operations for the day - returned to office to pack & ship OBG sample coolers.

F.B.# 11 | 10/15/14 | RFAAP B03204-12 TCE/KET/WMD | FB# 11

Begin Purge (1124)
nitial Purge: clear

| ) Turb(ntu) | Purge(L/min) | Desc |
|---|---|---|
| 0.45 | ≤0.3 L/min | clear |
| 2.76 | " | clear |
| 3.97 | " | clear |
| 3.40 | " | clear |
| , 2.59 | " | clear |
| ' 2.02 | " | clear |
| 5 2.06 | " | clear |

2 1.45 Post Purge Reading

1) 8260, (3) TM

y - returned to
ple coolers.

## General Notes

- Weather: Overcast 60°
- PPE: Eye Protection, Nitrile Gloves, Steeltoed boots
- Calibrations: YSI 650 MDS
  - pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.00
  - Conductivity reads 1413 µs in 1413 µs Std
  - DO% = 100%
  - HACH 2100Q Turbidimeter: 0.02 - 1000 NTU
- ✱ Dedicated tubing and well skirts used @ each location
- ✱ All equipment decon'ed before/after each use
- ✱ All purge water disposed of at dedicated location onsite
- ✱ All Samples collected, Stored and transported on ice in coolers

## SWC21

DTW: 6.07 — Begin Purge (0908)
Post Purge DTW: 6.13 — Initial Purge: clear

| Time | Temp(C) | Cond(µs) | DO mg/L | pH | ORP(mV) | Turb(NTU) | Purge | Desc |
|---|---|---|---|---|---|---|---|---|
| (0910) | 15.09 | 731 | 3.68 | 4.50 | 183.1 | 14.5 | ≤0.3 L/min | clear |
| (0915) | 14.28 | 769 | 0.77 | 4.80 | 179.3 | 256 | " | cloudy |
| (0920) | 14.24 | 759 | 0.67 | 4.68 | 184.4 | 373 | " | cloudy |
| (0925) | 14.30 | 744 | 1.20 | 4.65 | 188.3 | 332 | " | cloudy |
| (0930) | 14.28 | 748 | 1.14 | 4.65 | 189.5 | 317 | " | cloudy |
| (0935) | 14.33 | 746 | 0.85 | 4.66 | 190.9 | 303 | " | cloudy |
| (0940) | 14.37 | 744 | 0.78 | 4.66 | 191.4 | 291 | " | Cloudy |
| (0945) | 14.41 | 743 | 0.76 | 4.67 | 191.1 | 268 | " | cloudy |
| (0950) | 14.44 | 742 | 0.77 | 4.68 | 187.3 | 252 | " | Cloudy |
| (0950) | Readings Stable | | | | | | | |
| (1009) | 14.70 | 741 | 0.85 | 4.71 | 186.9 | 256 | | Post-Purge Reading |

Sample Time (0955)
Samples Collected: (3) 8260 C, (1) TM

10/15/14 RFAAP FB#11
B03204-12
TORRIKEC/WMO

## SWC22

DTW: 5.99
Post Purge DTW: 6.08
Begin Purge (1024)
Initial Purge: clear

| Time | Temp(C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb(NTU) | Purge Rate | Desc |
|---|---|---|---|---|---|---|---|---|
| (1025) | 16.40 | 991 | 3.55 | 6.35 | 134.1 | 1.98 | ≤0.3%min | clear |
| (1030) | 15.55 | 1036 | 1.87 | 6.53 | 126.7 | 1.10 | " | clear |
| (1035) | 15.30 | 1045 | 1.44 | 6.57 | 117.9 | 0.79 | " | clear |
| (1040) | 15.24 | 1046 | 1.40 | 6.58 | 117.0 | 0.74 | " | clear |
| (1045) | 15.90 | 1046 | 1.20 | 6.61 | 112.8 | 0.95 | " | clear |
| (1050) | 15.41 | 1049 | 1.09 | 6.62 | 110.0 | 0.78 | " | clear |
| (1055) | 15.48 | 1049 | 0.94 | 6.63 | 104.9 | 0.89 | " | clear |
| (1100) | 15.34 | 1050 | 0.88 | 6.64 | 104.8 | 0.50 | " | clear |
| (1105) | 15.13 | 1049 | 0.82 | 6.64 | 104.9 | 0.60 | " | clear |
| (1105) | Readings Stable | | | | | | | |
| (1114) | 15.47 | 1047 | 1.17 | 6.65 | 101.9 | 0.89 | Post Purge Reading | |

Sample Time (1110)
Samples Collected: (3) 8260C, (1) TM

## SWDUP - Taken From SWC21

Sample Time (1005)
Samples Collected: (3) 8260C, (1) TM

FB#1

(1024)
clear

| Turb(NTU) | Purge | Desc |
|---|---|---|
| 1.98 | ≤0.3%min | clear |
| 1.10 | " | clear |
| 0.79 | " | clear |
| 0.74 | " | clear |
| 0.95 | " | clear |
| 0.78 | " | clear |
| 0.89 | " | clear |
| 0.50 | " | clear |
| 0.30 | " | clear |

39 Post Purge Reading

)

260C, (1) TM

TM

10/15/14 → RFAAP
B03204-12
TRE/KFC/WMD

FB#1

## SWC23

DTW: 5.42
Post Purge DTW: 5.48

Begin Purge (1119)
Initial Purge clear

| Time | Temp(C) | Cond(µs) | DO mg/L | pH | ORP(mV) | Turb(NTU) | Purge | Desc |
|---|---|---|---|---|---|---|---|---|
| (1120) | 16.58 | 1136 | 3.64 | 6.97 | 94.1 | 1.01 | ≤0.3%min | clear |
| (1125) | 16.08 | 1241 | 1.86 | 6.80 | 98.6 | 1.36 | " | clear |
| (1130) | 15.85 | 1236 | 1.68 | 6.75 | 97.4 | 1.35 | " | clear |
| (1135) | 15.65 | 1231 | 1.68 | 6.74 | 96.7 | 1.06 | " | clear |
| (1140) | 15.44 | 1228 | 1.81 | 6.75 | 96.2 | 1.13 | " | clear |
| (1145) | 15.52 | 1226 | 1.80 | 6.77 | 95.3 | 1.09 | " | clear |
| (1150) | 15.78 | 1226 | 1.70 | 6.77 | 92.3 | 1.00 | " | clear |
| (1155) | 16.01 | 1230 | 1.71 | 6.77 | 90.8 | 0.75 | " | clear |
| (1155) | Readings Stable | | | | | | | |
| (1206) | 16.03 | 1236 | 1.65 | 6.75 | 89.7 | 1.03 | Post Purge Reading | |

Sample Time (1200)
Samples Collected: (3) 8260C, (1) TM

## SW12A

DTW: 7.21
Post Purge DTW: 7.28

Begin Purge (1214)
Initial Purge: clear

| Time | Temp(C) | Cond(µs) | DO mg/L | pH | ORP(mV) | Turb (NTU) | Purge | Desc |
|---|---|---|---|---|---|---|---|---|
| (1215) | 15.07 | 424 | 4.06 | 6.89 | 83.4 | 2.65 | ≤0.3%min | clear |
| (1220) | 14.75 | 472 | 2.75 | 6.69 | 85.2 | 4.26 | " | clear |
| (1225) | 14.73 | 482 | 2.56 | 6.65 | 84.5 | 2.38 | " | clear |
| (1230) | 14.50 | 486 | 2.47 | 6.64 | 86.0 | 1.83 | " | clear |
| (1235) | 14.40 | 488 | 2.39 | 6.62 | 87.6 | 1.82 | " | clear |
| (1240) | 14.36 | 488 | 2.35 | 6.62 | 89.3 | 1.49 | " | clear |
| (1245) | 14.28 | 489 | 2.35 | 6.62 | 90.4 | 1.38 | " | clear |
| (1245) | Readings Stable | | | | | | | |
| (1255) | 14.36 | 489 | 2.36 | 6.63 | 90.9 | 1.52 | Post Purge Reading | |

Sample Time (1250)
Samples Collected: (3) 8260C, (1) TM

10/24/14 RFAAP F.B. #12
BO3204-12
TOE/ICFE

General Notes:
- Weather - 50's, sunny w/ early fog
- PPE - Eye protection, nitrile gloves
- Calibrations: YSI 650 MDS
  pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.00
  Conductivity reads 1413 µs in a 1413 µs std.
  DO% = 100 %
  HACH 2100 Q Turbidimeter range: 0.02 - 1000 NTU
- New tubing & nulls/kirts used at each well
- All equipment decanned before/after each use.
- All purge water disposed of at dedicated location onsite
- Samples collected, stored & transported on ice in cooler.

STATIC WATER LEVEL TABLE - UNIT - 16

| Well | DTW | Post Purge DTW | NOTES |
|---|---|---|---|
| 16-1 | 46.82 | N/A | SWL ONLY |
| 16-2 | 55.82 | 55.89 | |
| 16-3 | 56.63 | N/A | sampled with UNIT 353 |
| 16-5 | 4.25 | 19.30 | |
| 16WC2B | 54.04 | 68.75 | |
| 16MW8 | 72.94 | 74.18 | |
| 16WC1B | | | |
| 16WC1A | 67.39 | | |
| 16MW9 | 46.55 | 66.09 | |
| 16C1 | | | |
| 16C3 | 68.52 | N/A | SWL ONLY |
| 16DH3 | DRY | N/A | " |
| 16WC2A | DRY | N/A | " |

10/21/14 RFAAP B032-41-12 TGE/KFC F.B # 12

16-2

DTW: 55.82 Begin Purge (0918)

Postpurge DTW: 55.89 Initial Purge: Clear

| TIME | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb (ntu) | Purge K | Desc. |
|---|---|---|---|---|---|---|---|---|
| (0920) | 13.27 | 560 | 7.26 | 6.93 | 111.8 | 0.64 | <0.3 L/min | clear |
| (0925) | 13.25 | 615 | 5.65 | 6.90 | 107.1 | 0.39 | " | clear |
| (0930) | 13.31 | 629 | 5.54 | 6.91 | 102.1 | 0.28 | " | clear |
| (0935) | 13.39 | 637 | 5.55 | 6.91 | 97.9 | 0.30 | " | clear |
| (0940) | 13.45 | 636 | 5.61 | 6.89 | 94.7 | 0.27 | " | clear |
| (0945) | 13.69 | 634 | 5.56 | 6.89 | 91.9 | 0.39 | " | clear |
| (0950) | 13.45 | 635 | 5.68 | 6.88 | 91.2 | 0.29 | " | clear |
| (0950) | Readings stable | | | | | | | |
| (1005) | 13. | 631 | 5.79 | 6.89 | 93.9 | 0.38 | Postpurge readings | |

Sample Time (0955)

Samples collected: (3) 8260, (2) 8270D, (1) TM

16-5

DTW: 4.25 Begin Purge (1019)

Postpurge DTW: 19.30 Initial Purge: clear

| TIME | Temp(°C) | Cond(µs) | DO mg/L | pH | ORP(mv) | Turb (ntu) | Purge K | Desc. |
|---|---|---|---|---|---|---|---|---|
| (1020) | 13.83 | 529 | 3.19 | 7.37 | 80.5 | 0.48 | 0.35 L/min | clear |
| (1025) | 13.34 | 536 | 1.23 | 7.24 | 77.5 | 2.62 | " | clear |
| (1030) | 13.27 | 536 | 1.11 | 7.24 | 74.5 | 0.77 | " | clear |
| (1035) | 13.17 | 535 | 1.09 | 7.25 | 72.6 | 0.54 | " | clear |
| (1040) | 13.21 | 535 | 1.03 | 7.26 | 70.9 | 0.72 | " | clear |
| (1045) | 13.12 | 535 | 0.94 | 7.26 | 68.0 | 0.98 | " | clear |
| (1050) | 13.13 | 534 | 0.92 | 7.26 | 67.0 | 1.10 | " | clear |
| (1055) | 13.23 | 535 | 0.89 | 7.26 | 64.7 | 1.32 | " | clear |
| (1055) | Readings Stable | | | | | | | |
| (1110) | 13.28 | 538 | 1.03 | 7.27 | 62.9 | 6.96 | Post purge Readings | |

