LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 4

2019

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Prepared for

Department of the Army
Longhorn Army Ammunition Plant

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LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 4

2019

A. Title: Report – Draft Final First Annual Remedial Action Operation Report, LHAAP-35B (37), (Chemical Laboratory), Longhorn Army Ammunition Plant, Karnack, Texas, March 2019
Author(s): Department of the Army
Recipient: Environmental Protection Agency
Date: March 21, 2019
Bate Stamp: 00919350 – 00920167

B. Title: Minutes – Final Minutes, Monthly Managers' Meeting (MMM), March 14, 2019, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Department of the Army
Recipient: All Parties
Date: March 27, 2019
Bate Stamp: 00920168 – 00920182

C. Title: Report – Final Year 1 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01, Longhorn Army Ammunition Plant, Karnack, Texas, March 2019
Author(s): Department of the Army
Recipient: Environmental Protection Agency
Date: March 27, 2019
Bate Stamp: 00920183 – 00920216

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

March 21, 2019

DAIM-ODB-LO

Mr. Rich Mayer
U.S. Environmental Protection Agency
Federal Facilities Section R6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Draft Final First Annual Remedial Action Operation Report, LHAAP-35B (37), Chemical Laboratory, Longhorn Army Ammunition Plant, Karnack, Texas, March 2019

Dear Mr. Mayer,

One hard copy and one compact disc (CD) of the above-referenced document are being transmitted to you for your records. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on February 21, 2019, and Texas Commission on Environmental Quality's (TCEQ) comments received on February 13, 2019. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Response to comments on the Draft version of the document are included with this Draft Final.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (letter)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)
A. Williams, USACE, Tulsa District, OK (1 CD)
R. Smith, USACE, Tulsa District, OK (electronic only)
A. Maly, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 CD)
P. Srivastav, APTIM, Houston, TX (letter)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

March 21, 2019

DAIM-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Draft Final First Annual Remedial Action Operation Report, LHAAP-35B (37), Chemical Laboratory, Longhorn Army Ammunition Plant, Karnack, Texas, March 2019

Dear Ms. Palmie,

One hard copy and one compact disc (CD) of the above-referenced document are being transmitted to you for your records. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on February 21, 2019, and Texas Commission on Environmental Quality's (TCEQ) comments received on February 13, 2019. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Response to comments on the Draft version of the document are included with this Draft Final.

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Sincerely,

Rose M. Zeiler, Ph.D.
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K. Nemmers, Bhate, Lakewood, CO (1 CD)
P. Srivastav, APTIM, Houston, TX (letter)

Response to Comments on
Draft First Annual Remedial Action Operation Report, LHAAP-35B (37), Chemical Laboratory
Longhorn Army Ammunition Plant, Karnack Texas

Document Date: January 25, 2019
Reviewer: Richard Mayer (EPA)
Respondent: Dr. Rose Zeiler, U.S. Army

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X)
2. Commenter Agrees (A) with response, or Does Not Agree (D) with response

Reviewer: Richard Mayer **Comment Date:** February 21, 2019						
Comment No.	**Section/Page/ Paragraph**	**Comment**	**C, D, E, or X[1]**	**Response**	**A or D[2]**	**Comment**
1	Page 2-4, Section 2.5	EPA agrees with the removal of monitoring well 35BWW02 from the groundwater monitoring program.	C	Monitoring well 35BWW02 will be removed from the groundwater monitoring program.		
2	Page 3-2, Section 3.1.1	EPA agrees with the potential need to install a new side gradient monitoring well.	C	Noted.		
3	Table 2-4, Page 2 of 13	Some of the monitoring well values on this table exceed a MCL and should be "blue bolded" in the columns.	C	Values on page 2 of 13 that are above the MCL and were bolded, but not highlighted, have been revised by adding the blue bolded "highlight"		
4	Page 4-2, 3rd Paragraph	1. EPA agrees with the Army's assessment of the geochemical indicators not being optimal. 2. While reviewing the sample collection logs, EPA noticed that there were at least four monitoring wells within the plume with high dissolved oxygen	C C	1. Noted. Also, the Final MNA Technical Memorandum has been approved and the next sampling event will be updated with the optimized list of analyses. 2. Agreed, the DO levels at some wells were high and DO meters can be affected by field conditions and therefore the evaluation of		

Reviewer: Richard Mayer Comment Date: February 21, 2019						
Comment No.	**Section/Page/ Paragraph**	**Comment**	**C, D, E, or X[1]**	**Response**	**A or D[2]**	**Comment**
		values (ranging from 2.25 to 6.7 mg/L).		groundwater conditions uses multiple lines of evidence including ORP and respiratory substrates.		

Response to Comments on
Draft First Annual Remedial Action Operation Report, LHAAP-35B (37), Chemical Laboratory
Longhorn Army Ammunition Plant, Karnack Texas

Document Date: January 24, 2019
Reviewer: April Palmie (TCEQ)
Respondent: Dr. Rose Zeiler, U.S. Army

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X)
2. Commenter Agrees (A) with response, or Does Not Agree (D) with response

Reviewer: April Palmie **Comment Date:** February 13, 2019						
Comment No.	**Section/Page/ Paragraph**	**Comment**	**C, D, E, or X[1]**	**Response**	**A or D[2]**	**Comment**
1	General, narrative	Please check all the narrative for font color. There are several sections where the font is dark gray rather than black	C	The font color will be checked and changed where needed.		
2	2.1, 2-1	In the sentence beginning "The LUC for this site…", please replace "for residential groundwater use" with "which prohibits residential groundwater use". Is the semi-colon used correctly in this sentence? A similar sentence is also in 4.1.	C	The sentence will be revised as shown below. The sentence will also be revised to remove the semi-colon for clarity. 1. The LUC for this site is groundwater restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing. Also, the LUC prohibits residential groundwater use until the levels of COCs in the groundwater and soil allow unrestricted use and unlimited exposure. 2. The first sentence in section 4.1 will be revised as follows:		

Reviewer: April Palmie Comment Date: February 13, 2019						
Comment No.	**Section/Page/ Paragraph**	**Comment**	**C, D, E, or X[1]**	**Response**	**A or D[2]**	**Comment**
				The LUC for LHAAP-35B (37) is groundwater restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing or the use of residential groundwater until COCs in the groundwater and soil allow unrestricted use and unlimited exposure.		
3	2.5, 2-4	TCEQ concurs with removing 35BWW02 from the groundwater monitoring program.	C	Monitoring well 35BWW02 will be removed from the groundwater monitoring program.		
4	3.3.1, 3-2	TCEQ concurs that a side-gradient well may be necessary. Please add the statement at the end of this section to 4.1.	C	The following sentence will be added after the third paragraph on page 4-2, before the sentenced that starts with “The qualitative assessment of geochemical indicators…” The COC data from the RA-O monitoring indicates that the plume has been stable during the first year of sampling. At 35BWW25, TCE concentrations have increased since 2013 to slightly above the MCL (detected at 5.3 µg/L in August 2018). If TCE concentrations at 35BWW25 remain above the MCL, a new side gradient monitoring well outside the MCL boundary may be needed in to provide a compliance well/sentry point.		

Reviewer: April Palmie **Comment Date:** February 13, 2019						
Comment No.	**Section/Page/ Paragraph**	**Comment**	**C, D, E, or X[1]**	**Response**	**A or D[2]**	**Comment**
5	4.1, 4-1	Last paragraph on this page – the last two sentences seem to contradict each other. Please revise the last sentence.	C	The last sentence of the paragraph will be deleted: ~~During the first year RA-O sampling, between November 2017 and August 2018, the plume has not migrated in any direction.~~		
6	Table 2-3	Please revise this table to • remove rows for unsampled analytes (such as the acids) and • merge the data when there are two sets of columns with the same date (such as 35BWW04 10/3/2013 which has 4 columns for that date – pull into 2 columns)	C	• Acids and Total Alkalinity have been removed from Table 2-3 • Columns in Table 2-3 have been merged for baseline data at the following wells: 35BWW04, 35BWW05, 35BWW06, 35BWW07, 35BWW08, 35BWW09, 35BWW10, 35BWW11, 35BWW12, 35BWW13, 35BWW14, 35BWW16, 35BWW18, 35BWW19, 35BWW20		
7	Figure 2-11	1. The PCE and TCE colors are too similar, please revise one of them. 2. Please use a consistent scale for water level. Most are in feet but 35BWW04 and 09 are in 0.2 foot intervals. 3. Consider using a more consistent scale for concentrations. For example, we could have a low, medium, and high concentration range which would allow for comparison between wells.	C/E C E E	The following bullets are responses to each of comments within comment 7. 1. PCE data lines will be changed to the color green. 2. All of the scales currently use 0.2 feet amsl intervals, but the decimals are not shown. The graphs will be revised to show the 0.2 amsl scale. 3. More consistent axis values were added to allow for better comparison between wells on Figure 2-11 a and b. The most common maximum values are 20 µg./L and 90 µg/L.		

Reviewer: April Palmie Comment Date: February 13, 2019						
Comment No.	**Section/Page/ Paragraph**	**Comment**	**C, D, E, or X[1]**	**Response**	**A or D[2]**	**Comment**
		Currently, every chart has a different concentration scale. 4. Please check the data set for these figures. I didn't check every one of them but several I checked were plotting incorrect data (values and COCs) and incorrect dates. For example, the correct sample dates should be 10/13, 11/17, 2/18, 5/18, and 8/18, yet charts have a sample at 8/16. 5. Another example is that 35BWW04 should have TCE. 6. In other cases, the values don't match the data table.	E E C	4. The data plotted on the figures 11a and 11b represent all the data collected at each well, including 8/16 which are provided on Table 2-4. No change to the dates or data will be made per this specific. 5. TCE data is not provided on the graph for 35BWW04 because the concentration in August 2018 was 2.2 µg/L, below the GWPS of 5.0 µg/L. No change to the dates or data will be made per this specific comment. 6. All the figures have been checked. TCE at monitoring well 35BWW10 was plotted on the water level axis in error and showed the wrong value on the concentration axis. The TCE data line has been revised to plot on the correct axis.		

Draft Final
First Annual Remedial Action Operation Report, LHAAP-35B (37) (Chemical Laboratory)
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for

U.S. Army Corps of Engineers, Tulsa District
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Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
March 2019

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Acronyms and Abbreviations

µg/L	micrograms per liter
J	estimated value
U	Not detected; The analyte was analyzed for but not detected above the associated method detection limit.
AECOM	AECOM Technical Services, Inc.
APTIM	Aptim Federal Services, LLC
Bhate	Bhate Environmental, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	contaminants of concern
DCE	Dichloroethene
DO	dissolved oxygen
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUCs	land use controls
MATOC	Multiple Award Task Order Contract
MCL	maximum contaminant level
MDL	method detection limit
MEGA	Multiple Environmental Government Acquisition
mg/L	milligram(s) per liter
MMRP	Military Munitions Response Program
MNA	monitored natural attenuation
mV	millivolts
No.	number
ORP	oxidation-reduction potential
PCE	tetrachloroethene
RA-O	remedial action operation
RACR	Remedial Action Completion Report
RAWP	Remedial Action Work Plan
RD	Remedial Design
RI	remedial investigation
ROD	Record of Decision
Shaw	Shaw Environmental & Infrastructure, Inc.
SU	standard unit

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Acronyms and Abbreviations *(continued)*

TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TNT	trinitrotoluene
TOC	total organic carbon
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, contracted with Bhate Environmental, Inc. (Bhate) under the Omaha Multiple Environmental Government Acquisition (MEGA) National Small Business Multiple Award Task Order Contract (MATOC), Environmental Remediation Services with Military Munitions Response Program (MMRP), Task Order Number (No.) W9128BV17F0150, to conduct environmental restoration at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP). The Bhate Team is comprised of Bhate and Aptim Federal Services, LLC (APTIM).

LHAAP is located in east Texas in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake (see **Figure 1-1**). The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of the LHAAP installation is 3.5 miles from the Texas-Louisiana state border.

LHAAP was established in December 1941 with the primary mission of manufacturing trinitrotoluene (TNT). Production of TNT began at Plant 1 in October 1942 through 1945, when the facility was placed on standby status until February 1952. In 1952 the facility was reactivated and production of pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40-millimeter ammunition continued at Plant 2, northeast of Plant 1, through 1956. In December 1954, a third facility, Plant 3, began production of solid-fuel rocket motors for tactical missiles until 1965 when Plant 2 was reactivated for the production of pyrotechnic and illuminating ammunition. In the years following the Vietnam conflict, LHAAP continued to produce flares and other basic pyrotechnic or illuminating items for the U.S. Department of Defense inventory. From September 1988 to May 1991, LHAAP was also used for the static firing and elimination of Pershing I and II rocket motors.

Remedial action operation (RA-O) activities are required at LHAAP-35B (37) under the Record of Decision (ROD) issued for the site in June 2010 (USACE 2010). The Remedial Action Completion Report (RACR, AECOM 2016) outlines the implementation of RA-O to address risks associated with contaminated groundwater at the LHAAP-35B (37) site. The RACR (AECOM 2016) was developed using the basis and details of the Remedial Design (RD) (USACE 2011) and the Remedial Action Work Plan (RAWP) (AECOM 2013) for LHAAP-35B (37), and included the installation of three new wells, 35BWW24, 35BWW25, and 35BWW26, and their inclusion into the monitoring network.

A field demonstration pilot study of the bio-plug technology was conducted at the site during September 2012 through June 2014 (AECOM 2016). The purpose of the pilot study was to determine the feasibility of the bio-plug technology to accelerate the aerobic biological degradation of chlorinated organic contaminants in the groundwater at the site. The pilot study commenced in September 2012 and concluded with the final groundwater sampling round in October 2014. Interpretation of data generated through these events indicated reduction of contaminant concentrations was not sufficient to justify continuation of the demonstration.

Groundwater monitoring at LHAAP-35B (37) is ongoing as described in the RACR (AECOM 2016). This report represents the first year of RA-O implementation and summarizes the results of site inspections and sampling activities. Baseline sampling was conducted in October 2013. A Groundwater Geochemistry Rebound Evaluation Memorandum for Record was submitted February 2017 which determined that the aquifer is sufficiently recovered to its pre-bio-plug study geochemical state to begin implementation of the monitored natural attenuation (MNA) remedy. The first year RA-O quarterly sampling events were conducted in November 2017, February, May, and August 2018. An MNA evaluation will not be conducted until after eight quarterly sampling events (including baseline) are completed which will be in August 2019.

1.1 Remedial Action Objectives

The RA-Os at LHAAP-35B (37) will protect human health and meet applicable or relevant and appropriate requirements. There are no ecological risks at the LHAAP-35B (37) site (USACE 2010).

The RA-Os for the LHAAP-35B (37) site, consistent with the reasonably anticipated future use as a national wildlife refuge, are:

- Ensure protection of human health by preventing human exposure to the contaminated groundwater
- Ensure protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water
- Ensure return of groundwater to its potential beneficial use as drinking water, wherever practicable

1.2 Performance Objectives

The remedy selected for LHAAP-37 is land use control (LUC), MNA and Long-Term Monitoring (LTM)/Five-Year reviews.

The remedy includes the following components:

- LUC: LUC in the impacted area ensures protection of human health by restricting the use of groundwater exceeding the applicable cleanup levels to environmental monitoring and testing only. The LUC will remain in effect until such time as the U.S. Army, U.S. Environmental Protection Agency (USEPA), and Texas Commission on Environmental Quality (TCEQ) agree that contaminants of concern (COCs) concentrations have met cleanup levels. As a component of the LUC implementation, the civil survey of the LUC boundary was conducted in January 2015 and recorded in the Harrison County Courthouse in March 2015.
- RA-O: An MNA program is implemented as part of RA-O to establish attenuation trends and verify that the volatile organic compounds (VOC) plume is stable or shrinking, and will not migrate to nearby surface water (Goose Prairie Creek) at levels that may present an unacceptable risk to human health or the environment. Natural attenuation is expected to return groundwater to acceptable quality over time. The MNA program performance objectives will be evaluated after two years of RA-O groundwater monitoring. During those two years, groundwater monitoring will be performed on a quarterly basis. RA-O monitoring will continue semiannually for an additional three years.
- LTM/Five-Year Reviews: Groundwater monitoring will be performed annually until the next Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Five-Year Review. RA-O associated with this remedy will be used to track the continued effectiveness of MNA. Further reductions in sampling will depend on the Five-Year Reviews, but sampling will be conducted at least once every five years until the cleanup levels are achieved.

According to the RACR (AECOM 2016), groundwater monitoring is being performed to evaluate remedy effectiveness and will include groundwater and surface water monitoring. The groundwater monitoring program is designed to evaluate and monitor natural attenuation of COCs in shallow zone groundwater and the surface water monitoring program is designed to evaluate potential migration of contaminated groundwater to surface water.

The combined monitoring program shall meet the following objectives (AECOM 2013):

- Demonstrate that natural attenuation is effectively occurring
- Detect changes in environmental conditions (e.g., geochemical, hydrogeologic, etc.) that may reduce the efficacy of any of the natural attenuation processes
- Identify potentially toxic and/or mobile transformation products

- Verify that the plume(s) is not expanding
- Verify no unacceptable impact to downgradient receptors
- Detect new releases of contaminants to the environment that could impact effectiveness of the natural attenuation remedy
- Verify attainment of the remediation objectives

Work completed as part of the 2017/2018 RA-O consisted of the following:

- November 2017 groundwater monitoring event consisting of 24 wells and two surface water locations
- February/March 2018 groundwater monitoring event consisting of 24 wells and two surface water locations
- May 2018 groundwater monitoring event consisting of 24 wells and two surface water locations
- August 2018 groundwater monitoring event consisting of 24 wells and two surface water locations
- LUC inspection
- Well maintenance activities

This report summarizes the LUC compliance inspection, results of groundwater sampling, and an evaluation of MNA.

1.3 Site Description

LHAAP-35B (37) is located in the central portion of LHAAP as shown on **Figure 1-2**, and covers an area of approximately 16.5 acres. The site topography is relatively flat. The nearest significant surface water body is Goose Prairie Creek which runs through the site. Goose Prairie Creek eventually flows into Caddo Lake; however it is often dry at LHAAP-35B (37).

At LHAAP-35B (37), a Chemical Laboratory and associated buildings were built during the construction of Plant 3 (1953-1955) and was originally used to support the production activities at LHAAP. These support activities included research and testing of materials used in the production processes and quality assurance testing. Also, one waste rack sump was located at the site. In 1998, the site was used as a staging area in support of investigation activities.

1.4 Conceptual Site Model

A detailed Conceptual Site Model of LHAAP-35B (37) was presented in the ROD (USACE 2010).

Although the groundwater is not currently being used, nor is it expected to be used in the future, the groundwater pathway is being considered for remediation because it has the potential to present an unacceptable risk to maintenance worker.

COCs identified in the ROD for LHAAP-35B (37) groundwater are tetrachloroethene (PCE), trichloroethene (TCE), and 1,1-dichloroethene (DCE). The presence of these COCs in the shallow groundwater zone represents the primary driver for remedial action as they are at concentrations above the human health standard for a hypothetical future maintenance worker under an industrial exposure scenario.

Based on groundwater level data collected 2013 through 2018, the dominant shallow zone groundwater gradient is to the northeast. Groundwater monitoring has shown that contaminants are confined to the shallow groundwater. To confirm that groundwater contamination is not present below the shallow groundwater zone, monitoring well 35BWW03 was installed in the intermediate zone and monitoring well 35BWW06 was installed in the lower portion of the shallow zone. Monitoring well 35BWW03 was last sampled in August 2016 and COCs were below the MCLs. Monitoring well 35BWW06 was sampled quarterly during Year 1 RA-O monitoring and results were either non-detects or below MCLs. The continued absence of COCs in well 35BWW06 in the lower portion of the shallow zone and in the intermediate well 35BWW03 indicates that the plume has been vertically delineated, with no intermediate zone impacts identified. As described in the RACR, DPT-03 and DPT-06 were installed in the intermediate zone, and because groundwater samples from the DPTs did not indicate VOCs exceeding clean-up levels, no additional intermediate zone wells were installed. Monitoring wells 35BWW03 and 35BWW06 will continue to be sampled once every five years to support the Five Year Reviews, and the next sampling event for these wells will be in 2021.

In the ROD (Shaw 2010), contamination was known to be only on the west side of the creek and modeling calculations were completed to assess the potential for the COCs present in shallow groundwater at LHAAP-35B (37) to migrate toward and discharge to Goose Prairie Creek. The modeling assumed contaminants were not leaching from vadose zone soil to groundwater. Based on the results of the model, PCE and 1,1-DCE would not appear at detectable levels where groundwater discharges into Goose Prairie Creek. Even though the contamination has been detected to the east of the creek during the first year RA-O, contaminants were not detected in the surface water. These results suggest that contaminants

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present in the shallow groundwater at LHAAP-35B (37) are not adversely impacting Goose Prairie Creek during intermittent periods of discharge to the creek.

2.0 SITE ACTIVITIES AT LHAAP-35B (37)

This section describes the results of the first annual RA-O activities including the annual LUC compliance inspection, quarterly groundwater monitoring, and monitoring system repairs and/or maintenance performed at LHAAP-35B (37).

2.1 Annual Land Use Control Compliance Inspection

The annual LUC compliance inspection for LHAAP-35B (37) was performed on 16 Aug 2018. The LUC for this site is groundwater restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing. Also, the LUC prohibits residential groundwater use until the levels of COCs in the groundwater and soil allow unrestricted use and unlimited exposure. The restriction applies to groundwater underlying an approximately 16.5-acre area defined by the surveyed LUC boundary (AECOM 2016). The Annual LUC Compliance Certification Documentation Form for the first year RA-O monitoring period is included in **Appendix A**. No non-compliance issues or concerns were noted during the annual inspection. No damage to bollards, well pads, or protective casings was observed during the first year inspection and minimal encroachment of weeds or brush on the well pads was observed. Area mowing and clearing around the wells is conducted on an as needed basis, but typically is done before sampling events. Maintenance activities that were performed at LHAAP-35B (37) during first annual RA-O period are presented in **Section 2.4**.

2.2 Groundwater Monitoring

The first annual RA-O monitoring is the first of two years of quarterly monitoring. Four groundwater sampling events were completed in November 2017, February/March, May, and August 2018. In the RAWP (AECOM 2013), the lower shallow groundwater well 35BWW06 and intermediate well 35BWW03 were scheduled to be sampled during the baseline event and then once every five years to support the Five-year review. In the RACR (AECOM 2016), 25 wells were selected for sampling, which included wells 35BWW03 and 35BWW06, although they are scheduled to be sampled once every five years. During the Year 1 RA-O sampling events, 35BWW06 was sampled quarterly to evaluate the lower shallow groundwater and well 35BWW03 was last sampled in August 2016. In the future, the sampling schedule from the RACR will be followed and wells 35BWW03 and 35BWW06 will be sampled again in 2021. The total number of monitoring wells sampled during each quarterly sampling event was 23 of the 24 planned wells, because 35BWW02 was dry as shown on **Table 2-1**. Monitoring well locations are depicted in **Figure 2-1**.

Prior to collecting groundwater samples, monitoring wells were gauged using a water level probe, and the depth to water was recorded to the nearest 0.01 feet from the top of casing.

Depth-to-water measurements were used to calculate the groundwater elevations presented in **Table 2-2**.

Water samples were collected using low-flow sampling techniques as described in the groundwater sampling procedures found in the *Final Installation-Wide Work Plan* (Bhate 2018).

2.2.1 Groundwater Elevations and Flow Direction

During the first year RA-O quarterly sampling events, monitoring well 35BWW02 was dry; however, the dry well did not limit the ability to construct a potentiometric surface contour map. The screen at 35BWW01 is located at a higher elevation than other shallow wells and is not representative of the shallow groundwater. The groundwater at 35BWW01 may represent a perched zone and therefore was not used to create the shallow groundwater potentiometric map. Based on the gauging data during the baseline and quarterly sampling events, the groundwater flow direction is interpreted to be to the northeast (**Figures 2-2** through **2-5**).

2.2.2 Groundwater Analytical Results

Quarterly groundwater samples were collected and analyzed for VOCs according to SW-846 Method 8260. Samples from six monitoring wells were analyzed for MNA geochemical parameters as shown on **Table 2-1**.

Over the course of the first annual RA-O sampling events, monitoring wells 35BWW04, 35BWW05, 35BWW09, 35BWW10, 35BWW12, 35BWW14, 35BWW15, 35BWW16, 35BWW17, 35BWW20, 35BWW25, and LHSMW58 contained VOCs above their respective MCLs. The highest concentration of VOCs was detected in well 35BWW09. Analytical results for first annual RA-O period are presented in **Tables 2-3** and **Table 2-4**. **Table 2-3** presents the VOC and MNA data from October 2013 baseline and first year quarterly RA-O events. Historical COC results are presented in **Table 2-4**. **Figures 2-6** through **2-10** depict the VOC data in wells sampled in October 2013, November 2017, February 2018, May 2018, and August 2018, respectively. The trends of COC concentrations in monitoring wells with COC concentrations greater than the MCL are depicted in graphs presented on **Figure 2-11a** and **2-11b**. An expanded discussion on the VOCs and their distribution including trend analysis is included **Section 3.1**.

Groundwater monitoring well sampling collection logs were completed for each monitoring well sampled and are included in **Appendix C**. Laboratory analytical results are included in **Appendix D**.

Antimony and thallium were detected in groundwater at the LHAAP-35B (37) site prior to the remedial investigation (RI) conducted in 2002. Although it was reported that antimony and

thallium contributed to the groundwater non-carcinogenic hazard,* only two of the 10 samples had detections of thallium and antimony in the 1996 event and those detections were J-qualified (i.e., the reported values were estimated values because they were less than laboratory reporting limits). The conclusions of the 2002 RI were that thallium and antimony had not been detected in the subsequent 1998 sampling event and that the groundwater at the site was not considered to be contaminated with these two metals (USACE 2010). Because previous detections of antimony and thallium results were J-qualified results, shallow zone well groundwater samples were collected during the second quarterly sampling event to determine the need for further sampling. During the second quarterly sampling event, thallium was not detected above the method detection limit (MDL) of 0.001 milligram per liter (mg/L), and antimony was not detected above the MCL of 0.006 mg/L. At one well, 35BWW04, an estimated level was detected, again under the MDL of 0.001, at 0.000913 J µg/L. Since antimony and thallium were not detected above their MCL, these analyses have been excluded from the future sampling.

2.3 Surface Water Sampling

As per the RACR, quarterly sampling of surface water from two locations, 35BSW01 and 35BSW02, in Goose Prairie Creek was conducted for the first year. Future sampling will be conducted annually until the first CERCLA Five-Year Review. To determine if groundwater may be contributing to the surface water, the groundwater elevations and creek bottom elevations are to be compared. If the groundwater elevation is higher than the creek bottom elevation, then a surface water sample will be collected. For this evaluation 35BWW05 is compared to creek bottom elevation at 35BSW01 and 35BWW12 is compared to 35BSW02.

During the baseline and the first year RA-O sampling event, surface water samples were collected when water was present, and analyzed for VOCs using USEPA Method 8260B. Water was present in Goose Prairie Creek only during the Year 1 Quarter 1 (February 2018) and Year 1 Quarter 3 (May 2018) sampling events. Photographs were taken of the creek (**Appendix B**) at the sampling points and those observations were also recorded in the field notes. **Figure 2-1** depicts the approximate locations of the surface water samples. **Table 2-3** presents the surface water VOC data. No VOCs were detected at concentrations exceeding the laboratory reporting limits during any of the sampling events.

2.4 Groundwater Monitoring System Maintenance

Inspections of the conditions/integrity of monitoring wells are conducted during each sampling event and the information was recorded on the field sampling forms. **Appendix B** includes a photo log, which shows the condition of the wells each quarter. Maintenance or repairs were performed as needed, based on observed conditions. During the first annual reporting period, no damage to well bollards, pads, or protective well casings was observed. Also, only minimal

encroachment of weeds or brush on the well pads was observed. Mowing the area to control brush and weeds is conducted on a routine basis and as needed to allow access to the wells and was conducted at LHAAP-35B (37) on 15 Aug 2018. **Table 2-5** provides a summary of the maintenance activities that were performed at the site during the first annual RA-O period.

2.5 Groundwater Monitoring Optimization

Monitoring well 35BWW02 was dry during the first year of groundwater RA-O sampling and it is recommended to remove this well from the groundwater-monitoring program for the second annual RA-O sampling event. The sampling screen at monitoring well 35BWW02 was installed higher than any other well in the sampling plan, from 192.54 to 187.54 feet amsl. The elevation at this well is approximately the same elevation as 35BWW01 which has water, but is considered perched water and does not represent the shallow groundwater. Monitoring well 35BWW13 is collocated with 365BWW02 and is screened from 181.27 to 166.57 feet amsl, which is more aligned with other shallow wells. Therefore, 35BWW02 is recommended to be removed from the groundwater monitoring program. The proposed monitoring program is presented in **Table 2-6** and **Figure 2-12**.

3.0 NATURAL ATTENUATION EVALUATION

The following sections present the results of the natural attenuation evaluation in accordance with the three lines of evidence discussed in the Final RACR for site COCs. Trend analysis will not conducted until the second year RA-O, per the RACR report so that a sufficient number of samples will have been collected for statistically valid trends.

3.1 First Line of Evidence: Change in COC Concentrations

Natural attenuation is the combination of multiple mechanisms, including biodegradation, volatilization, dilution, advection, and absorption that reduce contaminant concentrations. The decrease of COC concentrations over time and distance is evidence of natural attenuation. The change in groundwater COC concentrations over time and with distance was evaluated at LHAAP-35B (37). COC concentrations for the first year of RA-O sampling events are provided on **Figures 2-6** through **2-10** as well as in **Tables 2-3** and **2-4**. COCs exceeding their respective MCLs are highlighted. To aid in evaluating COCs over time, concentration trends are provided on **Figures 2-11a** and **2-11b**.

In the 2016 RACR, six wells were discussed as the primary focus of analysis due to high COC concentrations: 35BWW04, 35BWW05, 35BWW08, 35BWW10, 35BWW14, and 35BWW15. In 2018, all the COCs were below the MCL at 35BWW04 and the highest levels were observed in 35BWW09, 35BWW10, and 35BWW14.

At 35BWW04, PCE has reduced from 66.5 µg/L in October 2013 to 8.2 in November 2017 and was below the MCL for the first time at 2.2 µg/L in August 2018. This data indicates that MNA is reducing COC concentrations at this site. At 35BWW09, TCE has increased from 49 µg/L in 2013 to 180 µg/L in August 2018. Although TCE increased from 49 µg/L in 2013 to 180 µg/L in Nov 2017, the concentration remained at this level in 3 of the four Year 1 RA-O sampling events, suggesting that the levels are stable. PCE has increased at 35BWW10 from 4.52 µg/L in 2013 to 24 µg/L in August 2018, and TCE has decreased from 56.3 to 28 µg/L in the same time frame. At 35BWW14, PCE has also increased from 19 µg/L in 2013 to 31 µg/L in August 2018, and TCE has decreased from 82.8 to 12 µg/L in the same time frame. The degradation products of TCE, cis-1,2-DCE, and 1,1-DCE were also observed at 35BWW14 and 35BWW15, indicating that limited reductive dechlorination is occurring at the site.

Based on the general direction of groundwater flow, monitoring wells 35BWW18 and 35BWW19 are upgradient background monitoring wells; and monitoring wells 35BWW07, 35BWW23, and 35BWW24 are downgradient monitoring wells. Site COCs have not been observed in these wells and aid in delineating the plume configuration. The groundwater flows to the northeast from monitoring well 35BWW20 towards LHSMW58 and 35BWW17. Along

this flow path, PCE concentrations in May 2018 reduced from 29 to 12, 6.2 to 0.5 U (not detected). Groundwater also flows from 35BWW10 towards 35BWW15, 35BWW14, 35BWW16, and 35BWW07. Along this flow path PCE concentrations in August 2018 were detected at 24 µg/L, 11 µg/L, 31 µg/L to 6.6 µg/L to 0.5 µg/L U. In these wells TCE is also present at 28 to 9.2 to 12, to 3.3 to 0.5 U along the flow path. The decreases in concentrations as groundwater moves downgradient indicates that attenuation is occurring over distance.

3.1.1 Plume Stability

COC plume maps have been completed for each of the first year RA-O sampling events and are presented in **Figures 2-6** through **2-10**. The COC data from the RA-O monitoring indicates that the plume has been stable during the first year of sampling. Since 2013, the plume has moved north towards 35BWW25. At 35BWW25, TCE increased from below the detection limit 1.0 µg/L in October 2013 to 7.6 µg/L in November 2017. Since 2017, TCE concentrations have fluctuated and were observed at 5.3 µg/L in August 2018. COC concentrations at perimeter wells 35BWW06, 35BWW07, 35BWW08, 35BWW11, 35BWW18, 35BWW19, 35BWW23, 35BWW24, and 35BWW26 have remained below the detection limits during the first year RA-O. Monitoring well 35BWW16 is the most downgradient well with COCs above the detection limit, and PCE concentrations have fluctuated between August 2016 and August 2018 from 5.13 µg/L to 9.2 µg/L, to 12 µg/L, to 7.8 µg/L to 6.6 µg/L, indicating that MNA is preventing the plume from moving downgradient and is stable (**Table 2-4**). If TCE concentrations at 35BWW25 remain above the MCL, a new side gradient monitoring well outside the MCL boundary would be needed in the future to provide a compliance well/sentry point.

3.2 Second Line of Evidence: Geochemical Indicators

Select monitoring wells were sampled for MNA parameters and are shown on **Table 2-1**. **Table 2-3** includes the geochemical data used to determine if the site groundwater is favorable for MNA biological degradation processes. The field parameters for LHAAP-35B (37) wells include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity, turbidity, ferrous iron, and temperature. Additional MNA parameters are analyzed at an off-site lab and include gasses (ethene, ethane, and methane) and anions (chloride, nitrate, and sulfate).

Dissolved Oxygen

DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA 1998). Anaerobic bacteria, which are the primary microbes able to degrade the site COCs, may be inhibited at DO concentrations greater than 0.5 mg/L. In monitoring wells where COCs are

above the MCL, the DO concentrations ranged from 0.2 mg/L to 1.37 mg/L, with an average of 0.57 mg/L during the 4th Quarter of the first year RA-O. The low DO levels (<0.5 mg/L) observed in some of these impacted wells are favorable for reductive chlorination.

Oxidation Reduction Potential

The ORP levels indicate the oxidative or reductive potential in the aquifer and provide real-time data to determine if conditions are conducive for biodegradation. ORP values less than 50 millivolts (mV) indicate that the aquifer is reaching anaerobic conditions and are favorable for biological reductive dechlorination of chlorinated ethenes and ethanes. During the first year RA-O monitoring, the ORP measurements ranged from 111 mV at 35BWW05 to 281 mV at 35BWW04. These measurements indicate oxidative conditions which are not favorable for reductive dechlorination.

Nitrate

After DO has been depleted by microbes in the treatment zone, nitrate may be used as an electron acceptor and is reduced to nitrite. Nitrate levels above 1.0 mg/L may compete with reductive dechlorination (USEPA 1998). The nitrate and nitrite concentrations were below 1.0 mg/L during the first year RA-O sampling, indicating that nitrate will not inhibit the anaerobic degradation of site COCs.

Iron Reduction

After nitrate is utilized, iron (III) (ferric iron) is used as an electron acceptor during anaerobic biodegradation of organic carbon. During this process, iron (III) is reduced to iron (II) (ferrous iron), which is soluble in water, and an increase in ferrous iron can indicate reducing groundwater conditions. During the first year RA-O, ferrous iron was observed during each of the RA-O sampling events in monitoring wells 35BWW04 and 35BWW12, indicating that iron-reducing conditions exist in limited areas in the site groundwater. In August 2018, ferrous iron was observed at 0.52 mg/L in 35BWW04, along with PCE concentrations below the MCL for the first time. This data indicated that MNA processes are aiding in decreasing concentrations at this site.

Sulfate

After DO, nitrate, and iron have been depleted in the groundwater, sulfate is used as an electron acceptor. Concentrations of sulfate greater than 20 mg/L may compete with reductive dechlorination of the site COCs. However, in many plumes with high concentrations of sulfate, reductive dechlorination still occurs (USEPA 1998). Sulfate was sampled in monitoring wells designated for MNA analysis during the first year RA-O and ranged from 26.5 mg/L to

102 mg/L in August 2018. Sulfate levels are slightly elevated and may compete as an electron acceptor with site COCs.

Methane

Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, iron, and sulfate have been depleted. Methane levels above 500 µg/L are considered indicative of methanogenic conditions (USEPA 1998). Methane concentrations were less than 3 µg/L during the first year RA-O and suggest that methanogenic conditions are not present in the groundwater.