Sample Time (1100)

Samples Collected: (3) 8260C, (2) 8270D, (1) TM

10/21/14

RFAAP
BG320-12
TOE/KOFF

F.B. #12

16SPRING-

| Temp(C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(NTU) |
|---|---|---|---|---|---|
| 13.64 | 587 | 7.84 | 7.25 | 40.8 | 1.44 |

Sample Time (1125)
Samples Collected: (3) 8260C, (2) 8270D, (1) TM

16WC2B

DTW: 54.04

Begin Purge (1139)
Initial Purge: clear

Post Purge DTW: 68.75

| Time | Temp(C) | Cond(us) | DO mg/L | pH | ORP(mv) | Turb(NTU) | Purge Rate | Desc |
|---|---|---|---|---|---|---|---|---|
| (1140) | 14.48 | 334 | 8.90 | 7.78 | 34.6 | 0.35 | ≤0.3 L/min | clear |
| (1145) | 13.82 | 332 | 1.52 | 7.74 | 34.3 | 0.38 | " | clear |
| (1150) | 13.71 | 331 | 0.89 | 7.75 | 26.6 | 0.36 | " | clear |
| (1155) | 13.62 | 331 | 0.81 | 7.74 | 23.2 | 0.36 | " | clear |
| (1200) | 13.55 | 330 | 0.85 | 7.73 | 21.1 | 0.30 | " | clear |
| (1205) | 13.51 | 330 | 0.93 | 7.72 | 19.8 | 0.33 | " | clear |
| (1210) | 13.50 | 330 | 0.99 | 7.71 | 17.3 | 0.33 | " | clear |
| (1215) | 13.55 | 330 | 1.03 | 7.71 | 16.7 | 0.35 | " | clear |
| (1225) | Readings Stable | | | | | | | |
| (1227) | 13.60 | 330 | 1.34 | 7.71 | 12.2 | 0.41 | Post Sample Reading | |

Sample Time (1220)
Samples Collected: (3) 8260C, (2) 8270D
(1) TM

10/21/14

RFAAP
B032014-12
FOR/KFC/WMD

FB# 12

16MW8

DTW: 72.94

Post Purge DTW: 74.18

Begin Purge (1243)
Initial Purge: Clear

| Time | Temp(C) | Cond(ms) | DO mg/L | PH | ORP(mV) | Turb(NTU) | Purge | Desc |
|---|---|---|---|---|---|---|---|---|
| (1245) | 14.20 | 172 | 2.47 | 5.97 | 122.1 | 2.54 | ≤0.3 L/min | clear |
| (1250) | 13.82 | 160 | 1.51 | 5.57 | 137.7 | 1.08 | " | clear |
| (1255) | 13.82 | 156 | 0.87 | 5.40 | 140.7 | 0.71 | " | clear |
| (1300) | 13.74 | 157 | 0.64 | 5.23 | 146.8 | 0.63 | " | clear |
| (1305) | 13.63 | 153 | 0.53 | 5.17 | 148.3 | 0.53 | " | clear |
| (1310) | 13.64 | 152 | 0.49 | 5.15 | 147.3 | 0.57 | " | clear |
| (1315) | 13.69 | 152 | 0.48 | 5.15 | 146.0 | 0.54 | " | clear |
| (1315) | Readings Stable | | | | | | | |
| (1345) | 13.88 | 143 | 0.66 | 5.06 | 149.6 | 0.45 | Post Purge Readings | |

Sample Time (1320)
Samples Collected: (3) 82600C, (2) 82700
(1) TM

10/22/14 RFAAP FB#12

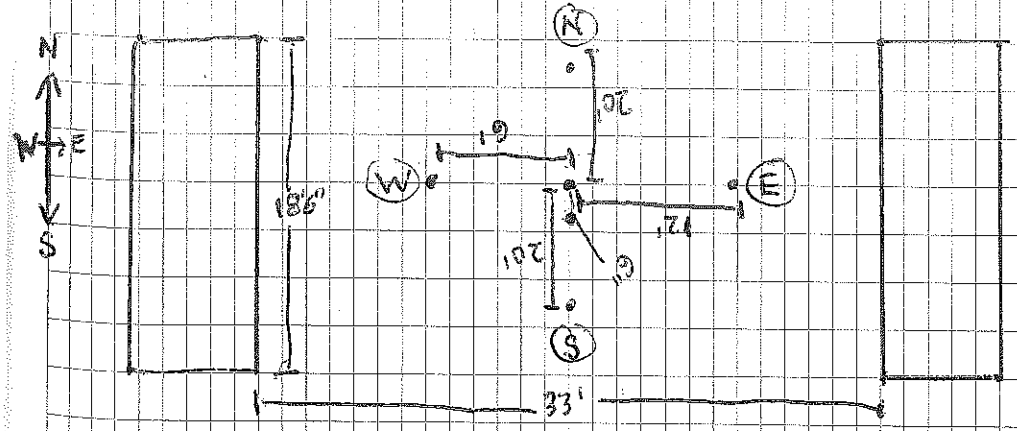
B03204-12/B03204-20S
KFC1WMD

General Notes

-Weather: Overcast & 10-40's, slight drizzle.
-PPE: Eye Protection, Nitrile Gloves, Steel Toed Boots, Coveralls
nitrile & neoprene gloves
-Calibrations: YSI 650 MDS
pH: 4.00 = 4.00, 7.00 = 7.00, 10.00 = 10.00
Conductivity reads 1413 µs, in 1413 µs std
DO% = 100%
HACH 2100Q Turbidimeter: 0.02-1000 NTU
-New tubing and well skirts used at each well
-All equipment decon'ed before/after each location
-All purge water/decon water disposed of at dedicated location onsite
-Decon'ed materials & waste materials from soil collection, collected, bagged & disposed of at on-site waste area
-All samples collected, stored, and transported on ice in coolers
* Refer to below diagram for each sampling point location

GRAVEL ROAD

PAD-3 (SOIL SAMPLING)




SAMPLE TIMES: SEE BELOW
SAMPLES COLLECTED: (2) 8330B

RIVER

10/22/14 RFAAP 303204-208 LFC/UMD F.B.#12

| SAMPLE LOCATION | SAMPLE TIME |
|---|---|
| PAD-3 | 0730 |
| PAD-3 DUP | ~~0730~~ 0735 |
| PAD-3N | 0740 |
| PAD-3S | 0745 |
| PAD-3E | 0750 |
| PAD-3W | 0755 |
| PAD-3 CO | 0800 |
| PAD-3 CO DUP | 0805 |

16MW9

DTW: 46.55 Begin Purge (0829)

Post purge DTW: 66.09 Initial Purge: clear

| Time | Temp(C) | Cond(ms) | DO mg/L | pH | ORP(mv) | Turb (NTU) | Purge Rate | Desc. |
|---|---|---|---|---|---|---|---|---|
| (0830) | 11.91 | 745 | 7.55 | 6.38 | 137.0 | 1.18 | ≤0.3 L/min. | clear |
| (0835) | 12.38 | 953 | 1.47 | 6.49 | -33.5 | 0.34 | " | clear |
| (0840) | 12.43 | 960 | 0.94 | 6.50 | -40.2 | 0.31 | " | clear |
| (0845) | 12.47 | 958 | 0.76 | 6.52 | -42.3 | 0.31 | " | clear |
| (0850) | 12.48 | 933 | 0.62 | 6.51 | -40.9 | 0.32 | " | clear |
| (0855) | 12.44 | 913 | 0.62 | 6.50 | -39.0 | 0.29 | " | clear |
| (0900) | 12.31 | 904 | 0.65 | 6.50 | -37.7 | 0.33 | " | clear |
| (0905) | 12.56 | 897 | 0.60 | 6.50 | -37.7 | 0.27 | " | clear |
| (0905) Readings Stable | | | | | | | | |
| (0915) | 12.35 | 885 | 0.76 | 6.50 | -36.2 | 0.27 | Post Purge Reading | |

Sample Time (0910)

Samples Collected: (3) 8260C, (2) 8270D

(1) TM

10/22/14 RFAAP F.B. #12
B03204-208
KFC/WMD

16WC1A

DTW: 67.39 Begin Purge (0924)

Post Purge DTW: 69.07 Initial Purge: clear

| TIME | TEMP(°C) | COND(µs) | DO(mg/L) | pH | ORP(mV) | TURB(NTU) | Purge R | Desc |
|---|---|---|---|---|---|---|---|---|
| (0925) | 13.05 | 567 | 8.52 | 7.31 | -24.0 | 0.49 | ≤0.3 L/min | clear |
| (0930) | 12.78 | 716 | 3.10 | 6.99 | -12.5 | 0.39 | " | clear |
| (0935) | 12.77 | 737 | 1.01 | 6.93 | -10.4 | 0.51 | " | clear |
| (0940) | 12.78 | 743 | 0.74 | 6.90 | -37.4 | 0.34 | " | clear |
| (0945) | 12.83 | 754 | 0.62 | 6.88 | -44.1 | 0.37 | " | clear |
| (0950) | 12.89 | 756 | 0.58 | 6.88 | -37.7 | 0.29 | " | clear |
| (0955) | 12.80 | 757 | 0.52 | 6.87 | -30.5 | 0.26 | " | clear |
| (1000) | 12.74 | 756 | 0.51 | 6.87 | -29.7 | 0.28 | " | clear |
| (1000) | Readings Stable | | | | ~~-32.1~~ WMD 10/22/14 | | | |
| (1045) | 13.27 | 758 | 0.65 | 6.83 | -32.1 | 0.28 | Post Purge Reading | |

Sample Time (1005)
Samples Collected: (9) 8260C, (6) 8270D
(3) TM

16WC1A DUP

Sample Time (1020)
Samples Collected: (3) 8260C, (2) 8270D
(1) TM

10/22/14 RFAAP FB. #12
B03204-208
KFC/Wind

16WC1B

DTW: 67.64 Begin Purge (1049)

Post Purge DTW: 68.18 Initial Purge: clear

| TIME | TEMP(°C) | COND(µs) | DO(mg/L) | pH | ORP(mv) | TURB(ntu) | Purge rate | Desc |
|---|---|---|---|---|---|---|---|---|
| (1050) | 12.91 | 358 | 5.76 | 6.55 | 32.9 | 6.34 | ≤0.3 L/min | clear |
| (1055) | 12.83 | 397 | 4.07 | 6.27 | 54.6 | 208 | " | cloudy |
| (1100) | 12.98 | 399 | 4.06 | 6.22 | 66.9 | 21.2 | " | sl. cloudy |
| (1105) | 13.13 | 395 | 4.01 | 6.22 | 74.2 | 7.11 | " | clear |
| (1110) | 13.09 | 391 | 3.55 | 6.20 | 79.8 | 4.21 | " | clear |
| (1115) | 12.92 | 386 | 2.75 | 6.17 | 84.8 | 2.89 | " | clear |
| (1120) | 12.85 | 387 | 2.53 | 6.17 | 87.5 | 2.40 | " | clear |
| (1125) | 12.86 | 378 | 2.07 | 6.14 | 89.1 | 2.26 | " | clear |
| (1130) | 12.80 | 379 | 1.82 | 6.13 | 89.2 | 2.13 | " | clear |
| (1135) | 12.72 | 376 | 1.55 | 6.12 | 89.1 | 2.16 | " | clear |
| (1140) | 12.82 | 374 | 1.40 | 6.12 | 86.0 | 1.35 | " | clear |
| (1140) | Readings Stable | | | | | | | |
| (1152) | 12.90 | 372 | 1.18 | 6.11 | 79.9 | 2.41 | Post Purge Reading | |

Sample Time (1145)

Samples Collected: (3) 8260C, (2) 8270D
(1) TM

16C1

DTW: 49.54 Begin Purge (1159)

Post Purge DTW: 49.55 Initial Purge:

| TIME | TEMP(°C) | COND(µs) | DO(mg/L) | pH | ORP(mv) | TURB(ntu) | Purge rate | Desc |
|---|---|---|---|---|---|---|---|---|
| (1200) | 13.23 | 550 | 7.23 | 6.61 | 69.7 | 1.42 | ≤0.3 L/min | clear |
| (1205) | 12.88 | 709 | 1.53 | 6.45 | 81.6 | 0.68 | " | clear |
| (1210) | 13.00 | 759 | 1.00 | 6.45 | 82.6 | 0.36 | " | clear |
| (1215) | 12.93 | 770 | 0.76 | 6.46 | 82.8 | 0.30 | " | clear |
| (1220) | 12.84 | 773 | 0.66 | 6.46 | 83.5 | 0.34 | " | clear |
| (1225) | 12.80 | 772 | 0.68 | 6.46 | 84.2 | 0.37 | " | clear |
| (1230) | 12.81 | 772 | 0.68 | 6.46 | 84.8 | 0.32 | " | clear |
| (1230) | Readings Stable | | | | | | | |
| (1245) | 12.87 | 770 | 0.99 | 6.47 | 82.5 | 0.34 | Post Purge Reading | |

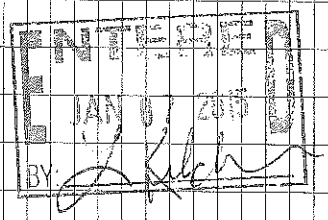
10/22/14

RFAAP
B03204-208
KPC/WMD

F.B. #12

1602 Continued

Sampling Time (1235)
Samples Collected: (3) 82600, (2) 82700,
(1) TM



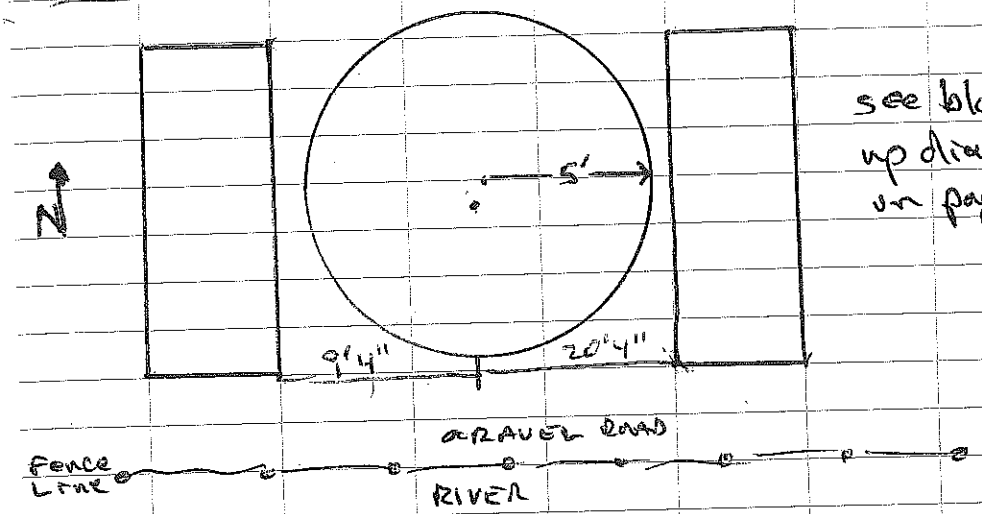
12/08/14 RFAAP B03204-208 KFE/WMD F.B.#12

General Notes:

- Weather- Overcast & 40's (~~Rained until noon~~) WMD 12/08/14
- PPE- Eye protection, nitrile/neoprene gloves, steel-toed over-the-calf rubber boots, coveralls
- All equipment decon'ed before/after each sampling location
- All decon water & waste material disposed of at their dedicated locations on plant.
- Waste material from soil collected, bagged & disposed of at on-site location.
- All samples collected, stored & transported in ice in coolers.

* REFER to below diagram for specific sampling locations:

PAD 3 (SOIL SAMPLING)




see blown up diagram on page 9.

SAMPLE TIMES (SEE BELOW)

Samples collected: (8) 8330B SOIL, (2) ~~8330B~~ ~~counted~~ WMD 12/08/14

12/08/14

RFAAP
B03204-208
KFC/MMM

F.B.#12

(Times not noted on bottles) see COCs

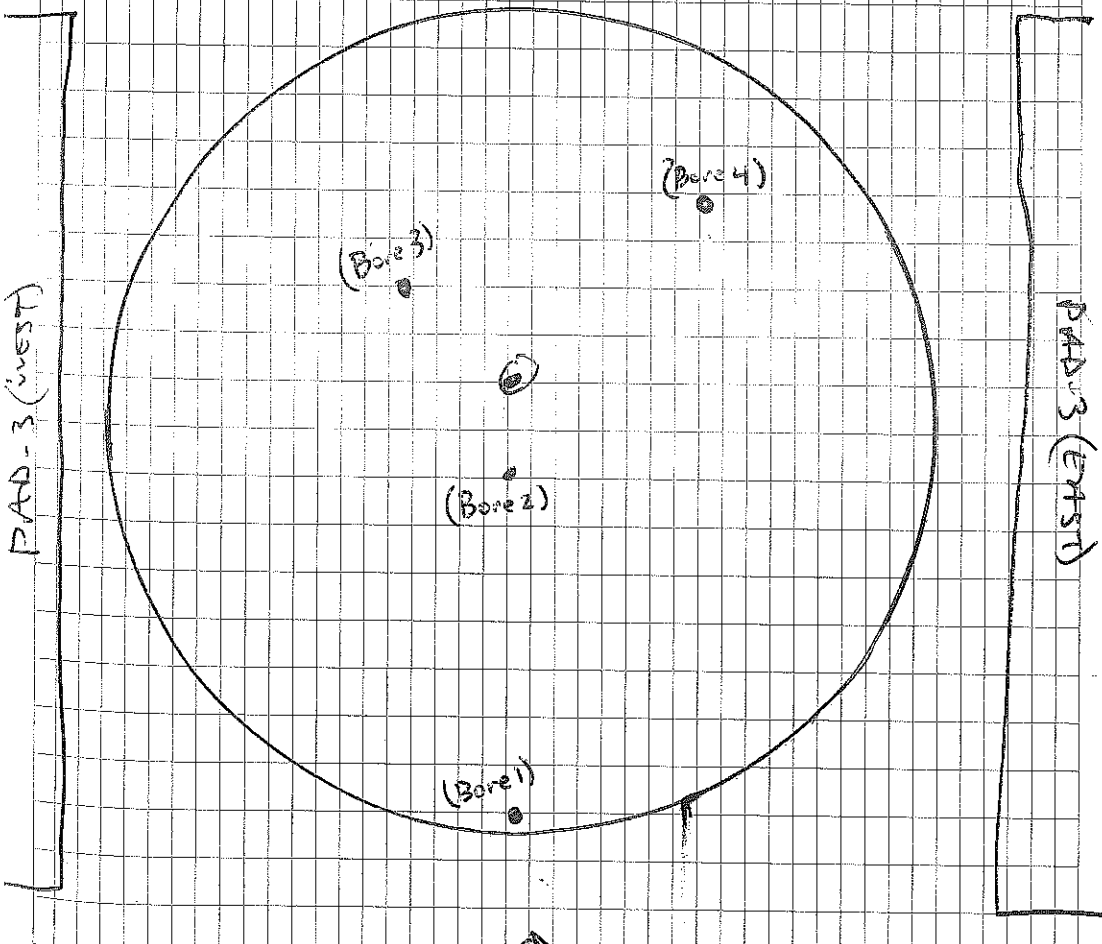
| SAMPLE LOCATION | SAMPLE COMPOSITE TIMES |
|---|---|
| ~~#3~~ PAD-3(0"-6") | 1300 ~~1350~~ — 1430 |
| ~~#~~ PAD-3(6"-12") | 1300 — 1435 |
| PAD-3(12"-18") | 1300 — 1440 |
| PAD-3(18"-24") | 1300 — 1445 |

GRAB SAMPLE TIME

~~Pre-event E.B~~ 11/7/14 @ ~~1300~~ DISCARDED JHE 12-4-14

~~Post-event E.B~~ WIMD 12/8/14

SAMPLE LOCATION SPECIFICS:



12/08/14 RFAAP F.B.#12
B03204-208
WMD

| Sample Location | Sample Composite Times |
|---|---|
| PAD-3 (0"-6") DUP | 1300 - 1430 |
| PAD-3 (6"-12") DUP | 1300 - 1435 |
| PAD-3 (12"-18") DUP | 1300 - 1440 |
| PAD-3 (18"-24") DUP | 1300 - 1445 |

(Times not noted on bottles, see COCs)

- Onsite at (1230) with Matt Alberts (BAE), Rob Lavelle (Davidson Drilling) and Mike Monaghan (Davidson Drilling)
- Matt Alberts performed clearing and observation of OBG soil surface at Pad-3 for unexploded explosives prior to drilling.
- Davidson Drilling performed drilling with track mounted Geoprobe with dedicated sleeves for soil sampling.
- Soil samples were composited in plastic bags and then put into glass jars on ice, and into coolers.
- All equipment was decomed and waste water stored onsite (underneath a covered port behind the office at the open burning grounds) in a 55 gallon drum labeled "Investigative Derived Waste from soil sampling at PAD-3 OBG - 12/08/2014 - DAA"
- offsite (1515)

# APPENDIX E

# CORRESPONDENCE (CD-ROM)

# *COMMONWEALTH of VIRGINIA*

*DEPARTMENT OF ENVIRONMENTAL QUALITY*
*Street address:* 629 East Main Street, Richmond, Virginia 23219
*Mailing address:* P.O. Box 1105, Richmond, Virginia 23218
TDD (804) 698-4021
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482


June 26, 2013

**VIA ELECTRONIC MAIL**
Mr. Jay Stewart
Environmental Manager
Radford Army Ammunition Plant
4050 Pepper's Ferry Road
Radford, Virginia 24141

**Re: Radford Army Ammunition Plant, Radford, VA**
**EPA ID No.VA1210020730, Post-Closure Care Permit (Units 5, 7, 10, and 16)**
**Approval of Closure of Hazardous Waste Management Unit 7 (former Surface Impoundment)**

Dear Mr. Stewart:

The Virginia Department of Environmental Quality (DEQ) is in receipt of the ***Closure Report Addendum*** for Hazardous Waste Management Unit (HWMU) 7 by Draper Aden Associates on behalf of Radford Army Ammunition Plant (RAAP) that was received on February 11, 2013. This February 11, 2013, document presents the results of additional closure activities performed in support of closure of Unit 7 since the DEQ's receipt of the ***Closure Report*** for HWMU 7 on February 15, 2012.

The DEQ has determined that Unit 7 meets the criteria for closure of soils and groundwater, This finding is based on reviews by the DEQ staff (groundwater specialist – Vince Maidens (see memorandum attached), risk assessor – Sonal Iyer (see memorandum attached), statistician – Hasan Keceli (see memorandum attached) and Hazardous Waste Permit Writer - Russell McAvoy ), of the ***Closure Report***, the ***Closure Report Addendum***, and the hazardous waste Post-Closure Care Permit language inclusive of the ***Closure Plan Amendment***. Closure activity results were compared to the requirements of the ***Closure Plan Amendment*** that became a part of the hazardous waste Post-Closure Care permit as a result of the Class 3 modification to that permit effective October 27, 2011.

The implications of clean closure of Unit 7 for soils and groundwater are as follows:

1. Upon re-issuance, permit conditions addressing HWMU 7 are removed from the hazardous waste Post-Closure Permit – that is currently in the renewal process. The expired permit is continued in accordance with 40 CFR § 270.51, since RAAP submitted a timely renewal permit application.