Total Organic Carbon

Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. Total organic carbon (TOC) is utilized as an energy and hydrogen source to support the reductive dechlorination of the chlorinated COCs. TOC concentrations greater than 20 mg/L are considered adequate to support microbial activity (USEPA 1998). TOC was less than 2 µg/L during the first year RA-O sampling. This data indicates that carbon concentrations in the groundwater are not supportive of reductive dechlorination.

pH

The pH of the groundwater has an effect on the activity of microbial populations. Microbes capable of degrading chlorinated aliphatic hydrocarbons generally prefer pH values from 6 to 8 standard units (SU) (USEPA 1998). The shallow zone groundwater pH during the first year RA-O period ranged from 3.77 to 7.13 SU, with an average of value of 5.32 SU. The pH levels in these wells are on average, low for dechlorinating bacteria.

Ethene and Ethane

Ethane and ethene are the two end products of the reductive dechlorination pathways for chlorinated ethanes and ethenes. During the first year RA-O, ethene and ethane concentrations were below the laboratory reporting limits (<0.55 µg/L). This data indicates that complete reductive dechlorination is not occurring at this time.

Geochemical Indicator MNA Parameter Summary

The qualitative assessment of geochemical indicators during the first year RA-O period in the groundwater at LHAAP-35B (37) indicates current geochemical conditions are not favorable for MNA processes via biological reduction. Nonetheless, certain parameters observed in a

few locations may indicate that conditions could favor biological natural attenuation, such as the low DO and nitrate/nitrite concentrations and the presence of ferrous iron. The presence of degradation products, cis-1,2-DCE and 1,1-DCE, suggest that limited biological degradation is occurring; however, the primary MNA processes reducing concentrations are abiotic.

3.3 Third Line of Evidence: Microbial Analysis

If the first two lines of evidence for MNA are deemed inadequate or inconclusive, and/or if the need for a contingency remedy is evaluated, data from field or microcosm studies will be necessary to establish the third line of evidence for MNA. Dechlorinating bacteria, *Dehalococcoides sp.*, were analyzed at wells designated for MNA sampling during the first year RA-O sampling. *Dehalococcoides sp.* concentrations were measured to be less than 0.5 cells per milliliter indicating that the species required for complete reductive dechlorination is not present at levels favorable for complete reductive dechlorination.

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4.0 SUMMARY AND CONCLUSIONS

4.1 Summary

The LUC for LHAAP-35B (37) is groundwater restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing or the use of residential groundwater until COCs in the groundwater and soil allow unrestricted use and unlimited exposure. The annual LUC compliance inspection for the first year RA-O was conducted on 16 Aug 2018. No non-compliance issues or concerns were identified during the annual inspection and site monitoring wells were in good condition. No change in land use or groundwater use has occurred at the site during the first year RA-O monitoring period. Monitoring well 35BWW02 was dry during the first year of RA-O and is recommended to be removed from the monitoring program.

VOC data and geochemical indicators were collected over the course of the monitoring period to evaluate effectiveness of MNA as a site remedy. A tiered approach was used to evaluate the occurrence of natural attenuation in site groundwater. The first line of evidence evaluated reductions in COC concentrations. The second line of evidence evaluated geochemical indicators, and the third line of evidence evaluated microbial populations in the aquifer. The results of the tiered evaluation and the conclusions are summarized below.

Sampling was conducted during the second quarter sampling event for antimony and thallium to determine if future sampling is warranted. The concentrations of antimony and thallium were below their respective MCLs, and it was determined that these metals will not be sampled in the future.

During the baseline and the first year RA-O sampling event, surface water samples were also collected, and analyzed for VOCs. Water was present in Goose Prairie Creek during the Year 1 Quarter 1 and Year 1 Quarter 3 sampling events and no VOCs were detected at concentrations exceeding the laboratory reporting limits.

An assessment of the first line of evidence included an evaluation of the groundwater flow and COC degradation trends. Based on the first year RA-O groundwater level measurements, the groundwater flow direction at LHAAP-35B (37) continues to be northeast. At monitoring well 35BWW25, TCE was first observed above the detection limit in 2016 and has remained elevated through the first year RA-O. This data suggests that the plume has moved side gradient since 2013, and concentrations in 35BWW25 have fluctuated between 5.1 to 11 µg/L.

During the baseline sampling event in 2013, PCE, TCE, 1,1-DCE, and VC were detected above their MCLs in 35BWW14 and 35BWW15. After the baseline sampling, a bio-plug pilot test

was conducted in 2015 and 2016. The first RA-O sampling event was conducted in November 2017 and PCE, TCE, and 1,1-DCE were observed above their respective MCLs at 35BWW14 and only PCE and TCE were observed at 35BWW15. At the end of the first year of RA-O sampling in August 2018, only PCE and TCE were above their respective MCLs in site groundwater.

The highest COC level observed during the first year RA-O monitoring period was in well 35BWW09, with TCE detected at 240 µg/L in May 2018, and 180 µg/L in August 2018. Reductions in COCs were also observed over time and distance during the first Year of RA-O sampling. At 35BWW04, PCE has reduced to below the MCL between November 2017 and August 2018. Along the groundwater flow path from 35BWW10 towards 35BWW15, 35BWW14, 35BWW16, and 35BWW07, both PCE and TCE concentrations have reduced.

The COC data from the RA-O monitoring indicates that the plume has been stable during the first year of sampling. At 35BWW25, TCE concentrations have increased since 2013 to slightly above the MCL (detected at 5.3 µg/L in August 2018). If TCE concentrations at 35BWW25 remain above the MCL, a new side gradient monitoring well outside the MCL boundary may be needed in to provide a compliance well/sentry point.

The qualitative assessment of geochemical indicators performed as the second line of evidence at LHAAP-35B (37) indicates current geochemical conditions are not optimal for biological degradation MNA processes. Although, degradation products cis-1,2-DCE and 1,1-DCE have been detected in monitoring wells, groundwater conditions within the impacted area are not highly reducing in most areas, which is not favorable for the complete reductive dechlorination of site COCs.

The third line of evidence to assess MNA is to evaluate microorganisms that demonstrate biological degradation. During the first year RA-O sampling, *Dehalococcoides sp.* was not observed at levels favorable for reductive dechlorination.

The evaluation of MNA at LHAAP-35B (37) indicates that decreasing concentrations are primarily due to abiotic processes, including dispersion, dilution, sorption, and volatilization. Quarterly sampling will continue for the second year of RA-O monitoring in compliance with the RACR (AECOM 2016).

5.0 REFERENCES

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Tables

Table 2-1
Groundwater RA-O Sampling – 2017 and 2018

Well ID	Groundwater Unit	Y1Q1 November 2017			Y1Q2 February 2018				Y1Q2 March 2018		Y1Q3 May 2018			Y1Q4 August 2018		
		VOC	Field Parameters	MNA	VOC	Field Parameters	Antimony/ Thallium	MNA	Antimony/ Thallium	Field Parameters	VOC	Field Parameters	MNA	VOC	Field Parameters	MNA
35BWW01	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW02	Shallow	Dry			Dry				Dry		Dry			Dry		
35BWW04	Shallow	X	X	X	X	X	X	X			X	X	X	X	X	X
35BWW05	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW06	Lower Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW07	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW08	Shallow	X	X	X	X	X	X	X			X	X	X	X	X	X
35BWW09	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW10	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW11	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW12	Shallow	X	X	X	X	X	X	X			X	X	X	X	X	X
35BWW13	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW14	Shallow	X	X	X	X	X	X	X			X	X	X	X	X	X
35BWW15	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW16	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW17	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW18	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW19	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW20	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW23	Shallow	X	X	X	X	X	X	X			X	X	X	X	X	X
35BWW24	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW25	Shallow	X	X		X	X			X	X	X	X		X	X	
35BWW26	Shallow	X	X	X	X	X	X	X			X	X	X	X	X	X
LHSMW58	Shallow	X	X		X	X			X	X	X	X		X	X	
35BSW01	Goose Prairie Creek	Dry			X	X			X	X	Dry			Dry		
35BSW02	Goose Prairie Creek	Dry			X	X			X	X	Dry			Dry		

Notes:

Field parameters to be monitored for all wells: pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and ferric iron.

MNA parameters include alkalinity, sulfate, sulfide, chloride, TOC, dissolved iron and manganese, total phosphorus, carbon dioxide, dissolved gases (methane, ethane, ethene) and total iron.

ID - identification

MNA - monitored natural attenuation

NS - not sampled

RA(O) - remedial action operation

TOC - total organic carbon

VOC - volatile organic compounds

X - well was analyzed for that parameter

Table 2-2

Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW01	1/1/2013	202.42	200.31	Dry	Dry	9	19	191.31	181.31	Dry
	8/18/2016	202.42	200.31	17.00	14.89	9	19	191.31	181.31	185.42
	11/8/2017	202.42	200.31	15.42	13.31	9	19	191.31	181.31	187.00
	2/14/2018	202.42	200.31	14.8	12.69	9	19	191.31	181.31	187.62
	3/29/2018	202.42	200.31	12.94	10.83	9	19	191.31	181.31	189.48
	5/24/2018	202.42	200.31	12.28	10.17	9	19	191.31	181.31	190.14
	8/16/2018	202.42	200.31	14.22	12.11	9	19	191.31	181.31	188.20
35BWW02	1/1/2013	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	8/19/2016	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	11/7/2017	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	2/13/2018	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	3/28/2018	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
	5/24/2018	203.95	201.54	Dry	Dry	9	14	192.54	187.54	Dry
35BWW04	1/1/2013	202.11	199.26	23.50	20.65	20	30	179.26	169.26	178.61
	8/17/2016	202.11	199.26	22.00	19.15	20	30	179.26	169.26	180.11
	11/9/2017	202.11	199.26	23.80	20.95	20	30	179.26	169.26	178.31
	2/14/2018	202.11	199.26	23.53	20.68	20	30	179.26	169.26	178.58
	5/22/2018	202.11	199.26	22.55	19.70	20	30	179.26	169.26	179.56
	8/22/2018	202.11	199.26	24.09	21.24	20	30	179.26	169.26	178.02
35BWW05	1/1/2013	202.57	199.97	24.08	21.48	26	36	173.97	163.97	178.49
	8/18/2016	202.57	199.97	22.65	20.05	26	36	173.97	163.97	179.92
	11/8/2017	202.57	199.97	24.30	21.70	26	36	173.97	163.97	178.27
	2/16/2018	202.57	199.97	24.00	21.40	26	36	173.97	163.97	178.57
	3/27/2018	202.57	199.97	23.35	20.75	26	36	173.97	163.97	179.22
	5/21/2018	202.57	199.97	23.20	20.60	26	36	173.97	163.97	179.37
	8/21/2018	202.57	199.97	24.63	22.03	26	36	173.97	163.97	177.94
35BWW06	1/1/2013	203.04	200.01	24.70	21.67	42	52	158.01	148.01	178.34
	8/18/2016	203.04	200.01	23.27	20.24	42	52	158.01	148.01	179.77
	11/8/2017	203.04	200.01	24.50	21.47	42	52	158.01	148.01	178.54
	2/16/2018	203.04	200.01	24.70	21.67	42	52	158.01	148.01	178.34
	3/27/2018	203.04	200.01	24.80	21.77	42	52	158.01	148.01	178.24
	5/21/2018	203.04	200.01	24.02	20.99	42	52	158.01	148.01	179.02
	8/21/2018	203.04	200.01	25.3	22.27	42	52	158.01	148.01	177.74
35BWW07	1/1/2013	203.53	200.86	27.85	25.18	18	28	182.86	172.86	175.68
	8/18/2016	203.53	200.86	25.50	22.83	18	28	182.86	172.86	178.03
	11/8/2017	203.53	200.86	27.94	25.27	18	28	182.86	172.86	175.59
	2/13/2018	203.53	200.86	27.25	24.58	18	28	182.86	172.86	176.28
	3/29/2018	203.53	200.86	26.52	23.85	18	28	182.86	172.86	177.01
	5/23/2018	203.53	200.86	26.11	23.44	18	28	182.86	172.86	177.42
	8/20/2018	203.53	200.86	28.05	25.38	18	28	182.86	172.86	175.48
35BWW08	1/1/2013	204.12	201.40	25.10	22.38	22	32	179.4	169.4	179.02
	8/17/2016	204.12	201.40	23.74	21.02	22	32	179.4	169.4	180.38
	11/7/2017	204.12	201.40	25.40	22.68	22	32	179.4	169.4	178.72
	2/14/2018	204.12	201.40	25.07	22.35	22	32	179.4	169.4	179.05
	5/23/2018	204.12	201.40	24.43	21.71	22	32	179.4	169.4	179.69
	8/22/2018	204.12	201.40	25.73	23.01	22	32	179.4	169.4	178.39
35BWW09	1/1/2013	205.16	203.15	26.40	24.39	25	35	178.15	168.15	178.76
	8/16/2016	205.16	203.15	24.85	22.84	25	35	178.15	168.15	180.31
	11/7/2017	205.16	203.15	26.45	24.44	25	35	178.15	168.15	178.71
	2/16/2018	205.16	203.15	26.43	24.42	25	35	178.15	168.15	178.73
	3/27/2018	205.16	203.15	25.57	23.56	25	35	178.15	168.15	179.59
	5/21/2018	205.16	203.15	25.5	23.49	25	35	178.15	168.15	179.66
	8/16/2018	205.16	203.15	26.71	24.70	25	35	178.15	168.15	178.45

Table 2-2

Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW10	1/1/2013	203.79	200.79	24.97	21.97	18.23	33	182.56	167.79	178.82
	8/18/2016	203.79	200.79	23.47	20.47	18.23	33	182.56	167.79	180.32
	11/7/2017	203.79	200.79	25.5	22.50	18.23	33	182.56	167.79	178.29
	2/16/2018	203.79	200.79	24.87	21.87	18.23	33	182.56	167.79	178.92
	3/27/2018	203.79	200.79	24.21	21.21	18.23	33	182.56	167.79	179.58
	5/24/2018	203.79	200.79	24.17	21.17	18.23	33	182.56	167.79	179.62
	8/17/2018	203.79	200.79	25.43	22.43	18.23	33	182.56	167.79	178.36
35BWW11	1/1/2013	203.31	200.9	24.47	22.06	25	35	175.9	165.9	178.84
	8/18/2016	203.31	200.9	22.42	20.01	25	35	175.9	165.9	180.89
	11/8/2017	203.31	200.9	24.3	21.89	25	35	175.9	165.9	179.01
	2/12/2018	203.31	200.9	24.06	21.65	25	35	175.9	165.9	179.25
	3/27/2018	203.31	200.9	23.16	20.75	25	35	175.9	165.9	180.15
	5/21/2018	203.31	200.9	22.64	20.23	25	35	175.9	165.9	180.67
	8/17/2018	203.31	200.9	24.46	22.05	25	35	175.9	165.9	178.85
35BWW12	1/1/2013	201.17	198.52	22.55	19.90	20.3	35	178.22	163.52	178.62
	8/17/2016	201.17	198.52	20.86	18.21	20.3	35	178.22	163.52	180.31
	11/9/2017	201.17	198.52	22.75	20.10	20.3	35	178.22	163.52	178.42
	2/14/2018	201.17	198.52	22.40	19.75	20.3	35	178.22	163.52	178.77
	5/23/2018	201.17	198.52	21.34	18.69	20.3	35	178.22	163.52	179.83
	8/22/2018	201.17	198.52	22.96	20.31	20.3	35	178.22	163.52	178.21
35BWW13	1/1/2013	203.52	201.07	25.55	23.10	19.8	34.5	181.27	166.57	177.97
	8/19/2016	203.52	201.07	23.51	21.06	19.8	34.5	181.27	166.57	180.01
	11/7/2017	203.52	201.07	25.50	23.05	19.8	34.5	181.27	166.57	178.02
	2/13/2018	203.52	201.07	25.36	22.91	19.8	34.5	181.27	166.57	178.16
	3/28/2018	203.52	201.07	24.25	21.80	19.8	34.5	181.27	166.57	179.27
	5/24/2018	203.52	201.07	24.00	21.55	19.8	34.5	181.27	166.57	179.52
	8/21/2018	203.52	201.07	25.71	23.26	19.8	34.5	181.27	166.57	177.81
35BWW14	1/1/2013	201.26	199.55	23.15	21.44	25	35	174.55	164.55	178.11
	8/17/2016	201.26	199.55	21.65	19.94	25	35	174.55	164.55	179.61
	11/7/2017	201.26	199.55	23.4	21.69	25	35	174.55	164.55	177.86
	2/15/2018	201.26	199.55	23.11	21.40	25	35	174.55	164.55	178.15
	5/22/2018	201.26	199.55	22.2	20.49	25	35	174.55	164.55	179.06
	8/22/2018	201.26	199.55	23.67	21.96	25	35	174.55	164.55	177.59
35BWW15	1/1/2013	201.75	200.01	23.6	21.86	17.8	47.5	182.21	152.51	178.15
	8/19/2016	201.75	200.01	22.04	20.30	17.8	47.5	182.21	152.51	179.71
	11/7/2017	201.75	200.01	23.77	22.03	17.8	47.5	182.21	152.51	177.98
	2/13/2018	201.75	200.01	23.64	21.90	17.8	47.5	182.21	152.51	178.11
	3/29/2018	201.75	200.01	22.43	20.69	17.8	47.5	182.21	152.51	179.32
	5/21/2018	201.75	200.01	23.65	21.91	17.8	47.5	182.21	152.51	178.10
	8/20/2018	201.75	200.01	24.07	22.33	17.8	47.5	182.21	152.51	177.68
35BWW16	1/1/2013	201.2	198.34	23.36	20.50	18.8	33.5	179.54	164.84	177.84
	8/19/2016	201.2	198.34	21.71	18.85	18.8	33.5	179.54	164.84	179.49
	11/7/2017	201.2	198.34	23.51	20.65	18.8	33.5	179.54	164.84	177.69
	2/13/2018	201.2	198.34	23.33	20.47	18.8	33.5	179.54	164.84	177.87
	3/29/2018	201.2	198.34	22.25	19.39	18.8	33.5	179.54	164.84	178.95
	5/24/2018	201.2	198.34	22.28	19.42	18.8	33.5	179.54	164.84	178.92
	8/17/2018	201.2	198.34	23.7	20.84	18.8	33.5	179.54	164.84	177.50
35BWW17	1/1/2013	201	198.16	22.85	20.01	18.3	33	179.86	165.16	178.15
	8/19/2016	201	198.16	20.95	18.11	18.3	33	179.86	165.16	180.05
	11/7/2017	201	198.16	22.89	20.05	18.3	33	179.86	165.16	178.11
	2/13/2018	201	198.16	22.73	19.89	18.3	33	179.86	165.16	178.27
	3/29/2018	201	198.16	21.38	18.54	18.3	33	179.86	165.16	179.62
	5/24/2018	201	198.16	21.42	18.58	18.3	33	179.86	165.16	179.58
	8/17/2018	201	198.16	23.11	20.27	18.3	33	179.86	165.16	177.89

Table 2-2

Groundwater Elevation Data, LHAAP-35B(37)

Well ID	Sampling Date	TOC Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Depth to Water (ft TOC)	Depth to Water (ft bgs)	Screen Interval (ft bgs)		Screen Interval (ft MSL)		Water Elevation (ft MSL)
						Top	Bottom	Top	Bottom	
35BWW18	1/1/2013	206.72	203.8	27.94	25.02	17.77	32.5	186.03	171.3	178.78
	8/16/2016	206.72	203.8	26.24	23.32	17.77	32.5	186.03	171.3	180.48
	11/7/2017	206.72	203.8	27.5	24.58	17.77	32.5	186.03	171.3	179.22
	2/13/2018	206.72	203.8	27.9	24.98	17.77	32.5	186.03	171.3	178.82
	3/27/2018	206.72	203.8	27.18	24.26	17.77	32.5	186.03	171.3	179.54
	5/21/2018	206.72	203.8	27	24.08	17.77	32.5	186.03	171.3	179.72
	8/16/2018	206.72	203.8	27.95	25.03	17.77	32.5	186.03	171.3	178.77
35BWW19	1/1/2013	206.66	204.1	27.75	25.19	18.75	33.48	185.35	170.62	178.91
	8/16/2016	206.66	204.1	25.82	23.26	18.75	33.48	185.35	170.62	180.84
	11/7/2017	206.66	204.1	27.2	24.64	18.75	33.48	185.35	170.62	179.46
	2/13/2018	206.66	204.1	27.48	24.92	18.75	33.48	185.35	170.62	179.18
	3/27/2018	206.66	204.1	26.99	24.43	18.75	33.48	185.35	170.62	179.67
	5/21/2018	206.66	204.1	26.7	24.14	18.75	33.48	185.35	170.62	179.96
	8/16/2018	206.66	204.1	27.55	24.99	18.75	33.48	185.35	170.62	179.11
35BWW20	1/1/2013	205.23	202.67	26.3	23.74	15.14	29.9	187.53	172.77	178.93
	8/18/2016	205.23	202.67	24.78	22.22	15.14	29.9	187.53	172.77	180.45
	11/8/2017	205.23	202.67	26.5	23.94	15.14	29.9	187.53	172.77	178.73
	2/12/2018	205.23	202.67	26.35	23.79	15.14	29.9	187.53	172.77	178.88
	3/27/2018	205.23	202.67	25.45	22.89	15.14	29.9	187.53	172.77	179.78
	5/24/2018	205.23	202.67	25.4	22.84	15.14	29.9	187.53	172.77	179.83
	8/20/2018	205.23	202.67	26.8	24.24	15.14	29.9	187.53	172.77	178.43
35BWW23	1/1/2013	205.37	202.74	27.03	24.40	20	30	182.74	172.74	178.34
	8/17/2016	205.37	202.74	27.03	24.40	20	30	182.74	172.74	178.34
	11/9/2017	205.37	202.74	28.56	25.93	20	30	182.74	172.74	176.81
	2/15/2018	205.37	202.74	28.35	25.72	20	30	182.74	172.74	177.02
	5/22/2018	205.37	202.74	27.63	25.00	20	30	182.74	172.74	177.74
	8/22/2018	205.37	202.74	28.86	26.23	20	30	182.74	172.74	176.51
35BWW24	8/19/2016	206.64	203.82	27.89	25.07	19.9	29.6	183.92	174.22	178.75
	2/16/2018	206.64	203.82	29.37	26.55	19.9	29.6	183.92	174.22	177.27
	3/28/2018	206.64	203.82	28.83	26.01	19.9	29.6	183.92	174.22	177.81
	5/24/2018	206.64	203.82	28.65	25.83	19.9	29.6	183.92	174.22	177.99
	8/21/2018	206.64	203.82	29.8	26.98	19.9	29.6	183.92	174.22	176.84
35BWW25	8/19/2016	204.31	201.74	25.45	22.88	19.9	29.6	181.84	172.14	178.86
	11/8/2017	204.31	201.74	27.27	24.70	19.9	29.6	181.84	172.14	177.04
	2/16/2018	204.31	201.74	26.92	24.35	19.9	29.6	181.84	172.14	177.39
	3/28/2018	204.31	201.74	26.38	23.81	19.9	29.6	181.84	172.14	177.93
	5/23/2018	204.31	201.74	26.32	23.75	19.9	29.6	181.84	172.14	177.99
	8/20/2018	204.31	201.74	27.31	24.74	19.9	29.6	181.84	172.14	177.00
35BWW26	8/17/2016	205.86	230.41	26.13	50.68	25.2	34.9	205.21	195.51	179.73
	11/9/2017	205.86	230.41	27.71	52.26	25.2	34.9	205.21	195.51	178.15
	2/14/2018	205.86	230.41	27.6	52.15	25.2	34.9	205.21	195.51	178.26
	5/22/2018	205.86	230.41	26.97	51.52	25.2	34.9	205.21	195.51	178.89
	8/22/2018	205.86	230.41	28.07	52.62	25.2	34.9	205.21	195.51	177.79
LHSMW58	1/1/2013	203.56	200.78	24.77	21.99	21.4	31.4	179.38	169.38	178.79
	8/18/2016	203.56	200.78	23.26	20.48	21.4	31.4	179.38	169.38	180.30
	11/8/2017	203.56	200.78	25.05	22.27	21.4	31.4	179.38	169.38	178.51
	2/12/2018	203.56	200.78	24.87	22.09	21.4	31.4	179.38	169.38	178.69
	3/27/2018	203.56	200.78	23.95	21.17	21.4	31.4	179.38	169.38	179.61
	5/24/2018	203.56	200.78	23.87	21.09	21.4	31.4	179.38	169.38	179.69
	8/20/2018	203.56	200.78	25.21	22.43	21.4	31.4	179.38	169.38	178.35

Notes:

bgs - below ground surface

Dry - insufficient or no water in well

ft - feet

MSL - mean sea level

TOC - top of casing

Table 2-3
Groundwater Results 2017-2018

	Location Code	35BSW01										35BSW02															
	Sample ID	35BSW01-101713		35BSW01-021218		35BSW01-180327						35BSW02-101713		35BSW02-021218		35BSW02-180327				35BWW01-110817		35BWW01-021418		35BWW01-180329		35BWW01-180524	
	Sample Date	10/17/2013	11/17/2017	2/12/2018	3/27/2018	5/25/2018	8/21/2018	10/17/2013	11/17/2017	2/12/2018	3/27/2018	5/25/2018	8/21/2018	11/8/2017	2/14/2018	3/29/2018	5/24/2018											
	Sample Event	Baseline	Year1 Quarter 1	Year1 Quarter 2	Year1 Quarter 2	Year1 Quarter 3	Year1 Quarter 4	Baseline	Year1 Quarter 1	Year1 Quarter 2	Year1 Quarter 2	Year1 Quarter 3	Year1 Quarter 4	Year1 Quarter 1	Year1 Quarter 2	Year1 Quarter 2	Year1 Quarter 3											
	Sample Purpose	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG	REG										
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS					Dry						Dry		Dry								Dry		Dry								
Bromide	mg/L																														
Chloride	mg/L																														
Fluoride	mg/L																														
Nitrate	mg/L	10																													
Nitrite	mg/L	1																													
Sulfate	mg/L																														
SULFIDE																															
Sulfide	mg/L																														
DHC																															
Dehalococcoides	cells/mL																														
FIELD TESTS																															
Conductivity	mS/cm						0.11		0.167								0.105		0.161				0.201		0.106		0.105		0.082		
Dissolved Oxygen	mg/L						12.35		7.43								11.29		7.09				2.32		6		5.26		0		
Oxidation-Reduction Potential	mV						92.3		153.6								108.5		168.9				204.3		185.6		257.3		491		
pH	SU						7.20		6.34								6.78		6.09				6.60		5.46		4.49		4.03		
Temperature	C						5.48		23.95								5.47		21.17				18.13		15.5		18.21		19.08		
Turbidity	NTU						45.5		11.8								43.6		16.7				140.6		124.7		130.9		59.7		
Water Level at Reading Time	Ft BTOC																						15.6		15.4		13.1		12.53		
GASES																															
Carbon Dioxide	µg/L																														
Ethane	µg/L																														
Ethylene	µg/L																														
Methane	µg/L																														
GENERAL CHEMISTRY																															
Ferrous Iron (Iron II)	mg/L																														
METALS																															
Antimony	mg/L	0.006							0.001	U									0.001	U							0.001	U			
Thallium	mg/L								0.001	U									0.001	U							0.001	U			
TOTAL ORGANIC CARBON																															
Total Inorganic Carbon	mg/L																														
Total Organic Carbon	mg/L																														
VOCs																															
1,1-Dichloroethene	µg/L	7	1	U			0.5	U					1	U			0.5	U					1	U	0.5	U			0.5	U	
cis-1,2-Dichloroethene	µg/L	70	0.5	U			0.5	U					0.5	U			0.5	U					1	U	0.5	U			0.5	U	
Tetrachloroethene	µg/L	5	0.5	U			0.5	U					0.5	U			0.5	U					1	U	0.5	U			0.5	U	
Trichloroethene	µg/L	5	0.5	U			0.5	U					0.5	U			0.5	U					1	U	0.5	U			0.5	U	
Vinyl Chloride	µg/L	2	0.5	U			0.5	U					0.5	U			0.5	U					1	U	0.5	U			0.5	U	

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW01						35BWW02															
	Sample ID		35BWW01-		35BWW01-180816		35BWW01-180816-		35BWW02-131004								35BWW04-100313		35BWW04-110917		35BWW04-110917		35BWW04-021418		35BWW04-021418-	
	Sample Date		5/24/2018		8/16/2018		8/16/2018		10/4/2013		11/7/2017		2/21/2018		5/25/2018		8/21/2018		10/3/2013		11/9/2017		11/9/2017		2/14/2018		2/14/2018	
	Sample Event		Year1 Quarter 3		Year1 Quarter 4		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2	
	Sample Purpose		FD		REG		FD		REG		REG		REG		REG		REG		REG		REG		FD		REG		FD	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS											Dry		Dry		Dry		Dry											
Bromide	mg/L																				0.1	U	0.209					
Chloride	mg/L																		11		5.67		5.82		6.96		7.06	
Fluoride	mg/L																				0.244		0.249					
Nitrate	mg/L	10																	1.06		0.187		0.173		0.124		0.105	
Nitrite	mg/L	1																	0.2	U	0.1	U	0.1	U	0.05	U	0.05	U
Sulfate	mg/L																		41.6		33.1		33.8		31.8		32.2	
SULFIDE																												
Sulfide	mg/L																		1	U	1	U	1	U				
DHC																												
Dehalococcoides	cells/mL																				1.7	U						
FIELD TESTS																												
Conductivity	mS/cm				0.195														0.257		0.277				0.312			
Dissolved Oxygen	mg/L				1.06														1.08		2.2				3.03			
Oxidation-Reduction Potential	mV				261														108		183.5				126.1			
pH	SU				4.93														6.46		6.50				6.34			
Temperature	C				24.59														26.49		18.4				17.84			
Turbidity	NTU				76.4														8.5		0				1.7			
Water Level at Reading Time	Ft BTOC				14.46																24.25							
GASES																												
Carbon Dioxide	µg/L																				38,000		35,000		40,000		43,000	
Ethane	µg/L																		2	U	0.076	U	0.076	U	0.6	U	0.6	U
Ethylene	µg/L																		2	U	0.071	U	0.071	U	1	U	1	U
Methane	µg/L																		3.17	U	0.49	J	0.3	U	1.3	U	1.3	U
GENERAL CHEMISTRY																												
Ferrous Iron (Iron II)	mg/L																		0.04	U	0.18				0.06			
METALS																												
Antimony	mg/L	0.006																							0.00187	J	0.000913	J
Thallium	mg/L																								0.001	U	0.001	U
TOTAL ORGANIC CARBON																												
Total Inorganic Carbon	mg/L																		8.4		40		33					
Total Organic Carbon	mg/L																		2.01		1.12		1.21		1.52		1.52	
VOCs																												
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U											2.3	J	1	U	1	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U											0.673	J	1	U	1	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U											66.5	J	7.3		8.2		10		10	
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U											11.4	J	1		1.1		1.3		1.2	
Vinyl Chloride	µg/L	2	0.5	U	0.5	U	0.5	U											0.5	U	1	U	1	U	0.5	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW04																							
	Sample ID		35BWW04-180522		35BWW04-180822		35BWW05-100413		35BWW05-110817		35BWW05-021618		35BWW05-180327		35BWW05-180521		35BWW05-180821		35BWW06-100413		35BWW06-110817		35BWW06-021618		35BWW06-180327		35BWW06-180521	
	Sample Date		5/22/2018		8/22/2018		10/4/2013		11/8/2017		2/16/2018		3/27/2018		5/21/2018		8/21/2018		10/4/2013		11/8/2017		2/16/2018		3/27/2018		5/21/2018	
	Sample Event		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																												
Bromide	mg/L																											
Chloride	mg/L		4.87		3.78																							
Fluoride	mg/L																											
Nitrate	mg/L	10	0.099	J	0.049	J																						
Nitrite	mg/L	1	0.1	U	0.1	U																						
Sulfate	mg/L		36.5		26.5																							
SULFIDE																												
Sulfide	mg/L																											
DHC																												
Dehalococcoides	cells/mL		1.2																									
FIELD TESTS																												
Conductivity	mS/cm		0.216		0.398		0.237		0.338		0.306		0.317		0.213		0.31				0.706		0.763		0.751		0.629	
Dissolved Oxygen	mg/L		0		0.33		0.59		0.78		0.65		1.72		0		0.7		0.073		0.8		0.57		0.37		0	
Oxidation-Reduction Potential	mV		411		281		-146		-0.3		84.6		125.1		269		111		-143		-11.2		-46.5		-95.6		180	
pH	SU		5.12		5.17		7.06		6.80		6.73		6.35		5.14		5.29		6.98		6.39		7.22		8.34		5.57	
Temperature	C		18.87		21.26		25		18.57		19.51		25.64		23.26		21.27		23.9		18		19.96		23.01		22.85	
Turbidity	NTU		58.3		229		43.3		19		0		0		779		657		5.1		0		0		0		0	
Water Level at Reading Time	Ft BTOC		22.73		24.3				24.55		24.15		23.45		23.41		24.85				26.3		26.37		24.9		24.22	
GASES																												
Carbon Dioxide	µg/L		770000		500000	J																						
Ethane	µg/L		0.47	UJ	0.47	U																						
Ethylene	µg/L		0.55	U	0.55	U																						
Methane	µg/L		1	UJ	1	U																						
GENERAL CHEMISTRY																												
Ferrous Iron (Iron II)	mg/L		0.52		0.52																							
METALS																												
Antimony	mg/L	0.006											0.001	U											0.00128	J		
Thallium	mg/L												0.001	U											0.001	U		
TOTAL ORGANIC CARBON																												
Total Inorganic Carbon	mg/L																											
Total Organic Carbon	mg/L		1.7		1.73																							
VOCs																												
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	0.5	U			0.5	U	0.5	U	1	U	1	U	0.5	U			0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.295	J	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U
Tetrachloroethene	µg/L	5	5.3		2.2		1.57		1.5		2.8				2		1.7		0.5	U	1	U	0.5	U			0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	14		7		10				8.5		7.3		0.5	U	1	U	0.5	U			0.5	U
Vinyl Chloride	µg/L	2	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW06																							
	Sample ID		35BWW06-180821		35BWW07-100513		35BWW07-110917		35BWW07-021318		35BWW07-180329		35BWW07-180523		35BWW07-180820		35BWW08-100913		35BWW08-110717		35BWW08-021418		35BWW08-180523		35BWW08-180822	
	Sample Date		8/21/2018		10/5/2013		11/9/2017		2/13/2018		3/29/2018		5/23/2018		8/20/2018		10/9/2013		11/7/2017		2/14/2018		5/23/2018		8/22/2018	
	Sample Event		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																										
Bromide	mg/L																		2.11							
Chloride	mg/L																71.5		11.3		11.2		12.2		10.3	
Fluoride	mg/L																		0.53							
Nitrate	mg/L	10															2.3		0.1	U	0.465		0.265		0.311	
Nitrite	mg/L	1															0.2	U	0.1	U	0.05	U	0.04	J	0.1	U
Sulfate	mg/L																115		62.3		55.8		51		64.4	
SULFIDE																										
Sulfide	mg/L																1	U	6.88							
DHC																										
Dehalococcoides	cells/mL																7.1	U	0.5	U			0.5			
FIELD TESTS																										
Conductivity	mS/cm		0.911		0.837		1.112		1.031		0.931		0.613		0.951		0.647		0.408		0.418		0.318		0.481	
Dissolved Oxygen	mg/L		0.44		10.86		1.86		0.84		0.97		0		0.63		1.06		3.2		3.2		0.58		1.6	
Oxidation-Reduction Potential	mV		92		187		135.7		94.7		119.1		364		112		99		176.5		25.5		380		236	
pH	SU		5.57		6.77		6.87		6.82		6.16		5.61		6.02		6.86		8.00		9.06		5.53		5.49	
Temperature	C		22.25		22.17		17.49		14.43		19		19.78		27.94		19.48		20.51		18.93		19.68		22.64	
Turbidity	NTU		162		27.6		5.9		0		0		35.3		59.1		1.1		0		0		0.8		42.8	
Water Level at Reading Time	Ft BTOC		25.5				27.9		29.5		28.3		26.33		28.28				26		25.31		24.63		25.95	
GASES																										
Carbon Dioxide	µg/L																		2,200		1,000	U	580,000		350,000	J
Ethane	µg/L																2	U	0.076	U	0.6	U	0.47	U	0.47	U
Ethylene	µg/L																2	U	0.071	U	1	U	0.55	U	0.55	U
Methane	µg/L																3.39	U	0.3	U	1.3	U	1	U	1	U
GENERAL CHEMISTRY																										
Ferrous Iron (Iron II)	mg/L																0.04	U	0.12		0.05		0.00	U	0.00	U
METALS																										
Antimony	mg/L	0.006									0.001	U									0.001	U				
Thallium	mg/L										0.001	U									0.001	U				
TOTAL ORGANIC CARBON																										
Total Inorganic Carbon	mg/L																28.7		34							
Total Organic Carbon	mg/L																4.19		0.875	J	0.87	J	0.812	J	0.854	J
VOCs																										
1,1-Dichloroethene	µg/L	7	0.5	U	1	U	1	U	0.5	U			0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	43.8		0.89	J	0.5	U	0.5	U	0.5	U
Vinyl Chloride	µg/L	2	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW09																													
	Sample ID		35BWW09-100813		35BWW09-110717		35BWW09-021318		35BWW09-180327		35BWW09-180521		35BWW09-180816		35BWW10-100413		35BWW10FD-		35BWW10-110717		35BWW10-021618		35BWW10-180327		35BWW10-180524		35BWW10-180817		35BWW11-100813		35BWW11-110817		35BWW11-021218	
	Sample Date		10/8/2013		11/7/2017		2/13/2018		3/20/2018		5/21/2018		8/16/2018		10/4/2013		10/4/2013		11/7/2017		2/16/2018		3/27/2018		5/24/2018		8/17/2018		10/8/2013		11/8/2017		2/12/2018	
	Sample Event		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		FD		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																																		
Bromide	mg/L																																	
Chloride	mg/L																																	
Fluoride	mg/L																																	
Nitrate	mg/L	10																																
Nitrite	mg/L	1																																
Sulfate	mg/L																																	
SULFIDE																																		
Sulfide	mg/L																																	
DHC																																		
Dehalococcoides	cells/mL																																	
FIELD TESTS																																		
Conductivity	mS/cm		1.02		0.776		0.926		0.85		0.591		0.534		0.309				0.318		0.357		0.354		0.245		0.366		0.518		0.586		0.595	
Dissolved Oxygen	mg/L		0.74		0.59		0.48		2.09		0		0.61		1.38				0.69		0.45		0.5		0		1.11		1.3		0.77		0.82	
Oxidation-Reduction Potential	mV		-13		-38.6		41.9		139.1		355		214		96				86.2		57.3		118.1		379		208		-59		93		20.9	
pH	SU		7.06		6.68		7.15		6.33		5.47		6.02		7.24				7.02		7.18		6.53		5.43		7.16		6.44		6.17		6.95	
Temperature	C		20.45		19.63		15.12		22.68		19.5		31.29		26.2				19.85		20.92		23.12		20.15		26.58		19.55		17.78		14.99	
Turbidity	NTU		0.6		18.5		0		0		0		72.6		20.2				0		0		0		88.3		277		2.1		66.8		0	
Water Level at Reading Time	Ft BTOC				26.56		26.53		22.68		25.75		26.91						25.5		24.95		24.28		24.38		25.63				24.85		24.55	
GASES																																		
Carbon Dioxide	µg/L																																	
Ethane	µg/L																																	
Ethylene	µg/L																																	
Methane	µg/L																																	
GENERAL CHEMISTRY																																		
Ferrous Iron (Iron II)	mg/L																																	
METALS																																		
Antimony	mg/L	0.006							0.001	U													0.001	U										
Thallium	mg/L								0.001	U													0.001	U										
TOTAL ORGANIC CARBON																																		
Total Inorganic Carbon	mg/L																																	
Total Organic Carbon	mg/L																																	
VOCs																																		
1,1-Dichloroethene	µg/L	7	1	U	0.84	J	0.5	U			0.5	U	0.5	U	1	U	1	U	1	U	0.5	U			0.5	U	0.5	U	1	U	1	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.529	J	1.7		0.5	U			0.96	J	0.84	J	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	1	U	0.5	U			0.5	U	0.5	U	4.45		4.52		31		29				30		24		0.252	J	1	U	0.5	U
Trichloroethene	µg/L	5	49		180		180				240		180		56.3		56.9		33		39				36		28		0.5	U	1	U	0.5	U
Vinyl Chloride	µg/L	2	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW11																					
	Sample ID		35BWW11-180327		35BWW11-180521		35BWW11-180817		35BWW12-100313		35BWW12-110917		35BWW12-021418		35BWW12-180523		35BWW12-		35BWW12-180822		35BWW12-		35BWW13-100713	
	Sample Date		3/27/2018		5/21/2018		8/17/2018		10/3/2013		11/9/2017		2/14/2018		5/23/2018		5/23/2018		8/22/2018		8/22/2018		10/7/2013	
	Sample Event		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 3		Year1 Quarter 4		Year1 Quarter 4		Baseline	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		FD		REG		FD		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																								
Bromide	mg/L										0.086	J												
Chloride	mg/L								10.5		10.8		9.3		9.08		9.68		8.4		8.14			
Fluoride	mg/L										0.159													
Nitrate	mg/L	10							0.2	U	0.161		0.05	U	0.1	U	0.1	U	0.1	U	0.1	U		
Nitrite	mg/L	1							0.2	U	0.032	J	0.05	U	0.1	U	0.1	U	0.1	U	0.1	U		
Sulfate	mg/L								38.5		48.5		46.5		48.7		58.6		47.2		44.8			
SULFIDE																								
Sulfide	mg/L								1	U	7.56													
DHC																								
Dehalococcoides	cells/mL										0.5	U			3.3									
FIELD TESTS																								
Conductivity	mS/cm		0.471		0.306		0.333		0.322		0.402		0.431		0.277				0.46				0.113	
Dissolved Oxygen	mg/L		1.31		0		0.48		0.68		0.79		0.51		0				0.25				1.18	
Oxidation-Reduction Potential	mV		195.8		342		170		119		151		122.8		374				201				230	
pH	SU		5.68		5.71		6.33		5.98		6.00		6.39		5.29				5.53				5.11	
Temperature	C		24.14		23.02		27.66		21.72		18.19		17.98		20.41				21.3				18.45	
Turbidity	NTU		0		0		66.7		42		0		5.4		729				356				101	
Water Level at Reading Time	Ft BTOC		23.16		22.85		24.69				23.3		22.44		21.55				23.19					
GASES																								
Carbon Dioxide	µg/L										53,000		61,000	J	700,000		570,000		320,000	J	340,000	J		
Ethane	µg/L								2	U	0.076	U	0.6	U	0.47	U	0.47	U	0.47	U	0.47	U		
Ethylene	µg/L								2	U	0.071	U	1	U	0.55	U	0.55	U	0.55	U	0.55	U		
Methane	µg/L								6.83	U	0.91	J	0.52	J	0.83	J	0.8	J	0.73	UB	0.73	UB		
GENERAL CHEMISTRY																								
Ferrous Iron (Iron II)	mg/L								0.04	U	0.24		0.26		3.30				0.91					
METALS																								
Antimony	mg/L	0.006	0.001	U									0.001	U										
Thallium	mg/L		0.001	U									0.001	U										
TOTAL ORGANIC CARBON																								
Total Inorganic Carbon	mg/L								14.9		47	J												
Total Organic Carbon	mg/L								3.2		0.669	J	0.812	J	0.985	J	0.969	J	0.754	J	0.851	J		
VOCs																								
1,1-Dichloroethene	µg/L	7			0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
cis-1,2-Dichloroethene	µg/L	70			0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5			0.5	U	0.5	U	15.3		4.8		7.1		6.2		7		7.3		7.6		4.14	
Trichloroethene	µg/L	5			0.5	U	0.5	U	2.04		0.62	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.84	
Vinyl Chloride	µg/L	2			0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code	35BWW13																		35BWW14									
	Sample ID	35BWW13-110717		35BWW13-110717-		35BWW13-021318		35BWW13-021318		35BWW13-		35BWW13-180328		35BWW13-180328		35BWW13-180524		35BWW13-180821		35BWW14-100913		35BWW14-110717		35BWW14-021518		35BWW14-180522		35BWW14-180822	
	Sample Date	11/7/2017		11/7/2017		2/13/2018		2/13/2018		2/13/2018		3/28/2018		3/28/2018		5/24/2018		8/21/2018		10/9/2013		11/7/2017		2/15/2018		5/22/2018		8/22/2018	
	Sample Event	Year1 Quarter 1		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4	
	Sample Purpose	REG		FD		REG		FD		FD		REG		FD		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																														
Bromide	mg/L																						1.09							
Chloride	mg/L																			16.3		11.1		11.9		15.6		10	
Fluoride	mg/L																					0.476							
Nitrate	mg/L	10																		0.2	U	0.1	U	0.533		0.349		0.423	
Nitrite	mg/L	1																		0.2	U	0.1	U	0.05	U	0.1	U	0.1	U
Sulfate	mg/L																			59.5		55.6		54.5		66.7		52.1	
SULFIDE																														
Sulfide	mg/L																			1	U	1	U						
DHC																														
Dehalococcoides	cells/mL																			0.3	U	0.5	U			0.5			
FIELD TESTS																														
Conductivity	mS/cm		0.154				0.133						0.141				0.139		0.152		0.368		0.484		0.44		0.303		0.451	
Dissolved Oxygen	mg/L		4.59				5.59						4.84				0		0.95		0.68		0.56		2.7		0		0.25	
Oxidation-Reduction Potential	mV		289.1				213.1						267				538		376		-52		0.56		105.9		388		245	
pH	SU		5.27				4.94						4.04				3.77		4.58		6.83		7.05		6.76		5.11		5.28	
Temperature	C		18.43				15.65						17.73				18.4		22.74		20.93		20		20.38		22.73		25.74	
Turbidity	NTU		4.9				1.5						0				877		191		1		0		0		17.9		66.9	
Water Level at Reading Time	Ft BTOC		25.65				25.43						24.37				24.25		25.92				23.46		23.2		22.38		23.89	
GASES																														
Carbon Dioxide	µg/L																					9,400		20,000		480,000		520,000	J
Ethane	µg/L																			2	U	0.076	U	0.6	U	0.47	U	0.47	U
Ethylene	µg/L																			2	U	0.071	U	1	U	0.55	U	0.55	U
Methane	µg/L																			83.6		1.3		1.3	U	1	U	2.2	UB
GENERAL CHEMISTRY																														
Ferrous Iron (Iron II)	mg/L																			0.04	U	0.35		0.00	U	0.00	U	0.00	U
METALS																														
Antimony	mg/L	0.006											0.001	U	0.001	U								0.001	U				
Thallium	mg/L												0.001	U	0.001	U								0.001	U				
TOTAL ORGANIC CARBON																														
Total Inorganic Carbon	mg/L																			18.3		43							
Total Organic Carbon	mg/L																			3.84		0.812	J	0.766	J	1.03		0.961	J
VOCs																														
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U	0.5	U	0.5	U					0.5	U	0.5	U	57.2		8.4		0.5	U	5.1		2.2	
cis-1,2-Dichloroethene	µg/L	70	1	U	1	U	0.5	U	0.5	U	0.5	U					0.5	U	0.5	U	14.3		2.4		1.1		2.6		1.4	
Tetrachloroethene	µg/L	5	0.99	J	0.84	J	1.9		1.9		1.9						0.5	U	0.5	U	19		53		44		30		31	
Trichloroethene	µg/L	5	1	U	1	U	0.5	U	0.5	U	0.5	U					0.5	U	0.5	U	82.8		24		20		23		12	
Vinyl Chloride	µg/L	2	1	U	1	U	0.5	U	0.5	U	0.5	U					0.5	U	0.5	U	5.09		1	U	0.5	U	0.5	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW15																								35BWW17					
	Sample ID		35BWW15-131008		35BWW15-110717		35BWW15-021318		35BWW15-180329		35BWW15-180521		35BWW15-180820		35BWW16-100713		35BWW16FD-		35BWW16-110717		35BWW16-021318		35BWW16-180329		35BWW16-180524		35BWW16-180817		35BWW17-131008		35BWW17-110717		35BWW17-021318	
	Sample Date		10/8/2013		11/7/2017		2/13/2018		3/29/2018		5/21/2018		8/20/2018		10/7/2013		10/7/2013		11/7/2017		2/13/2018		3/29/2018		5/24/2018		8/17/2018		10/8/2013		11/7/2017		2/13/2018	
	Sample Event		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		FD		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																																		
Bromide	mg/L																																	
Chloride	mg/L																																	
Fluoride	mg/L																																	
Nitrate	mg/L	10																																
Nitrite	mg/L	1																																
Sulfate	mg/L																																	
SULFIDE																																		
Sulfide	mg/L																																	
DHC																																		
Dehalococcoides	cells/mL																																	
FIELD TESTS																																		
Conductivity	mS/cm		0.868		0.48		0.519		0.5		0.311		0.431		0.259				0.314		0.32		0.295		0.183		0.198		0.259		0.199		0.234	
Dissolved Oxygen	mg/L		0.82		0.8		0.61		0.46		0		0.47		1.35				1.74		0.65		0.99		0		0.27		0.6		0.64		0.45	
Oxidation-Reduction Potential	mV		-45		226.3		99.3		144.4		328		208		213				178.3		155.4		201.3		491		267		142		125.4		201.3	
pH	SU		6.84		6.74		6.65		6.28		5.42		5.73		6				6.24		5.71		5.11		5.02		5.43		5.67		6.27		5.15	
Temperature	C		21.01		19.09		15.68		20.2		20.37		23.52		22.42				18.78		15.24		19.75		23.55		27.97		20.59		19.5		13.93	
Turbidity	NTU		1,000		0		0		0		5.4		22.5		98.9				5.7		0		30.9		786		600		975		0		0.1	
Water Level at Reading Time	Ft BTOC				24.2		24		22.6		23.81		24.26						23.7		23.48		22.5		22.48		23.91				23		22.93	
GASES																																		
Carbon Dioxide	µg/L																																	
Ethane	µg/L																																	
Ethylene	µg/L																																	
Methane	µg/L																																	
GENERAL CHEMISTRY																																		
Ferrous Iron (Iron II)	mg/L																																	
METALS																																		
Antimony	mg/L	0.006							0.001	U													0.001	U										
Thallium	mg/L								0.001	U													0.001	U										
TOTAL ORGANIC CARBON																																		
Total Inorganic Carbon	mg/L																																	
Total Organic Carbon	mg/L																																	
VOCs																																		
1,1-Dichloroethene	µg/L	7			4.2		2.2				3.4		1.7		0.865	J	0.846	J	1.1		0.5	U			0.5	U	0.5	U			1	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70			1.1		0.5	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U			1	U	0.5	U
Tetrachloroethene	µg/L	5			12		12				13		11		0.447	J	0.447	J	9.2		12				7.8		6.6				2.6		7.5	
Trichloroethene	µg/L	5			15		14				13		9.2		2.57		2.45		4.2		5.8				4		3.3				1.1		2.9	
Vinyl Chloride	µg/L	2			1	U	0.5	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U			1	UJ	0.5	U

Table 2-3
Groundwater Results 2017-2018

			Location Code		35BWW17																						35BWW19					
			Sample ID	35BWW17-180329		35BWW17-180524		35BWW17-180821		35BWW18-100213		35BWWU18-		35BWW18-110717		35BWW18-021318		35BWW18-180327		35BWW18-180521		35BWW18-180816		35BWW19-100713		35BWW19-110717		35BWW19-021318		35BWW19-180327		35BWW19-180521		35BWW19-180816	
			Sample Date	3/29/2018		5/24/2018		8/21/2018		10/2/2013		10/2/2013		11/7/2017		2/13/2018		3/27/2018		5/21/2018		8/16/2018		10/7/2013		11/7/2017		2/13/2018		3/27/2018		5/21/2018		8/16/2018	
			Sample Event	Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4	
			Sample Purpose	REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																																			
Bromide	mg/L																																		
Chloride	mg/L																																		
Fluoride	mg/L																																		
Nitrate	mg/L	10																																	
Nitrite	mg/L	1																																	
Sulfate	mg/L																																		
SULFIDE																																			
Sulfide	mg/L																																		
DHC																																			
Dehalococcoides	cells/mL																																		
FIELD TESTS																																			
Conductivity	mS/cm			0.119		0.058		0.085		2.42				0.842		0.979		0.842		0.621		0.865		2.53		2.465		3.035		2.675		2.62		1.36	
Dissolved Oxygen	mg/L			1.55		0		1.1		1.05				1.37		0.93		1.73		0		0.82		1.62		0.84		1.34		1.21		0		0.48	
Oxidation-Reduction Potential	mV			244.9		540		370		-166				205.6		125.3		184.1		363		227		138		182		114.9		161.2		345		229	
pH	SU			4.45		3.81		4.74		12.3				6.04		6.10		5.59		5.40		5.59		6.23		6.30		6.30		5.73		5.67		6.18	
Temperature	C			19.19		19.35		22.37		28.79				19.36		15.29		22.11		19.08		24.11		17.7		19.45		14.24		21.49		19.22		28.08	
Turbidity	NTU			10.1		812		639		1				7.3		0		0		312		162		9.8		12		0.4		0		111		356	
Water Level at Reading Time	Ft BTOC			21.45		21.66		23.35						27.88		28.3		27.4		27.24		28.18				27.3		27.76		27.3		26.95		27.77	
GASES																																			
Carbon Dioxide	µg/L																																		
Ethane	µg/L																																		
Ethylene	µg/L																																		
Methane	µg/L																																		
GENERAL CHEMISTRY																																			
Ferrous Iron (Iron II)	mg/L																																		
METALS																																			
Antimony	mg/L	0.006		0.001	U													0.001	U											0.001	U				
Thallium	mg/L			0.001	U													0.001	U											0.001	U				
TOTAL ORGANIC CARBON																																			
Total Inorganic Carbon	mg/L																																		
Total Organic Carbon	mg/L																																		
VOCs																																			
1,1-Dichloroethene	µg/L	7				0.5	U	0.5	U	1	U	1	U	1	U	0.5	U			0.5	U	0.5	U	1	U	1	U	0.5	U			0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70				0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U
Tetrachloroethene	µg/L	5				0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U
Trichloroethene	µg/L	5				0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U
Vinyl Chloride	µg/L	2				0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW20												35BWW23							
	Sample ID		35BWW20-100413		35BWW20-110817		35BWW20-021218		35BWW20-180327		35BWW20-180524		35BWW20-180820		35BWW23-070114		35BWW23-110917		35BWW23-021518		35BWW23-180522	
	Sample Date		10/4/2013		11/8/2017		2/12/2018		3/27/2018		5/24/2018		8/20/2018		7/1/2014		11/9/2017		2/15/2018		5/22/2018	
	Sample Event		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 3	
	Sample Purpose		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																						
Bromide	mg/L																0.469					
Chloride	mg/L																89.8		71.1		68.2	
Fluoride	mg/L																0.184					
Nitrate	mg/L	10															0.1	U	0.05	U	0.1	U
Nitrite	mg/L	1															0.1	U	0.155		0.1	U
Sulfate	mg/L																123		112		116	
SULFIDE																						
Sulfide	mg/L																1	U				
DHC																						
Dehalococcoides	cells/mL																2.2				0.5	
FIELD TESTS																						
Conductivity	mS/cm		0.378		0.328		0.413		0.366		0.24		0.372				0.891		0.782		0.466	
Dissolved Oxygen	mg/L		1.65		2.15		3.49		3.97		0.93		1.03				4.24		2.83		0	
Oxidation-Reduction Potential	mV		170		136.7		94.3		190.7		366		238				153.1		110.5		393	
pH	SU		5.23		6.70		7.09		5.82		5.66		7.13				6.45		6.42		5.19	
Temperature	C		23.28		19.3		16.04		23.72		21.6		28.86				17.4		21		23.14	
Turbidity	NTU		35.9		25		20.3		24.1		272		648				0		0		0	
Water Level at Reading Time	Ft BTOC				27.05		26.6		25.78		25.65		27.04				28.88		28.75		27.86	
GASES																						
Carbon Dioxide	µg/L																50,000		63,000		480,000	
Ethane	µg/L																0.076	U	0.6	U	0.47	U
Ethylene	µg/L																0.071	U	1	U	0.55	U
Methane	µg/L																0.9	J	1.3	U	1	U
GENERAL CHEMISTRY																						
Ferrous Iron (Iron II)	mg/L																0.16		0.01		0.00	U
METALS																						
Antimony	mg/L	0.006							0.001	U									0.001	U		
Thallium	mg/L								0.001	U									0.001	U		
TOTAL ORGANIC CARBON																						
Total Inorganic Carbon	mg/L																41					
Total Organic Carbon	mg/L																1.05		0.946	J	1.19	
VOCs																						
1,1-Dichloroethene	µg/L	7	1	U	1	U	0.5	U			0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U
Tetrachloroethene	µg/L	5	31.1		25		34				29		19		0.5	U	1	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	7.04		4.7		5.7				6.3		3.6		0.5	U	1	U	0.5	U	0.5	U
Vinyl Chloride	µg/L	2	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

	Location Code	35BWW23	35BWW24										35BWW25											
	Sample ID	35BWW23-180822	35BWW24-081916		35BWW24-110817		35BWW24-021618		35BWW24-180328		35BWW24-180524		35BWW24-180821		35BWW25-081916		35BWW25FD-		35BWW25-110817		35BWW25-110817		35BWW25-021618	
	Sample Date	8/22/2018	8/19/2016		11/8/2017		2/16/2018		3/28/2018		5/24/2018		8/21/2018		8/19/2016		8/19/2016		11/8/2017		11/8/2017		2/16/2018	
	Sample Event	Year1 Quarter 4	Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4		Baseline		Baseline		Year1 Quarter 1		Year1 Quarter 1		Year1 Quarter 2	
	Sample Purpose	REG	REG		REG		REG		REG		REG		REG		REG		FD		REG		FD		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																								
Bromide	mg/L																							
Chloride	mg/L		58.1																					
Fluoride	mg/L																							
Nitrate	mg/L	10	0.104																					
Nitrite	mg/L	1	0.1	U																				
Sulfate	mg/L		102																					
SULFIDE																								
Sulfide	mg/L																							
DHC																								
Dehalococcoides	cells/mL																							
FIELD TESTS																								
Conductivity	mS/cm		0.653				1.717		1.572		1.49		1.01		1.5						0.974				0.865	
Dissolved Oxygen	mg/L		0.59				2.18		1.51		2.95		0		0.37						2.32				0.92	
Oxidation-Reduction Potential	mV		261				246.9		109.4		164.7		424		250						239.2				116.9	
pH	SU		5.35				6.49		6.35		5.53		5.31		5.69						6.42				6.28	
Temperature	C		28.91				16.4		19.99		18.36		20.52		23.33						18.41				19.21	
Turbidity	NTU		3.7				9.8		6.7		0		114		48						0				0	
Water Level at Reading Time	Ft BTOC		29.09				30.14		30.15		29.61		28.85		30.02						27.27				27.73	
GASES																								
Carbon Dioxide	µg/L		500,000	J																				
Ethane	µg/L		0.47	U																				
Ethylene	µg/L		0.55	U																				
Methane	µg/L		1	U																				
GENERAL CHEMISTRY																								
Ferrous Iron (Iron II)	mg/L		0.00	U																				
METALS																								
Antimony	mg/L	0.006									0.001	U												
Thallium	mg/L										0.001	U												
TOTAL ORGANIC CARBON																								
Total Inorganic Carbon	mg/L																							
Total Organic Carbon	mg/L		1.16																					
VOCs																								
1,1-Dichloroethene	µg/L	7	0.5	U	1	U	1	U	0.5	U			0.5	U	0.5	U	1	U	1	U	1	U	1	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.415	J	1	U	0.5	U			0.5	U	0.5	U	5.55		5.94		7.6		7.5		11	
Vinyl Chloride	µg/L	2	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U

	Location Code	35BWW25																						
	Sample ID	35BWW25-021618-		35BWW25-180328		35BWW25-180328-																		
	Sample Date	2/16/2018		3/28/2018		3/28/2018																		
	Sample Event	Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 2																		
	Sample Purpose	FD		REG		FD																		
Parameter	Units	Result	Val Qual	Result	Val Qual	Result	Val Qual																	
ANIONS																								
Bromide	mg/L																							
Chloride	mg/L																							
Fluoride	mg/L																							
Nitrate	mg/L																							
Nitrite	mg/L																							
Sulfate	mg/L																							
SULFIDE																								
Sulfide	mg/L																							
DHC																								
Dehalococcoides	cells/mL																							
FIELD TESTS																								
Conductivity	mS/cm			0.829																				
Dissolved Oxygen	mg/L			2.38																				
Oxidation-Reduction Potential	mV			167.9																				
pH	SU			5.51																				
Temperature	C			17.44																				
Turbidity	NTU			0																				
Water Level at Reading Time	Ft BTOC			26.6																				
GASES																								
Carbon Dioxide	µg/L																							
Ethane	µg/L																							
Ethylene	µg/L																							
Methane	µg/L																							
GENERAL CHEMISTRY																								
Ferrous Iron (Iron II)	mg/L																							
METALS																								
Antimony	mg/L			0.001	U	0.001	U																	
Thallium	mg/L			0.001	U	0.001	U																	
TOTAL ORGANIC CARBON																								
Total Inorganic Carbon	mg/L																							
Total Organic Carbon	mg/L																							
VOCs																								
1,1-Dichloroethene	µg/L	0.5	U																					
cis-1,2-Dichloroethene	µg/L	0.5	U																					
Tetrachloroethene	µg/L	0.5	U																					
Trichloroethene	µg/L	11		11																				
Vinyl Chloride	µg/L	0.5	U																					

Table 2-3
Groundwater Results 2017-2018

	Location Code		35BWW25								35BWW26										LHSMW58									
	Sample ID		35BWW25-180523		35BWW25-		35BWW25-180820		35BWW25-180820-		35BWW26-081716		35BWW26-110917		35BWW26-021418		35BWW26-180522		35BWW26-180822		LHSMW58-100313		LHSMW58-110817		LHSMW58-021218		LHSMW58-180327		LHSMW58-180524		LHSMW58-180820	
	Sample Date		5/23/2018		5/23/2018		8/20/2018		8/20/2018		8/17/2016		11/9/2017		2/14/2018		5/22/2018		8/22/2018		10/3/2013		11/8/2017		2/12/2018		3/27/2018		5/24/2018		8/20/2018	
	Sample Event		Year1 Quarter 3		Year1 Quarter 3		Year1 Quarter 4		Year1 Quarter 4				27.71 - 28.85		27.6 - 28.15		32.91 - 32.91		28.02 - 28.32		Baseline		Year1 Quarter 1		Year1 Quarter 2		Year1 Quarter 2		Year1 Quarter 3		Year1 Quarter 4	
	Sample Purpose		REG		FD		REG		FD		REG		REG		REG		REG		REG		REG		REG		REG		REG		REG	
Parameter	Units	MCL/GW-IND	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
ANIONS																																
Bromide	mg/L												0.169																			
Chloride	mg/L										30.2		29.6		30.2		32.2		30.3		9.83											
Fluoride	mg/L												0.295																			
Nitrate	mg/L	10									0.2	U	0.12		0.05	U	0.093	J	0.036	J	2.32											
Nitrite	mg/L	1									0.2	U	0.033	J	0.05	U	0.1	U	0.1	U	0.2	U										
Sulfate	mg/L										28.7		30.2		30.3		31.6		27.6		34.9											
SULFIDE																																
Sulfide	mg/L										1	U	1	U							1	U										
DHC																																
Dehalococcoides	cells/mL												2.2				0.5															
FIELD TESTS																																
Conductivity	mS/cm		0.563				0.697						0.327		0.312		0.222		0.33				0.24		0.241		0.203		0.148		0.257	
Dissolved Oxygen	mg/L		0				0.36						1.02		1.78		0		0.42				2.6		5.8		6.5		2.45		1.37	
Oxidation-Reduction Potential	mV		383				222						169.6		139.8		418		277				138.8		96.5		213		386		228	
pH	SU		5.34				5.93						6.21		6.1		4.83		4.89				5.98		6.75		5.64		5.14		5.43	
Temperature	C		20.81				29.33						19.8		17.65		20.62		21.56				17.7		15.86		22.76		20.74		25.78	
Turbidity	NTU		2.5				43.9						0		0		0		0				0		0		0		0		42.3	
Water Level at Reading Time	Ft BTOC		26.5				27.53						28.85		28.15		27.19		28.32				25.2		24.95		24		24.05		25.43	
GASES																																
Carbon Dioxide	µg/L										417,000		57,000		57,000		490,000		450,000	J												
Ethane	µg/L										2	U	0.076	U	0.6	U	0.47	U	0.47	U	2	U										
Ethylene	µg/L										2	U	0.071	U	1	U	0.55	U	0.55	U	2	U										
Methane	µg/L										2	U	0.3	U	1.3	U	1	U	1	U	3.1	J										
GENERAL CHEMISTRY																																
Ferrous Iron (Iron II)	mg/L										0.04	U	0.03		0.00	U	0.00	U	0.00	U	0.04	U										
METALS																																
Antimony	mg/L	0.006													0.001	U											0.001	U				
Thallium	mg/L														0.001	U											0.001	U				
TOTAL ORGANIC CARBON																																
Total Inorganic Carbon	mg/L										112		28								53.9											
Total Organic Carbon	mg/L										18.2		0.861	J	0.762	J	1.08		0.865	J	4.43											
VOCs																																
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U			0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	20.3		20		14				12		26	
Trichloroethene	µg/L	5	5.5		5.1		5.3		5.3		0.5	U	1	U	0.5	U	0.5	U	0.5	U	4.26		1.6		0.5	U			1.4		2.2	
Vinyl Chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U			0.5	U	0.5	U

Table 2-3
Groundwater Results 2017-2018

Notes:
Bold and highlighted values indicate result exceeds the MCL.
µg/L - micrograms per liter
C - degrees Celsius
cells/mL - cells per milliliter
DHC - Dehalococcoides
Ft BTOC - feet below top of casing
GW-Ind - groundwater medium-specific concentration for industrial use
ID - identification
J - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed.
MCL - maximum contaminant level
mg/L - milligrams per Liter
mS/cm - millisiemens per centimeter
mV - millivolts
NTU - nephelometric turbidity unit
REG - regular sample
SIM - selected ion monitoring
SU - standard unit
SVOC - semivolatile organic compound
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
UJ - The analyte was analyzed for, but not detected above the established reporting limit. However, review and evaluation of supporting QC data have indicated that the "non-detect" may be inaccurate or imprecise. The non-detect result should be estimated.
ValQual - validation qualifier
VOC - volatile organic compound

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BSW01		35BSW01		35BSW02		35BSW02		35BWW01		35BWW01		35BWW01		35BWW01		35BWW01		35BWW01		35BWW01		35BWW03		35BWW03	
	Sample ID		35BSW01-101713		35BSW01-021218		35BSW02-101713		35BSW02-021218		35BWW01-081916		35BWW01-110817		35BWW01-021418		35BWW01-180524		35BWW01-		35BWW01-180816		35BWW01-		35BWW03-100513		35BWW03-081816	
	Sample Date		10/17/2013		2/12/2018		10/17/2013		2/12/2018		8/19/2016		11/8/2017		2/14/2018		5/24/2018		5/24/2018		8/16/2018		8/16/2018		10/5/2013		8/18/2016	
	Location Description		Surface Water Location		Surface Water Location		Surface Water Location		Surface Water Location		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	1	U	0.5	U	1	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code				35BWW04																35BWW05					
	Sample ID		35BWW03FD-		35BWW04-100313		35BWW04-081716		35BWW04-110917		35BWW04-		35BWW04-021418		35BWW04-		35BWW04-180522		35BWW04-180822		35BWW05-100413		35BWW05-081816		35BWW05-110817		35BWW05-021618	
	Sample Date		8/18/2016		10/3/2013		8/17/2016		11/9/2017		11/9/2017		2/14/2018		2/14/2018		5/22/2018		8/22/2018		10/4/2013		8/18/2016		11/8/2017		2/16/2018	
	Location Description		Shallow zone, unimpacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	66.5	J	6.1		7.3		8.2		10		10		5.3		2.2		1.57		1.25		1.5		2.8	
Trichloroethene	µg/L	5	0.5	U	11.4	J	0.786	J	1		1.1		1.3		1.2		0.5	U	0.5	U	14		8.87		7		10	
1,1-Dichloroethene	µg/L	7	1	U	2.3	J	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.673	J	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.295	J	0.497	J	1	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW05		35BWW05		35BWW06														35BWW07							
	Sample ID		35BWW05-180521		35BWW05-180821		35BWW06-100413		35BWW06-081816		35BWW06FD-		35BWW06-110817		35BWW06-021618		35BWW06-180521		35BWW06-180821		35BWW07-100513		35BWW07-081916		35BWW07-110917		35BWW07-021318	
	Sample Date		5/21/2018		8/21/2018		10/4/2013		8/18/2016		8/18/2016		11/8/2017		2/16/2018		5/21/2018		8/21/2018		10/5/2013		8/19/2016		11/9/2017		2/13/2018	
	Location Description		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Lower shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	2		1.7		0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U
Trichloroethene	µg/L	5	8.5		7.3		0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW08																35BWW09									
	Sample ID		35BWW07-180523		35BWW07-180820		35BWW08-100913		35BWW08-081716		35BWW08-110717		35BWW08-021418		35BWW08-180523		35BWW08-180822		35BWW09-100813		35BWW09-081616		35BWW09-110717		35BWW09-021318		35BWW09-180521	
	Sample Date		5/23/2018		8/20/2018		10/9/2013		8/17/2016		11/7/2017		2/14/2018		5/23/2018		8/22/2018		10/8/2013		8/16/2016		11/7/2017		2/13/2018		5/21/2018	
	Location Description		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted downgradient		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary		Shallow zone, impacted outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	43.8		1.01		0.89	J	0.5	U	0.5	U	0.5	U	49		149		180		180		240	
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.84	J	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.529	J	0.759	J	1.7		0.5	U	0.96	J
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW10		35BWW10												35BWW11									
	Sample ID		35BWW09-180816		35BWW10-100413		35BWW10FD-		35BWW10-081816		35BWW10-110717		35BWW10-021618		35BWW10-180524		35BWW10-180817		35BWW11-100813		35BWW11-081816		35BWW11-110817		35BWW11-021218		35BWW11-180521	
	Sample Date		8/16/2018		10/4/2013		10/4/2013		8/18/2016		11/7/2017		2/16/2018		5/24/2018		8/17/2018		10/8/2013		8/18/2016		11/8/2017		2/12/2018		5/21/2018	
	Location Description		Shallow zone, impacted outside site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow, impacted, within site boundary		Shallow zone, v. low impact, within site boundary		Shallow zone, v. low impact, within site boundary		Shallow zone, v. low impact, within site boundary		Shallow zone, v. low impact, within site boundary		Shallow zone, v. low impact, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	4.45		4.52		21		31		29		30		24		0.252	J	0.798	J	1	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	180		56.3		56.9		23.9		33		39		36		28		0.5	U	0.5	U	1	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	1	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.84	J	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW12		35BWW12														35BWW13							
	Sample ID		35BWW11-180817		35BWW12-100313		35BWW12-081716		35BWW12-110917		35BWW12-021418		35BWW12-180523		35BWW12-		35BWW12-180822		35BWW12-		35BWW13-100713		35BWW13-081916		35BWW13-110717		35BWW13-	
	Sample Date		8/17/2018		10/3/2013		8/17/2016		11/9/2017		2/14/2018		5/23/2018		5/23/2018		8/22/2018		8/22/2018		10/7/2013		8/19/2016		11/7/2017		11/7/2017	
	Location Description		Shallow zone, v. low impact, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, v. low impact, crossgradient		Shallow zone, v. low impact, crossgradient		Shallow zone, v. low impact, crossgradient		Shallow zone, v. low impact, crossgradient	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	15.3		4.06		4.8		7.1		6.2		7		7.3		7.6		4.14		0.5	U	0.99	J	0.84	J
Trichloroethene	µg/L	5	0.5	U	2.04		0.473	J	0.62	J	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1.84		0.5	U	1	U	1	U
1,1-Dichloroethene	µg/L	7	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW13										35BWW14												35BWW15			
	Sample ID		35BWW13-021318		35BWW13-		35BWW13-		35BWW13-180524		35BWW13-180821		35BWW14-100913		35BWW14-081716		35BWW14-110717		35BWW14-021518		35BWW14-180522		35BWW14-180822		35BWW15-011414		35BWW15-081916	
	Sample Date		2/13/2018		2/13/2018		2/13/2018		5/24/2018		8/21/2018		10/9/2013		8/17/2016		11/7/2017		2/15/2018		5/22/2018		8/22/2018		1/14/2014		8/19/2016	
	Location Description		Shallow zone, v. low impact, crossgradient		Shallow zone, v. low impact, crossgradient		Shallow zone, v. low impact, crossgradient		Shallow zone, v. low impact, crossgradient		Shallow zone, v. low impact, crossgradient		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1.9		1.9		1.9		0.5	U	0.5	U	19		20.1		53		44		30		31		8.69		14.5	
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	82.8		39.7		24		20		23		12		43.5		20.5	
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	57.2		10		8.4		0.5	U	5.1		2.2		35.5		6.63	
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	14.3		3.44		2.4		1.1		2.6		1.4		6.25		1.73	
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	5.09		0.301	J	1	U	0.5	U	0.5	U	0.5	U	3.42		0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW15								35BWW16														35BWW17			
	Sample ID		35BWW15-110717		35BWW15-021318		35BWW15-180521		35BWW15-180820		35BWW16-100713		35BWW16FD-		35BWW16-081916		35BWW16-110717		35BWW16-021318		35BWW16-180524		35BWW16-180817		35BWW17-020414		35BWW17-081916	
	Sample Date		11/7/2017		2/13/2018		5/21/2018		8/20/2018		10/7/2013		10/7/2013		8/19/2016		11/7/2017		2/13/2018		5/24/2018		8/17/2018		2/4/2014		8/19/2016	
	Location Description		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	12		12		13		11		0.447	J	0.447	J	5.13		9.2		12		7.8		6.6		0.512	J	0.5	U
Trichloroethene	µg/L	5	15		14		13		9.2		2.57		2.45		3.43		4.2		5.8		4		3.3		0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	4.2		2.2		3.4		1.7		0.865	J	0.846	J	0.787	J	1.1		0.5	U	0.5	U	0.5	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	1.1		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

			Location Code	35BWW17							35BWW18												35BWW19			
			Sample ID	35BWW17-110717		35BWW17-021318		35BWW17-180524		35BWW17-180821		35BWW18-100213		35BWWU18-		35BWW18-081616		35BWW18-110717		35BWW18-021318		35BWW18-180521		35BWW18-180816		35BWW19-100713		35BWW19-081616	
			Sample Date	11/7/2017		2/13/2018		5/24/2018		8/21/2018		10/2/2013		10/2/2013		8/16/2016		11/7/2017		2/13/2018		5/21/2018		8/16/2018		10/7/2013		8/16/2016	
			Location Description	Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	2.6		7.5		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	1.1		2.9		0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	1	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW19								35BWW20												35BWW23					
	Sample ID		35BWW19-110717		35BWW19-021318		35BWW19-180521		35BWW19-180816		35BWW20-100413		35BWW20-081816		35BWW20-110817		35BWW20-021218		35BWW20-180524		35BWW20-180820		35BWW23-070114		35BWW23-081716		35BWW23-110917	
	Sample Date		11/7/2017		2/13/2018		5/21/2018		8/16/2018		10/4/2013		8/18/2016		11/8/2017		2/12/2018		5/24/2018		8/20/2018		7/1/2014		8/17/2016		11/9/2017	
	Location Description		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow sone, impacted, within site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	1	U	0.5	U	0.5	U	0.5	U	31.1		26.7		25		34		29		19		0.5	U	0.5	U	1	U
Trichloroethene	µg/L	5	1	U	0.5	U	0.5	U	0.5	U	7.04		6.75		4.7		5.7		6.3		3.6		0.5	U	0.5	U	1	U
1,1-Dichloroethene	µg/L	7	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U
cis-1,2-Dichloroethene	µg/L	70	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U
Vinyl chloride	µg/L	2	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U

Table 2-4
COC Concentrations 2013-2018

			Location Code	35BWW23						35BWW24										35BWW25							
			Sample ID	35BWW23-021518		35BWW23-180522		35BWW23-180822		35BWW24-081916		35BWW24-110817		35BWW24-021618		35BWW24-180524		35BWW24-180821		35BWW25-081916		35BWW25FD-		35BWW25-110817		35BWW25-		35BWW25-021618	
			Sample Date	2/15/2018		5/22/2018		8/22/2018		8/19/2016		11/8/2017		2/16/2018		5/24/2018		8/21/2018		8/19/2016		8/19/2016		11/8/2017		11/8/2017		2/16/2018	
			Location Description	Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, unimpacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U
Trichloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.415	J	1	U	0.5	U	0.5	U	0.5	U	5.55		5.94		7.6		7.5		11	
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U	1	U	1	U	1	U	1	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

	Location Code		35BWW25										35BWW26									
	Sample ID		35BWW25-		35BWW25-180523		35BWW25-		35BWW25-180820		35BWW25-		35BWW26-081716		35BWW26-110917		35BWW26-021418		35BWW26-180522		35BWW26-180822	
	Sample Date		2/16/2018		5/23/2018		5/23/2018		8/20/2018		8/20/2018		8/17/2016		11/9/2017		2/14/2018		5/22/2018		8/22/2018	
	Location Description		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, impacted, outside site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary		Shallow zone, unimpacted, within site boundary	
Parameter	Units	MCL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U
Trichloroethene	µg/L	5	11		5.5		5.1		5.3		5.3		0.5	U	1	U	0.5	U	0.5	U	0.5	U
1,1-Dichloroethene	µg/L	7	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	1	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

			Location Code	LHSMW58											
			Sample ID	LHSMW58-100313		LHSMW58-081816		LHSMW58-110817		LHSMW58-021218		LHSMW58-180524		LHSMW58-180820	
			Sample Date	10/3/2013		8/18/2016		11/8/2017		2/12/2018		5/24/2018		8/20/2018	
			Location Description	Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary		Shallow zone, impacted, within site boundary	
Parameter	Units	MCL		Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
Tetrachloroethene	µg/L	5		20.3		19.9		20		14		12		26	
Trichloroethene	µg/L	5		4.26		1.93		1.6		0.5	U	1.4		2.2	
1,1-Dichloroethene	µg/L	7		1	U	1	U	1	U	0.5	U	0.5	U	0.5	U
cis-1,2-Dichloroethene	µg/L	70		0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U
Vinyl chloride	µg/L	2		0.5	U	0.5	U	1	U	0.5	U	0.5	U	0.5	U

Table 2-4
COC Concentrations 2013-2018

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Some samples may have been diluted due to the concentration(s) of one or more analytes exceeding the upper limit of the calibration curve.