2. In conjunction with 1, the deed restriction in accordance with 40 CFR § 264.116 (Survey Plat) and 40 CFR § 264.119 (Post-Closure Notices) and currently in force addressing Unit 7 may be disregarded and voided.

3. Groundwater monitoring addressing Unit 7 may be discontinued immediately upon your receipt of this letter, and specifically; the compliance period is discontinued in accordance with the hazardous waste Post-Closure Permit – Module I, Section I.K.2 and Module V, Section V.F.2.c which state:

   "… . The compliance period (for Unit 7) during which the GPS (**Appendix G of Permit Attachment 3**) applies is eighteen (18) years. The original permit for unit 7 was issued on October 30, 1999, and became effective on November 30, 1999. The compliance period, therefore, continues until November 30, 2017 or until the Director approves clean closure in accordance with the closure plan amendment."

4. Non-Groundwater, Post-Closure related activities involving Unit 7 may be discontinued immediately upon your receipt of this letter, and specifically; these may be discontinued in accordance with the hazardous waste Post-Closure Permit – Module I, Section I.I.2 which states:

   "… . The hazardous waste surface impoundment (Unit 7) was closed in accordance with the closure plan on January 4, 1990, the post-closure care period shall extend to January 4, 2020, and the facility is required to manage this unit under a Post-Closure Permit until January 4, 2020 or until the Director approves clean closure in accordance with the closure plan amendment."

A closure verification inspection is not required by the Closure Plan Addendum under the hazardous waste Post-Closure Permit and, therefore, one was not performed. The DEQ's Blue Ridge regional Office did not have any comments with respect to the ***Closure Report*** and ***Closure Report Addendum*** as noted in correspondence dated June 20, 2013.

The ***Closure Plan Amendment*** is contained within the hazardous waste management permit that was issued to US Army Radford Army Ammunition Plant Facility for the post-closure care of four hazardous waste management units of one hazardous waste disposal facility located in Montgomery and Pulaski Counties, Virginia. HWMU 7 is located in Montgomery County, Virginia at north latitude 37° 11' 12'' and west longitude 80° 33' 21''. The permit became effective on November 4, 2002.

Based upon the Department's administrative and technical reviews of the above ***Closure Report***, ***Closure Report Addendum***, the Closure Certifications, and the supplemental information submitted, the Department has determined the information submitted demonstrates closure for the HWMU 7. The demonstration of closure is in accordance with the closure performance standards in the DEQ approved ***Closure Plan Amendment***, the VHWMR, and the RCRA Regulations under 40 CFR § 264.111. The Department approves the Closure Certifications, the above the ***Closure Report***, and the ***Closure Report Addendum***, for the US Army Radford Army Ammunition Plant, Radford facility under EPA ID No. VA1210020730. Please note, however, that the Environmental Protection Agency retains the authority to address possible corrective action of continuing releases pursuant to the Hazardous and Solid Waste Amendments of 1984.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision to initiate a legal appeal by filing a notice of appeal with:

David K. Paylor, Director
Department of Environmental Quality
629 East Main Street
PO Box 10009
Richmond VA 23240-0009

In the event that this decision is served to you by mail, the date of service will be calculated as three days after the postmark date. Please refer to Part 2A of the Rules of the Supreme Court of Virginia, which describes the required content of the Notice of Appeal, including specifications of the Circuit Court to which the appeal is taken, and additional requirements concerning appeals from decisions of administrative agencies.

If you have any questions or comments concerning this matter, please contact Russell L. McAvoy, P.E., of my staff at (804) 698-4194 or by e-mail at russell.mcavoy@deq.virginia.gov.

Sincerely,

Leslie A. Romanchik

Leslie A. Romanchik
Hazardous Waste Program Manager
Office of Waste Permitting and Compliance

Enclosures: DEQ Staff Memorandums - 3

cc: Andrea Barbieri, EPA, Region III (3LC50)
Aziz Farahmand, DEQ, Blue Ridge Regional Office
Beth Lohman, DEQ, Blue Ridge Regional Office
Ann Regn, DEQ, CO
Sonal Iyer, DEQ, CO
Pat McMurray, DEQ, CO
Hasan Keceli, DEQ, CO
Jutta Schneider, DEQ, CO
Vince Maiden, DEQ, CO
Julia King–Collins, DEQ, CO
Central Hazardous Waste Files

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

# OFFICE OF REMEDIATION PROGRAMS

Via Electronic mail

**MEMO**

TO: Russ McAvoy

Thru: Pat McMurray PM

FROM: Sonal Iyer SI

DATE: June 08, 2012

SUBJECT: Technical Risk Assessment Review: Closure Report for HWMU 7 at Radford Army Ammunition Plant. Dated February 9, 2012
EPA ID: VA1210020730

Per our internal meeting on May 24, 2012, this memorandum provides review comments for risk assessment portion of the closure report mentioned above. This review does not include comparing protocols and approaches for evaluating the unit against those in approved closure plan. The review also does not include list of HCOCs analyzed in soils and groundwater, facility-wide background concentrations, Laboratory data validation, statistical evaluation, groundwater data and evaluation, permit conditions and/or exemptions, and any other information besides risk assessment calculations. Furthermore, the method detection limits for soil and groundwater samples is assumed to be below applicable risk based levels. If such is not the case, the risk assessment outcomes may be different than discussed herein and may need to be revisited. The risk assessment is carried out to demonstrate that 'the unit no longer meets the definition of waste.'

Comments:

1. Section 3.3.2. Soil Sample Collection and Analytical Results, page 13: The 2004 samples show Aroclor in a few samples and the facility has provided some rationale about possibility of overestimation. However, in absence of confirmatory samples DEQ will consider the results as reported for risk assessment. Over/underestimation of potential risk due

to data limitation may be discussed qualitatively in the uncertainties section.

2. It is noted that the chromium analysis in soils is only for total chromium and data for hexavalent chromium is not available.

3. Section 4.3.2.1. Comparison to Risk-Based Concentrations (residential Screen), page 17: DEQ does not understand the purpose of including this section, corresponding tables, and any conclusions because risk based screening is not considered to demonstrate closure. All detected chemicals above the background must be included in quantitative risk assessment for residential receptor and for fate-and-transport evaluation. The facility has included all detected chemicals in risk assessment. To avoid confusion, please remove this section and corresponding table.

4. Table 6: This table uses maximum detected concentration for all chemicals, except Aroclor. Only for this chemical, average concentration is used. If 95% UCL of the mean cannot be calculated due to data set limitation, maximum detected concentrations must be used. The facility is advised to either exclude this table or recalculate using 95% UCL of the mean for Aroclor-1254.

5. Section 4.3.2.5. Uncertainty Analysis, page 19: Please remove the statements relating to Radford's intention to leave the soil 'in-place' unless Radford AAP is willing to develop a deed restriction that will prohibit any surface disturbance of the soil in future.

6. Section 4.4. Results of Clean Closure Evaluation for Residual Material and Soil, page 20: This evaluation does not include fate-and-transport assessment. However, please see comment # 7 below.

7. Section 5.0. Clean Closure Evaluation for Groundwater, pages 22 through 26: For a land based unit with interrupted bottom liner, ideally, the groundwater data would be included in quantitative risk assessment for residential receptor using same protocols as described in REAMS user's manual and cumulative risk would be calculated from soil and groundwater. Also, all the detected HCOCs in soils must be evaluated via fate-and-transport modeling. However, the unit has had a post-closure groundwater monitoring permit for many years and based on internal DEQ discussion, this review takes the position that groundwater water data evaluation per permit conditions may be sufficient to meet clean closure requirements for groundwater as well as fate-and-transport

evaluation. Therefore current review does not include this entire section and potential for impact to surface water or vapor intrusion and Groundwater/ Permitting Staff may provide comments/decisions regarding groundwater condition, monitoring requirements, and clean closure status.

8. Appendix E. Chronic Daily Intake Calculations, Toxicity Factors: The facility has not used REAMS software to calculate risk and hazard even though the closure plan clearly required the use of it. However, the information provided by the facility reflects REAMS methodology, assumptions, default values, and calculation protocols. Therefore these calculations are deemed acceptable. The facility needs to add carcinogenic risk-adults and carcinogenic risk-child to obtain life-time cancer risk (in line with REAMS methodology). Please add the risk for each chemical, each pathway, and cumulative risk. For non-carcinogenic hazard index, please use assessment results for child receptor. Please provide a summary table showing these calculations.

Based on the information provided in the above submittal and review conducted as specified in the opening paragraph, the soil/stabilized waste mass, bottom clay liner and soils beneath the HWMU 7:

- Fail current individual risk based performance criteria-residential receptor for Aroclor 1254;
- Pass current risk based performance criteria-residential receptor of cumulative risk within 1E-4 to1E-6 and hazard index at or below 1.

This report and review did not include results of fate-and transport evaluation.

If there are any questions pertaining to this memorandum, I can be contacted at 698-4259.

DEQ
Department of Environmental Quality

OFFICE OF REMEDIATION PROGRAMS

# MEMO

TO: Russ McAvoy

THROUGH: Pat McMurray PM

FROM: Hasan Keceli H.K

DATE: July 24, 2012

CC: Leslie Romanchik

SUBJECT: Background Development for for Radford AAP Permit # VA12100270730

The facility has developed background for the site as suggested by the Department in 2001. The background limits are acceptable. Please let me know if you have any questions.

**VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY**
**LAND PROTECTION & REVITALIZATION DIVISION**
**OFFICE OF REMEDIATION PROGRAMS**

# MEMORANDUM

**TO:** Russ McAvoy
Office of Waste Permitting and Compliance

**THROUGH:** Jutta Schneider
Office of Remediation Programs

**FROM:** Vincent Maiden
Office of Remediation Programs

**DATE:** March 5, 2013

**SUBJECT:** Radford Army Ammunition Plant, Radford, VA – EPA ID No. VA1210020730
Closure Report & Addendum for HWMU-7 – Post Closure Care Permit
Clean Closure Evaluation of Groundwater – Technical Review Comments

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The purpose of this memorandum is to document the review of the groundwater related sections of the Closure Report for HWMU-7 dated February 2012, Closure Report Addendum for HWMU-7 dated January 2013, and Closure Plan approved September 27, 2011. Please accept the following observations and comments.

## Closure Report for HWMU-7 (February 2012)

1. **Section 5.0 Clean Closure of Groundwater**

   - The report indicates that the clean closure evaluation for groundwater was carried out as stipulated in the approved Closure Plan Amendment for HWMU-7 dated July 2010, which was incorporated in to the permit on September 27, 2011 as part of a Class 3 permit modification.

   - A review of the approved Closure Plan Amendment for HWMU-7 was conducted to confirm. The Closure Plan Amendment states in Section 2.2 that "In the event that the residual material and underlying soils at HWMU-7 meet the clean closure standards specified by the VDEQ, Radford AAP will attempt to demonstrate clean closure for groundwater at HWMU-7 as well. Clean closure for groundwater at HWMU-7 will be demonstrated by comparing the most recent groundwater sample analytical results at the time that the Closure Report is prepared to the Groundwater Protection Standards (GPSs) for the Unit." This was also described in Section 7.0 and Section 8.3 of the Closure Plan Amendment.

- The groundwater clean closure evaluation focused on data collected during the 4th Quarter 2011 Semi-Annual Compliance Monitoring Event and the 2nd Quarter 2011 Annual Groundwater Monitoring Event. This would be the most recent data and is acceptable for this evaluation.

- For the purpose of this evaluation the groundwater data was compared to the current Groundwater Protection Standards (GPS) for the facility, last revised September 27, 2011, and presented in Appendix H of the report.

2. **Section 5.2 Constituents Detected Above Quantitation Limits & Section 5.3 Comparison to Groundwater Protection Standards.**

   - The report indicated that no organic Hazardous Constituent of Concern (HCOC) were detected and concentrations equal to or greater than their respective QLs in the groundwater at HWMU-7 during the Second Quarter 2011 and Fourth Quarter 2011 monitoring events. Please note that Chloroform was observed but this exceedance was resolved by a June, 2007 ASD approval (details provided in item 3).