µg/L - micrograms per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

MCL - Maximum Contaminant Limit

mg/L - milligrams per liter

PCL - Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

ppb - parts per billion

1 ppb - 1 µg/L

Table 2-5
Well Maintenance Activities Year 1 RA(O)

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Date Mowed	Photos	Comments
35BWW01	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/14/2018	Good	Good	Good	In Place		No	
	3/29/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/16/2018	Good	Good	Good	In Place		Yes	
35BWW02	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/28/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/16/2018	Good	Good	Good	In Place		Yes	
35BWW04	11/9/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/14/2018	Good	Good	Good	In Place		No	
	5/22/2018	Good	Good	Good	In Place		Yes	
	8/22/2018	Good	Good	Good	In Place		Yes	
35BWW05	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/16/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/21/2018	Good	Good	Good	In Place		Yes	
	8/21/2018	Good	Good	Good	In Place		Yes	
35BWW06	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/16/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/21/2018	Good	Good	Good	In Place		Yes	
	8/21/2018	Good	Good	Good	In Place		Yes	
35BWW07	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/29/2018	Good	Good	Good	In Place		No	
	5/23/2018	Good	Good	Good	In Place		Yes	
	8/20/2018	Good	Good	Good	In Place		Yes	
35BWW08	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/14/2018	Good	Good	Good	In Place		No	
	5/23/2018	Good	Good	Good	In Place		Yes	
	8/22/2018	Good	Good	Good	In Place		Yes	
35BWW09	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/16/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/21/2018	Good	Good	Good	In Place		Yes	
	8/16/2018	Good	Good	Good	In Place		Yes	
35BWW10	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/16/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/17/2018	Good	Good	Good	In Place		Yes	
35BWW11	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/12/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/21/2018	Good	Good	Good	In Place		Yes	
	8/17/2018	Good	Good	Good	In Place		Yes	

Table 2-5
Well Maintenance Activities Year 1 RA(O)

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Date Mowed	Photos	Comments
35BWW12	11/9/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/14/2018	Good	Good	Good	In Place		No	
	5/23/2018	Good	Good	Good	In Place		Yes	
	8/22/2018	Good	Good	Good	In Place		Yes	
35BWW13	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/28/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/21/2018	Good	Good	Good	In Place		Yes	
35BWW14	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/15/2018	Good	Good	Good	In Place		No	
	5/22/2018	Good	Good	Good	In Place		Yes	
	8/22/2018	Good	Good	Good	In Place		Yes	
35BWW15	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/29/2018	Good	Good	Good	In Place		No	
	5/21/2018	Good	Good	Good	In Place		Yes	
	8/20/2018	Good	Good	Good	In Place		Yes	
35BWW16	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/29/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/17/2018	Good	Good	Good	In Place		Yes	
35BWW17	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/29/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/17/2018	Good	Good	Good	In Place		Yes	
35BWW18	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/21/2018	Good	Good	Good	In Place		Yes	
	8/16/2018	Good	Good	Good	In Place		Yes	
35BWW19	11/7/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/13/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/21/2018	Good	Good	Good	In Place		No	
	8/16/2018	Good	Good	Good	In Place		Yes	
35BWW20	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/12/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		No	
	8/20/2018	Good	Good	Good	In Place		Yes	
35BWW23	11/9/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/15/2018	Good	Good	Good	In Place		No	
	5/22/2018	Good	Good	Good	In Place		Yes	
	8/22/2018	Good	Good	Good	In Place		Yes	

Table 2-5
Well Maintenance Activities Year 1 RA(O)

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Date Mowed	Photos	Comments
35BWW24	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/16/2018	Good	Good	Good	In Place		No	
	3/28/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/21/2018	Good	Good	Good	In Place		Yes	
35BWW25	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/16/2018	Good	Good	Good	In Place		No	
	3/28/2018	Good	Good	Good	In Place		No	
	5/23/2018	Good	Good	Good	In Place		Yes	
	8/20/2018	Good	Good	Good	In Place			
35BWW26	11/9/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/14/2018	Good	Good	Good	In Place		No	
	5/22/2018	Good	Good	Good	In Place		No	
	8/22/2018	Good	Good	Good	In Place		Yes	
LHSMW58	11/8/2017	Good	Good	Good	In Place	8/15/2018	No	
	2/12/2018	Good	Good	Good	In Place		No	
	3/27/2018	Good	Good	Good	In Place		No	
	5/24/2018	Good	Good	Good	In Place		Yes	
	8/20/2018	Good	Good	Good	In Place		Yes	

Notes:

ID - identification

RA(O) - remedial action operation

Table 2-6
Proposed Year 2 RA(O) Quarterly Sampling

Well ID	VOC	Field Parameters	MNA Parameters	Water Levels
35BWW01	X	X		X
35BWW02 [a]	X	X		X
35BWW04	X	X	X	X
35BWW05	X	X		X
35BWW06	X	X		X
35BWW07	X	X		X
35BWW08	X	X	X	X
35BWW09	X	X		X
35BWW10	X	X		X
35BWW11	X	X		X
35BWW12	X	X	X	X
35BWW13	X	X		X
35BWW14	X	X	X	X
35BWW15	X	X		X
35BWW16	X	X		X
35BWW17	X	X		X
35BWW18	X	X		X
35BWW19	X	X		X
35BWW20	X	X		X
35BWW23	X	X	X	X
35BWW24	X	X		X
35BWW25	X	X		X
35BWW26	X	X	X	X
LHSMW58	X	X		X
35BSW01	X	X		X
35BSW02	X	X		X

Notes:

MNA parameters include alkalinity, sulfate, sulfide, chloride, TOC, dissolved iron and manganese, total phosphorus, carbon dioxide, dissolved gases (methane, ethane, ethene) and total iron.

Field parameters to be monitored for all wells: pH, temperature, conductivity, turbidity, oxidation-reduction potential (ORP), dissolved oxygen (DO), and ferric iron.

[a] Well is proposed to be removed from the sampling list.

ID - identification

MNA - monitored natural attenuation

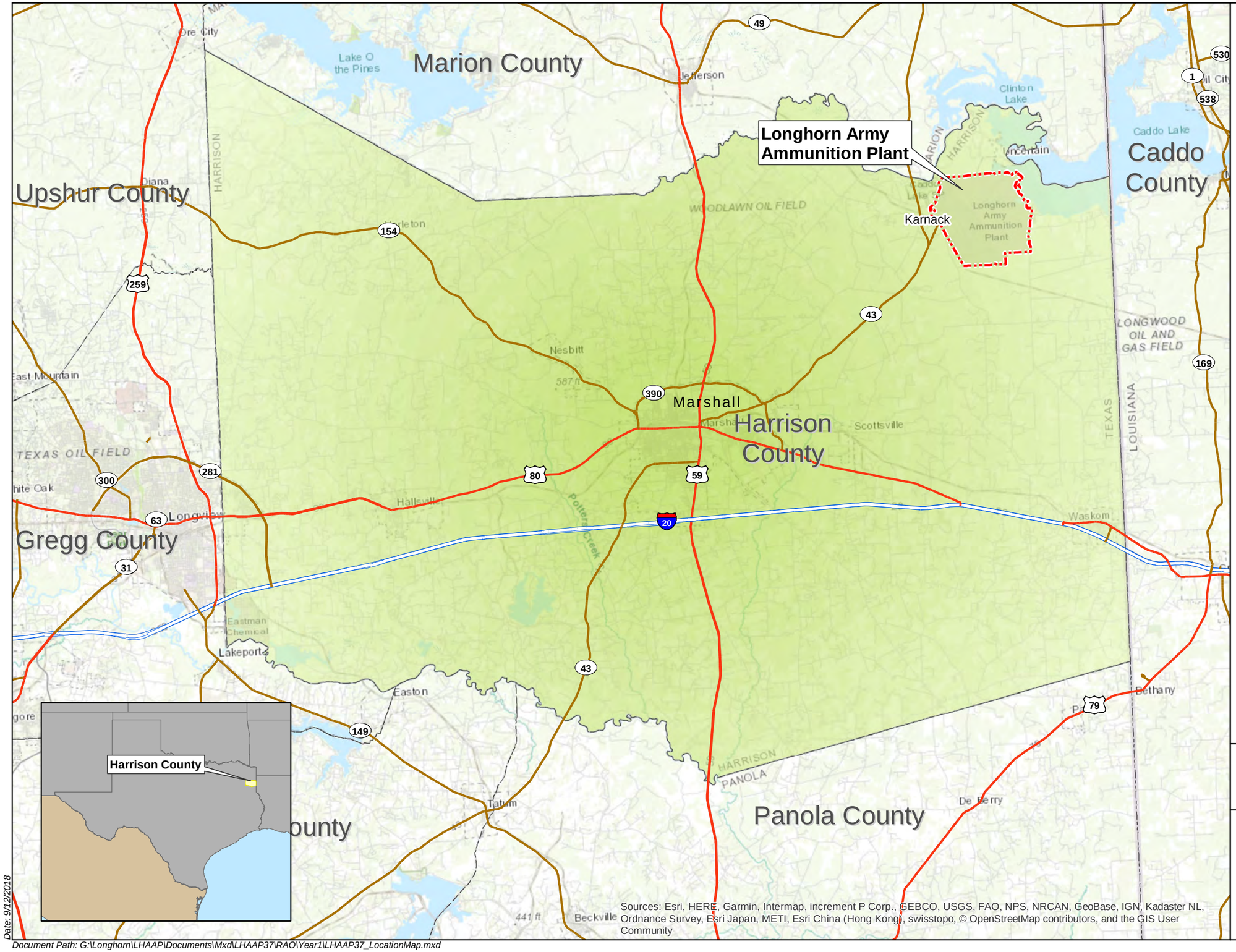
RA(O) - remedial action operation

TOC - total organic carbon

VOC - volatile organic compounds

X - well will be analyzed for that parameter

Figures



Note:
1. RA(O) = Remedial Action Operations

N

0 2 4 Miles

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TULSA DISTRICT
TULSA, OKLAHOMA

Figure 1-1

LHAAP Location Map
First Annual RA(O) Report
LHAAP-35B(37)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Date: 9/12/2018

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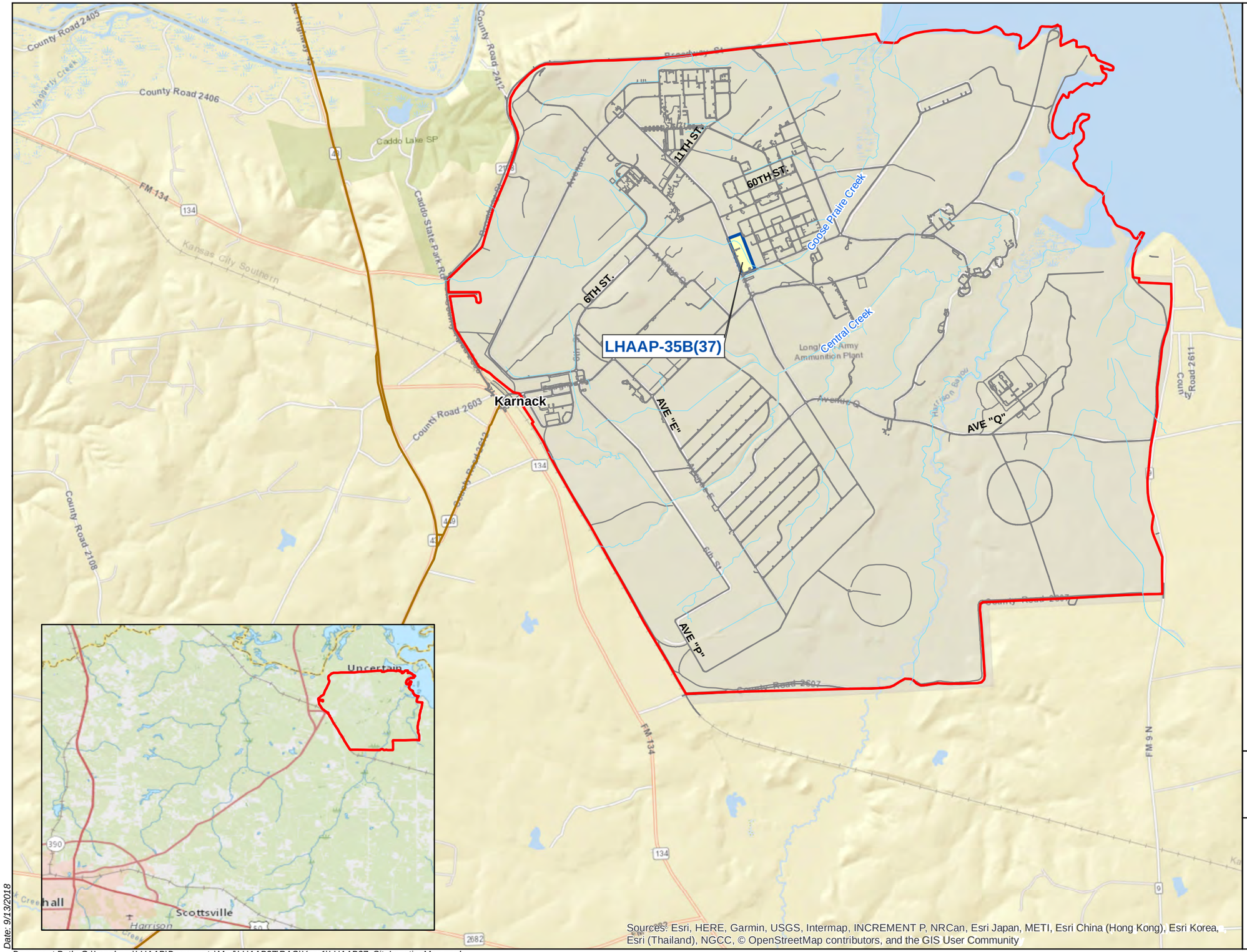

Stream
Road
LHAAP Boundary
LHAAP-35B(37) Site Boundary

Note:
1. RA(O) = Remedial Action Operations

N

0 1,500 3,000
Feet

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

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TULSA, OKLAHOMA

Figure 1-2

LHAAP Site Vicinity Map
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/13/2018

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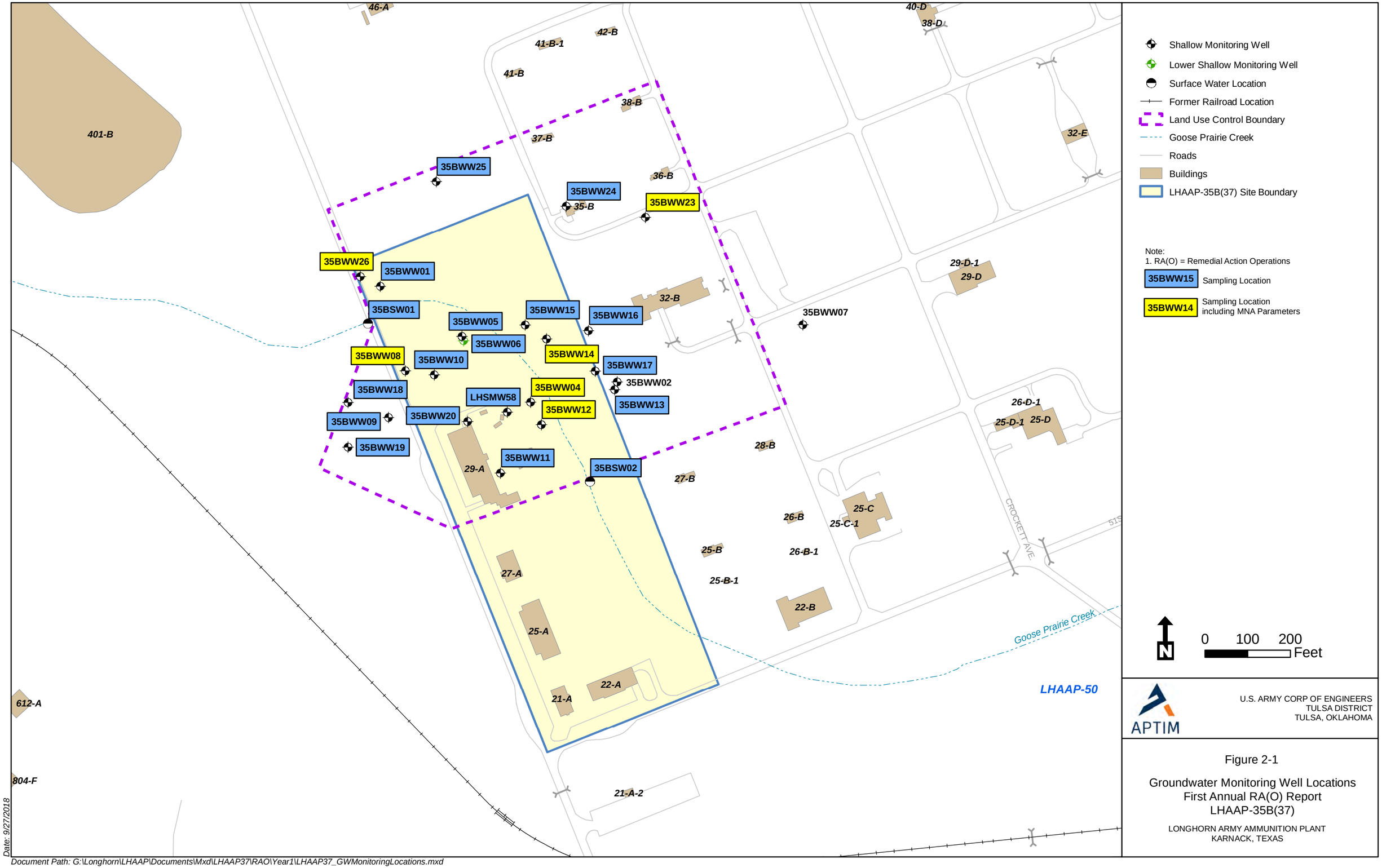
46-A
42-B
41-B-1
41-B
38-B
37-B
401-B
35BWW25
36-B
35BWW24
35-B
35BWW23
35BWW26
35BWW01
35BSW01
35BWW05
35BWW15
35BWW16
32-B
35BWW07
35BWW06
35BWW08
35BWW10
35BWW14
35BWW17
35BWW02
35BWW18
LHSMW58
35BWW04
35BWW13
35BWW12
35BWW09
35BWW20
35BWW19
35BWW11
35BSW02
29-A
28-B
27-B
26-B
25-C
25-C-1
25-B
26-B-1
25-B-1
27-A
22-B
25-A
22-A
21-A
21-A-2
612-A
804-F
40-D
38-D
32-E
29-D-1
29-D
26-D-1
25-D-1
25-D
CROCKETT AVE.
Goose Prairie Creek
LHAAP-50
Shallow Monitoring Well
Lower Shallow Monitoring Well
Surface Water Location
Former Railroad Location
Land Use Control Boundary
Goose Prairie Creek
Roads
Buildings
LHAAP-35B(37) Site Boundary
Note:
1. RA(O) = Remedial Action Operations
35BWW15 Sampling Location
35BWW14 Sampling Location including MNA Parameters
N
0 100 200
Feet
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Figure 2-1
Groundwater Monitoring Well Locations
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
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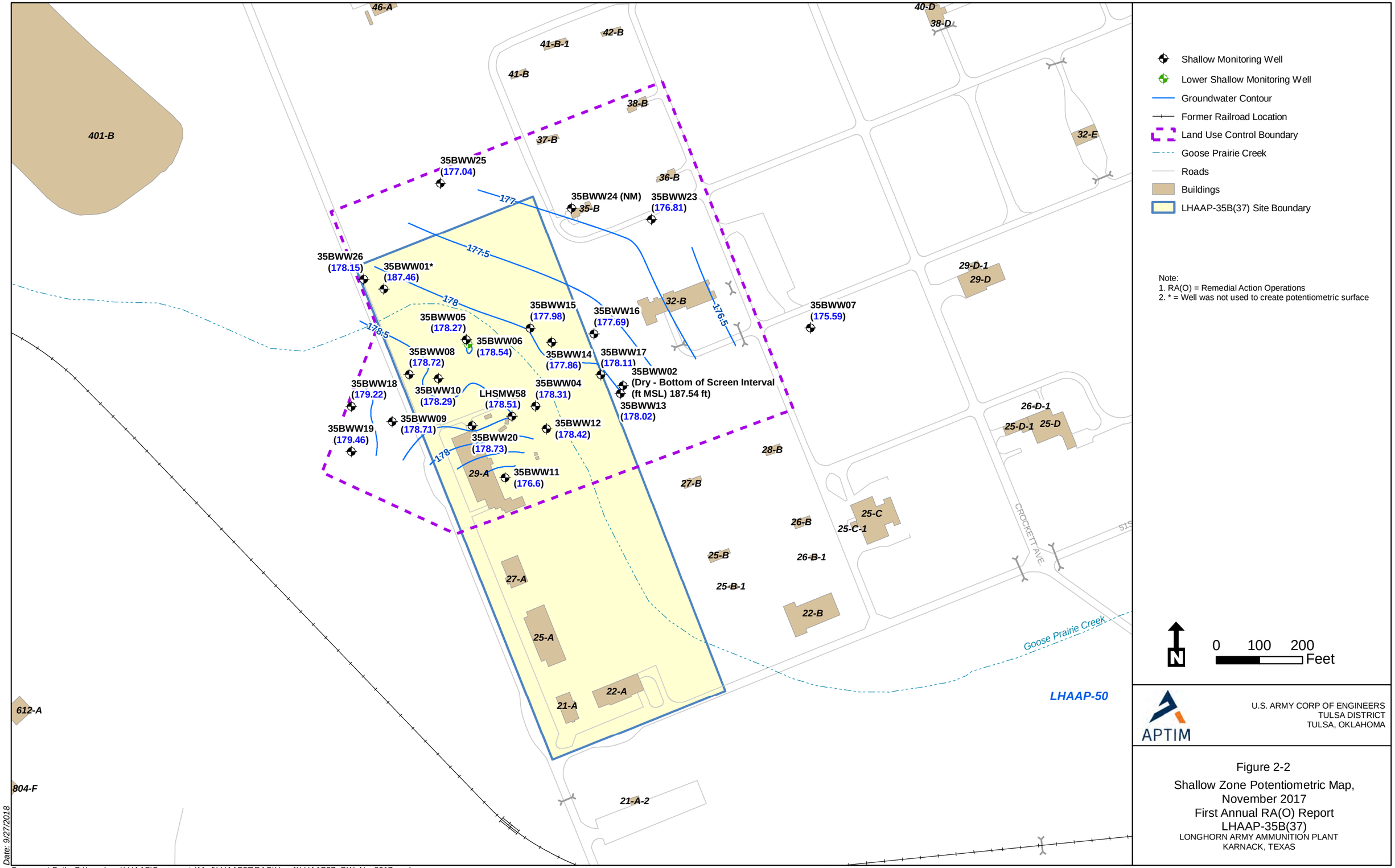

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TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-2

Shallow Zone Potentiometric Map,
November 2017
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/27/2018

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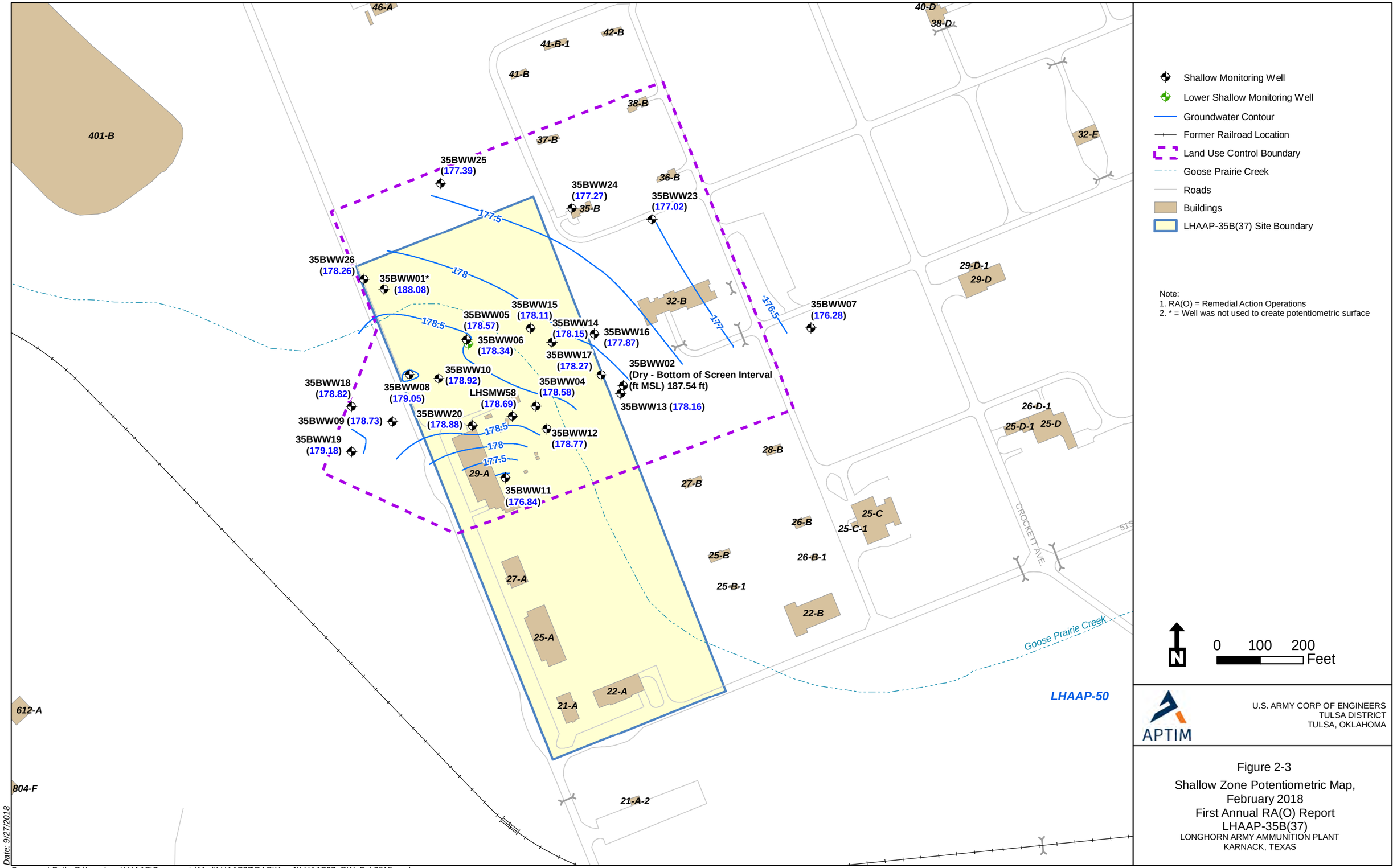
46-A
42-B
41-B-1
41-B
38-B
37-B
36-B
35-B
401-B
40-D
38-D
32-E
35BWW25 (177.39)
35BWW24 (177.27)
35BWW23 (177.02)
177.5
35BWW26 (178.26)
35BWW01* (188.08)
178
35BWW15 (178.11)
35BWW05 (178.57)
178.5
35BWW14 (178.15)
35BWW16 (177.87)
35BWW06 (178.34)
35BWW17 (178.27)
32-B
177
176.5
35BWW07 (176.28)
29-D-1
29-D
35BWW02 (Dry - Bottom of Screen Interval (ft MSL) 187.54 ft)
35BWW10 (178.92)
35BWW18 (178.82)
35BWW08 (179.05)
35BWW04 (178.58)
LHSMW58 (178.69)
35BWW13 (178.16)
35BWW20 (178.88)
35BWW09 (178.73)
178.5
35BWW12 (178.77)
35BWW19 (179.18)
178
177.5
29-A
35BWW11 (176.84)
26-D-1
25-D-1
25-D
28-B
27-B
25-C
26-B
25-C-1
CROCKETT AVE.
25-B
26-B-1
25-B-1
27-A
22-B
25-A
Goose Prairie Creek
22-A
21-A
LHAAP-50
612-A
804-F
21-A-2
Shallow Monitoring Well
Lower Shallow Monitoring Well
Groundwater Contour
Former Railroad Location
Land Use Control Boundary
Goose Prairie Creek
Roads
Buildings
LHAAP-35B(37) Site Boundary
Note:
1. RA(O) = Remedial Action Operations
2. * = Well was not used to create potentiometric surface
N
0 100 200
Feet
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U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA
Figure 2-3
Shallow Zone Potentiometric Map,
February 2018
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
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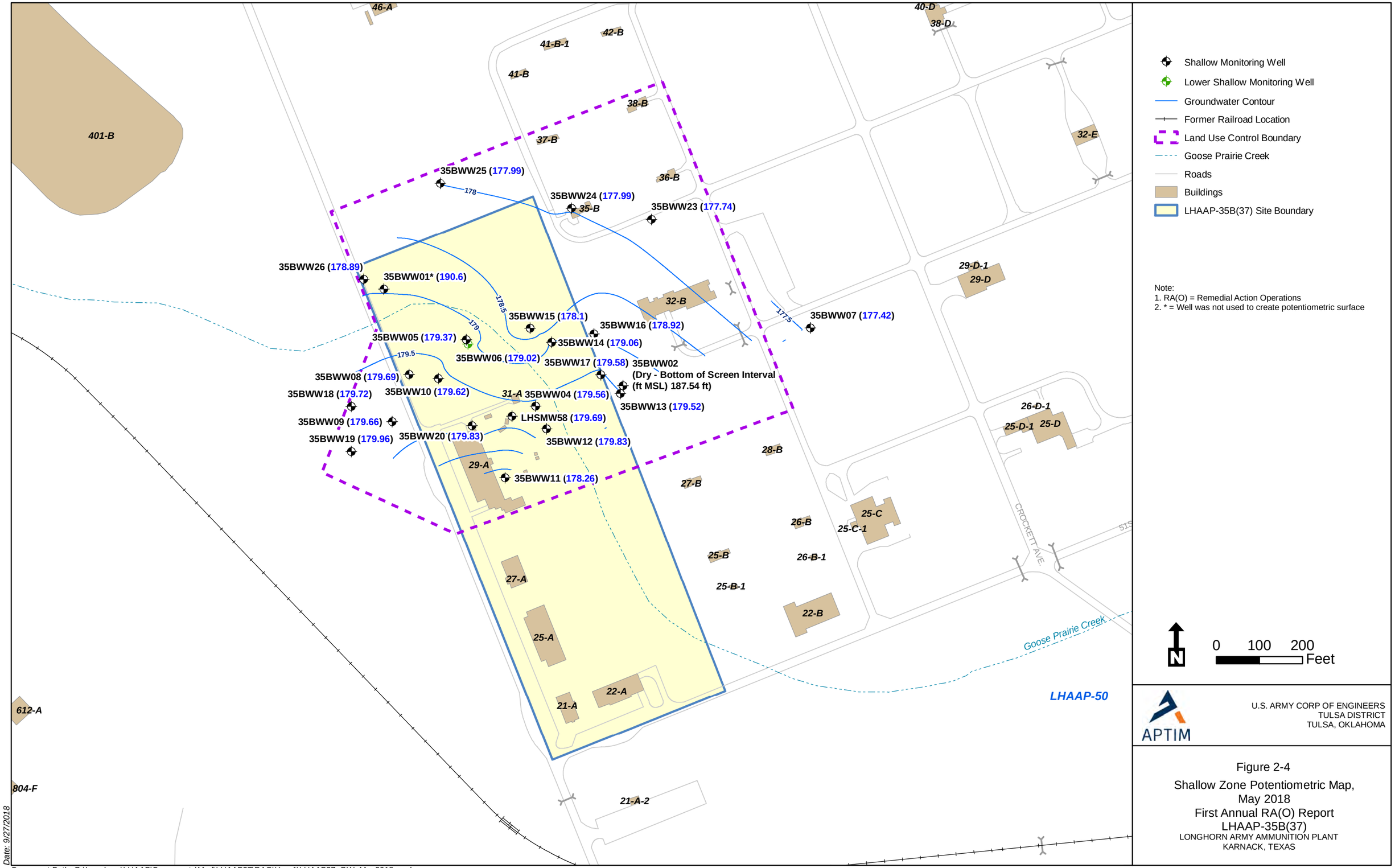

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TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-4

Shallow Zone Potentiometric Map,
May 2018
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/27/2018

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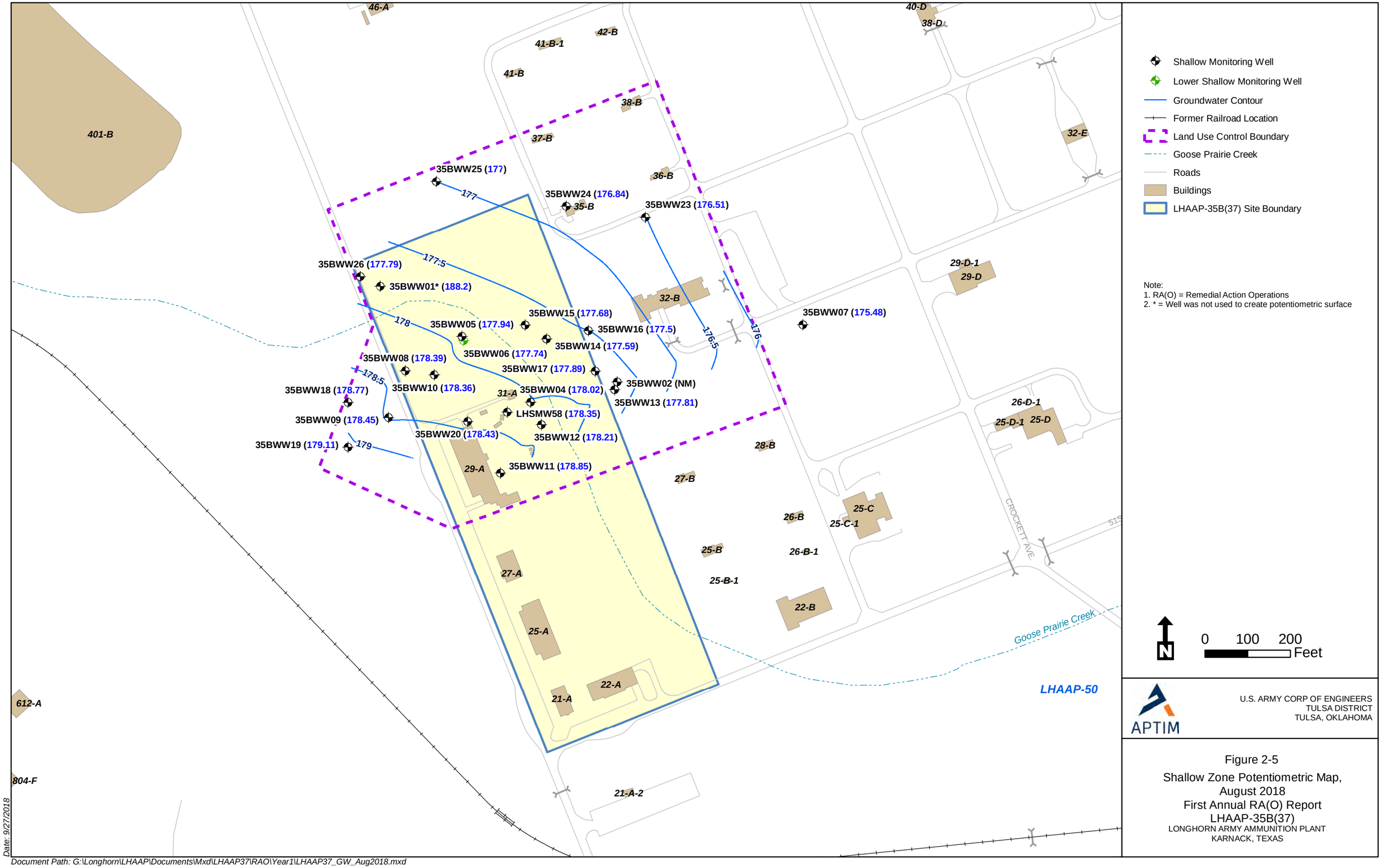

Note:
1. RA(O) = Remedial Action Operations
2. * = Well was not used to create potentiometric surface

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TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-5

Shallow Zone Potentiometric Map,
August 2018
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/27/2018

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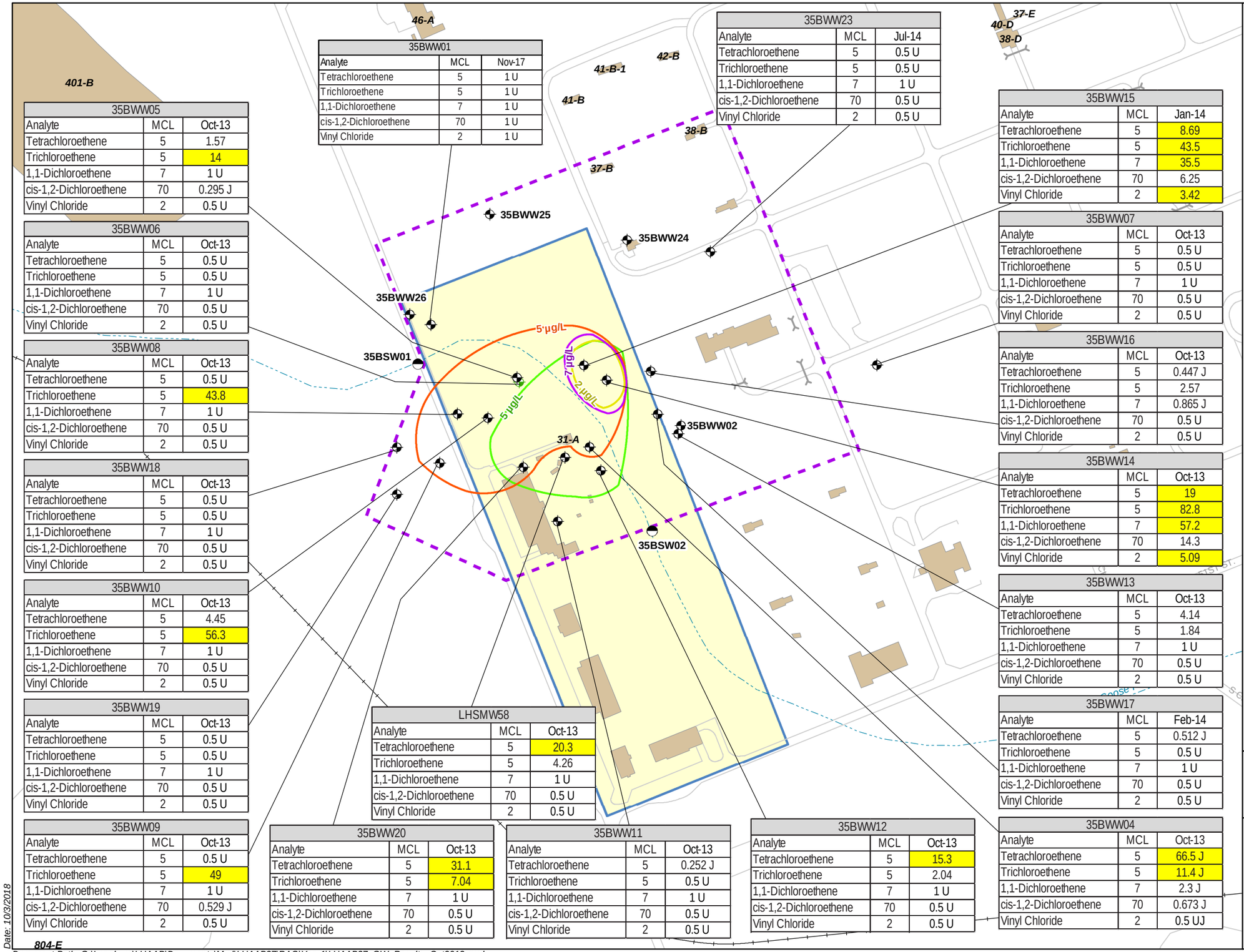

35BWW01		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl Chloride	2	1 U

35BWW23		
Analyte	MCL	Jul-14
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW05		
Analyte	MCL	Oct-13
Tetrachloroethene	5	1.57
Trichloroethene	5	14
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.295 J
Vinyl Chloride	2	0.5 U

35BWW06		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW08		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	43.8
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW18		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW10		
Analyte	MCL	Oct-13
Tetrachloroethene	5	4.45
Trichloroethene	5	56.3
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW19		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW09		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	49
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.529 J
Vinyl Chloride	2	0.5 U

LHSMW58		
Analyte	MCL	Oct-13
Tetrachloroethene	5	20.3
Trichloroethene	5	4.26
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW20		
Analyte	MCL	Oct-13
Tetrachloroethene	5	31.1
Trichloroethene	5	7.04
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW11		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.252 J
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW12		
Analyte	MCL	Oct-13
Tetrachloroethene	5	15.3
Trichloroethene	5	2.04
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW15		
Analyte	MCL	Jan-14
Tetrachloroethene	5	8.69
Trichloroethene	5	43.5
1,1-Dichloroethene	7	35.5
cis-1,2-Dichloroethene	70	6.25
Vinyl Chloride	2	3.42

35BWW07		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW16		
Analyte	MCL	Oct-13
Tetrachloroethene	5	0.447 J
Trichloroethene	5	2.57
1,1-Dichloroethene	7	0.865 J
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW14		
Analyte	MCL	Oct-13
Tetrachloroethene	5	19
Trichloroethene	5	82.8
1,1-Dichloroethene	7	57.2
cis-1,2-Dichloroethene	70	14.3
Vinyl Chloride	2	5.09

35BWW13		
Analyte	MCL	Oct-13
Tetrachloroethene	5	4.14
Trichloroethene	5	1.84
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW17		
Analyte	MCL	Feb-14
Tetrachloroethene	5	0.512 J
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl Chloride	2	0.5 U

35BWW04		
Analyte	MCL	Oct-13
Tetrachloroethene	5	66.5 J
Trichloroethene	5	11.4 J
1,1-Dichloroethene	7	2.3 J
cis-1,2-Dichloroethene	70	0.673 J
Vinyl Chloride	2	0.5 UJ

- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- 1,1-Dichloroethene Contour
- Vinyl Chloride Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA(O) = Remedial Action Operations

N

0 100 200 Feet

APTIM

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-6
Groundwater Results
October 2013 Baseline
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 10/3/2018

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year1\LHAAP37_GW_Results_Oct2013.mxd

00919428

35BWW26		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW01		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW25		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	**7.6**
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW24		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW23		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW05		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1.5
Trichloroethene	5	**7**
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW15		
Analyte	MCL	Nov-17
Tetrachloroethene	5	**12**
Trichloroethene	5	**15**
1,1-Dichloroethene	7	4.2
cis-1,2-Dichloroethene	70	1.1
Vinyl chloride	2	1 U

35BWW06		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW07		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW08		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	0.89 J
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW16		
Analyte	MCL	Nov-17
Tetrachloroethene	5	**9.2**
Trichloroethene	5	4.2
1,1-Dichloroethene	7	1.1
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW18		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW14		
Analyte	MCL	Nov-17
Tetrachloroethene	5	**53**
Trichloroethene	5	**24**
1,1-Dichloroethene	7	**8.4**
cis-1,2-Dichloroethene	70	2.4
Vinyl chloride	2	1 U

35BWW10		
Analyte	MCL	Nov-17
Tetrachloroethene	5	**31**
Trichloroethene	5	**33**
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW13		
Analyte	MCL	Nov-17
Tetrachloroethene	5	0.99 J
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW19		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

LHSMW58		
Analyte	MCL	Nov-17
Tetrachloroethene	5	**20**
Trichloroethene	5	1.6
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW17		
Analyte	MCL	Nov-17
Tetrachloroethene	5	2.6
Trichloroethene	5	1.1
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 UJ

35BWW09		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	**180**
1,1-Dichloroethene	7	0.84 J
cis-1,2-Dichloroethene	70	1.7
Vinyl chloride	2	1 U

35BWW20		
Analyte	MCL	Nov-17
Tetrachloroethene	5	**25**
Trichloroethene	5	4.7
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW11		
Analyte	MCL	Nov-17
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW12		
Analyte	MCL	Nov-17
Tetrachloroethene	5	4.8
Trichloroethene	5	0.62 J
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW04		
Analyte	MCL	Nov-17
Tetrachloroethene	5	**7.3**
Trichloroethene	5	1
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BSW01
35BSW02
35BWW02
31-A
5 µg/L
7 µg/L

- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- 1,1-Dichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA(O) = Remedial Action Operations

N

0 100 200 Feet

APTIM

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-7
Groundwater Results
November 2017 Y1Q1
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/27/2018

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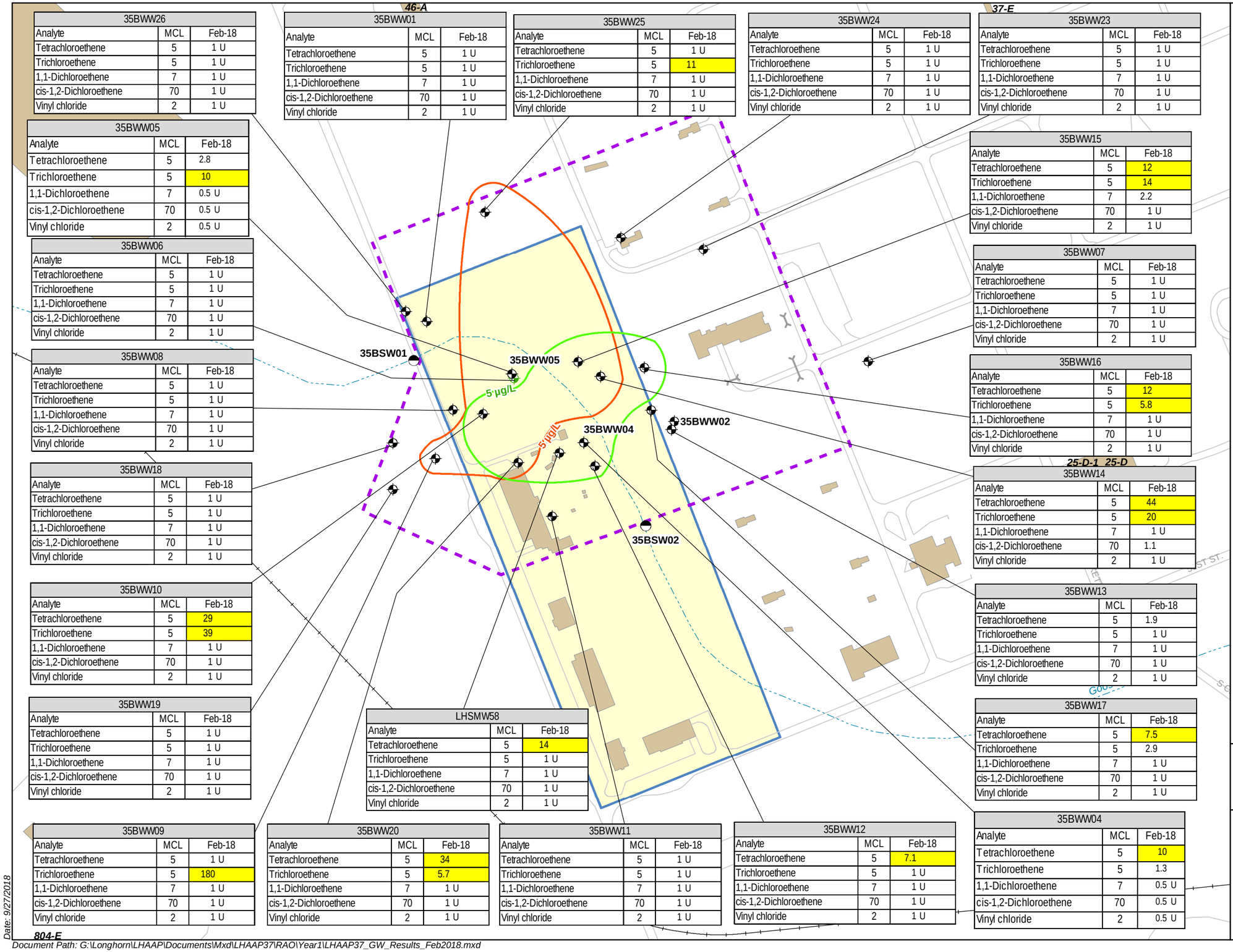

35BWW26		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW01		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW25		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	11
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW24		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW23		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW05		
Analyte	MCL	Feb-18
Tetrachloroethene	5	2.8
Trichloroethene	5	10
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW15		
Analyte	MCL	Feb-18
Tetrachloroethene	5	12
Trichloroethene	5	14
1,1-Dichloroethene	7	2.2
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW06		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW07		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW08		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW16		
Analyte	MCL	Feb-18
Tetrachloroethene	5	12
Trichloroethene	5	5.8
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW18		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW14		
Analyte	MCL	Feb-18
Tetrachloroethene	5	44
Trichloroethene	5	20
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1.1
Vinyl chloride	2	1 U

35BWW10		
Analyte	MCL	Feb-18
Tetrachloroethene	5	29
Trichloroethene	5	39
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW13		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1.9
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW19		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

LHSMW58		
Analyte	MCL	Feb-18
Tetrachloroethene	5	14
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW17		
Analyte	MCL	Feb-18
Tetrachloroethene	5	7.5
Trichloroethene	5	2.9
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW09		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	180
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW20		
Analyte	MCL	Feb-18
Tetrachloroethene	5	34
Trichloroethene	5	5.7
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW11		
Analyte	MCL	Feb-18
Tetrachloroethene	5	1 U
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW12		
Analyte	MCL	Feb-18
Tetrachloroethene	5	7.1
Trichloroethene	5	1 U
1,1-Dichloroethene	7	1 U
cis-1,2-Dichloroethene	70	1 U
Vinyl chloride	2	1 U

35BWW04		
Analyte	MCL	Feb-18
Tetrachloroethene	5	10
Trichloroethene	5	1.3
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA(O) = Remedial Action Operations

N

0 100 200 Feet

APTIM

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-8
Groundwater Results
February 2018 Y1Q2
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/27/2018

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35BWW26		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW01		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW25		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	5.5
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW24		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW23		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW05		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	2
Trichloroethene	5	8.5
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW15		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	13
Trichloroethene	5	13
1,1-Dichloroethene	7	3.4
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW06		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW07		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW08		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW16		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	7.8
Trichloroethene	5	4
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW18		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW14		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	30
Trichloroethene	5	23
1,1-Dichloroethene	7	5.1
cis-1,2-Dichloroethene	70	2.6
Vinyl chloride	2	0.5 U

35BWW10		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	30
Trichloroethene	5	36
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW13		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW19		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW17		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

LHSMW58		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	12
Trichloroethene	5	1.4
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW09		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	240
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.96 J
Vinyl chloride	2	0.5 U

35BWW20		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	29
Trichloroethene	5	6.3
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW11		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW12		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	6.2
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW04		
Analyte	MCL/GW-IND	May-18
Tetrachloroethene	5	5.3
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

46-A
37-E
401-B
31-A
25-D-1
25-D
804-E
35BSW01
35BSW02
35BWW02
5 µg/L

- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA(O) = Remedial Action Operations

N

0 100 200 Feet

APTIM

U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-9
Groundwater Results
May 2018 Y1Q3
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 9/27/2018

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year1\LHAAP37_GW_Results_May2018.mxd

35BWW26		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW01		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW25		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	5.3
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW24		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW23		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW05		
Analyte	MCL	Aug-18
Tetrachloroethene	5	1.7
Trichloroethene	5	7.3
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW15		
Analyte	MCL	Aug-18
Tetrachloroethene	5	11
Trichloroethene	5	9.2
1,1-Dichloroethene	7	1.7
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW06		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW07		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW08		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW16		
Analyte	MCL	Aug-18
Tetrachloroethene	5	6.6
Trichloroethene	5	3.3
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW18		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW14		
Analyte	MCL	Aug-18
Tetrachloroethene	5	31
Trichloroethene	5	12
1,1-Dichloroethene	7	2.2
cis-1,2-Dichloroethene	70	1.4
Vinyl chloride	2	0.5 U

35BWW10		
Analyte	MCL	Aug-18
Tetrachloroethene	5	24
Trichloroethene	5	28
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW13		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW19		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW17		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

LHSMW58		
Analyte	MCL	Aug-18
Tetrachloroethene	5	26
Trichloroethene	5	2.2
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW09		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	180
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.84 J
Vinyl chloride	2	0.5 U

35BWW20		
Analyte	MCL	Aug-18
Tetrachloroethene	5	19
Trichloroethene	5	3.6
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW11		
Analyte	MCL	Aug-18
Tetrachloroethene	5	0.5 U
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW12		
Analyte	MCL	Aug-18
Tetrachloroethene	5	7.3
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

35BWW04		
Analyte	MCL	Aug-18
Tetrachloroethene	5	2.2
Trichloroethene	5	0.5 U
1,1-Dichloroethene	7	0.5 U
cis-1,2-Dichloroethene	70	0.5 U
Vinyl chloride	2	0.5 U

401-B

35BSW01

35BSW02

31-A

5 ug/L

5 ug/L

- Shallow Monitoring Well
- Lower Shallow Monitoring Well
- Surface Water Location
- Tetrachloroethene Contour
- Trichloroethene Contour
- Former Railroad Location
- Land Use Control Boundary
- Goose Prairie Creek
- Roads
- Buildings
- LHAAP-35B(37) Site Boundary

Note:
1. RA(O) = Remedial Action Operations

N

0 100 200 Feet

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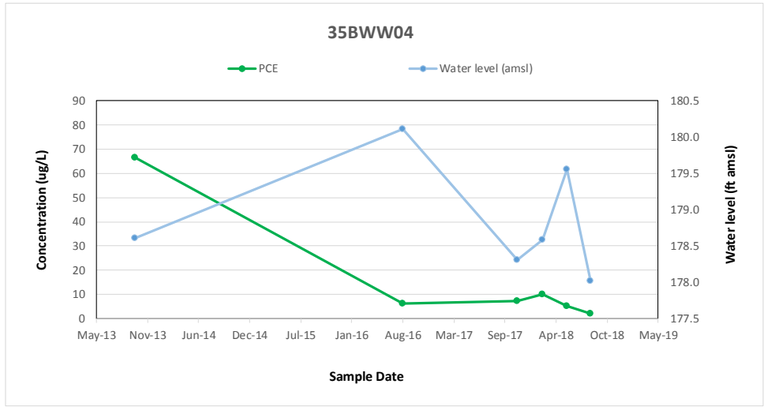
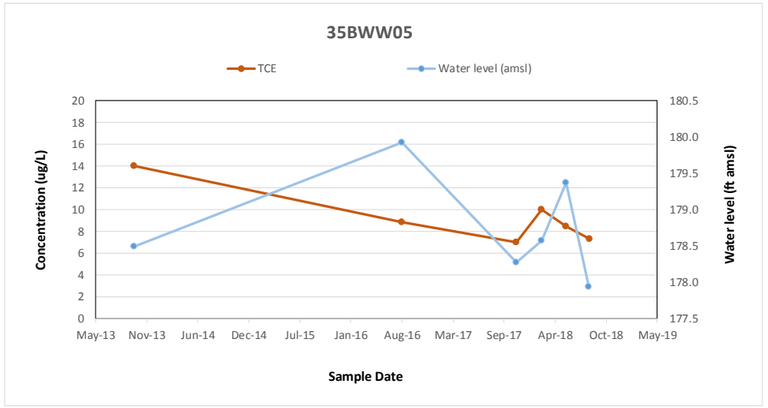
U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

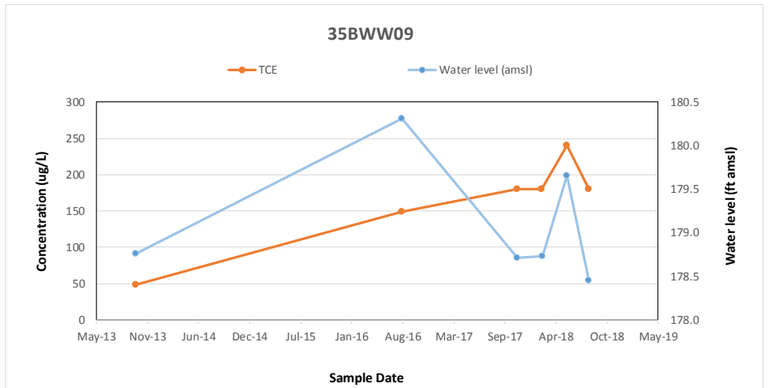
Figure 2-10
Groundwater Results,
August 2018 Y1Q4
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

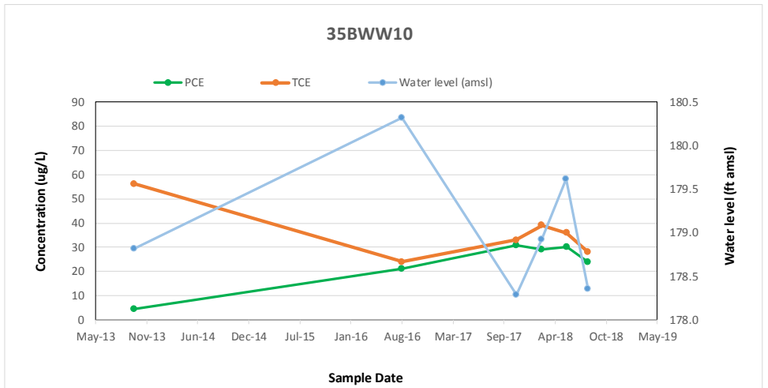
Date: 10/3/2018

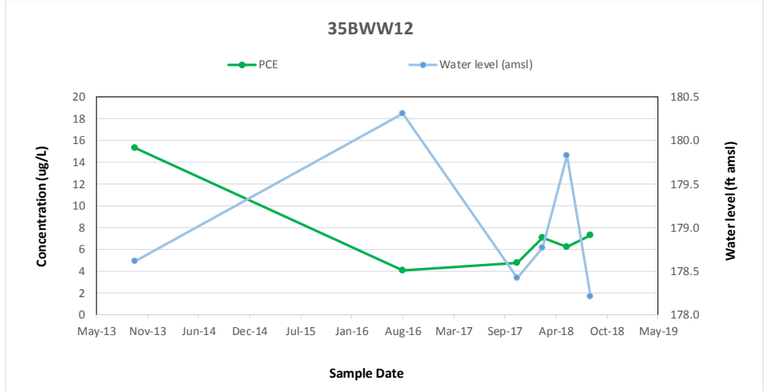
Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year1\LHAAP37_GW_Results_Aug2018.mxd

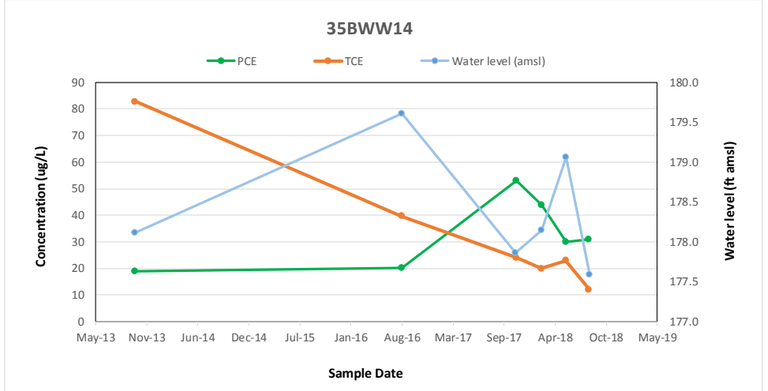






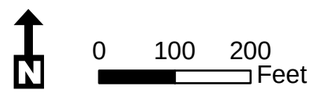






Cleanup Levels:
Tetrachloroethene = 5 µg/L
Trichloroethene = 5 µg/L

Notes:
1. RA(O) = Remedial Action Operations



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TULSA DISTRICT
TULSA, OKLAHOMA

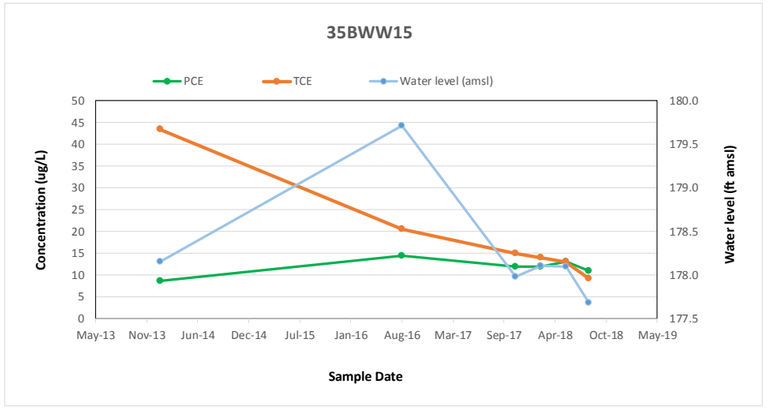
Figure 2-11a

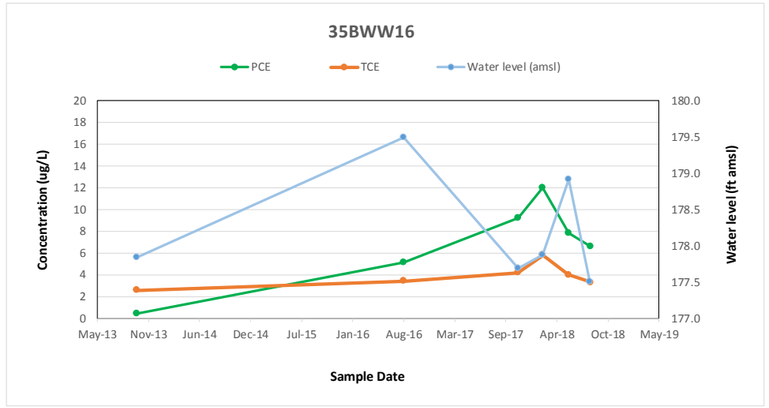
COC Concentrations
First Annual RA(O) Report
LHAAP-35B(37)

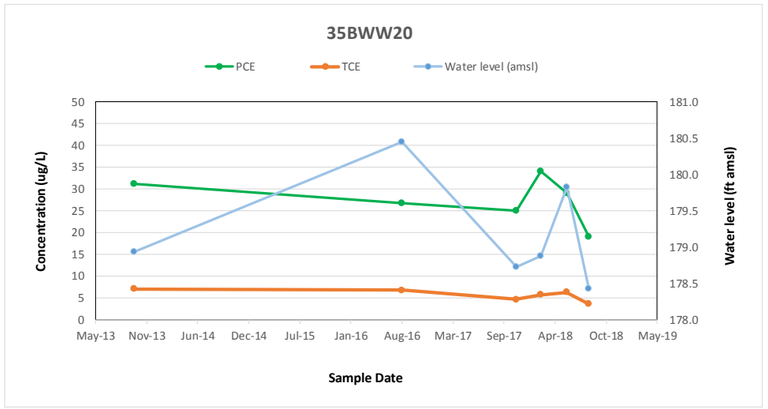
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

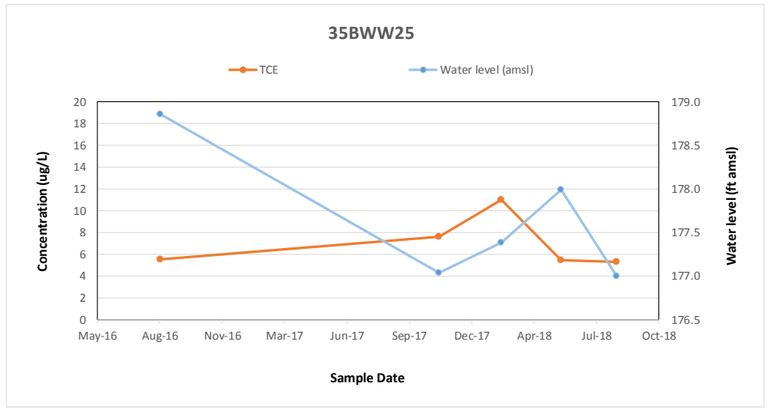
Date: 3/15/2019

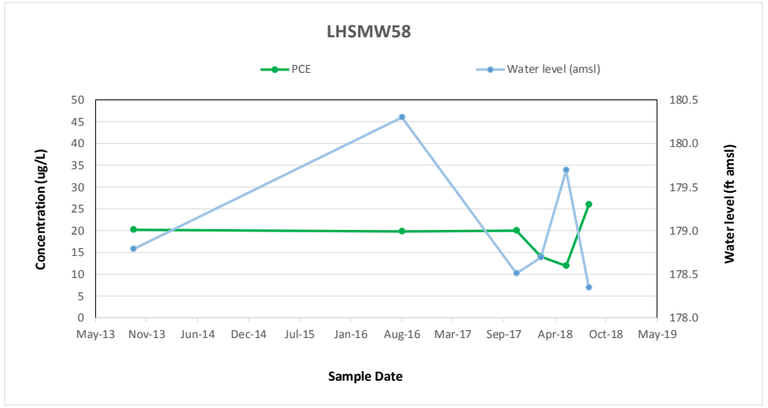
Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year1\LHAAP37_COC_Concentrations.mxd





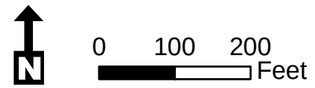






Cleanup Levels:
Tetrachloroethene = 5 µg/L
Trichloroethene = 5 µg/L

Notes:
1. RA(O) = Remedial Action Operations



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U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

Figure 2-11b

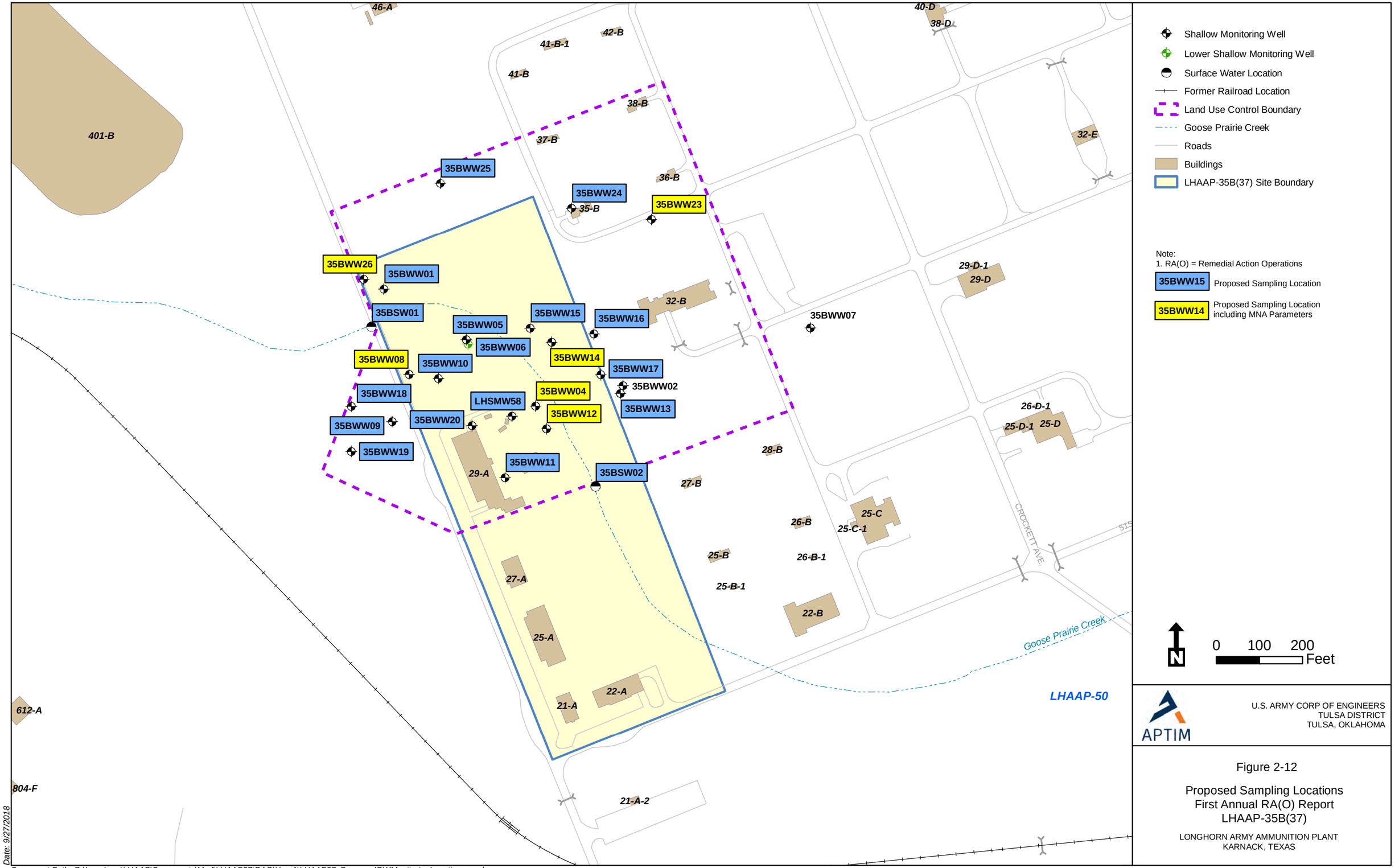
COC Concentrations
First Annual RA(O) Report
LHAAP-35B(37)

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/18/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year1\LHAAP37_COC_Concentrations_2.mxd

00919434


46-A
42-B
41-B-1
41-B
38-B
37-B
36-B
35-B
401-B
35BWW25
35BWW24
35BWW23
35BWW26
35BWW01
35BSW01
35BWW05
35BWW15
35BWW16
35BWW06
35BWW14
35BWW08
35BWW10
35BWW17
35BWW02
35BWW18
LHSMW58
35BWW04
35BWW13
35BWW12
35BWW09
35BWW20
35BWW19
35BWW11
35BSW02
29-A
27-A
25-A
22-A
21-A
21-A-2
612-A
804-F
32-B
35BWW07
29-D-1
29-D
40-D
38-D
32-E
28-B
27-B
26-B
25-C
25-C-1
25-B
26-B-1
25-B-1
22-B
26-D-1
25-D-1
25-D
CROCKETT AVE.
Goose Prairie Creek
LHAAP-50
Shallow Monitoring Well
Lower Shallow Monitoring Well
Surface Water Location
Former Railroad Location
Land Use Control Boundary
Goose Prairie Creek
Roads
Buildings
LHAAP-35B(37) Site Boundary
Note:
1. RA(O) = Remedial Action Operations
35BWW15 Proposed Sampling Location
35BWW14 Proposed Sampling Location including MNA Parameters
N
0 100 200
Feet
APTIM
U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA
Figure 2-12
Proposed Sampling Locations
First Annual RA(O) Report
LHAAP-35B(37)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
Date: 9/27/2018
Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP37\RAO\Year1\LHAAP37_ProposedGWMonitoringLocations.mxd

Appendix A

Annual Land Use Control Compliance Certification and Documentation

Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Action Work Plan dated June 2013 for LHAAP-35B (37) a certification of site was conducted by Aprim [indicate transferee] on 8/16/18.