   - The report did reveal that five inorganic HCOC were detected at concentrations above their respective QLs in the Second Quarter 2011 and Fourth Quarter 2011 monitoring events. These detections include barium, chromium, cobalt, nickel, and zinc.

   - The facility compared the monitoring results, as discussed above, against the approved GPS (Appendix H) for the unit. This comparison is consistent with the approved Closure Plan.

   - Cobalt was the only detected constituent observed at concentrations above its approved GPS. The cobalt GPS for the Unit is a site-specific background GPS of 5µg/l. Cobalt was detected in plume well 7W13 at a concentration of 11.7µg/l during the events evaluated. This concentration is consistent with the historical cobalt concentrations in this well (5.3µg/l to 16.4µg/l).

   - Radford AAP submitted an Alternate Source Demonstration (ASD) for Cobalt to the Department on December 15, 2011. The results of the ASD concluded that the total cobalt concentrations observed in groundwater at HWMU-7 are derived from ambient, naturally-occurring and naturally variable sources. The Department approved the ASD in correspondence dated January 5, 2012. Based on the ASD approval the facility was not required to remediate cobalt in groundwater at HWMU-7 and no additional action was required in response to the observed exceedance.

3. **Section 5.4 Alternate Source Demonstration for Additional Detected Constituents**

   - Chloroform, which is not an HCOC for HWMU-7, was detected during the Second Quarter 2011 monitoring event and in historical monitoring events at concentrations ranging from below the QL of 1µg/l to a maximum of 3µg/l. These detections are orders of magnitude below the drinking water MCLG of 70µg/l for Chloroform and the Total Trihalomethanes MCL of 80µg/l.

- Radford AAP prepared an ASD for chloroform at HWMU-7 which was received by the on January 31, 2007 and approved by the Department in a letter dated June 14, 2007.

- Chloroform is not a HCOC for HWMU-7 and the Department approved an ASD resolving the noted exceedances. Therefore, the detection of chloroform does not impact the eligibility for groundwater clean closure at this unit.

4. **Section 5.5 Evaluation of Potential for Aroclor-1254 Migration to Groundwater**

- The Post Closure Care Permit for HWMU-7 did not require that the facility analyze groundwater for Aroclor-1254. Therefore, this constituent is not a listed as a groundwater HCOC and groundwater data was not collected or submitted for consideration in the closure report. In subsequent discussions with the Department the facility agreed to further evaluate Aroclor-1254 with additional soil and groundwater sampling and present information in a closure report addendum.

5. **Section 5.6 Results of Clean Closure Evaluation for Groundwater**

- The report concludes that the results of the clean closure evaluation reveal that HCOCs are not currently present in groundwater at HWMU-7 at concentrations greater than their respective GPS or the exceedances have been demonstrated (through ASD approval) to be consistent with site-wide background (cobalt) or derived from a source other than HWMU-7 (chloroform).

- The report states that Radford AAP has met the criteria, detailed in the approved Closure Plan Amendment, for clean closure of groundwater at HWMU-7.

**Closure Report Addendum for HWMU-7 (January 2013)**

6. Section 5.0 Clean Closure Evaluation For Groundwater & Section 5.1 Aroclor Evaluation

- Verification soil samples confirmed the presence of Aroclor 1254 in the soils underlying HWMU-7. In lieu of fate-and-transport modeling the facility collected one round of groundwater samples for Aroclor 1254. On November 28-29, Draper Aden Associates collected groundwater samples for analysis for Aroclor 1254 from the permit specified Compliance Monitoring wells for HWMU-7. The laboratory analytical results indicated that Aroclor 1254 was not detected in any of the groundwater samples at concentration greater than the laboratory MDL.

7. Section 5.2 Calendar Year 2012 Groundwater Compliance Monitoring

- The Closure Report Addendum updated the clean closure evaluation for groundwater presented in the February 2012 report. The semi-annual groundwater compliance monitoring date for 2012 was presented and evaluated.

- Based on the data presented, hazardous waste constituents are not present in groundwater at HWMU-7 at concentrations greater than their respective GPS or have been demonstrated to

be derived from a source other than the Unit as approved by the Department.

In conclusion, a review of the Closure Report for HWMU-7 (February 2012) and Closure Report Addendum (January 2013) revealed that the facility appears to have met the groundwater clean closure standards set forth in the Amended Closure Plan dated July 2010. However, please note that as described in Section 2.2 of the Closure Plan, the clean closure of groundwater is contingent on the facility meeting clean closure requirements for the residual material and the underlying soils at HWMU-7.

# COMMONWEALTH of VIRGINIA

*DEPARTMENT OF ENVIRONMENTAL QUALITY*
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Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4020
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January 21, 2014

Mr. Jay Stewart
Environmental Manager
BAE Systems
Ordnance Systems Inc.
4050 Pepper's Ferry Road
Radford, Virginia 24141

**VIA ELECTRONIC MAIL**

**Re: Extension Request for Alternate Source Demonstration**
**Radford Army Ammunitions Plant**
**4050 Pepper's Ferry Road, Radford, Virginia 24141**
**EPA ID#: VA1210020730**

Dear Mr. Stewart:

The Department of Environmental Quality, Office of Remediation Programs (the Department) has reviewed the extension request for the Radford Army Ammunitions Plant (Facility) located in Radford, Virginia. The Department understands that BAE Systems, Ordnance Systems Inc. (BAE), in a letter dated January 14, 2014 is requesting an extension for the submittal of the Alternate Source Demonstration (ASD) for total Cobalt, which was verified in well 16WC1B in December 2013.

Based on Permit Condition V.J.4.i.(3)(c), the Facility must collect four independent samples at a frequency of one per calendar quarter,. Therefore, the submittal of the ASD data results within 90 days following completion of the collection of the quarterly samples in approved.

EPA ID#: VA1210020730
Radford Army Ammunitions Plant
Radford, Virginia
January 21, 2014

The Department would request that the Facility provide a schedule for the required sampling. You may contact me to discuss any questions or issues that arise. I can be reached at 703-583-3825 or by email at Kurt.Kochan@deq.virginia.gov.

Respectfully,

Kurt W. Kochan
Corrective Action Project Manager

cc: RAAP Correspondence File
Jutta Schneider, VDEQ-CO
Aziz Farahmand, VDEQ-BRRO
Matt Albers, BAE
Jim McKenna, ACO Staff
Janet Frazier, DAA
Mike Lawless, DAA

# COMMONWEALTH of VIRGINIA

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www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4020
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April 2, 2014

**VIA ELECTRONIC MAIL**
Mr. Jay Stewart
Environmental Manager
Radford Army Ammunition Plant
4050 Pepper's Ferry Road
Radford, Virginia 24141

**Re: Radford Army Ammunition Plant (RAAP), Radford, VA**
**EPA ID No.VA1210020730, Post-Closure Care Permit (Units 5, 7, 10, and 16)**
**Approval of Closure of Hazardous Waste Management Unit 10 (former Equalization Basin)**

Dear Mr. Stewart:

The Virginia Department of Environmental Quality (DEQ) approved the clean closure of soils associated with the RAAP's Equalization Basin for the Biological Treatment System, Hazardous Waste Management Unit (HWMU) 10, on December 8, 1998. The required closure PE and Owner/Operator certifications and closure report addressing HWMU 10 soils were submitted by the RAAP and approved by the DEQ under the soils clean closure approval.

The DEQ has determined, based on information submitted by the RAAP on July 30, 2013 and November 15, 2013, that RAAP meets the groundwater clean closure standards for HWMU 10 (see attached memorandum dated November 18, 2013). In addition, in correspondence to the RAAP dated September 10, 2012 (see Attachment), the DEQ approved an alternate source demonstration (ASD) which concluded that the observed acetone and 2-propanol concentrations in groundwater not associated with HWMU 10 were not derived from HWMU 10. The ASD concluded that acetone and 2-propanol concentrations observed in groundwater at HWMU-10 are derived from propellant production wastewater flowing through the Bioplant lift station and associated pressurized sewer lines located upgradient from point of compliance well 10D3D, and are not originating from HWMU-10. With the exception of acetone and 2-propanol, no constituents of concern have been detected in groundwater at concentrations greater than their

respective GPSs during the course of the Compliance groundwater monitoring program under the auspices of the Hazardous Waste Post-Closure Care Permit.

The implications of clean closure of Unit 10 for soils and groundwater are as follows:

1. Upon re-issuance, permit conditions addressing HWMU 10 are removed from the Hazardous Waste Post-Closure Care Permit – that is currently in the renewal process. The expired permit is continued in accordance with 40 CFR § 270.51, since RAAP submitted a timely renewal permit application.

2. In conjunction with 1, the deed restriction in accordance with 40 CFR § 264.116 (Survey Plat) and 40 CFR § 264.119 (Post-Closure Notices) and currently in force addressing HWMU 10 may be disregarded and voided.

3. Groundwater and non-groundwater, Post-Closure related activities involving HWMU 10 may be discontinued immediately upon your receipt of this letter, and specifically; these may be discontinued in accordance with the continued Hazardous Waste Post-Closure Care Permit – Module I, Section I.I. which states:

   *I.I. PERMIT DURATION AND POST-CLOSURE CARE PERIOD*

   *This Permit shall be in effect for ten (10) years from the date of issuance (**270.50(a)**). The post-closure period for each hazardous waste management unit shall begin after completion of closure of the unit and continue for 30 years after that date (**264.117(a)**), **or for a reduced period if the Director approves clean closure of the unit and the reduced period is sufficient to protect human health and the environment (264.117(a)(2)(i))**. The date of final closure certification for each unit is different; therefore, the final date of post-closure care is different for each unit.*

4. As a result of the ASD approval by the DEQ on September 10, 2012, (see Attachment), and the DEQ's Clean Closure Evaluation of Groundwater Memorandum dated November 18, 2013 (see Attachment), RAAP is required to provide a report on the Bio Lift Station inspection that is scheduled to occur in July 2014 and to continue groundwater monitoring at well 10D3D for 2-propanol and acetone independent of the requirements of the continued or the to-be issued Hazardous Waste Post-Closure Care Permit to assure that groundwater conditions do not deteriorate and require further investigation in the future. Please contact Kurt Kochan, the DEQ's hazardous waste groundwater specialist at kurt.kochan@deq.virginia.gov or (703) 583-3825 for submission requirements and evaluation criteria.

A closure verification inspection is not required in accordance with 40 CFR Section 264.120 and Post-Closure Care Permit Section II.E.2 because closure is not occurring after completion of the established Post-Closure Care Period for an individual hazardous waste disposal unit. In addition, as stated previously, a final closure inspection and PE and Owner/Operator Certifications were provided in supported of the soils closure of HWMU 10 in 1998.

Based upon the Department's administrative and technical reviews of the above referenced previously submitted groundwater data, the attached memorandums (2), the closure report and Closure Certifications for the HWMU 10 soils, and the supplemental information submitted, the Department has determined the information submitted demonstrates closure for the HWMU 10. The demonstration of closure is in accordance with the closure performance standards in the DEQ approved, continued Hazardous Waste Management Post-Closure Care Permit addressing HWMUs 5, 7, 10, and 16, the VHWMR, and the RCRA Regulations under 40 CFR § 264.111. The Department approves the cited above documentation and Closure Certifications for the US Army Radford Army Ammunition Plant, Radford facility under EPA ID No. VA1210020730. Please note, however, that the Environmental Protection Agency retains the authority to address possible corrective action of continuing releases pursuant to the Hazardous and Solid Waste Amendments of 1984.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision to initiate a legal appeal by filing a notice of appeal with:

David K. Paylor, Director
Department of Environmental Quality
629 East Main Street
PO Box 1105
Richmond, VA 23218

In the event that this decision is served to you by mail, the date of service will be calculated as three days after the postmark date. Please refer to Part 2A of the Rules of the Supreme Court of Virginia, which describes the required content of the Notice of Appeal, including specifications of the Circuit Court to which the appeal is taken, and additional requirements concerning appeals from decisions of administrative agencies.