A summary of land use control mechanism is as follows:

Groundwater restriction – restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met. A restriction against residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

[Indicate whether groundwater restrictions are still required at LHAAP-35B (37)]

A summary of compliance with land use and restriction covenants is as follows:

No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-35B (37).

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief. I also certify that the non-residential use assumption that forms the basis of the remedy remains the same.

Date: August 16, 2018

Name/Title: Scott Beesinger / Senior Field Tech

Signature: Scott Beesinger

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

Appendix B

Photographic Log

PHOTO LOG

Photo No.	Date	Task and Description
1	May 25, 2018	Surface Water Location, 35BSW01
2	May 25, 2018	Surface Water Location, 35BSW02
3	August 6, 2018	Surface Water Location, 35BSW01
4	August 6, 2018	Surface Water Location, 35BSW02
5	August 16, 2018	Well Inspection, 35BWW01
6	August 21, 2018	Well Inspection, 35BWW02
7	August 22, 2018	Well Inspection, 35BWW04
8	August 21, 2018	Well Inspection, 35BWW05
9	August 21, 2018	Well Inspection, 35BWW06
10	August 20, 2018	Well Inspection, 35BWW07
11	August 22, 2018	Well Inspection, 35BWW08
12	August 16, 2018	Well Inspection, 35BWW09
13	August 17, 2018	Well Inspection, 35BWW10
14	August 17, 2018	Well Inspection, 35BWW11
15	August 22, 2018	Well Inspection, 35BWW12
16	August 21, 2018	Well Inspection, 35BWW13
17	August 22, 2018	Well Inspection, 35BWW14
18	August 20, 2018	Well Inspection, 35BWW15
19	August 17, 2018	Well Inspection, 35BWW16
20	August 21, 2018	Well Inspection, 35BWW17
21	August 16, 2018	Well Inspection, 35BWW18
22	August 16, 2018	Well Inspection, 35BWW19
23	August 20, 2018	Well Inspection, 35BWW20
24	August 22, 2018	Well Inspection, 35BWW23
25	August 21, 2018	Well Inspection, 35BWW24
26	August 20, 2018	Well Inspection, 35BWW25
27	August 22, 2018	Well Inspection, 35BWW26
28	August 20, 2018	Well Inspection, LHSMW58



PHOTO 1: Surface Water Location, 35BSW01
DATE: May 25, 2018



PHOTO 2: Surface Water Location, 35BSW02
DATE: May 25, 2018



PHOTO 3: Surface Water Location, 35BSW01
DATE: August 6, 2018



PHOTO 4: Surface Water Location, 35BSW02
DATE: August 6, 2018



PHOTO 5: Well Inspection, 35BWW01
DATE: August 16, 2018



PHOTO 6: Well Inspection, 35BWW02
DATE: August 21, 2018



PHOTO 7: Well Inspection, 35BWW04
DATE: August 22, 2018



PHOTO 8: Well Inspection, 35BWW05
DATE: August 21, 2018



PHOTO 9: Well Inspection, 35BWW06
DATE: August 21, 2018



PHOTO 10: Well Inspection, 35BWW07
DATE: August 20, 2018



PHOTO 11: Well Inspection, 35BWW08
DATE: August 22, 2018



PHOTO 12: Well Inspection, 35BWW09
DATE: August 16, 2018



PHOTO 13: Well Inspection, 35BWW10
DATE: August 17, 2018



PHOTO 14: Well Inspection, 35BWW11
DATE: August 17, 2018



PHOTO 15: Well Inspection, 35BWW12
DATE: August 22, 2018



PHOTO 16: Well Inspection, 35BWW13
DATE: August 21, 2018



PHOTO 17: Well Inspection, 35BWW14
DATE: August 22, 2018



PHOTO 18: Well Inspection, 35BWW15
DATE: August 20, 2018



PHOTO 19: Well Inspection, 35BWW16
DATE: August 17, 2018



PHOTO 20: Well Inspection, 35BWW17
DATE: August 21, 2018



PHOTO 21: Well Inspection, 35BWW18
DATE: August 16, 2018



PHOTO 22: Well Inspection, 35BWW19
DATE: August 16, 2018



PHOTO 23: Well Inspection, 35BWW20
DATE: August 20, 2018



PHOTO 24: Well Inspection, 35BWW23
DATE: August 22, 2018



PHOTO 25: Well Inspection, 35BWW24
DATE: August 21, 2018



PHOTO 26: Well Inspection, 35BWW25
DATE: August 20, 2018



PHOTO 27: Well Inspection, 35BWW26
DATE: August 22, 2018



PHOTO 28: Well Inspection, LHSMW58
DATE: August 20, 2018

Appendix C

Groundwater Sampling Forms

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BSW01**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BSW01-110818

DATE/TIME: 11/8/2017 / 00:00

Sample Interval: -

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: no sample, surface water location is dry

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment:

Casing ID (in.):

Purge Start Date/Time: - / -

Depth to Water - Initial (DTWi) (ft)

Purge End Date/Time: 11/8/2017 / 00:00

Constructed Depth to Well Bottom (ft)

PID Reading: N/A

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Location ID: 35BSW01 Sample No: 35BSW01-110818										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BSW02**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BSW02-110818

DATE/TIME: 11/8/2017 / 00:00

Sample Interval: -

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: no sample, surface water location is dry

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.):

Depth to Water - Initial (DTWi) (ft)

Constructed Depth to Well Bottom (ft)

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Purging Method/Equipment:

Purge Start Date/Time: - / -

Purge End Date/Time: 11/8/2017 / 00:00

PID Reading: N/A

Location ID: 35BSW02 Sample No: 35BSW02-110818										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Light Rain, Air Temp:70, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW01-110817

DATE/TIME: 11/8/2017 / 14:35

Sample Interval: 15.42 - 15.98 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 15.42

Constructed Depth to Well Bottom (ft) 19

Measured Depth of Well (ft): 20.85

Screen Interval (ft): 9.00 - 19.00

Pump Start Time: 11/8/2017 / 14:00

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/8/2017 / 14:00

Purge End Date/Time: 11/8/2017 / 14:35

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW01		Sample No: 35BWW01-110817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	14:00	100	1.0	15.60	0.201	18.13	6.60	140.6	204.3	2.32
11/11/2017	14:10	100	2.0	15.72	0.183	17.42	6.00	152.5	217.7	0.98
11/11/2017	14:15	100	2.5	15.80	0.176	16.92	5.52	134.8	212.5	0.83
11/11/2017	14:20	100	3.0	15.85	0.169	16.33	5.32	119.3	217.3	0.76
11/11/2017	14:25	100	3.5	15.97	0.167	16.22	5.29	116.3	216.1	0.67
11/11/2017	14:30	100	4.0	15.97	0.168	16.20	5.28	125.9	220.1	0.63
11/11/2017	14:35	100	4.5	15.98	0.164	16.18	5.30	116.8	229.6	0.63

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW02**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BWW02-110617

DATE/TIME: 11/7/2017 / 16:50

Sample Interval: - Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Dry well, not sampled.

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft)

Constructed Depth to Well Bottom (ft) 47

Measured Depth of Well (ft): 16.9

Screen Interval (ft): 9.00 - 14.00

Pump Start Time:

Purging Method/Equipment:

Purge Start Date/Time: - / -

Purge End Date/Time: 11/7/2017 / 16:50

PID Reading: N/A

Location ID: 35BWW02 Sample No: 35BWW02-110617										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW04**

Project No: **501032**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Sunny, Air Temp:60, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW04-110917

DATE/TIME: 11/9/2017 / 10:00

Sample Interval: 23.8 - 24.25 Ft

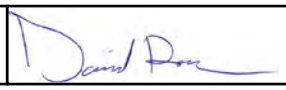
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Field Dup 35BWW04-11092017-FD, Ferrous Iron: 0.18mg/L

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110917	None	ANIONS	SW9056
		DHC	CENSUS
		GASES	RSK-175
		SULFIDE	E376.1
		TOTAL ORGANIC CARBON	SW9060
		VOLATILES	SW8260

Sampler:		David Rowan	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/9/2017 / 09:25

Depth to Water - Initial (DTWi) (ft) 23.8

Purge End Date/Time: 11/9/2017 / 10:00

Constructed Depth to Well Bottom (ft) 30

PID Reading: N/A

Measured Depth of Well (ft): 33.3

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 11/9/2017 / 09:25

APTIM

Sample Collection Log

Location ID: 35BWW04		Sample No: 35BWW04-110917								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/9/2017	09:30	200		24.0	0.300	17.51	7.20	10	164.3	3.56
11/9/2017	09:40	200		24.20	0.296	18.29	6.80	10	183.3	3.46
11/9/2017	09:45	180		24.25	0.292	18.43	6.60	10	171.0	3.00
11/9/2017	09:50	180		24.25	0.280	18.53	6.53	0	180.0	2.20
11/9/2017	09:55	200		24.25	0.275	18.83	6.55	0	184.0	2.19
11/9/2017	10:00	180		24.25	0.277	18.40	6.50	0	183.5	2.20

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW05**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Rain Showers, Air Temp:60, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW05-110817

DATE/TIME: 11/8/2017 / 11:25

Sample Interval: 24.25 - 24.55 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:	David Rowan		
QC'ed By:	Robert Mayer	8/24/2018	

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 11/8/2017 / 10:45

Depth to Water - Initial (DTWi) (ft) 24.3

Purge End Date/Time: 11/8/2017 / 11:25

Constructed Depth to Well Bottom (ft) 36

PID Reading: N/A

Measured Depth of Well (ft): 38

Screen Interval (ft): 26.00 - 36.00

Pump Start Time: 11/8/2017 / 10:45

APTIM

Sample Collection Log

Location ID: 35BWW05		Sample No: 35BWW05-110817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	10:55	150		24.35	0.393	18.64	7.40	190.4	193.1	1.43
11/8/2017	11:05	150		24.40	0.395	18.44	7.14	30	-33.4	1.23
11/8/2017	11:10	180		24.40	0.378	18.42	6.98	30	-20.2	1.00
11/8/2017	11:15	180		24.45	0.362	18.40	6.97	25	-18.8	0.94
11/8/2017	11:20	200		24.50	0.327	18.63	6.89	20	-0.80	0.81
11/8/2017	11:25	200		24.55	0.338	18.57	6.80	19	-0.30	0.78

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW06**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Rain Showers, Air Temp:50, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW06-110817

DATE/TIME: 11/8/2017 / 12:10

Sample Interval: 24.55 - 26.3 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:	David Rowan		
QC'ed By:	Robert Mayer	8/24/2018	

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/8/2017 / 11:35

Depth to Water - Initial (DTWi) (ft) 24.5

Purge End Date/Time: 11/8/2017 / 12:10

Constructed Depth to Well Bottom (ft) 52

PID Reading: N/A

Measured Depth of Well (ft): 53

Screen Interval (ft): 42.00 - 52.00

Pump Start Time: 11/8/2017 / 11:35

APTIM

Sample Collection Log

Location ID: 35BWW06		Sample No: 35BWW06-110817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	11:40	200		26.0	0.689	18.28	6.55	0.0	-1.1	1.47
11/8/2017	11:50	200		26.1	0.703	18.17	6.45	0.0	-10.4	0.86
11/8/2017	11:55	200		26.15	0.705	18.00	6.40	0.0	-10.6	0.80
11/8/2017	12:00	200		26.20	0.709	18.05	6.40	0.0	-10.8	0.76
11/8/2017	12:05	180		26.25	0.708	18.10	6.38	0.0	-11.0	0.79
11/8/2017	12:10	180		26.30	0.706	18.00	6.39	0.0	-11.2	0.80

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW07**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Light Rain, Air Temp:70, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW07-110917

DATE/TIME: 11/9/2017 / 11:21

Sample Interval: 27.9 - 27.9 Ft

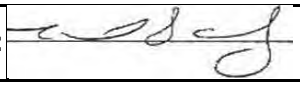
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Purged well dry11-08-17. Decharged- Smp on 11-09-17. Took 3 sets of reading on YSI prior to smp. Start depth on 11-08, DTW 27.94. Recharge Depth on 11-09-17, 27.90'. Notice the different dates on last three readings.

Chain of Custody	COC	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110917	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27.94

Constructed Depth to Well Bottom (ft) 28.5

Measured Depth of Well (ft): 31.39

Screen Interval (ft): 18.00 - 28.00

Pump Start Time: 11/8/2017 / 12:33

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/8/2017 / 12:33

Purge End Date/Time: 11/9/2017 / 11:21

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW07		Sample No: 35BWW07-110917								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	12:40	100	1.0	28.51	1.148	16.96	7.00	40.1	204.6	1.94
11/8/2017	12:50	100	2.0	29.30	1.116	16.76	6.95	17.2	199.9	1.35
11/8/2017	12:55	100	2.5	29.50	1.114	16.64	6.94	12.3	202.9	1.31
11/8/2017	13:00	100	3.0	29.70	1.111	16.55	6.93	10.7	205.9	1.31
11/8/2017	13:05	100	3.5	29.90	1.108	16.50	6.93	8.1	208.2	1.10
11/8/2017	13:10	100	4.0	30.15	1.099	16.31	6.93	10.8	210.2	0.99
11/8/2017	13:15	100	4.5	30.40	1.082	16.24	6.93	12.0	211.5	1.06
11/8/2017	13:20	100	5.0	30.60	1.075	16.25	6.93	11.3	212.5	0.90
11/8/2017	13:25	100	5.5	30.90	1.062	16.17	6.93	12.1	212.5	0.84
11/9/2017	11:15	100	1	27.90	1.111	17.60	6.78	4.6	144.5	2.13
11/9/2017	11:18	100	1.3	27.90	1.109	17.50	6.86	5.4	137.8	1.86
11/9/2017	11:21	100	1.6	27.90	1.112	17.49	6.87	5.9	135.7	1.86

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW08**

Project No: **501032**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Fog/Mist, Air Temp:72, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW08-110717

DATE/TIME: 11/7/2017 / 11:55

Sample Interval: 25.5 - Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Ferrous Iron: 0.12 mg/L, 35BWW08-110717MS/MSD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	ANIONS	SW9056
		DHC	CENSUS
		SULFIDE	E376.1
		TOTAL ORGANIC CARBON	SW9060
		VOLATILES	SW8260
		GASES	RSK-175

Sampler:	David Rowan	David Rowan	
QC'ed By:	Robert Mayer	Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 11/7/2017 / 11:23

Depth to Water - Initial (DTWi) (ft) 25.4

Purge End Date/Time: 11/7/2017 / 11:55

Constructed Depth to Well Bottom (ft) 32.5

PID Reading: N/A

Measured Depth of Well (ft): 34.2

Screen Interval (ft): 22.00 - 32.00

Pump Start Time: 11/7/2017 / 11:23

APTIM

Sample Collection Log

Location ID: 35BWW08		Sample No: 35BWW08-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	11:25	100		25.50	0.543	20.50	7.96	70	181.80	4.20
11/7/2017	11:35	100		25.70	0.447	20.49	8.12	70	177.1	4.05
11/7/2017	11:40	100		25.80	0.428	20.50	8.11	21.20	175.1	3.50
11/7/2017	11:45	100		25.9	0.416	20.50	8.01	12.0	176.0	3.29
11/7/2017	11:50	100		26.0	0.410	20.50	8.00	9.0	176.3	3.20
11/7/2017	11:55	100		26.0	0.408	20.51	8.00	0.0	176.5	3.20

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW09**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Fog/Mist, Air Temp:70, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW09-110717

DATE/TIME: 11/7/2017 / 15:25

Sample Interval: 26.56 - 26.56 Ft

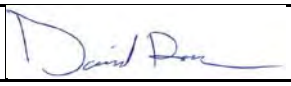
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:		David Rowan	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/7/2017 / 14:50

Depth to Water - Initial (DTWi) (ft) 26.45

Purge End Date/Time: 11/7/2017 / 15:25

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.15

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 11/7/2017 / 14:50

APTIM

Sample Collection Log

Location ID: 35BWW09		Sample No: 35BWW09-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	14:55	180		26.52	0.792	19.63	6.82	65	-50.8	0.77
11/7/2017	15:05	180		26.53	0.781	19.54	6.68	69	-47.3	0.64
11/7/2017	15:10	200		26.55	0.780	19.55	6.68	44.4	-47.3	0.63
11/7/2017	15:15	200		26.55	0.777	19.59	6.68	31.1	-44.3	0.59
11/7/2017	15:20	180		26.56	0.775	19.60	6.68	23.4	-40.3	0.59
11/7/2017	15:25	200		26.56	0.776	19.63	6.68	18.5	-38.6	0.59

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW10**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Fog/Mist, Air Temp:70, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW10-110717

DATE/TIME: 11/7/2017 / 16:30

Sample Interval: 25.2 - 25.5 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:	David Rowan	David Rowan	
QC'ed By:	Robert Mayer	Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.5

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 33.5

Screen Interval (ft): 18.23 - 33.00

Pump Start Time: 11/7/2017 / 15:50

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/7/2017 / 15:50

Purge End Date/Time: 11/7/2017 / 16:30

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW10		Sample No: 35BWW10-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	16:00	200		25.50	0.340	20.22	7.23	65.3	100.6	1.93
11/7/2017	16:10	180		25.50	0.331	20.16	7.09	12.0	84.3	0.90
11/7/2017	16:15	180		25.50	0.327	20.04	7.07	0.0	83.2	0.81
11/7/2017	16:20	180		25.50	0.321	19.75	7.01	0.0	97.4	0.69
11/7/2017	16:25	180		25.50	0.319	19.74	7.01	0.0	86.7	0.70
11/7/2017	16:30	200		25.50	0.318	19.85	7.02	0.0	86.2	0.69

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW11**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Rain Showers, Air Temp:50, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW11-110817

DATE/TIME: 11/8/2017 / 14:30

Sample Interval: 24.3 - 37.7 Ft

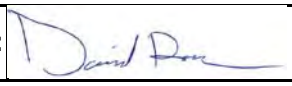
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:		David Rowan	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/8/2017 / 13:55

Depth to Water - Initial (DTWi) (ft) 24.3

Purge End Date/Time: 11/8/2017 / 14:30

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.7

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 11/8/2017 / 13:55

APTIM

Sample Collection Log

Location ID: 35BWW11				Sample No: 35BWW11-110817						
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	14:00	150		24.50	0.598	18.27	6.31	100.9	107.4	1.55
11/8/2017	14:10	150		24.75	0.590	17.94	6.22	60.30	98.7	0.96
11/8/2017	14:15	180		27.80	0.588	17.84	6.20	60.40	94.7	0.91
11/8/2017	14:20	180		24.87	0.588	17.80	6.19	68.50	94.8	0.88
11/8/2017	14:25	200		24.90	0.586	17.80	6.20	67.70	93.0	0.78
11/8/2017	14:30	200		24.85	0.586	17.78	6.17	66.80	93.0	0.77

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW12**

Project No: **501032**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Sunny, Air Temp:60, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW12-110917

DATE/TIME: 11/9/2017 / 11:45

Sample Interval: 22.75 - 35.5 Ft

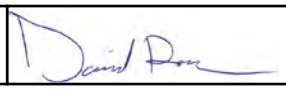
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW12-110917-MS/MSD, Ferrous Iron: 0.24 mg/L

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110917	None	ANIONS	SW9056
		DHC	CENSUS
		GASES	RSK-175
		SULFIDE	E376.1
		TOTAL ORGANIC CARBON	SW9060
		VOLATILES	SW8260

Sampler:		David Rowan	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 11/9/2017 / 11:00

Depth to Water - Initial (DTWi) (ft) 22.75

Purge End Date/Time: 11/9/2017 / 11:45

Constructed Depth to Well Bottom (ft) 35.5

PID Reading: N/A

Measured Depth of Well (ft): 35.5

Screen Interval (ft): 20.30 - 35.00

Pump Start Time: 11/9/2017 / 11:00

APTIM

Sample Collection Log

Location ID: 35BWW12		Sample No: 35BWW12-110917								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/9/2017	11:10	150		23.00	0.460	18.08	6.40	150	108.1	0.84
11/9/2017	11:20	150		23.10	0.398	17.95	6.20	47.5	132.2	0.75
11/9/2017	11:25	150		23.15	0.398	18.15	6.00	30.1	141.7	0.77
11/9/2017	11:30	180		23.20	0.398	18.16	6.00	15.5	145.1	0.76
11/9/2017	11:35	180		23.27	0.400	18.18	6.00	12.0	150.0	0.81
11/9/2017	11:40	180		23.30	0.402	18.19	6.00	10.0	152.3	0.80
11/9/2017	11:45	150		23.30	0.402	18.19	6.00	0.0	151.0	0.79

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW13**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:68, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW13-110717

DATE/TIME: 11/7/2017 / 16:20

Sample Interval: 25.5 - 25.65 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW13-110717-FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 11/7/2017 / 15:47

Depth to Water - Initial (DTWi) (ft) 25.5

Purge End Date/Time: 11/7/2017 / 16:20

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.65

Screen Interval (ft): 19.80 - 34.50

Pump Start Time: 11/7/2017 / 15:47

APTIM

Sample Collection Log

Location ID: 35BWW13		Sample No: 35BWW13-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	15:50	220	1.0	25.65	0.159	18.76	5.48	6.0	254.4	4.78
11/7/2017	16:00	220	3.2	25.65	0.160	18.66	5.37	4.9	276.0	4.55
11/7/2017	16:05	220	4.3	25.65	0.161	18.62	5.32	5.1	277.0	4.55
11/7/2017	16:10	220	5.4	25.65	0.158	18.46	5.31	4.8	282.1	4.57
11/7/2017	16:15	220	6.5	25.65	0.156	18.45	5.30	4.8	283.7	4.59
11/7/2017	16:20	220	7.6	25.65	0.154	18.43	5.27	4.9	289.1	4.59

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW14**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:68, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW14-110717

DATE/TIME: 11/7/2017 / 12:55

Sample Interval: 23.4 - 23.46 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.35 mg/L, 35BWW14-110717MS

Chain of Custody	COC	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	ANIONS	SW9056
		DHC	CENSUS
		GASES	RSK-175
		SULFIDE	E376.1
		TOTAL ORGANIC CARBON	SW9060
		VOLATILES	SW8260

Sampler:	Mike Martinez	
QC'ed By:	Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Purging Method/Equipment: Peristaltic Pump

Measuring Point : Top of Casing

Casing ID (in.): 4

Purge Start Date/Time: 11/7/2017 / 12:17

Depth to Water - Initial (DTWi) (ft) 23.4

Purge End Date/Time: 11/7/2017 / 12:55

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.25

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 11/7/2017 / 12:17

APTIM

Sample Collection Log

Location ID: 35BWW14		Sample No: 35BWW14-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	12:20	210	1	23.46	0.486	20.05	8.65	12.6	2.05	2.05
11/7/2017	12:30	210	3.1	23.46	0.490	20.08	7.35	0.0	0.87	0.87
11/7/2017	12:35	210	4.15	23.46	0.490	20.10	7.10	0.0	0.82	0.82
11/7/2017	12:40	210	5.20	23.46	0.490	20.10	7.05	0.0	0.71	0.71
11/7/2017	12:45	210	6.25	23.46	0.485	19.96	7.05	0.0	0.60	0.60
11/7/2017	12:50	210	7.3	23.46	0.484	19.98	7.05	0.0	0.58	0.58
11/7/2017	12:55	210	8.35	23.46	0.484	20.00	7.05	0.0	0.56	0.56

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW15**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:68, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW15-110717

DATE/TIME: 11/7/2017 / 11:50

Sample Interval: 23.77 - 24.2 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 11/7/2017 / 11:00

Depth to Water - Initial (DTWi) (ft) 23.77

Purge End Date/Time: 11/7/2017 / 11:50

Constructed Depth to Well Bottom (ft) 48

PID Reading: N/A

Measured Depth of Well (ft): 50.1

Screen Interval (ft): 17.80 - 47.50

Pump Start Time: 11/7/2017 / 11:00

APTIM

Sample Collection Log

Location ID: 35BWW15		Sample No: 35BWW15-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	11:05	120	1.0	24.08	0.549	19.44	6.84	0.1	227.0	2.36
11/7/2017	11:15	120	2.2	24.15	0.457	19.41	6.68	0.0	232.7	1.56
11/7/2017	11:20	120	2.8	24.19	0.465	19.20	6.69	0.0	232.6	1.23
11/7/2017	11:25	120	3.4	24.19	0.470	19.13	6.69	0.0	232.5	1.19
11/7/2017	11:30	120	4.0	24.19	0.471	19.11	6.67	0.0	229.9	0.98
11/7/2017	11:35	120	4.6	24.20	0.478	19.10	6.69	0.0	228.1	0.95
11/7/2017	11:40	120	5.2	24.20	0.480	19.09	6.72	0.0	227.3	0.83
11/7/2017	11:45	120	5.8	24.20	0.480	19.09	6.73	0.0	226.6	0.83
11/7/2017	11:50	120	6.4	24.20	0.480	19.09	6.74	0.0	226.3	0.80

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW16**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:68, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW16-110717

DATE/TIME: 11/7/2017 / 15:20

Sample Interval: 23.51 - 23.7 Ft

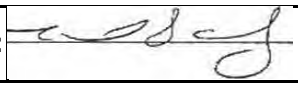
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.51

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 23.7

Screen Interval (ft): 18.80 - 33.50

Pump Start Time: 11/7/2017 / 14:45

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/7/2017 / 14:45

Purge End Date/Time: 11/7/2017 / 15:20

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW16		Sample No: 35BWW16-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	14:50	110	1.0	23.70	0.308	19.14	6.27	34.1	154.6	2.98
11/7/2017	15:00	110	2.10	23.70	0.312	19.07	6.00	22.1	171.0	1.54
11/7/2017	15:05	110	2.65	23.70	0.312	18.79	6.23	11.1	172.3	1.61
11/7/2017	15:10	110	3.20	23.70	0.312	18.76	6.24	7.4	175.1	1.75
11/7/2017	15:15	110	3.75	23.70	0.313	18.77	6.24	6.5	177.2	1.74
11/7/2017	15:20	110	4.30	23.70	0.314	18.78	6.24	5.7	178.3	1.74

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:68, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW17-110717

DATE/TIME: 11/7/2017 / 14:25

Sample Interval: 22.89 - 23 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW17-110717MS/MSD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.89

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 36.32

Screen Interval (ft): 18.30 - 33.00

Pump Start Time: 11/7/2017 / 13:45

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/7/2017 / 13:45

Purge End Date/Time: 11/7/2017 / 14:25

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW17		Sample No: 35BWW17-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	13:50	100	1.0	23.00	0.196	19.96	6.60	4.1	130.6	1.59
11/7/2017	14:00	100	2.0	23.00	0.200	19.56	6.43	2.3	129.6	0.85
11/7/2017	14:05	100	2.5	23.00	0.200	19.52	6.42	1.1	132.1	0.75
11/7/2017	14:10	100	3.0	23.00	0.201	19.50	6.42	0.8	128.6	0.65
11/7/2017	14:15	100	3.5	23.00	0.201	19.49	6.30	0.9	127.1	0.67
11/7/2017	14:20	100	4.0	23.00	0.200	19.48	6.28	0.0	126.9	0.65
11/7/2017	14:25	100	4.5	23.00	0.199	19.50	6.27	0.0	125.4	0.64

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW18**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Fog/Mist, Air Temp:70, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW18-110717

DATE/TIME: 11/7/2017 / 13:30

Sample Interval: 27.5 - 27.88 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:	David Rowan	David Rowan	
QC'ed By:	Robert Mayer	Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27.5

Constructed Depth to Well Bottom (ft) 32.5

Measured Depth of Well (ft): 35.35

Screen Interval (ft): 17.77 - 32.50

Pump Start Time: 11/7/2017 / 12:55

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/7/2017 / 12:55

Purge End Date/Time: 11/7/2017 / 13:30

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW18		Sample No: 35BWW18-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	13:00	150		27.8	0.828	19.42	6.61	27	205.2	1.92
11/7/2017	13:10	150		27.87	0.834	19.21	6.13	13.6	209.2	1.75
11/7/2017	13:15	150		27.87	0.836	19.88	6.10	13.2	208.2	1.70
11/7/2017	13:25	150		27.88	0.837	19.43	6.01	10.0	206.7	1.44
11/7/2017	13:30	150		27.88	0.842	19.36	6.04	7.3	205.6	1.37
11/10/2017	13:20	150		27.87	0.834	19.34	6.05	13.6	207.5	1.49

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW19**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Fog/Mist, Air Temp:70, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW19-110717

DATE/TIME: 11/7/2017 / 14:30

Sample Interval: 27.2 - 27.3 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110717	None	VOLATILES	SW8260

Sampler:	David Rowan	David Rowan	
QC'ed By:	Robert Mayer	Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27.2

Constructed Depth to Well Bottom (ft) 33.98

Measured Depth of Well (ft): 36.6

Screen Interval (ft): 18.75 - 33.48

Pump Start Time: 11/7/2017 / 13:55

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/7/2017 / 13:55

Purge End Date/Time: 11/7/2017 / 14:30

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW19		Sample No: 35BWW19-110717								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/7/2017	14:00	200		27.27	2.431	19.54	6.39	10	148.2	1.46
11/7/2017	14:10	200		27.28	2.454	19.52	6.33	12	168.2	1.28
11/7/2017	14:15	180		27.28	2.470	19.36	6.31	15	174.7	1.06
11/7/2017	14:20	180		27.29	2.468	19.44	6.30	15	177.0	0.85
11/7/2017	14:25	180		27.29	2.468	19.43	6.30	13.5	179.0	0.85
11/7/2017	14:30	180		27.30	2.465	19.45	6.30	12.0	182.0	0.84

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Rain Showers, Air Temp:50, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW20-110817

DATE/TIME: 11/8/2017 / 13:40

Sample Interval: 26.5 - 27.05 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:	David Rowan	David Rowan	
QC'ed By:	Robert Mayer	Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.5

Constructed Depth to Well Bottom (ft) 30.4

Measured Depth of Well (ft): 33

Screen Interval (ft): 15.14 - 29.90

Pump Start Time: 11/8/2017 / 13:05

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/8/2017 / 13:05

Purge End Date/Time: 11/8/2017 / 13:40

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW20		Sample No: 35BWW20-110817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	13:10	200		26.80	0.349	19.32	6.82	100.0	126.5	1.31
11/8/2017	13:20	200		26.84	0.338	18.90	6.82	40.0	125.9	1.91
11/8/2017	13:25	200		26.91	0.330	19.24	6.72	45.20	132.9	2.00
11/8/2017	13:30	180		26.95	0.330	19.00	6.72	30.30	134.5	2.00
11/8/2017	13:35	180		27.00	0.328	19.20	6.75	32.00	135.5	2.10
11/8/2017	13:40	180		27.05	0.328	19.30	6.70	25.0	136.7	2.15

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW23**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Clear, Air Temp:68, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW23-110917

DATE/TIME: 11/9/2017 / 10:00

Sample Interval: 28.56 - 29.15 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.16 mg/L, 35BWW23-110917-MS/MSD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110917	None	ANIONS	SW9056
		GASES	RSK-175
		SULFIDE	E376.1
		TOTAL ORGANIC CARBON	SW9060
		VOLATILES	SW8260
		DHC	CENSUS

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/9/2017 / 09:25

Depth to Water - Initial (DTWi) (ft) 28.56

Purge End Date/Time: 11/9/2017 / 10:00

Constructed Depth to Well Bottom (ft) 33.61

PID Reading: N/A

Measured Depth of Well (ft): 33.6

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 11/9/2017 / 09:25

APTIM

Sample Collection Log

Location ID: 35BWW23		Sample No: 35BWW23-110917								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/9/2017	09:30	100	1.0	28.88	0.891	17.40	6.45	0.0	153.1	4.24
11/11/2017	09:40	100	2.0	28.97	0.899	17.50	6.44	0.0	152.2	3.83
11/11/2017	09:45	100	2.5	29.11	0.909	17.66	6.44	0.0	153.9	3.61
11/11/2017	09:50	100	3.0	29.15	0.910	17.69	6.44	0.0	153.7	3.56
11/11/2017	09:55	100	3.5	29.15	0.915	17.71	6.46	0.0	154.7	3.45
11/11/2017	10:00	100	4.0	29.15	0.917	17.73	6.46	0.0	154.6	3.43

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW24**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Light Rain, Air Temp:70, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW24-110817

DATE/TIME: 11/8/2017 / 12:05

Sample Interval: 29.87 - 30.14 Ft

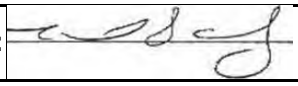
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/8/2017 / 11:30

Depth to Water - Initial (DTWi) (ft) 29.9

Purge End Date/Time: 11/8/2017 / 12:05

Constructed Depth to Well Bottom (ft) 30.2

PID Reading: N/A

Measured Depth of Well (ft): 32.68

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 11/8/2017 / 11:30

APTIM

Sample Collection Log

Location ID: 35BWW24		Sample No: 35BWW24-110817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	11:35	100	1.0	29.90	1.179	17.90	6.50	17.6	238.8	2.23
11/8/2017	11:45	100	2.0	30.00	1.704	17.46	6.48	11.3	240.6	2.03
11/8/2017	11:50	100	2.5	30.10	1.712	16.44	6.49	9.3	242.6	2.18
11/8/2017	11:55	100	3.0	30.13	1.715	16.42	6.49	9.8	246.9	2.15
11/8/2017	12:00	100	3.5	30.13	1.716	16.41	6.49	8.8	247.0	2.17
11/8/2017	12:05	100	4.0	30.14	1.717	16.40	6.49	9.8	246.9	2.18

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW25**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Light Rain, Air Temp:70, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW25-110817

DATE/TIME: 11/8/2017 / 11:05

Sample Interval: 27.27 - 27.27 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW25-110817-FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/8/2017 / 10:35

Depth to Water - Initial (DTWi) (ft) 27.27

Purge End Date/Time: 11/8/2017 / 11:05

Constructed Depth to Well Bottom (ft) 30.2

PID Reading: N/A

Measured Depth of Well (ft): 32.48

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 11/8/2017 / 10:35

APTIM

Sample Collection Log

Location ID: 35BWW25		Sample No: 35BWW25-110817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	10:40	180	1	27.27	0.963	18.42	6.56	0.0	206.6	2.05
11/8/2017	10:50	180	2.8	27.27	0.967	18.40	6.47	0.0	225.1	2.17
11/8/2017	10:55	180	3.7	27.27	0.970	18.37	6.43	0.0	233.1	2.27
11/8/2017	11:00	180	4.6	27.27	0.975	18.40	6.44	0.0	237.9	2.31
11/8/2017	11:05	180	5.5	27.27	0.974	18.41	6.42	0.0	239.2	2.32

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW26**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Clear, Air Temp:68, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW26-110917

DATE/TIME: 11/9/2017 / 12:25

Sample Interval: 27.71 - 28.85 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.03 mg/L

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110917	None	DHC	CENSUS
		GASES	RSK-175
		SULFIDE	E376.1
		TOTAL ORGANIC CARBON	SW9060
		VOLATILES	SW8260
		ANIONS	SW9056