If you have any questions or comments concerning this matter, please contact Russell L. McAvoy, P.E., of my staff at (804) 698-4194 or by e-mail at russell.mcavoy@deq.virginia.gov.

Sincerely,

Leslie A. Romanchik

Leslie A. Romanchik
Hazardous Waste Program Manager
Office of Waste Permitting and Compliance

Attachments (2):
**The DEQ's Memorandum dated November 18, 2013 - Groundwater Clean Closure Approval, and**
**The DEQ's Letter dated September 10, 2012 - Groundwater Alternate Source Demonstration Approval**

cc: Andrea Barbieri, EPA, Region III (3LC50)
Aziz Farahmand, DEQ, Blue Ridge Regional Office
Beth Lohman, DEQ, Blue Ridge Regional Office
Jutta Schneider, DEQ, CO
Kurt Kochan, DEQ, CO
Julia King-Collins, DEQ, CO
Central Hazardous Waste Files

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

**VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY**
**LAND PROTECTION & REVITALIZATION DIVISION**
**OFFICE OF REMEDIATION PROGRAMS**

# MEMORANDUM

**TO:** Russ McAvoy
Office of Waste Permitting and Compliance

**THROUGH:** Jutta Schneider
Office of Remediation Programs

**FROM:** Vincent Maiden
Office of Remediation Programs

**DATE:** November 18, 2013

**SUBJECT:** Radford Army Ammunition Plant, Radford, VA – EPA ID No. VA1210020730
HWMU – 10 Clean Closure Information – Post Closure Care Permit
Clean Closure Evaluation of Groundwater – Technical Review

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The purpose of this memorandum is to document the review of the groundwater related information that was presented to the Department by the facility in a request to for approval of clean closure of HWMU-10 and ultimately the removal of the monitoring requirements from the HWMU 5,7,10 & 16 Post Closure Care (PCC) permit. This information was submitted on July 30, 2013 with a follow up letter submitted on November 15, 2013. It is noted that the Department granted clean closure of soils at HWMU-10 in 1998.

A review of the information provided and facility file revealed that the facility appears to have met the groundwater clean closure standards. Historically 2-propanol and acetone have been noted above their respective Groundwater Protection Standard (GPS) in monitoring well 10D3D. However, the Department approved an Alternate Source Demonstration (ASD) for each of these recognizing that the impacts were not caused by the unit.

Based on the information received and a review of the file, the groundwater post closure care requirements for HWMU-10 may be removed from the PCC permit. However, as conditions of this approval the facility should be required to provide a report on the Bio Lift Station inspection that is scheduled to occur in July 2014 and to continue groundwater monitoring at 10D3D for 2-propanol and acetone independent of the requirements of this post closure care permit to assure that groundwater conditions do not deteriorate and require further investigation in the future.

# COMMONWEALTH of VIRGINIA

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Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482


September 10, 2012

Mr. Bob Winstead
BAE Systems
Ordnance Systems Inc.
6580 Valley Center Drive, Suite 333
Radford, VA 24141
**VIA ELECTRONIC MAIL**

**RE:** Alternate Source Demonstration for acetone & 2-propanol in monitoring well 10D3D
HWMU #10, Radford Army Ammunition Plant, Radford, VA
EPA ID# VA1210020730

Dear Mr. Winstead:

The above-noted Alternate Source Demonstration (ASD) investigation, submitted on behalf of Radford Army Ammunition Plant, by BAE Systems, Ordinance Systems Inc., dated July 6, 2012, has been reviewed for technical content and consistency with the requirements of 40 CFR 264.99.(i). The need to submit an ASD was triggered by an exceedance of the acetone and 2-propanol Groundwater Protection Standard during the fourth quarter of 2011 for monitoring well 10D3D. The exceedance was reported by the facility and a 90-day extension of the ASD due date was granted by the Department on April 4, 2012.

As defined under 40 CFR 264.99.(i), the ASD report must show one of the following in order to obtain approval:

1) A source other than a regulated unit caused the contamination.
2) The contamination was caused by natural variation in groundwater.
3) The contamination was a result of an error in field sampling.
4) The contamination was the result of an error in lab analysis.
5) The SSI contamination was result of an error in statistical analysis.

The ASD report focused on proving the applicability of item #1 by presenting information regarding the clean closure for soils at HWMU-10, discussion of groundwater flow rates, evidence of a source other than the HWMU-10 (Bioplant lift station and pressurized lines),

and a trend analysis for this historically detected contaminants of concern. The report concludes that acetone and 2-propanol concentrations observed are not derived from the closed HWMU-10, but are derived from the propellant production wastewater flowing through the Bioplant lift station and associated pressurized sewer lines leading to the Bioplant equalization basins, which are located upgradient from monitoring well 10D3D.

Based on the above discussion and the body of evidence presented to the Department, the content of the ASD is determined to be sufficient to meet the regulatory criteria for approval and as a result, the facility does not have to remediate the acetone and 2-propanol GPS exceedances observed in well 10D3D. Please note that future exceedances of the GPS for acetone and 2-propanol noted in 10D3D will not require the submittal of a separate ASD unless the monitoring results reveal a change in site conditions that may indicate a release from HWMU-10. Please make sure that this approval is reflected in future correspondence to the Department where appropriate.

The facility is advised to evaluate the Bioplant lift station and pressurized sewer lines to assure that an ongoing release of wastewater is not occurring. This evaluation should be documented and retained in the facility file record.

If you have any additional technical questions, you may contact me at 276-676-4867 or by email at Vincent.Maiden@deq.virginia.gov.

Sincerely,

Vincent Maiden

Vincent A. Maiden
Office of Remediation Programs

cc: Jutta Schneider, Russ McAvoy, File – DEQ CO
Aziz Farahmand, DEQ-BRRO
Andrea Barbieri, EPA Region II (3LC50)
Jim McKenna, US Army

# COMMONWEALTH of VIRGINIA

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Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

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Office of Waste Permitting and Compliance

Land Protection and Remediation Division

July 17, 2014

**VIA ELECTRONIC MAIL**
Mr. Jay Stewart
Environmental Manager
BAE Systems, Ordnance Systems, Inc.
Radford Army Ammunition Plant
4050 Pepper's Ferry Road
Radford, Virginia 24141

**Re: Radford Army Ammunition Plant, Radford, VA**
**EPA ID No.VA1210020730, Approval of Permit Reissuance**
**Hazardous Waste Management Units 5 and 16, Post Closure-Care Permit**

Dear Mr. Stewart:

Enclosed is the Final Hazardous Waste Permit for Post Closure-Care of two hazardous waste management units (HWMUs) (5 and 16) at the Radford Army Ammunition Plant (RAAP) facility, Radford, Virginia. The Final Permit issuance has been approved and is scheduled to become effective on August 16, 2014.

This final permit decision is in accordance with the Virginia Hazardous Waste Management Regulations (VHWMR), 9 VAC 20-60, 9 VAC-20-60-124, which incorporates 40 CFR Part 124 by reference, and in accordance with 40 CFR § 124.13, Obligation to Raise Issues and Provide Information During the Public Comment Period, which specifies:

> *All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Director's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably available arguments and factual grounds*

> *supporting their position, including all supporting material, by the close of public comment period (including any public hearing) under §124.10). Any supporting materials which are submitted shall be incorporated in full and may not be incorporated by reference, unless they are already part of the administrative record in the same proceeding, or consist of Commonwealth or Federal statutes and regulations, EPA documents of general applicability, or other generally available reference materials.*

The DEQ published a Public Notice of a 45-day comment period addressing the draft Permit in the Roanoke Times on April 30, 2014. The corresponding radio announcement was broadcast on April 30, 2014, on Radio Station 107.1 FM, WPSK, in Pulaski, Virginia. A public meeting to disseminate information and exchange ideas relevant to the draft permit was held on June 4, 2014. A public hearing to accept oral comments regarding the draft permit was also held on June 4, 2014. The Draft Permit was assembled after finding the Part B Permit Application, submitted October 3, 2011, with subsequent additions dated February 14, 2012, May 30, 2012, and September 7, 2012, complete and technically accurate.

The hazardous waste permit fee of $56,180 was deposited with the DEQ's Department of Finance account on September 12, 2011.

The DEQ received no comments expressing the opinion that the permit should be denied. Therefore, in accordance with 40 CFR § 124.15, the Director of the DEQ has made a final permit decision to reissue the post closure-care permit for HWMUs 5 and 16.

This final permit decision is based upon the supporting rationale provided in the enclosed "Comment Response Summary," dated July 17, 2014, for the Radford Army Ammunition Plant, Radford, Virginia facility which is in accordance with 40 CFR § 124.17. The "Response to Comments Document" specifies which provisions of the draft permit, if any, have been changed in the final permit decision, and the reasons for the change. In addition, this document describes and responds to all significant comments on the draft permit or the permit application which were raised during the public comment period.

In addition, please note that this final permit decision shall become effective 30 days after the service of notice of this decision unless a review or an appeal is requested on the permit under the VHWMR, 9 VAC 20-60-124. Appeals under the VHWMR do not incorporate the appeals process under 40 CFR § 124.19. Appeals under the VHWMR will be in accordance with the Administrative Process Act, Chapter 40, § 2.2-4000 et. seq., of Title 2.2 of the Code of Virginia. All federal regulatory references to the appeals process or the EPA Environmental Appeals Board, such as in 40 CFR § 124.5, shall be construed to mean the administrative processes and appeals processes as specified by Virginia's Administrative Process Act.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision to initiate a legal appeal by filing a notice of appeal with:

David K. Paylor, Director
Department of Environmental Quality
629 East Main Street
P.O. Box 1105
Richmond, VA 23218

In the event that this decision is served to you by mail, the date of service will be calculated as three days after the postmark date. Please refer to Part 2A of the Rules of the Supreme Court of Virginia, which describes the required content of the Notice of Appeal, including specifications of the Circuit Court to which the appeal is taken, and additional requirements concerning appeals from decisions of administrative agencies.

If you should have any further questions regarding this matter please contact Russell McAvoy, Jr., Environmental Engineer Senior, of my staff by phone at (804) 698-4194 or by e-mail at russell.mcavoy@deq.virginia.gov.

Sincerely,

Leslie A. Romanchik

Leslie A. Romanchik
Hazardous Waste Program Manager
Office of Waste Permitting and Compliance

Attachments:

Enclosure 1 – Comment Response Summary
Enclosure 2 – Final Permit for Radford Army Ammunition Plant, Radford, Virginia Facility

cc: Andrea Barbieri, EPA Region III (3LC50)
Aziz Farahmand, DEQ, BRRO
Beth Lohman, DEQ, BRRO (w/out enclosures)
Jutta Schneider, DEQ, CO (w/out enclosures)
Russell McAvoy, DEQ (w/out enclosures)
Julia King-Collins, DEQ, CO (w/out enclosures)
Cynthia Houchens, DEQ, CO (w/out enclosures)
Hazardous Waste Management File

*COMMONWEALTH of VIRGINIA*

*DEPARTMENT OF ENVIRONMENTAL QUALITY*
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Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

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# Enclosure 1
# Comment Response Summary
# Radford Army Ammunition Plant
# VA1210020730

## July 17, 2011

**COMMENT 1** - Reference June 4, 2014 verbal comment by Peter deFur at Public Hearing held at the New River Competitiveness Center, Radford, Virginia, Page 9, lines 17 - 23 and Page 10, lines 1 - 3. Question: Because I have recently taken this contract and started this work, my first comment is to request an extension of the public comment period. The permit is over seven hundred (700) pages, highly detailed, highly technical and I want a chance to give my client a fair consideration of the technical analysis that I can do for that permit. So that's my first comment. I'd like it to be extended through the end of August.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 2** - Reference June 4, 2014 verbal comment by Peter deFur at Public Hearing held at the New River Competitiveness Center, Radford, Virginia, Page 10, lines 4 - 16. Question: Second of all, in brief review of the materials that I've had a chance to take a look at and the summary, I see that one (1) of the monitorings will be for several of the forms of Dinitrotoluene or DNT. There are, in fact, six (6) different forms of DNT and only two (2) will be monitored and I would recommend that all six (6), either individually or collectively, as total DNT be measured and monitored because the toxicity and the fate in transport is under investigation right now by the scientific community and EPA headquarters is making a determination about how they will be treated.

**Response:** Dinitrotoluene (DNT) is a technical mixture containing approximately 80% 2,4-dinitrotoluene, approximately 20% 2,6-dinitrotoluene and < 5% 3,4-, 2,3- and 2,5-DNT. 2,4- and 2,6-DNT are the most common isomers produced during TNT synthesis (Han and others 2011), therefore these would be the targeted constituents at this facility. Also, there are no Maximum Contaminant Levels (MCLs) or Risk-based Screening Levels (RSLs) for total DNT or 2,3-, 2,5- and 3,4-DNT and there are currently no EPA-approved analytical methods for the other four DNT isomers (2,3-DNT, 2,5-DNT, 3,4-DNT, and 3,5-DNT). Lastly, as 2,4-dinitrotoluene and 2,6-dinitrotoluene comprise nearly 100 % of DNT, it is the professional opinion of DEQ groundwater staff that the analysis for the additional isomers potentially included in DNT is not warranted because the majority of this mixture is comprised of the two isomers already included on the facility's compliance monitoring list.

**COMMENT 3** - Reference June 4, 2014 verbal comment by Travis Williams at Public Hearing held at the New River Competitiveness Center, Radford, Virginia, Page 12, lines 3 - 7. Question: I'd just like to echo some of Mr. deFur's comments. My main concern is really request - to request an extension of the public comment period, at least through August 22nd. There's a lot of information here.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 4** - Reference June 4, 2014 verbal comment by Phyllis Albritton at Public Hearing held at the New River Competitiveness Center, Radford, Virginia, Page 15, lines 6 - 10.

Question: So I - because the document is intense and I am not an engineer and I really would like to study it, from what the two (2) gentlemen before me have said - and they're experts – I definitely as a concerned citizen, not only for myself, but for many others would like the period extended to at least August 22nd. I mean, we need - we need a little more time. It's very involved.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 5** - Reference June 12, 2014, written comment by Phyllis Albritton.
Question: But, all along, I have been concerned with the way the issues of the arsenal have been "handled" in our community.

Two examples:

1. Open meetings, when there was no sitting down with presentation and time for questions and answers. The public was asked to mull around and comment.

2. Notification of the last meeting:
   a. One notification in the newspaper almost a whole month prior to the meeting.
   b. Announcement on ONE radio station, which hardly anyone concerned with the issue listens to.

And, I do wonder if the newspapers were notified of the last meeting, as there were no press people there.

**Response:**
**Information meeting format: The format of the informational meeting followed the café style with tables designated by topic for focused discussion and Q&A. Each table was hosted by a DEQ staff member and included groundwater, permitting and inspections, post closure care and a registration table with handouts entitled, "How to Make Public Comment." Community members were greeted at the door and encouraged to move from table to table as they asked questions of the staff.**

**Public Hearing format: As the informational meeting ended, participants walked to the hearing room which helped transition from open discussion to formal hearing. The Hearing Officer maintained the position of neutrality and delivered instructions tailored to this hearing. A microphone was placed at a podium that was placed directly in front of the hearing officer so the citizens could address their comments directly to the hearing officer. The Hearing Officer took notes and maintained eye contact with each speaker as they spoke. He took notes and was obviously interested in what they were saying. A registration form listed those who wanted to speak, and the officer asked if anyone would like to speak after the list was exhausted. This was an obvious effort to seek input from the**

**participants, which he mentioned several times. He thanked everyone who came out to the informal and formal meetings. The hearing was over in less than one hour.**

**Notification of the meeting: Public notice was given through Town Hall, email to interested stakeholders, publication on the DEQ's website on 3 different pages (Waste Permits, Public Calendar and RAAP facility page). Notification included a local radio. The radio station (107.1 FM, WPSK) selected is considered appropriate for reaching nearby residents in Longshop, McCoy and other communities surrounding the arsenal. People associated with the New River Free Clinic and Radford believe it to be a good choice. Newspaper notice was through the Roanoke Times, New River Valley Edition. Future DEQ Hazardous Waste Program public notices addressing the Radford Arsenal will be advertised in more than one local newspaper and more than one radio station to enhance coverage in the local area.**

**Press: The DEQ reached out to reporter Orlando Salinas, Channel 7 - Roanoke, before the meeting.**

**COMMENT 6 -** Reference June 4, 2014 verbal comment by Devawn Oberlender at Public Hearing held at the New River Competitiveness Center, Radford, Virginia, Page 15, lines 21 - 23 and Page 16, lines 1 - 2. Question: Hi, Mr. Deppe. Thanks for hearing us. I just want to reiterate - line myself up with those comments that we need more time - at least until August 22nd.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 7 -** Reference June 4, 2014 verbal comment by Devawn Oberlender at Public Hearing held at the New River Competitiveness Center, Radford, Virginia, Page 16, lines 10 - 23 and Page 17, lines 1 - 12. Question: And, you know, it's just really patently obvious from who's not in this room that the people who are on the other side of the digital divide - Congressman Morgan Griffith likes to do these telephone town halls, which are fabulous - saves gas, gets people involved - and I was on one (1) just a couple of months ago and this man that is right here and he had to tell Congressman Griffith that his daughter has to go into the - into town - into the library to use the computer because they can't get internet where he lives. So putting it on the Virginia Town Hall website is maybe not, you know, reaching those people on the other side of the digital divide. And, you know, there was - well, there's significant legislation that followed on Executive Order 12898 which requires that people who meet the definition of environmental justice - so those are people who fall within a certain socioeconomic category, which indeed the children here do. Over fifty percent (50%) of the children at Belview elementary qualify for subsidized lunch. Those people aren't here tonight and they, by law, need to be given special consideration.

**Response: The idea of doing a telephone town hall will be taken under advisement. See also the response to comment 5.**

**COMMENT 8** - Reference June 10, 2014, written comment by Gregory D. Habeeb – Member Virginia House of Delagates. Question: I have received some letters from constituents about the proposed close out of two hazard waste areas sites at Radford Arsenal, HWMU 5 & 16. I am writing to you to ask that you support their request for the extension of the public comment period through August 22, 2014.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 9** - Reference June 4, 2014, written comment by Joseph Yost, Delegate, 12th District, Virginia House of Delagates . Question: I write today in support of an impending request to extend the public comment period for HWMU 5 & 16 from June 19 until August 22. I believe it is imperative to extend this request for the betterment of the citizens I represent but also the entire New River Valley.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 10** - Reference June 3, 2014, written comment by Mark Barbour. Question: I am a stakeholder in the proposed permit change to Hazardous Waste Management Unit (HWMU) 5 & 16 and request that the DEQ extend the public comment period to August 22, 2014, to give our community a full and fair chance to understand this change

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 11** - Reference June 3, 2014, written comment by Meriel Russell. Question: I would like to request an extension of sixty days for public comment on the Post Closure Care Permits for HWMU 5 & 16 at the Radford Army Ammunition Plant. Please leave the comment period open through August 22nd, 2014, to allow for the intervening federal holidays and summer travel schedules.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**COMMENT 12** - Reference June 3, 2014, written comment by Sarah Windes. Question: I am a resident of Blacksburg. I am requesting an extension to August 22 on the comment deadline for the BAE plan for the Radford arsenal. More time is needed to accurately assess the risks of closing the landfill.

**Response: The public comment period was not extended as explained in the DEQ's letter dated June 12, 2014, to the commenter.**

**PERMIT TABLE OF CONTENTS – ATTACHMENT CONTENT LIST**

**COMMENT 13 -** Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: **Attachment 2 – Unit 5 Information:** Attachment 2, Appendix E is titled 'COMPLIANCE (QUARTERLY) GROUNDWATER MONITORING LIST.' The term 'QUARTERLY' should be replaced with 'SEMIANNUAL' to reflect the reduction of sampling frequency from quarterly to semiannually as presented in the VDEQ-approved Class 1 Permit Modification dated June 14, 2007.

**Response: The DEQ concurs with this comment, and the requested change has been made to the Post-Closure Care Permit.**

**COMMENT 14 -** Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: **Attachment 3 – Unit 16 Information.** Attachment 3, Appendix E is titled 'COMPLIANCE (QUARTERLY) GROUND WATER MONITORING LIST.' The term 'QUARTERLY' should be replaced with 'SEMIANNUAL' to reflect the reduction of sampling frequency from quarterly to semiannually as presented in the VDEQ-approved Class 1 Permit Modification dated June 14, 2007.

**Response: The DEQ concurs with this comment, and the requested change has been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 1, APPENDIX C – CLOSURE NOTICES AND POST CLOSURE PLANS**

**COMMENT 15 -** Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: **Permit Attachment 1, Appendix C.2 – Post-Closure Plan for Units 5, 7, and 16:** The final page of this document is titled 'Appendix C.2.A – Closure Plan Amendment – Unit 7' (page no. 146 of the Draft PCC Permit PDF document); this page should be removed as HWMU-7 received clean closure for soil and groundwater and is no longer included in the Permit.

**Response: The DEQ concurs with this comment, and the requested change has been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 1, APPENDIX C – CLOSURE NOTICES AND POST CLOSURE PLANS**

**COMMENT 16 -** Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question:

**Permit Attachment 1, Appendix C.2 – Post-Closure Plan for Units 5, 7, and 16:** The final page of this document is titled 'Appendix C.2.A – Closure Plan Amendment – Unit 7' (page no. 146 of the Draft PCC Permit PDF document); this page should be removed as HWMU-7 received clean closure for soil and groundwater and is no longer included in the Permit.

An additional document titled 'Appendix C.3 – Unit Post-Closure Plan for Unit 10' is included following Permit Attachment 1, Appendix C.2 (page nos. 147-157 of the Draft PCC Permit PDF document). This document should be removed as HWMU-10 received clean closure for soil and groundwater and is no longer included in the Permit.

**Response: The DEQ concurs with this comment, and the requested changes have been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 1, APPENDIX F – INSPECTION REQUIREMENTS**

**COMMENT 17** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: **Appendix F.1 – Example Semi-Annual Inspection Log:** The word 'Quarterly' listed under 'Reason for Inspection' in Form DUP 6057F should be replaced with 'Semiannual'.

**Response: The DEQ concurs with this comment, and the requested change has been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 1, APPENDIX G– PERSONNEL AND TRAINING**

**COMMENT 18** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: **Appendix G.3 – Personnel Training Summary:** The following statement should be added to the bottom of the table: "NOTE: Names of responsible personnel associated with Permit compliance will be maintained in the facility record at Radford AAP in accordance with 40 CFR § 264.16.d."

**Response: The DEQ concurs with this comment, and the requested changes have been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 1, APPENDIX H – GROUNDWATER COMPLIANCE MONITORING PROGRAM – EXAMPLE SAMPLING AND ANALYSIS PLAN FOR ALL POST-CLOSURE CARE UNITS**

**COMMENT 19** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: **Appendix H.6 – Quality Assurance Project Plan: An Example:** The second sentence of Section 2.2 Target Compounds is missing a reference to Permit Attachment 3; this reference should be added as noted.