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 11/9/2017 / 11:40

Depth to Water - Initial (DTWi) (ft) 27.71

Purge End Date/Time: 11/9/2017 / 12:25

Constructed Depth to Well Bottom (ft) 35.5

PID Reading: N/A

Measured Depth of Well (ft): 38

Screen Interval (ft): 25.20 - 34.90

Pump Start Time: 11/9/2017 / 11:40

APTIM

Sample Collection Log

Location ID: 35BWW26		Sample No: 35BWW26-110917								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/9/2017	11:50	100	1.0	28.21	0.333	19.57	6.57	1.1	157.0	1.80
11/9/2017	12:00	100	2.0	28.45	0.327	19.75	6.27	0.3	165.9	1.22
11/9/2017	12:05	100	2.5	28.55	0.328	19.83	6.25	0.0	166.9	1.15
11/9/2017	12:10	100	3.0	28.79	0.327	19.92	6.22	0.0	168.4	1.10
11/9/2017	12:15	100	3.5	28.80	0.328	19.85	6.22	0.0	168.8	1.08
11/9/2017	12:20	100	4.0	28.85	0.327	19.85	6.21	0.0	169.3	1.04
11/9/2017	12:25	100	4.5	28.85	0.327	19.80	6.21	0.0	169.6	1.02

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW58**

Sampler(s): **David Rowan**

FIELD CONDITIONS

Rain Showers, Air Temp:50, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: LHSMW58-110817

DATE/TIME: 11/8/2017 / 12:55

Sample Interval: 25.05 - 25.25 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-NOV2017-GW-ALSHT-110817	None	VOLATILES	SW8260

Sampler:	David Rowan	David Rowan	
QC'ed By:	Robert Mayer	Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 25.05

Constructed Depth to Well Bottom (ft) 34

Measured Depth of Well (ft): 35.15

Screen Interval (ft): 21.40 - 31.40

Pump Start Time: 11/8/2017 / 12:20

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 11/8/2017 / 12:20

Purge End Date/Time: 11/8/2017 / 12:55

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-110817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
11/8/2017	12:25	180		25.15	0.248	19.17	6.45	0.0	90.4	3.15
11/8/2017	12:35	180		25.15	0.241	18.02	6.15	0.0	124.4	2.73
11/8/2017	12:40	200		25.20	0.240	17.87	6.08	0.0	130.5	2.63
11/8/2017	12:45	200		25.20	0.236	17.78	6.03	0.0	133.6	2.62
11/8/2017	12:50	180		25.20	0.240	17.80	6.00	0.0	131.5	2.60
11/8/2017	12:55	180		25.20	0.240	17.70	5.98	0.0	138.8	2.60

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BSW01**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BSW01-021218 **DATE/TIME: 2/12/2018 / 13:45** **Sample Interval: - Ft**

Sampling Method: BA **Sample Purpose: REG** **Sample Matrix: GW**

Sample Notes: Surface Water Sample/ Collected with a Disposable Bailer/ Note construction of bridge down sream

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bailer

Casing ID (in.):

Purge Start Date/Time: 2/12/2018 / 13:45

Depth to Water - Initial (DTWi) (ft)

Purge End Date/Time: 2/12/2018 / 13:45

Constructed Depth to Well Bottom (ft)

PID Reading: N/A

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time: 2/12/2018 / 13:45

Location ID: 35BSW01 Sample No: 35BSW01-021218

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/2018	13:45				0.110	5.48	7.20	45.5	92.3	12.35

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BSW02**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BSW02-021218

DATE/TIME: 2/12/2018 / 13:00

Sample Interval: - Ft

Sampling Method: BA

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Surface Water Sample/ Collected with a Disposable Bailer/ Note construction of bridge up-sream

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.):

Depth to Water - Initial (DTWi) (ft)

Constructed Depth to Well Bottom (ft)

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Purging Method/Equipment:

Purge Start Date/Time: - / -

Purge End Date/Time: 2/12/2018 / 13:00

PID Reading: N/A

Location ID: 35BSW02 Sample No: 35BSW02-021218										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/2018	13:00				0.105	5.47	6.78	43.6	108.5	11.29

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Light Rain, Air Temp:52, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW01-021418

DATE/TIME: 2/14/2018 / 18:00

Sample Interval: 14.8 - 15.4 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021418	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/14/2018 / 17:20

Depth to Water - Initial (DTWi) (ft) 14.8

Purge End Date/Time: 2/14/2018 / 18:00

Constructed Depth to Well Bottom (ft) 19

PID Reading: N/A

Measured Depth of Well (ft): 20.85

Screen Interval (ft): 9.00 - 19.00

Pump Start Time: 2/14/2018 / 17:20

APTIM

Sample Collection Log

Location ID: 35BWW01		Sample No: 35BWW01-021418								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/2018	17:25	100	1	15.21	0.111	16.46	5.58	121.6	173.6	5.94
2/14/2018	17:35	100	2	15.25	0.11	16.44	5.63	120.8	172	5.93
2/14/2018	17:40	100	2.5	15.3	0.104	15.82	5.51	122.6	178.3	5.98
2/14/2018	17:45	100	3	15.35	0.107	15.63	5.47	123.7	182.5	6.00
2/14/2018	17:50	100	3.5	15.39	0.106	15.53	5.48	124.1	183.3	6.00
2/14/2018	17:55	100	4	15.4	0.106	15.51	5.48	125.5	183.7	6.00
2/14/2018	18:00	100	4.5	15.4	0.106	15.5	5.46	124.7	185.6	6.00

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW02**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW02-021318

DATE/TIME: 2/13/2018 / 00:00

Sample Interval: 25.43 - Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: NO SAMPLE / WELL DRY AT TIME OF GAUGING / DEPTH TO BOTTOM 16.90'

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft)

Constructed Depth to Well Bottom (ft) 47

Measured Depth of Well (ft): 16.9

Screen Interval (ft): 9.00 - 14.00

Pump Start Time:

Purging Method/Equipment:

Purge Start Date/Time: - / -

Purge End Date/Time: 2/13/2018 / 00:00

PID Reading: N/A

Location ID: 35BWW02 Sample No: 35BWW02-021318										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW04**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Rain Showers, Air Temp:52, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW04-021418

DATE/TIME: 2/14/2018 / 14:45

Sample Interval: 23.53 - 23.56 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.06 mg/L / 35BWW04-021418-FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021418	None	ANIONS	SW9056
		GASES	RSK-175
		METALS	SW6020
		SULFIDE	E376.1
		VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/14/2018 / 14:10

Depth to Water - Initial (DTWi) (ft) 23.53

Purge End Date/Time: 2/14/2018 / 14:45

Constructed Depth to Well Bottom (ft) 30

PID Reading: N/A

Measured Depth of Well (ft): 33.3

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 2/14/2018 / 14:10

APTIM

Sample Collection Log

Location ID: 35BWW04		Sample No: 35BWW04-021418								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/2018	14:15	200	1		0.313	18.22	6.39	3.1	123.6	3.23
2/14/2018	14:25	200	3		0.314	18.04	6.36	2.2	125.1	3.12
2/14/2018	14:30	200	4		0.313	17.9	6.35	1.9	125.7	3.01
2/14/2018	14:35	200	5		0.312	17.88	6.34	1.8	125.9	3.00
2/14/2018	14:40	200	6		0.312	17.87	6.33	1.8	126.9	3.03
2/14/2018	14:45	200	7		0.312	17.84	6.34	1.7	126.1	3.03

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW05**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:62, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW05-021618

DATE/TIME: 2/16/2018 / 08:35

Sample Interval: 24 - 24.15 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021618	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24

Constructed Depth to Well Bottom (ft) 36

Measured Depth of Well (ft): 38

Screen Interval (ft): 26.00 - 36.00

Pump Start Time: 2/16/2018 / 08:00

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 2/16/2018 / 08:00

Purge End Date/Time: 2/16/2018 / 08:35

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW05		Sample No: 35BWW05-021618								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/16/2018	08:05	200	1	24.15	0.279	19.55	6.90	5.2	96.3	2.00
2/16/2018	08:15	200	3	24.15	0.277	19.64	6.69	1.2	105.6	0.96
2/16/2018	08:20	200	4	24.15	0.284	19.56	6.73	0.0	89.6	0.69
2/16/2018	08:24	200	5	24.15	0.303	19.53	6.73	0.0	88.3	0.69
2/16/2018	08:30	200	6	24.15	0.306	19.50	6.74	0.0	86.4	0.65
2/16/2018	08:35	200	7	24.15	0.306	19.51	6.73	0.0	84.6	0.65

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW06**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:62, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW06-021618

DATE/TIME: 2/16/2018 / 09:30

Sample Interval: 24.7 - 26.37 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021618	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/16/2018 / 08:45

Depth to Water - Initial (DTWi) (ft) 24.7

Purge End Date/Time: 2/16/2018 / 09:30

Constructed Depth to Well Bottom (ft) 52

PID Reading: N/A

Measured Depth of Well (ft): 52

Screen Interval (ft): 42.00 - 52.00

Pump Start Time: 2/16/2018 / 08:45

APTIM

Sample Collection Log

Location ID: 35BWW06		Sample No: 35BWW06-021618								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/16/2018	08:50	100	1.0	25.40	0.750	19.46	7.28	0.0	-48.8	1.20
2/16/2018	09:00	100	2.0	25.58	0.751	19.74	7.24	0.0	-46.3	0.74
2/16/2018	09:05	100	2.5	25.72	0.758	19.84	7.23	0.0	-44.2	0.69
2/16/2018	09:10	100	3.0	25.96	0.759	19.90	7.22	0.0	-43.1	0.58
2/16/2018	09:15	100	3.5	26.15	0.759	19.92	7.22	0.0	-42.7	0.56
2/16/2018	09:20	100	4.0	26.33	0.762	19.94	7.22	0.0	-46.1	0.57
2/16/2018	09:25	100	4.5	26.35	0.763	19.96	7.22	0.0	-46.3	0.57
2/16/2018	09:30	100	5.0	26.37	0.763	19.96	7.22	0.0	-46.5	0.57

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW07**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW07-021318

DATE/TIME: 2/13/2018 / 14:50

Sample Interval: 27.25 - 29.5 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 2/13/2018 / 13:50

Depth to Water - Initial (DTWi) (ft) 27.25

Purge End Date/Time: 2/13/2018 / 14:50

Constructed Depth to Well Bottom (ft) 28.5

PID Reading: N/A

Measured Depth of Well (ft): 31.39

Screen Interval (ft): 18.00 - 28.00

Pump Start Time: 2/13/2018 / 13:50

APTIM

Sample Collection Log

Location ID: 35BWW07		Sample No: 35BWW07-021318								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	14:00	100	1.0	27.90	1.064	15.37	6.78	0.8	92.1	1.63
2/13/2018	14:10	100	2.0	28.25	10.76	15.46	6.78	0.6	98.8	1.25
2/13/2018	14:15	100	2.5	28.50	1.074	15.30	6.77	0.0	101.3	1.03
2/13/2018	14:20	100	3.0	28.75	1.072	15.03	6.76	0.0	102.9	1.01
2/13/2018	14:25	100	3.5	28.85	1.066	14.88	6.76	0.0	101.3	0.96
2/13/2018	14:30	100	4.0	29.05	1.058	14.65	6.78	0.0	97.8	0.88
2/13/2018	14:35	100	4.5	29.15	1.049	14.49	6.81	0.0	94.6	0.84
2/13/2018	14:40	100	5.0	29.35	1.038	14.48	6.83	0.0	93.1	0.83
2/13/2018	14:45	100	5.5	29.45	1.031	14.43	6.82	0.0	93.7	0.85
2/13/2018	14:50	100	7.0	29.50	1.031	14.43	6.82	0.0	94.7	0.84

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW08**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:52, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW08-021418

DATE/TIME: 2/14/2018 / 15:45

Sample Interval: 25.07 - 25.31 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.05 mg/L

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021418	None	ANIONS	SW9056
		GASES	RSK-175
		METALS	SW6020
		VOLATILES	SW8260
		SULFIDE	E376.1

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 2/14/2018 / 15:15

Depth to Water - Initial (DTWi) (ft) 25.07

Purge End Date/Time: 2/14/2018 / 15:45

Constructed Depth to Well Bottom (ft) 32.5

PID Reading: N/A

Measured Depth of Well (ft): 34.2

Screen Interval (ft): 22.00 - 32.00

Pump Start Time: 2/14/2018 / 15:15

APTIM

Sample Collection Log

Location ID: 35BWW08		Sample No: 35BWW08-021418								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/2018	15:20	245	1	25.31	0.385	18.72	8.89	0	26.6	5.90
2/14/2018	15:30	245	3.45	25.31	0.411	18.88	9	0	26.4	3.24
2/14/2018	15:35	245	4.675	25.31	0.417	18.9	9.05	0	25.9	3.21
2/14/2018	15:40	245	5.9	25.31	0.417	18.93	9.06	0	25.8	3.20
2/14/2018	15:45	245	7.125	25.31	0.418	18.93	9.06	0	25.5	3.20

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW09**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW09-021318

DATE/TIME: 2/13/2018 / 09:55

Sample Interval: 26.43 - 26.53 Ft

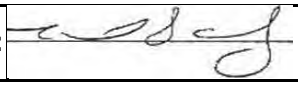
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Purging Method/Equipment: Peristaltic Pump

Measuring Point : Top of Casing

Casing ID (in.): 4

Purge Start Date/Time: 2/13/2018 / 09:20

Depth to Water - Initial (DTWi) (ft) 26.43

Purge End Date/Time: 2/13/2018 / 09:55

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.15

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 2/13/2018 / 09:20

APTIM

Sample Collection Log

Location ID: 35BWW09 Sample No: 35BWW09-021318										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	09:25	200	1.0	26.53	0.920	14.71	7.18	0.0	54.1	1.32
2/13/2018	09:35	200	3.0	26.53	0.923	14.79	7.17	0.0	45.5	0.66
2/13/2018	09:40	200	4.0	26.53	0.920	15.07	7.10	0.0	40.6	0.64
2/13/2018	09:45	200	5.0	26.53	0.923	15.10	7.11	0.0	41.1	0.49
2/13/2018	09:50	200	6.0	26.53	0.924	15.12	7.14	0.0	41.9	0.48
2/13/2018	09:55	200	7.0	26.53	0.926	15.12	7.15	0.0	41.9	0.48

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW10**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:62, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW10-021618

DATE/TIME: 2/16/2018 / 11:30

Sample Interval: 24.87 - 24.95 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021618	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.87

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 33.5

Screen Interval (ft): 18.23 - 33.00

Pump Start Time: 2/16/2018 / 09:50

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 2/16/2018 / 09:50

Purge End Date/Time: 2/16/2018 / 11:30

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW10		Sample No: 35BWW10-021618								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/16/2018	09:55	175	1.0	24.95	0.361	20.97	7.36	0.0	9.7	1.10
2/16/2018	10:05	175	2.75	24.95	0.357	21.02	7.27	0.0	33.6	0.69
2/16/2018	10:10	175	3.625	24.95	0.357	21.00	7.22	0.0	42.7	0.64
2/16/2018	10:15	175	4.5	24.95	0.357	21.04	7.20	0.0	46.1	0.51
2/16/2018	10:20	175	5.375	24.95	0.358	20.89	7.20	0.0	52.2	0.49
2/16/2018	10:25	175	6.25	24.95	0.357	20.90	7.18	0.0	55.0	0.45
2/16/2018	10:30	175	7.125	24.95	0.357	20.92	7.18	0.0	57.3	0.45

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW11**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Sunny, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW11-021218

DATE/TIME: 2/12/2018 / 15:40

Sample Interval: 24.06 - 24.55 Ft

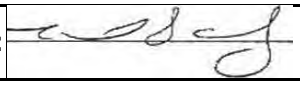
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Purging Method/Equipment: Peristaltic Pump

Measuring Point : Top of Casing

Casing ID (in.): 4

Purge Start Date/Time: 2/12/2018 / 15:05

Depth to Water - Initial (DTWi) (ft) 24.06

Purge End Date/Time: 2/12/2018 / 15:40

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.7

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 2/12/2018 / 15:05

APTIM

Sample Collection Log

Location ID: 35BWW11 Sample No: 35BWW11-021218										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/2018	15:10	200	1.0	24.55	0.594	16.02	6.83	0.0	52.3	1.20
2/12/2018	15:20	200	3.0	24.55	0.598	15.44	6.92	0.0	30.0	0.97
2/12/2018	15:25	200	4.0	24.55	0.598	15.11	6.93	0.0	26.3	0.90
2/12/2018	15:30	200	5.0	24.55	0.596	14.99	6.93	0.0	22.3	0.86
2/12/2018	15:35	200	6.0	24.55	0.595	14.98	6.95	0.0	21.5	0.84
2/12/2018	15:40	200	7.0	24.55	0.595	14.99	6.95	0.0	20.9	0.82

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW12**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Rain Showers, Air Temp:52, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW12-021418

DATE/TIME: 2/14/2018 / 13:00

Sample Interval: 22.4 - 22.44 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.26 mg/L / 35BWW12-021418-MS/MSD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021418	None	ANIONS	SW9056
		GASES	RSK-175
		SULFIDE	E376.1
		VOLATILES	SW8260
		METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 2/14/2018 / 12:25

Depth to Water - Initial (DTWi) (ft) 22.4

Purge End Date/Time: 2/14/2018 / 13:00

Constructed Depth to Well Bottom (ft) 35.5

PID Reading: N/A

Measured Depth of Well (ft): 35.8

Screen Interval (ft): 20.30 - 35.00

Pump Start Time: 2/14/2018 / 12:25

APTIM

Sample Collection Log

Location ID: 35BWW12		Sample No: 35BWW12-021418								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/2018	12:30	200	1	22.44	0.473	17.45	6.61	3.7	113	1.08
2/14/2018	12:40	200	3	22.44	0.443	17.65	6.41	4.4	117.1	0.69
2/14/2018	12:45	200	4	22.44	0.433	17.87	6.39	4.5	121.7	0.63
2/14/2018	12:50	200	5	22.44	0.432	17.93	6.39	4.9	121.9	0.55
2/14/2018	12:55	200	6	22.44	0.431	17.97	6.39	5.4	122.3	0.51
2/14/2018	13:00	200	7	22.44	0.431	17.98	6.39	5.4	122.8	0.51

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW13**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW13-021318

DATE/TIME: 2/13/2018 / 13:35

Sample Interval: 25.36 - 25.43 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW13-021318FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 2/13/2018 / 13:05

Depth to Water - Initial (DTWi) (ft) 25.36

Purge End Date/Time: 2/13/2018 / 13:35

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.65

Screen Interval (ft): 19.80 - 34.50

Pump Start Time: 2/13/2018 / 13:05

APTIM

Sample Collection Log

Location ID: 35BWW13		Sample No: 35BWW13-021318								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	13:10	165	1.0	25.43	0.138	15.40	5.31	12.8	172.3	5.75
2/13/2018	13:20	165	2.65	25.43	0.137	15.48	5.04	1.1	199.3	5.63
2/13/2018	13:25	165	3.475	25.43	0.135	15.62	4.97	1.0	206.1	5.57
2/13/2018	13:30	165	4.3	25.43	0.134	15.64	4.95	1.3	209.5	5.58
2/13/2018	13:35	165	5.125	25.43	0.133	15.65	4.94	1.5	213.1	5.59

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW14**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:61, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW14-021518

DATE/TIME: 2/15/2018 / 14:40

Sample Interval: 23.11 - 23.2 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.00 mg/L

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021518	None	ANIONS	SW9056
		GASES	RSK-175
		METALS	SW6020
		SULFIDE	E376.1
		VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Purging Method/Equipment: Peristaltic Pump

Measuring Point : Top of Casing

Casing ID (in.): 4

Purge Start Date/Time: 2/15/2018 / 14:05

Depth to Water - Initial (DTWi) (ft) 23.11

Purge End Date/Time: 2/15/2018 / 14:40

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.25

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 2/15/2018 / 14:05

APTIM

Sample Collection Log

Location ID: 35BWW14 **Sample No: 35BWW14-021518**

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/15/2018	13:16	210	7.30	23.20	0.441	20.38	6.77	0.0	106.0	2.73
2/15/2018	14:10	210	1.0	23.20	0.443	19.84	6.81	0.0	105.8	3.73
2/15/2018	14:20	210	3.1	23.20	0.442	20.20	6.80	0.0	105.2	2.92
2/15/2018	14:25	210	4.15	23.20	0.440	20.43	6.79	0.0	104.1	2.80
2/15/2018	14:30	210	5.20	23.20	0.439	20.38	6.78	0.0	105.2	2.72
2/15/2018	14:35	210	6.25	23.20	0.440	20.38	6.76	0.0	105.9	2.70

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW15**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW15-021318

DATE/TIME: 2/13/2018 / 11:00

Sample Interval: 23.64 - 24 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.64

Constructed Depth to Well Bottom (ft) 48

Measured Depth of Well (ft): 50.1

Screen Interval (ft): 17.80 - 47.50

Pump Start Time: 2/13/2018 / 10:20

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 2/13/2018 / 10:20

Purge End Date/Time: 2/13/2018 / 11:00

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW15		Sample No: 35BWW15-021318								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	10:25	120	1	24.00	0.461	16.05	6.70	0.0	101.0	1.62
2/13/2018	10:35	120	2.2	24.00	0.470	15.72	6.70	0.0	99.3	1.04
2/13/2018	10:40	120	3.3	24.00	0.473	15.67	6.70	0.0	97.8	0.91
2/13/2018	10:45	120	4.4	24.00	0.494	15.64	6.71	0.0	94.3	0.76
2/13/2018	10:50	120	5.5	24.00	0.510	15.67	6.68	0.0	97.3	0.64
2/13/2018	10:55	120	6.6	24.00	0.519	15.68	6.65	0.0	98.9	0.62
2/13/2018	11:00	120	7.7	24.00	0.519	15.68	6.65	0.0	99.3	0.61

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW16**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW16-021318

DATE/TIME: 2/13/2018 / 12:50

Sample Interval: 23.33 - 23.48 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 2/13/2018 / 12:15

Depth to Water - Initial (DTWi) (ft) 23.33

Purge End Date/Time: 2/13/2018 / 12:50

Constructed Depth to Well Bottom (ft) 33.5

PID Reading: N/A

Measured Depth of Well (ft): 36.88

Screen Interval (ft): 18.80 - 33.50

Pump Start Time: 2/13/2018 / 12:15

APTIM

Sample Collection Log

Location ID: 35BWW16		Sample No: 35BWW16-021318								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	12:20	170	1.0	23.48	0.314	16.01	5.91	3.2	116.7	1.16
2/13/2018	12:30	170	2.7	23.48	0.315	15.45	5.81	0.0	154.3	0.89
2/13/2018	12:35	170	3.55	23.48	0.316	15.34	5.70	0.0	154.4	0.74
2/13/2018	12:40	170	4.4	23.48	0.3185	15.24	5.70	0.0	155.1	0.68
2/13/2018	12:45	170	5.25	23.48	0.319	15.21	5.71	0.0	154.8	0.67
2/13/2018	12:50	170	6.1	23.48	0.320	15.24	5.71	0.0	155.4	0.65

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW17**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW17-021318

DATE/TIME: 2/13/2018 / 11:55

Sample Interval: 22.73 - 22.93 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 2/13/2018 / 11:15

Depth to Water - Initial (DTWi) (ft) 22.73

Purge End Date/Time: 2/13/2018 / 11:55

Constructed Depth to Well Bottom (ft) 33.5

PID Reading: N/A

Measured Depth of Well (ft): 36.32

Screen Interval (ft): 18.30 - 33.00

Pump Start Time: 2/13/2018 / 11:15

APTIM

Sample Collection Log

Location ID: 35BWW17		Sample No: 35BWW17-021318								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	11:20	180	1.0	22.93	0.240	15.44	5.30	5.6	178.1	0.93
2/13/2018	11:30	180	2.8	22.93	0.236	14.44	5.15	4.7	181.3	0.61
2/13/2018	11:35	180	3.7	22.93	0.236	14.24	5.11	2.6	195.2	0.53
2/13/2018	11:40	180	4.6	22.93	0.236	14.07	5.04	0.8	198.6	0.54
2/13/2018	11:45	180	5.5	22.93	0.236	13.93	5.12	0.5	200.3	0.48
2/13/2018	11:50	180	6.4	22.93	0.235	13.92	5.14	0.7	200.9	0.47
2/13/2018	11:55	180	7.3	22.93	0.234	13.93	5.15	0.1	201.3	0.45

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW18**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW18-021318

DATE/TIME: 2/13/2018 / 09:00

Sample Interval: 27.9 - 28.3 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27.9

Constructed Depth to Well Bottom (ft) 32.5

Measured Depth of Well (ft): 35.35

Screen Interval (ft): 17.77 - 32.50

Pump Start Time: 2/13/2018 / 08:25

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 2/13/2018 / 08:25

Purge End Date/Time: 2/13/2018 / 09:00

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW18		Sample No: 35BWW18-021318								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	08:30	180	1	28.30	0.954	16.41	6.14	1.3	116.8	1.70
2/13/2018	08:40	180	2.8	28.30	0.947	15.69	6.12	0.0	126.9	1.19
2/13/2018	08:45	180	3.7	28.30	0.966	15.33	6.06	0.0	125.7	0.97
2/13/2018	08:50	180	4.6	28.30	0.974	15.31	6.07	0.0	126.1	0.94
2/13/2018	08:55	180	5.5	28.30	0.976	15.30	6.09	0.0	125.9	0.93
2/13/2018	09:00	180	6.4	28.30	0.979	15.29	6.10	0.0	125.3	0.93

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW19**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW19-021318

DATE/TIME: 2/13/2018 / 08:05

Sample Interval: 27.48 - 27.76 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 2/13/2018 / 07:35

Depth to Water - Initial (DTWi) (ft) 27.48

Purge End Date/Time: 2/13/2018 / 08:05

Constructed Depth to Well Bottom (ft) 33.98

PID Reading: N/A

Measured Depth of Well (ft): 36.6

Screen Interval (ft): 18.75 - 33.48

Pump Start Time: 2/13/2018 / 07:35

APTIM

Sample Collection Log

Location ID: 35BWW19		Sample No: 35BWW19-021318								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/13/2018	07:40	210	1.0	27.76	2.951	14.62	6.42	6.0	107.8	1.91
2/13/2018	07:50	210	3.1	27.76	3.033	14.22	6.33	6.0	114.3	1.36
2/13/2018	07:55	210	4.15	27.76	3.037	14.21	6.30	4.3	116.1	1.33
2/13/2018	08:00	210	5.20	27.76	3.037	14.20	6.33	2.4	116.9	1.35
2/13/2018	08:05	210	6.25	27.76	3.035	14.24	6.30	0.4	114.9	1.34

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:36, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW20-021218

DATE/TIME: 2/12/2018 / 14:45

Sample Interval: 26.35 - 26.6 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.35

Constructed Depth to Well Bottom (ft) 30.4

Measured Depth of Well (ft): 33

Screen Interval (ft): 15.14 - 29.90

Pump Start Time: 2/12/2018 / 14:10

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 2/12/2018 / 14:10

Purge End Date/Time: 2/12/2018 / 14:45

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW20		Sample No: 35BWW20-021218								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/2018	14:15	100	1.0	26.60	0.429	15.10	7.48	40.9	58.9	1.68
2/12/2018	14:25	100	2.0	26.60	0.429	15.54	7.30	29.4	74.5	2.92
2/12/2018	14:30	100	2.5	26.60	0.424	15.77	7.20	25.6	81.3	2.98
2/12/2018	14:35	100	3.0	26.60	0.417	16.03	7.12	19.6	88.9	3.45
2/12/2018	14:40	100	3.5	26.60	0.415	16.01	7.10	20.5	90.9	3.35
2/12/2018	14:45	100	4.0	26.60	0.413	16.04	7.09	20.3	94.3	3.49

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW23**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:61, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW23-021518

DATE/TIME: 2/15/2018 / 13:45

Sample Interval: 28.35 - 28.75 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.01 mg/L

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021518	None	GASES	RSK-175
		METALS	SW6020
		SULFIDE	E376.1
		VOLATILES	SW8260
		ANIONS	SW9056

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/15/2018 / 13:05

Depth to Water - Initial (DTWi) (ft) 28.35

Purge End Date/Time: 2/15/2018 / 13:45

Constructed Depth to Well Bottom (ft) 33.61

PID Reading: N/A

Measured Depth of Well (ft): 33.6

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 2/15/2018 / 13:05

APTIM

Sample Collection Log

Location ID: 35BWW23		Sample No: 35BWW23-021518								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/15/2018	13:10	200	1.0	28.75	0.829	19.83	6.93	33.8	59.2	3.01
2/15/2018	13:20	200	3.0	28.75	0.804	20.07	6.53	5.9	100.7	2.51
2/15/2018	13:25	200	4.0	28.75	0.784	20.60	6.47	0.0	106.5	2.62
2/15/2018	13:30	200	5.0	28.75	0.785	21.00	6.43	0.0	107.3	2.75
2/15/2018	13:35	200	6.0	28.75	0.786	21.02	6.42	0.0	110.5	2.82
2/15/2018	13:40	200	7.0	28.75	0.784	21.02	6.41	0.0	111.5	2.81
2/15/2018	13:45	200	8.0	28.75	0.782	21.00	6.42	0.0	110.5	2.83

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW24**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:62, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW24-021618

DATE/TIME: 2/16/2018 / 11:30

Sample Interval: 29.37 - 30.15 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021618	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/16/2018 / 10:50

Depth to Water - Initial (DTWi) (ft) 29.37

Purge End Date/Time: 2/16/2018 / 11:30

Constructed Depth to Well Bottom (ft) 30.2

PID Reading: N/A

Measured Depth of Well (ft): 30.15

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 2/16/2018 / 10:50

APTIM

Sample Collection Log

Location ID: 35BWW24		Sample No: 35BWW24-021618								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/16/2018	10:55	100	1.0	29.71	1.560	19.88	6.40	49.2	103.0	1.94
2/16/2018	11:05	100	2.0	29.81	1.557	20.06	6.38	38.9	104.2	1.49
2/16/2018	11:10	100	2.5	29.99	1.563	20.14	6.39	15.2	103.5	1.42
2/16/2018	11:15	100	3.0	30.05	1.565	20.10	6.38	15.9	104.5	1.45
2/16/2018	11:20	100	3.5	30.15	1.570	20.00	6.36	7.7	101.3	1.52
2/16/2018	11:25	100	4.0	30.15	1.572	19.99	6.35	6.4	108.3	1.52
2/16/2018	11:30	100	4.5	30.15	1.572	19.99	6.35	6.7	109.4	1.51

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW25**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:62, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW25-021618

DATE/TIME: 2/16/2018 / 12:25

Sample Interval: 26.92 - 27.73 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW25-021618-FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021618	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/16/2018 / 11:40

Depth to Water - Initial (DTWi) (ft) 26.92

Purge End Date/Time: 2/16/2018 / 12:25

Constructed Depth to Well Bottom (ft) 30.2

PID Reading: N/A

Measured Depth of Well (ft): 32.48

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 2/16/2018 / 11:40

APTIM

Sample Collection Log

Location ID: 35BWW25		Sample No: 35BWW25-021618								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/16/2018	11:45	100	1.0	27.25	0.885	18.87	6.54	58.5	97.8	1.88
2/16/2018	11:55	100	2.0	27.35	0.874	18.91	6.35	52.3	104.2	1.32
2/16/2018	12:00	100	2.5	27.45	0.870	19.00	6.30	51.1	109.6	1.11
2/16/2018	12:05	100	3.0	27.55	0.865	19.05	6.30	50.2	114.8	1.04
2/16/2018	12:10	100	3.5	27.69	0.861	19.22	6.29	2.3	116.1	0.99
2/16/2018	12:15	100	4.0	27.70	0.865	19.23	6.28	0.0	116.6	0.95
2/16/2018	12:20	100	4.5	27.72	0.865	19.20	6.27	0.0	117.2	0.94
2/16/2018	12:25	100	5.0	27.73	0.865	19.21	6.28	0.0	116.9	0.92

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW26**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Light Rain, Air Temp:52, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW26-021418

DATE/TIME: 2/14/2018 / 17:05

Sample Interval: 27.6 - 28.15 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Fe 0.00 mg/L

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021418	None	ANIONS	SW9056
		GASES	RSK-175
		METALS	SW6020
		SULFIDE	E376.1
		VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/14/2018 / 16:25

Depth to Water - Initial (DTWi) (ft) 27.6

Purge End Date/Time: 2/14/2018 / 17:05

Constructed Depth to Well Bottom (ft) 35.5

PID Reading: N/A

Measured Depth of Well (ft): 38

Screen Interval (ft): 25.20 - 34.90

Pump Start Time: 2/14/2018 / 16:25

APTIM

Sample Collection Log

Location ID: 35BWW26		Sample No: 35BWW26-021418								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/14/2018	16:30	100	1	27.9	0.422	18.02	6.42	0	148.6	2.34
2/14/2018	16:40	100	2	28.1	0.382	18	6.38	0	133.3	2.11
2/14/2018	16:45	100	2.5	28.15	0.331	17.98	6.31	0	131.1	2.01
2/14/2018	16:50	100	3	28.15	0.324	17.89	6.2	0	134.7	1.79
2/14/2018	16:55	100	3.5	28.15	0.316	17.66	6.11	0	138.1	1.80
2/14/2018	17:00	100	4	28.15	0.314	17.65	6.1	0	137.5	1.79
2/14/2018	17:05	100	4.5	28.15	0.312	17.65	6.1	0	139.8	1.78

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **LHSMW58**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Sunny, Air Temp:41, Wind Speed:Still

SAMPLING INFORMATION

Sample No: LHSMW58-021218

DATE/TIME: 2/12/2018 / 16:30

Sample Interval: 24.87 - 24.95 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-FEB2018-GW-ALSHT-021218	None	VOLATILES	SW8260

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/12/2018 / 15:55

Depth to Water - Initial (DTWi) (ft) 24.87

Purge End Date/Time: 2/12/2018 / 16:30

Constructed Depth to Well Bottom (ft) 34

PID Reading: N/A

Measured Depth of Well (ft): 35.15

Screen Interval (ft): 21.40 - 31.40

Pump Start Time: 2/12/2018 / 15:55

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-021218								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
2/12/2018	16:00	150	1.0	24.95	0.248	16.27	6.92	0.0	73.4	6.00
2/12/2018	16:10	150	2.5	24.95	0.242	16.17	6.75	0.0	90.4	5.90
2/12/2018	16:15	150	3.25	24.95	0.241	15.81	6.77	0.0	93.4	5.82
2/12/2018	16:20	150	4.0	24.95	0.240	15.84	6.77	0.0	94.5	5.84
2/12/2018	16:25	150	4.75	24.95	0.241	15.85	6.77	0.0	96.5	5.81
2/12/2018	16:30	150	5.50	24.95	0.241	15.86	6.75	0.0	96.5	5.80

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BSW01**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:76, Wind Speed:Strong Winds

SAMPLING INFORMATION

Sample No: 35BSW01-180327

DATE/TIME: 3/27/2018 / 14:45

Sample Interval: - Ft

Sampling Method: BA

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Surface Water Sample collected with Disposable Bailer

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment:

Casing ID (in.):

Purge Start Date/Time: - / -

Depth to Water - Initial (DTWi) (ft)

Purge End Date/Time: 3/27/2018 / 14:45

Constructed Depth to Well Bottom (ft)

PID Reading: N/A

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Location ID: 35BSW01 Sample No: 35BSW01-180327

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	14:45				0.167	23.95	6.34	11.8	153.6	7.43

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BSW02**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:75, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BSW02-180327

DATE/TIME: 3/27/2018 / 12:05

Sample Interval: - Ft

Sampling Method: BA

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Surface Water Sample collected with Disposable Bailer

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.):

Depth to Water - Initial (DTWi) (ft)

Constructed Depth to Well Bottom (ft)

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Purging Method/Equipment:

Purge Start Date/Time: - / -

Purge End Date/Time: 3/27/2018 / 12:05

PID Reading: N/A

Location ID: 35BSW02		Sample No: 35BSW02-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	12:05				0.161	21.17	6.09	16.7	168.9	7.09

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW01**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:60, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW01-180329

DATE/TIME: 3/29/2018 / 11:55

Sample Interval: 12.94 - 13.61 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 3/29/2018 / 11:05

Depth to Water - Initial (DTWi) (ft) 12.94

Purge End Date/Time: 3/29/2018 / 11:55

Constructed Depth to Well Bottom (ft) 19

PID Reading: N/A

Measured Depth of Well (ft): 20.85

Screen Interval (ft): 9.00 - 19.00

Pump Start Time: 3/29/2018 / 11:05

APTIM

Sample Collection Log

Location ID: 35BWW01		Sample No: 35BWW01-180329								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/29/2018	11:15	100	1.0	13.11	0.141	19.04	4.89	128.5	210.2	6.40
3/29/2018	11:25	100	2.0	13.25	0.115	18.62	4.55	131.8	245.3	5.30
3/29/2018	11:35	100	3.0	13.43	0.103	18.19	4.49	130.5	252.8	5.26
3/29/2018	11:45	100	4.0	13.56	0.103	18.20	4.47	131.0	255.0	5.28
3/29/2018	11:50	100	4.5	13.60	0.104	18.25	4.49	130.8	256.4	5.26
3/29/2018	11:55	100	5.0	13.1	0.105	18.21	4.49	130.9	257.3	5.26

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW02**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BWW02-180329

DATE/TIME: 3/29/2018 / 11:59

Sample Interval: -

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: Dry well, not sampled.