**Response: The DEQ concurs with this comment, and the requested change has been made to the Post-Closure Care Permit.**

**COMMENT 20** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: **Appendix H.8 – EPA III Micro-Purging Guidance:** This appendix includes the BAE Systems Ordnance Systems Inc. Low-Flow Groundwater Sampling and Analysis Plan (page nos. 375-394 of the Draft PCC Permit PDF document). Appendix B of the BAE Low-Flow Groundwater Sampling and Analysis Plan presents Groundwater Compliance Monitoring (Quarterly) Constituent Lists for HWMUs 5, 7, 10, and 16. The reference to 'Quarterly' should be revised to 'Semiannual' in the lists for HWMUs 5 and 16 to reflect the reduction of sampling frequency from quarterly to semiannually as presented in the VDEQ-approved Class 1 Permit Modification dated June 14, 2007. The monitoring lists for HWMUs 7 and 10 should be removed as both Units received clean closure for soil and groundwater and are no longer included in the Permit. The constituents benzene and diethyl phthalate should be added to the monitoring list for HWMU-16 as noted in the attached pages.

**Response: The DEQ concurs with this comment, and the requested changes have been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 1, APPENDIX J – STATISTICAL PROCEDURES**

**COMMENT 21** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: The title of Section 7.0 'Comparison of Ground Water Monitoring Well Data to the Concentration Limits Specified in Permit Attachment 1, Appendices G, J and K (Unit 5) and Permit Attachments 3-5, Appendices G (Units 7, 10, and 16)' should be revised to 'Comparison of Ground Water Monitoring Well Data to the Concentration Limits Specified in Permit Attachment 1, Appendices G, J and K (Unit 5) and Permit Attachment 3, Appendix G (Unit 16)' to remove references to Units 7 and 10.

**Response: The DEQ concurs with this comment, and the requested changes have been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 2, APPENDIX D – CONTINGENCY PLAN**

**COMMENT 22** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question: Permit Attachment 2, Appendix D is missing from the Draft PCC Permit PDF document. The relevant pages are attached to this document for inclusion into the Permit.

**Response: The DEQ concurs with this comment, and the requested changes have been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 2, APPENDIX G– UNIT 5 GROUNDWATER PROTECTION STANDARDS**

**COMMENT 23** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question:

The USEPA MCL and GPS for arsenic listed in Permit Attachment 2, Appendix G is 50 µg/l. The actual USEPA MCL for arsenic is 10 µg/l; therefore, the USEPA MCL and GPS for arsenic listed in Permit Attachment 2, Appendix G should be revised to 10 µg/l.

**Response: The DEQ concurs with this comment, and the requested change has been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 2, APPENDIX K – GROUNDWATER CORRECTIVE ACTION ANNUAL MONITORING LIST**

**COMMENT 24** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question:

The GPS for arsenic listed in Permit Attachment 2, Appendix K should be revised to the USEPA MCL of 10 µg/l.

The VDEQ ACLs listed for vanadium, 2,6-dinitrotoluene, and 4-nitroaniline should be revised to 63 µg/l, 0.042 µg/l, and 3.3 µg/l, respectively, to reflect the most recent VDEQ ACLs (December 2013) as used in Permit Attachment 2, Appendix G.

The GPS for 2,6-dinitrotoluene should be revised to the PQL of 10 µg/l as the VDEQ ACL for 2,6-dinitrotoluene is less that the PQL; this revision is also consistent with the GPS listed for 2,6-dinitrotoluene in Permit Attachment 2, Appendix G.

The reference date for the VDEQ ACLs listed in the Notes section of Appendix K should be revised to December 2013 to reflect the most recent VDEQ ACLs.

**Response: The DEQ concurs with this comment, and the requested changes have been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 3, APPENDIX D – CONTINGENCY PLAN**

**COMMENT 25** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question:

Permit Attachment 3, Appendix D is missing from the Draft PCC Permit PDF document. The relevant pages are attached to this document for inclusion into the Permit.

**Response: The DEQ concurs with this comment, and the requested changes have been made to the Post-Closure Care Permit.**

**PERMIT ATTACHMENT 3, APPENDIX G– UNIT 16 GROUNDWATER PROTECTION STANDARDS**

**COMMENT 26** - Reference June 16, 2014, written comment by Matt Albertson on behalf of BAE Systems Environmental contractor for the Radford Army Ammunition Plant. Question:

The reference date for the VDEQ ACLs listed in the Notes section of Appendix G should be revised to December 2013 to reflect the most recent VDEQ ACLs. The VDEQ ACL values listed in the table reflect the December 2013 values.

**Response: The DEQ concurs with this comment, and the requested change has been made to the Post-Closure Care Permit.**

# COMMONWEALTH of VIRGINIA

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July 21, 2014

Mr. Jay Stewart
Environmental Manager
BAE Systems, Ordnance Systems Inc.
4050 Pepper's Ferry Road
Radford, Virginia 24141

**VIA ELECTRONIC MAIL**

**Re: Notification of Groundwater Sampling Results – Post Closure Care Permit HWMUs 5 & 16**
**Radford Army Ammunitions Plant**
**Route 114, Radford, Virginia 24141**
**EPA ID#: VA1210020730**

Dear Mr. Stewart:

This letter acknowledges the receipt and review of the Notification of Groundwater Verification Sampling Results and Additional Appendix IX Groundwater Monitoring Results, Post Closure Care Permit HWMUs 5 & 16 dated July 1, 2014, submitted to the Virginia Department of Environmental Quality, Office of Remediation Programs (Department) by BAE Systems on behalf of the Radford Army Ammunitions Plant (RAAP).

The Department understands that RAAP has confirmed the presence of 1,1-dichloroethene in HWMU-16 point of compliance well 16MW9. The Department understands that 1,1-dichloroethene has not been previously detected above the limit of quantification (LOQ) over the past 12 annual Appendix IX groundwater monitoring events years in up-gradient well 16C1. Based on this, RAAP has proposes that the Department accept the LOQ for 1,1-dichloroethene of 1 microgram per liter (ug/L) as the background concentration and the U.S. EPA Maximum Contaminant Level (MCL) for 1,1-dichloroethene of 7 ug/L as the Groundwater Protection Standard (GPS) in lieu of establishing the background concentration through quarterly background monitoring. The Department concurs with this proposal.

The Facility should submit a Class 1 permit modification to add the constituent to the compliance monitoring list, the concentration of each hazardous constituent, and a proposed concentration limit to the existing permit. The Class 1 Permit Modification should be submitted to Russell McAvoy at DEQ within 90 days of the date of this letter. Any questions regarding the permit modification can be directed to Mr. McAvoy at (804) 698-4194 or by e-mail at russell.mcavoy@deq.virginia.gov.

If you have any additional technical questions, you may contact me at 703-583-3825 or by email at Kurt.Kochan@deq.virginia.gov.

Respectfully,

Kurt W. Kochan
Corrective Action Project Manager
Office of Remediation Programs

cc: RAAP Correspondence File
Andrea Barbieri, EPA Region 3
Jutta Schneider, VDEQ-CO
Russ McAvoy, VDEQ-CO
Aziz Farahmand, VDEQ-BRRO
Matt Albers, BAE
Jim McKenna, ACO Staff

# COMMONWEALTH of VIRGINIA

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Office of Waste Permitting and Compliance

Land Protection and Remediation Division

September 12, 2014

**VIA ELECTRONIC MAIL**
Mr. Jay Stewart
Environmental Manager
BAE Systems, Ordnance Systems, Inc.
Radford Army Ammunition Plant
4050 Pepper's Ferry Road
Radford, Virginia 24141

**Re: Radford Army Ammunition Plant, Radford, VA**
**EPA ID No.VA1210020730, Approval of Class 1 Permit Modifications**
**Hazardous Waste Management Units 5 and 16, Post Closure-Care Permit**

Dear Mr. Stewart:

Enclosed are the final Class 1 Modifications to the Hazardous Waste Permit for Post Closure-Care of two hazardous waste management units (HWMUs) 5 and 16 at the Radford Army Ammunition Plant (RAAP), Radford, Virginia facility. The final Class 1 Modifications to the Permit have been approved.

The Virginia Department of Environmental Quality (DEQ) received the Class 1 Permit groundwater related modification request addressing the HWMU 16 that was communicated to the DEQ in an e-mail dated August 13, 2014, from the RAAP, Radford, Virginia facility. RAAP requested that 1,1-dichloroethene (1,1-DCE) be added to the Groundwater Compliance Monitoring Constituent List for HWMU-16.

1,1-DCE was detected in the most recent annual groundwater sampling event required under the Post-Closure Permit, and in a letter dated July 21, 2014, the VDEQ supported the RAAP's July 1, 2014, proposal that 1,1-DCE be added to the Groundwater Compliance Monitoring Constituent List and also the setting of the background value for 1,1-DCE at the Limit of Quantitation (LOQ) value of 1

ug/1 and the Groundwater Protection Standard (GPS) at the USEPA Maximum Contaminant Level (MCL) of 7 ug/l.

In the e-mail letter dated August 13, 2014, RAAP submitted the following requested changes to the facility's hazardous waste Post Closure-Care Permit as marked–up files comprising the Class 1 Permit modification:

- Permit Attachment 3, Appendix E (HWMU-16 Groundwater Compliance Monitoring Constituent List) from the Post-Closure Care Permit to add 1,1-DCE to the groundwater Compliance Monitoring Program for HWMU-16, and

- Permit Attachment 3, Appendix G (HWMU-16 Groundwater Protection Standards) from the Post-Closure Care Permit to add 1,1-DCE to the groundwater Compliance Monitoring Program for HWMU-16.

The requested changes represent a Class 1 permit modification under 40 CFR § 270.42, Appendix I.C.2 – *Changes in groundwater sampling or analysis procedures or monitoring schedule, with prior approval of the Director.*

Based on the above justification, this August 13, 2014, e-mailed letter requesting changes in the groundwater compliance monitoring program including the addition of 1,1-DCE and its associated background concentration and GPS; the RAAP has established sufficient documentation for approval of all requested changes. In accordance with the VHWMR, under 40 CFR § 270.42, Appendix I, Section C.2 and based upon the accuracy of the information contained in the Permittee's correspondence dated August 13, 2014, the requested Class 1 modifications to the permit are approved.

Enclosed are the final modified pages in electronic format to be inserted into the RAAP's copy of the hazardous waste permit.

All conditions and requirements of the facility Permit shall remain in effect for the duration of the Permit unless the existing Permit is modified, revoked and reissued, or terminated in accordance with 40 CFR § 124.5, and 40 CFR § 270.41 through 270.42, or continued in accordance with 9 VAC 20-60-270.B.5.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date of service of this decision to initiate a legal appeal by filing a notice of appeal with:

David K. Paylor, Director
Department of Environmental Quality
629 East Main Street
P.O. Box 1105
Richmond, VA 23218

In the event that this decision is served to you by mail, the date of service will be calculated as three days after the postmark date. Please refer to Part 2A of the Rules of the Supreme Court of Virginia, which describes the required content of the Notice of Appeal, including specifications

of the Circuit Court to which the appeal is taken, and additional requirements concerning appeals from decisions of administrative agencies.

This above Class 1 permit modification under 40 CFR § 270.42(a)(1) requires the Permittee to send a notice of the modification to all persons on the facility mailing list (attached) within 90 days after the change is put into effect. In addition, RAAP must provide documentation to this Office regarding compliance with the public notice requirement. Please submit evidence of this mailing (return receipts, copy of the notification letter) when it is available.

If you should have any questions regarding these matters, please contact Russell McAvoy, Jr., PE, Environmental Engineer Senior, at (804) 698-4194 or by e-mail at russell.mcavoy@deq.virginia.gov.

Sincerely,

Leslie A. Romanchik

Leslie A. Romanchik
Hazardous Waste Program Manager
Office of Waste Permitting and Compliance

Enclosures: Facility Mailing List, Modified Permit Pages

cc: Andrea Barbieri – EPA, Region III (3LC50) e/enclosures
Jutta Schneider – DEQ, CO
Kurt Kochan – DEQ, CO
Aziz Farahmand – DEQ, BRRO
Elizabeth Lohman – DEQ, BRRO
Julia King–Collins – DEQ, CO
Central Hazardous Waste Files