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment:

Casing ID (in.): 4

Purge Start Date/Time: - / -

Depth to Water - Initial (DTWi) (ft)

Purge End Date/Time: 3/29/2018 / 11:59

Constructed Depth to Well Bottom (ft) 47

PID Reading: N/A

Measured Depth of Well (ft): 16.9

Screen Interval (ft): 9.00 - 14.00

Pump Start Time:

Location ID: 35BWW02 Sample No: 35BWW02-180329

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW05**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:76, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW05-180327

DATE/TIME: 3/27/2018 / 13:05

Sample Interval: 23.35 - 23.45 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW05-180327MS/MSD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 3/27/2018 / 12:20

Depth to Water - Initial (DTWi) (ft) 23.35

Purge End Date/Time: 3/27/2018 / 13:05

Constructed Depth to Well Bottom (ft) 36

PID Reading: N/A

Measured Depth of Well (ft): 38

Screen Interval (ft): 26.00 - 36.00

Pump Start Time: 3/27/2018 / 12:20

APTIM

Sample Collection Log

Location ID: 35BWW05		Sample No: 35BWW05-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	12:20	200	1.0	23.45	0.279	25.23	5.97	3.9	169.1	2.20
3/27/2018	12:30	200	3.0	23.45	0.280	25.38	6.10	2.1	151.1	1.99
3/27/2018	12:35	200	4.0	23.45	0.281	25.51	6.15	1.8	148.6	1.94
3/27/2018	12:40	200	5.0	23.45	0.294	25.96	6.16	1.5	142.9	1.93
3/27/2018	12:45	200	6.0	23.45	0.300	26.14	6.21	0.2	137.6	1.97
3/27/2018	12:50	200	7.0	23.45	0.310	25.74	6.30	0.0	130.0	1.78
3/27/2018	12:55	200	8.0	23.45	0.313	25.69	6.30	0.0	129.9	1.77
3/27/2018	13:00	200	9.0	23.45	0.317	25.67	6.33	0.0	124.8	1.77
3/27/2018	13:05	200	10.0	23.45	0.317	25.64	6.35	0.0	125.1	1.72

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW06**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:79, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW06-180327

DATE/TIME: 3/27/2018 / 13:40

Sample Interval: 24.8 - 24.9 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 24.8

Constructed Depth to Well Bottom (ft) 52

Measured Depth of Well (ft): 52

Screen Interval (ft): 51.50 - 51.50

Pump Start Time: 3/27/2018 / 13:10

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 3/27/2018 / 13:10

Purge End Date/Time: 3/27/2018 / 13:40

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW06		Sample No: 35BWW06-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	13:15	100	1.0	24.90	0.754	22.65	8.47	0.0	-87.2	1.08
3/27/2018	13:25	100	2.0	24.90	0.753	23.12	8.36	0.0	-94.3	0.41
3/27/2018	13:30	100	2.5	24.90	0.753	22.98	8.38	0.0	-96.2	0.40
3/27/2018	13:35	100	3.0	24.90	0.752	22.99	8.37	0.0	-96.1	0.37
3/27/2018	13:40	100	3.5	24.90	0.751	23.01	8.34	0.0	-95.6	0.37

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW07**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:60, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW07-180329

DATE/TIME: 3/29/2018 / 10:55

Sample Interval: 26.52 - 28.3 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 3/29/2018 / 09:50

Depth to Water - Initial (DTWi) (ft) 26.52

Purge End Date/Time: 3/29/2018 / 10:55

Constructed Depth to Well Bottom (ft) 28.5

PID Reading: N/A

Measured Depth of Well (ft): 31.39

Screen Interval (ft): 18.00 - 28.00

Pump Start Time: 3/29/2018 / 09:50

APTIM

Sample Collection Log

Location ID: 35BWW07		Sample No: 35BWW07-180329								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/29/2018	10:00	100	1.0	27.10	0.976	17.99	6.39	4.2	97.5	1.61
3/29/2018	10:10	100	2.0	27.31	0.959	18.24	6.23	0.0	102.4	1.44
3/29/2018	10:20	100	3.0	27.60	0.954	18.07	6.15	0.0	111.1	1.18
3/29/2018	10:30	100	4.0	27.85	0.945	18.50	6.14	0.0	112.0	1.09
3/29/2018	10:40	100	5.0	28.12	0.939	19.03	6.16	0.0	115.1	0.99
3/29/2018	10:45	100	5.5	28.20	0.938	19.06	6.16	0.0	118.3	0.99
3/29/2018	10:50	100	6.0	28.28	0.931	19.03	6.16	0.0	117.9	0.97
3/29/2018	10:55	100	6.5	28.30	0.931	19.00	6.16	0.0	119.1	0.97

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW09**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:76, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW09-180327

DATE/TIME: 3/20/2018 / 17:00

Sample Interval: 25.57 - 25.65 Ft

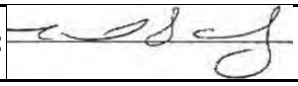
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 25.57

Constructed Depth to Well Bottom (ft) 35

Measured Depth of Well (ft): 37.15

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 3/27/2018 / 16:30

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 3/27/2018 / 16:30

Purge End Date/Time: 3/20/2018 / 17:00

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW09 Sample No: 35BWW09-180327										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	16:35	180	1.0	21.76	0.927	21.76	6.44	0.0	133.3	3.24
3/27/2018	16:45	180	2.8	22.60	0.855	22.60	6.33	0.0	139.4	2.15
3/27/2018	16:50	180	3.7	22.69	0.853	22.69	6.33	0.0	138.3	2.11
3/27/2018	16:55	180	4.6	22.71	0.851	22.71	6.33	0.0	138.2	2.10
3/27/2018	17:00	180	5.5	22.68	0.850	22.68	6.33	0.0	139.1	2.09

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW10**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:82, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW10-180327

DATE/TIME: 3/27/2018 / 14:25

Sample Interval: 24.21 - 24.28 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 3/27/2018 / 13:50

Depth to Water - Initial (DTWi) (ft) 24.21

Purge End Date/Time: 3/27/2018 / 14:25

Constructed Depth to Well Bottom (ft) 33.5

PID Reading: N/A

Measured Depth of Well (ft): 33.5

Screen Interval (ft): 18.23 - 33.00

Pump Start Time: 3/27/2018 / 13:50

APTIM

Sample Collection Log

Location ID: 35BWW10		Sample No: 35BWW10-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	13:55	210	1.0	24.28	0.367	22.75	6.93	0.0	78.6	1.76
3/27/2018	14:05	210	3.1	24.28	0.359	22.70	6.72	0.0	98.1	0.68
3/27/2018	14:10	210	4.15	24.28	0.354	22.61	6.55	0.0	125.4	0.53
3/27/2018	14:15	210	5.20	24.28	0.355	23.07	6.54	0.0	113.4	0.52
3/27/2018	14:20	210	6.25	24.28	0.355	23.11	6.52	0.0	120.8	0.52
3/27/2018	14:25	210	7.30	24.28	0.354	23.12	6.53	0.0	118.1	0.50

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW11**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Mostly Cloudy, Air Temp:75, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW11-180327

DATE/TIME: 3/27/2018 / 11:50

Sample Interval: 23.16 - 23.16 Ft

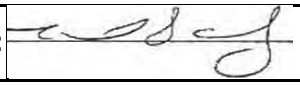
Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Purging Method/Equipment: Peristaltic Pump

Measuring Point : Top of Casing

Casing ID (in.): 4

Purge Start Date/Time: 3/27/2018 / 11:10

Depth to Water - Initial (DTWi) (ft) 23.16

Purge End Date/Time: 3/27/2018 / 11:50

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.7

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 3/27/2018 / 11:10

APTIM

Sample Collection Log

Location ID: 35BWW11 Sample No: 35BWW11-180327										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	11:15	190	1.0	23.16	0.472	23.17	5.60	0.0	196.1	2.34
3/27/2018	11:25	190	2.9	23.16	0.471	23.95	5.60	0.0	193.3	1.48
3/27/2018	11:30	190	3.85	23.16	0.471	24.15	5.62	0.0	192.8	1.45
3/27/2018	11:35	190	4.80	23.16	0.470	24.57	5.62	0.0	194.0	1.39
3/27/2018	11:40	190	5.75	23.16	0.471	24.18	5.64	0.0	194.0	1.32
3/27/2018	11:45	190	6.70	23.16	0.470	24.14	5.67	0.0	194.8	1.31
3/27/2018	11:50	190	7.65	23.16	0.471	24.14	5.68	0.0	195.8	1.31

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW13**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Rain Showers, Air Temp:59, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW13-180328

DATE/TIME: 3/28/2018 / 11:30

Sample Interval: 24.25 - 24.37 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW13-180328-FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.25

Constructed Depth to Well Bottom (ft) 35

Measured Depth of Well (ft): 37.65

Screen Interval (ft): 19.80 - 34.50

Pump Start Time: 3/28/2018 / 10:55

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 3/28/2018 / 10:55

Purge End Date/Time: 3/28/2018 / 11:30

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW13		Sample No: 35BWW13-180328								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/28/2018	11:00	200	1.0	24.37	0.159	17.68	4.20	0.0	237.9	4.96
3/28/2018	11:10	200	3.0	24.37	0.159	17.68	4.09	0.0	254.3	4.80
3/28/2018	11:15	200	4.0	24.37	0.155	17.79	4.06	0.0	259.3	4.83
3/28/2018	11:20	200	5.0	24.37	0.145	17.76	4.05	0.0	263.3	4.83
3/28/2018	11:25	200	6.0	24.37	0.141	17.72	4.04	0.0	266.7	4.83
3/28/2018	11:30	200	7.0	24.37	0.141	17.73	4.04	0.0	267.0	4.84

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW15**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:60, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW15-180329

DATE/TIME: 3/29/2018 / 14:40

Sample Interval: 22.43 - 22.6 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.43

Constructed Depth to Well Bottom (ft) 48

Measured Depth of Well (ft): 50.1

Screen Interval (ft): 17.80 - 47.50

Pump Start Time: 3/29/2018 / 13:55

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 3/29/2018 / 13:55

Purge End Date/Time: 3/29/2018 / 14:40

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW15		Sample No: 35BWW15-180329								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/29/2018	14:00	120	1.0	22.60	0.395	19.86	6.04	0.0	196.6	2.44
3/29/2018	14:10	120	2.2	22.60	0.391	20.27	6.05	0.0	155.1	0.98
3/29/2018	14:15	120	2.8	22.60	0.407	20.26	6.10	0.0	169.5	0.64
3/29/2018	14:20	120	3.4	22.60	0.425	20.25	6.08	0.0	159.3	0.61
3/29/2018	14:25	120	4.0	22.60	0.487	20.23	6.23	0.0	153.5	0.47
3/29/2018	14:30	120	4.6	22.60	0.492	20.20	6.28	0.0	144.0	0.45
3/29/2018	14:35	120	5.2	22.60	0.499	20.23	6.29	0.0	142.3	0.43
3/29/2018	14:40	120	5.8	22.60	0.500	20.20	6.28	0.0	144.4	0.46

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW16**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:60, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW16-180329

DATE/TIME: 3/29/2018 / 13:35

Sample Interval: 22.25 - 22.5 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 3/29/2018 / 13:00

Depth to Water - Initial (DTWi) (ft) 22.25

Purge End Date/Time: 3/29/2018 / 13:35

Constructed Depth to Well Bottom (ft) 33.5

PID Reading: N/A

Measured Depth of Well (ft): 36.22

Screen Interval (ft): 18.80 - 33.50

Pump Start Time: 3/29/2018 / 13:00

APTIM

Sample Collection Log

Location ID: 35BWW16		Sample No: 35BWW16-180329								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/29/2018	13:05	120	1.0	22.50	0.283	19.09	5.01	23.6	220.2	1.84
3/29/2018	13:15	120	2.2	22.50	0.287	19.64	5.04	26.5	209.6	1.17
3/29/2018	13:20	120	2.8	22.50	0.289	19.46	5.07	30.7	206.1	0.94
3/29/2018	13:25	120	3.4	22.50	0.293	19.73	5.09	32.9	202.1	0.96
3/29/2018	13:30	120	4.0	22.50	0.295	19.75	5.10	31.1	201.5	0.97
3/29/2018	13:35	120	4.6	22.50	0.295	19.75	5.11	30.9	201.3	0.99

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:60, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW17-180329

DATE/TIME: 3/29/2018 / 12:50

Sample Interval: 21.38 - 21.45 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.38

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 36.88

Screen Interval (ft): 18.30 - 33.00

Pump Start Time: 3/29/2018 / 12:10

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 3/29/2018 / 12:10

Purge End Date/Time: 3/29/2018 / 12:50

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW17		Sample No: 35BWW17-180329								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/29/2018	12:20	200	1.0	21.45	0.122	18.68	4.48	10.6	250.4	3.40
3/29/2018	12:30	200	3.0	21.45	0.121	19.09	4.48	10.1	247.3	1.79
3/29/2018	12:35	200	4.0	21.45	0.121	19.24	4.48	10.1	246.1	1.63
3/29/2018	12:40	200	5.0	21.45	0.120	19.23	4.46	12.8	243.8	1.56
3/29/2018	12:45	200	6.0	21.45	0.119	19.19	4.46	11.3	244.4	1.56
3/29/2018	12:50	200	7.0	21.45	0.119	19.19	4.45	10.1	244.9	1.55

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW18**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:78, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW18-180327

DATE/TIME: 3/27/2018 / 15:25

Sample Interval: 27.18 - 27.4 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 3/27/2018 / 14:50

Depth to Water - Initial (DTWi) (ft) 27.18

Purge End Date/Time: 3/27/2018 / 15:25

Constructed Depth to Well Bottom (ft) 32.5

PID Reading: N/A

Measured Depth of Well (ft): 35.35

Screen Interval (ft): 17.77 - 32.50

Pump Start Time: 3/27/2018 / 14:50

APTIM

Sample Collection Log

Location ID: 35BWW18		Sample No: 35BWW18-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	14:55	140	21.70	27.40	0.816	21.70	5.44	0.0	185.1	2.44
3/27/2018	15:05	140	22.20	27.40	0.821	22.20	5.53	0.0	183.6	1.94
3/27/2018	15:10	140	22.38	27.40	0.826	22.38	5.54	0.0	181.8	1.83
3/27/2018	15:15	140	22.19	27.40	0.835	22.19	5.56	0.0	181.6	1.79
3/27/2018	15:20	140	22.13	27.40	0.840	22.13	5.56	0.0	181.7	1.75
3/27/2018	15:25	140	22.11	27.40	0.842	22.11	5.59	0.0	184.1	1.73

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW19**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Cloudy, Air Temp:78, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW19-180327

DATE/TIME: 3/27/2018 / 16:15

Sample Interval: 26.99 - 27.3 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.99

Constructed Depth to Well Bottom (ft) 33.98

Measured Depth of Well (ft): 36.6

Screen Interval (ft): 18.75 - 33.48

Pump Start Time: 3/27/2018 / 15:40

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 3/27/2018 / 15:40

Purge End Date/Time: 3/27/2018 / 16:15

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW19		Sample No: 35BWW19-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	15:45	200	1.0	27.30	2.664	22.01	5.78	0.0	169.4	1.82
3/27/2018	15:55	200	3.0	27.30	2.665	21.66	5.77	0.0	163.7	1.27
3/27/2018	16:00	200	4.0	27.30	2.668	21.60	5.76	0.0	162.7	1.25
3/27/2018	16:05	200	5.0	27.30	2.670	21.58	5.76	0.0	162.1	1.23
3/27/2018	16:10	200	6.0	27.30	2.677	21.54	5.74	0.0	163.3	1.20
3/27/2018	16:15	200	7.0	27.30	2.675	21.49	5.73	0.0	161.2	1.21

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW20**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:72, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW20-180327

DATE/TIME: 3/27/2018 / 10:05

Sample Interval: 25.45 - 25.78 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 2

Purge Start Date/Time: 3/27/2018 / 09:25

Depth to Water - Initial (DTWi) (ft) 25.45

Purge End Date/Time: 3/27/2018 / 10:05

Constructed Depth to Well Bottom (ft) 30.4

PID Reading: N/A

Measured Depth of Well (ft): 33

Screen Interval (ft): 15.14 - 29.90

Pump Start Time: 3/27/2018 / 09:25

APTIM

Sample Collection Log

Location ID: 35BWW20		Sample No: 35BWW20-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	09:30	100	1.0	25.78	0.371	23.27	5.87	28.2	184.9	4.44
3/27/2018	09:40	100	2.0	25.78	0.369	23.28	5.84	28.1	187.3	4.20
3/27/2018	09:45	100	2.5	25.78	0.367	23.29	5.80	28.3	190.9	5.90
3/27/2018	09:50	100	3.0	25.78	0.365	23.78	5.86	28.6	190.6	1.04
3/27/2018	09:55	100	3.5	25.78	0.364	23.79	5.87	26.9	189.1	3.98
3/27/2018	10:00	100	4.0	25.78	0.361	23.73	5.83	24.3	189.8	3.97
3/27/2018	10:05	100	4.5	25.78	0.366	23.72	5.82	24.1	190.7	3.97

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW24**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Rain Showers, Air Temp:58, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW24-180328

DATE/TIME: 3/28/2018 / 12:20

Sample Interval: 28.83 - 29.61 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 3/28/2018 / 11:45

Depth to Water - Initial (DTWi) (ft) 28.83

Purge End Date/Time: 3/28/2018 / 12:20

Constructed Depth to Well Bottom (ft) 30.2

PID Reading: N/A

Measured Depth of Well (ft): 32.68

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 3/28/2018 / 11:45

APTIM

Sample Collection Log

Location ID: 35BWW24		Sample No: 35BWW24-180328								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/28/2018	11:50	100	1.0	29.28	1.469	18.35	5.49	2.3	175.9	3.89
3/28/2018	12:00	100	2.0	29.40	1.482	18.45	5.51	1.3	168.6	3.25
3/28/2018	12:05	100	2.5	29.50	1.491	18.32	5.51	0.0	165.7	3.06
3/28/2018	12:10	100	3.0	29.59	1.490	18.37	5.51	0.0	165.5	2.99
3/28/2018	12:15	100	3.5	29.60	1.492	18.34	5.51	0.0	165.9	2.95
3/28/2018	12:20	100	4.0	29.61	1.490	18.36	5.53	0.0	164.7	2.95

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW25**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Rain Showers, Air Temp:58, Wind Speed:Still

SAMPLING INFORMATION

Sample No: 35BWW25-180328

DATE/TIME: 3/28/2018 / 12:40

Sample Interval: 26.38 - 26.6 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW25-180328-FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 26.38

Constructed Depth to Well Bottom (ft) 30.2

Measured Depth of Well (ft): 32.48

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 3/28/2018 / 12:40

Purging Method/Equipment: Peristaltic Pump

Purge Start Date/Time: 3/28/2018 / 12:40

Purge End Date/Time: 3/28/2018 / 12:40

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW25		Sample No: 35BWW25-180328								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/28/2018	12:45	100	1.0	26.60	0.839	18.02	5.52	1.2	167.4	2.59
3/28/2018	12:55	100	2.0	26.60	0.833	17.72	5.51	0.0	166.0	2.50
3/28/2018	13:00	100	2.5	26.60	0.832	17.51	5.51	0.0	165.1	2.50
3/28/2018	13:05	100	3.0	26.60	0.831	17.49	5.52	0.0	166.0	2.39
3/28/2018	13:10	100	3.5	26.60	0.830	17.48	5.52	0.0	166.0	2.38
3/28/2018	13:15	100	4.0	26.60	0.829	17.44	5.51	0.0	167.9	2.38

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **LHSMW58**

Project No: **501032**

Sampler(s): **Mike Martinez**

FIELD CONDITIONS

Partly Cloudy, Air Temp:75, Wind Speed:Still

SAMPLING INFORMATION

Sample No: LHSMW58-180327

DATE/TIME: 3/27/2018 / 10:50

Sample Interval: 23.95 - 24 Ft

Sampling Method: PP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAR2018-GW-ALSHT-032918	None	METALS	SW6020

Sampler:		Mike Martinez	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Peristaltic Pump

Casing ID (in.): 4

Purge Start Date/Time: 3/27/2018 / 10:15

Depth to Water - Initial (DTWi) (ft) 23.95

Purge End Date/Time: 3/27/2018 / 10:50

Constructed Depth to Well Bottom (ft) 34

PID Reading: N/A

Measured Depth of Well (ft): 35.15

Screen Interval (ft): 21.40 - 31.40

Pump Start Time: 3/27/2018 / 10:15

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-180327								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
3/27/2018	10:20	120	1.0	24.00	0.207	21.23	5.63	3.9	208.4	6.72
3/27/2018	10:30	120	2.2	24.00	0.205	21.82	5.61	0.0	210.4	6.57
3/27/2018	10:35	120	2.8	24.00	0.203	22.31	5.62	0.0	210.7	6.55
3/27/2018	10:40	120	3.4	24.00	0.203	22.76	5.64	0.0	210.7	6.52
3/27/2018	10:45	120	4.0	24.00	0.203	22.78	5.66	0.0	211.4	6.50
3/27/2018	10:50	120	4.6	24.00	0.203	22.76	5.64	0.0	213.0	6.50

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BSW01**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BSW01-052518

DATE/TIME: 5/25/2018 / 00:00

Sample Interval: -

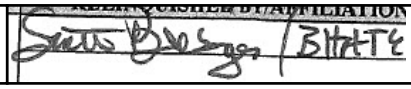
Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: no sample, surface water location is dry

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment:

Casing ID (in.):

Purge Start Date/Time: - / -

Depth to Water - Initial (DTWi) (ft)

Purge End Date/Time: 5/25/2018 / 00:00

Constructed Depth to Well Bottom (ft)

PID Reading: N/A

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Location ID: 35BSW01 Sample No: 35BSW01-052518										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BSW02**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

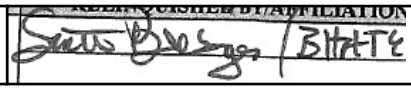
SAMPLING INFORMATION

Sample No: 35BSW02-052518 **DATE/TIME: 5/25/2018 / 00:00** **Sample Interval: -**

Sampling Method: **Sample Purpose: REG** **Sample Matrix: GW**

Sample Notes: no sample, surface water location is dry

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.):

Depth to Water - Initial (DTWi) (ft)

Constructed Depth to Well Bottom (ft)

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Purging Method/Equipment:

Purge Start Date/Time: - / -

Purge End Date/Time: 5/25/2018 / 00:00

PID Reading: N/A

Location ID: 35BSW02		Sample No: 35BSW02-052518								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW01-180524

DATE/TIME: 5/24/2018 / 10:50

Sample Interval: 16.21 - 16.21 Ft

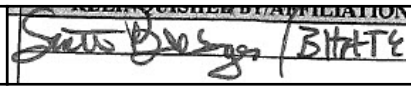
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW01-180524FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 12.28

Constructed Depth to Well Bottom (ft) 19

Measured Depth of Well (ft): 21

Screen Interval (ft): 9.00 - 19.00

Pump Start Time: 5/24/2018 / 10:20

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/24/2018 / 10:20

Purge End Date/Time: 5/24/2018 / 10:50

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW01		Sample No: 35BWW01-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	10:25	100	0.5	12.35	0.079	19.49	4.46	35.0	427	1.14
5/24/2018	10:30	100	1.0	12.41	0.080	19.20	4.26	47.3	448	0.07
5/24/2018	10:35	100	1.5	12.45	0.082	19.16	4.05	57.9	488	0.00
5/24/2018	10:40	100	2.0	12.48	0.082	19.12	4.04	58.5	489	0.00
5/24/2018	10:45	100	2.5	12.51	0.082	19.10	4.03	59.3	490	0.00
5/24/2018	10:50	100	3.0	12.53	0.082	19.08	4.03	59.7	491	0.00

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW04**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW04-180522

DATE/TIME: 5/22/2018 / 08:25

Sample Interval: 27.85 - 27.85 Ft

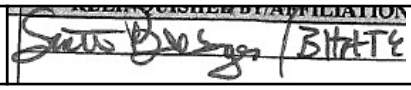
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW04-180522MS/MSD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	GASES	RSK-175
		GENERAL CHEMISTRY	SW9060
		VOLATILES	SW8260B
		GENERAL CHEMISTRY	SW9056
		DHC IN WATER	CENSUS

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/22/2018 / 07:55

Depth to Water - Initial (DTWi) (ft) 22.55

Purge End Date/Time: 5/22/2018 / 08:25

Constructed Depth to Well Bottom (ft) 30

PID Reading: N/A

Measured Depth of Well (ft): 33.33

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 5/22/2018 / 07:55

APTIM

Sample Collection Log

Location ID: 35BWW04		Sample No: 35BWW04-180522								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/2018	08:00	100	0.5	22.61	0.258	19.76	5.81	45.2	373	0.90
5/22/2018	08:05	100	1	22.65	0.237	19.14	5.53	48.6	380	0.39
5/22/2018	08:10	100	1.5	22.69	0.217	19.03	5.15	56.8	409	0.00
5/22/2018	08:15	100	2	22.71	0.217	18.95	5.14	57	410	0.00
5/22/2018	08:20	100	2.5	22.72	0.216	18.9	5.13	57.7	411	0.00
5/22/2018	08:25	100	3	22.73	0.216	18.87	5.12	58.3	411	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW05**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Cloudy, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW05-180521

DATE/TIME: 5/21/2018 / 13:05

Sample Interval: 33.6 - 33.6 Ft

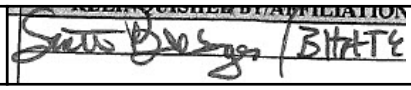
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.2

Constructed Depth to Well Bottom (ft) 36

Measured Depth of Well (ft): 38

Screen Interval (ft): 26.00 - 36.00

Pump Start Time: 5/21/2018 / 12:35

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/21/2018 / 12:35

Purge End Date/Time: 5/21/2018 / 13:05

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW05		Sample No: 35BWW05-180521								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/2018	12:40	100	0.5	23.27	0.205	24.40	6.27	800	296	1.49
5/21/2018	12:45	100	1.0	23.33	0.209	23.70	5.70	798	258	0.11
5/21/2018	12:50	100	1.5	23.38	0.212	23.39	5.16	780	267	0.00
5/21/2018	12:55	100	2.0	23.40	0.213	23.31	5.15	780	268	0.00
5/21/2018	13:00	100	2.5	23.41	0.213	23.29	5.15	779	269	0.00
5/21/2018	13:05	100	3.0	23.41	0.213	23.26	5.14	779	269	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW06**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW06-180521

DATE/TIME: 5/21/2018 / 13:50

Sample Interval: 48.03 - 48.03 Ft

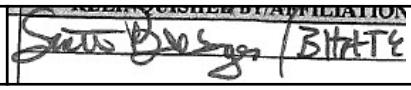
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 24.02

Constructed Depth to Well Bottom (ft) 52

Measured Depth of Well (ft): 53.53

Screen Interval (ft): 42.00 - 52.00

Pump Start Time: 5/21/2018 / 13:20

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/21/2018 / 13:20

Purge End Date/Time: 5/21/2018 / 13:50

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW06		Sample No: 35BWW06-180521								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/2018	13:25	100	0.5	24.08	0.501	24.66	5.72	13.1	173	1.43
5/21/2018	13:30	100	1.0	24.12	0.640	23.29	5.88	8.3	182	0.40
5/21/2018	13:35	100	1.5	24.16	0.630	23.00	5.60	4.2	180	0.00
5/21/2018	13:40	100	2.0	24.19	0.629	22.96	5.59	1.9	181	0.00
5/21/2018	13:45	100	2.5	24.21	0.629	22.89	5.58	0.0	180	0.00
5/21/2018	13:50	100	3.0	24.22	0.629	22.85	5.57	0.0	180	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW07**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW07-180523

DATE/TIME: 5/23/2018 / 11:20

Sample Interval: 28 - 28 Ft

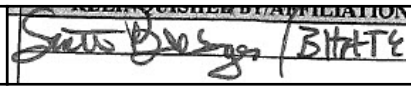
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180523	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.11

Constructed Depth to Well Bottom (ft) 28.5

Measured Depth of Well (ft): 31.48

Screen Interval (ft): 18.00 - 28.00

Pump Start Time: 5/23/2018 / 10:50

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/23/2018 / 10:50

Purge End Date/Time: 5/23/2018 / 11:20

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW07		Sample No: 35BWW07-180523								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/2018	10:55	100	0.5	26.17	0.621	21.52	5.82	66.2	366	0.77
5/23/2018	11:00	100	1.0	26.23	0.618	20.37	5.60	48.3	370	0.20
5/23/2018	11:05	100	1.5	26.27	0.614	19.91	5.60	37.0	366	0.00
5/23/2018	11:10	100	2.0	26.29	0.613	19.85	5.61	36.7	365	0.00
5/23/2018	11:15	100	2.5	26.31	0.613	19.82	5.61	36.1	364	0.00
5/23/2018	11:20	100	3.0	26.33	0.613	19.78	5.61	35.3	364	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW08**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW08-180523

DATE/TIME: 5/23/2018 / 08:15

Sample Interval: 29.72 - 29.72 Ft

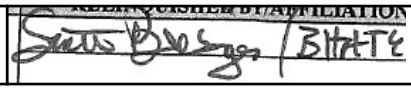
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180523	None	GASES	RSK-175
		GENERAL CHEMISTRY	SW9060
		GENERAL CHEMISTRY	SW9056
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.43

Constructed Depth to Well Bottom (ft) 32.5

Measured Depth of Well (ft): 34.23

Screen Interval (ft): 22.00 - 32.00

Pump Start Time: 5/23/2018 / 07:45

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/23/2018 / 07:45

Purge End Date/Time: 5/23/2018 / 08:15

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW08		Sample No: 35BWW08-180523								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/2018	07:50	100	0.5	24.49	0.308	22.1	5.53	8.1	401	1.31
5/23/2018	07:55	100	1	24.54	0.278	20.44	5.56	4	387	0.99
5/23/2018	08:00	100	1.5	24.57	0.316	19.85	5.54	2.2	383	0.60
5/23/2018	08:05	100	2	24.6	0.317	19.74	5.52	2	381	0.59
5/23/2018	08:10	100	2.5	24.62	0.317	19.68	5.52	1.7	380	0.58
5/23/2018	08:15	100	3	24.63	0.318	19.68	5.53	0.8	380	0.58

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW09**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW09-180521

DATE/TIME: 5/21/2018 / 10:15

Sample Interval: 31.36 - 31.36 Ft

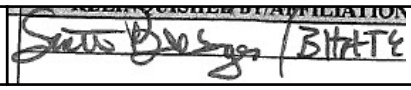
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/21/2018 / 09:45

Depth to Water - Initial (DTWi) (ft) 25.5

Purge End Date/Time: 5/21/2018 / 10:15

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.18

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 5/21/2018 / 09:45

APTIM

Sample Collection Log

Location ID: 35BWW09		Sample No: 35BWW09-180521								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/2018	09:50	100	0.5	25.58	0.576	21.16	6.44	12.2	314	1.13
5/21/2018	09:55	100	1.0	25.65	0.594	20.04	6.04	3.1	330	0.33
5/21/2018	10:00	100	1.5	25.70	0.592	19.71	5.50	0.0	353	0.00
5/21/2018	10:05	100	2.0	25.72	0.591	19.64	5.49	0.00	354	0.00
5/21/2018	10:10	100	2.5	25.74	0.591	19.58	5.48	0.0	354	0.00
5/21/2018	10:15	100	3.0	25.75	0.591	19.50	5.47	0.0	355	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW10**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW10-180524

DATE/TIME: 5/24/2018 / 08:20

Sample Interval: 28.62 - 28.62 Ft

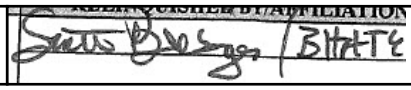
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.17

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 36.5

Screen Interval (ft): 18.23 - 33.00

Pump Start Time: 5/24/2018 / 07:50

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/24/2018 / 07:50

Purge End Date/Time: 5/24/2018 / 08:20

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW10		Sample No: 35BWW10-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	07:55	100	0.5	24.24	0.247	21.18	5.57	141	400	0.57
5/24/2018	08:00	100	1.0	24.29	0.244	20.37	5.50	119	393	0.13
5/24/2018	08:05	100	1.5	24.33	0.245	20.22	5.44	90.3	382	0.00
5/24/2018	08:10	100	2.0	24.35	0.245	20.19	5.43	89.7	381	0.00
5/24/2018	08:15	100	2.5	24.37	0.245	20.17	5.43	89.0	380	0.00
5/24/2018	08:20	100	3.0	24.38	0.245	20.15	5.43	88.3	379	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW11**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW11-180521

DATE/TIME: 5/21/2018 / 11:15

Sample Interval: 32.16 - 32.16 Ft

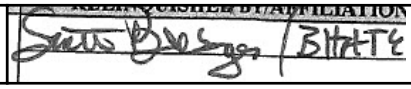
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/21/2018 / 10:40

Depth to Water - Initial (DTWi) (ft) 22.64

Purge End Date/Time: 5/21/2018 / 11:15

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.7

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 5/21/2018 / 10:40

APTIM

Sample Collection Log

Location ID: 35BWW11		Sample No: 35BWW11-180521								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/2018	10:45	100	0.5	22.70	0.324	22.47	6.37	0.0	325	0.83
5/21/2018	10:50	100	1.0	22.75	0.312	22.54	6.34	0.0	324	0.35
5/21/2018	10:55	100	1.5	22.79	0.306	22.62	6.02	0.0	330	0.00
5/21/2018	11:00	100	2.0	22.81	0.306	22.81	5.74	0.0	340	0.00
5/21/2018	11:05	100	2.5	22.83	0.306	22.90	5.73	0.0	341	0.00
5/21/2018	11:10	100	3.0	22.84	0.306	22.97	5.72	0.0	342	0.00
5/21/2018	11:15	100	3.5	22.85	0.306	23.02	5.71	0.0	342	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW12**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW12-180523

DATE/TIME: 5/23/2018 / 13:05

Sample Interval: 30.29 - 30.29 Ft

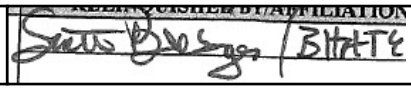
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW12-180523FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180523	None	GASES	RSK-175
		GENERAL CHEMISTRY	SW9060
		GENERAL CHEMISTRY	SW9056
		DHC IN WATER	CENSUS
		VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.34

Constructed Depth to Well Bottom (ft) 35.5

Measured Depth of Well (ft): 38.32

Screen Interval (ft): 20.30 - 35.00

Pump Start Time: 5/23/2018 / 12:35

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/23/2018 / 12:35

Purge End Date/Time: 5/23/2018 / 13:05

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW12		Sample No: 35BWW12-180523								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/2018	12:40	100	0.5	21.4	0.241	24.09	5.38	756	365	0.75
5/23/2018	12:45	100	1	21.45	0.258	21.23	5.28	743	380	0.21
5/23/2018	12:50	100	1.5	21.49	0.276	20.65	5.28	730	375	0.00
5/23/2018	12:55	100	2	21.52	0.277	20.58	5.29	730	375	0.00
5/23/2018	13:00	100	2.5	21.54	0.277	20.49	5.29	729	374	0.00
5/23/2018	13:05	100	3	21.55	0.277	20.41	5.29	729	374	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW13**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW13-180524

DATE/TIME: 5/24/2018 / 11:40

Sample Interval: 29.6 - 29.6 Ft

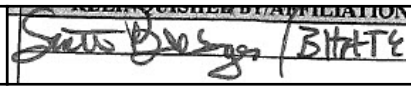
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 5/24/2018 / 11:10

Depth to Water - Initial (DTWi) (ft) 24

Purge End Date/Time: 5/24/2018 / 11:40

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.71

Screen Interval (ft): 19.80 - 34.50

Pump Start Time: 5/24/2018 / 11:10

APTIM

Sample Collection Log

Location ID: 35BWW13		Sample No: 35BWW13-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	11:15	100	0.5	24.08	0.145	19.90	4.59	833	455	1.03
5/24/2018	11:20	100	1.0	24.15	0.144	18.85	3.92	851	505	0.44
5/24/2018	11:25	100	1.5	24.19	0.140	18.59	3.80	875	536	0.00
5/24/2018	11:30	100	2.0	24.22	0.139	18.52	3.79	875	537	0.00
5/24/2018	11:35	100	2.5	24.24	0.139	18.45	3.78	876	538	0.00
5/24/2018	11:40	100	3.0	24.25	0.139	18.40	3.77	877	538	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW14**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW14-180522

DATE/TIME: 5/22/2018 / 12:10

Sample Interval: 32.46 - 32.46 Ft

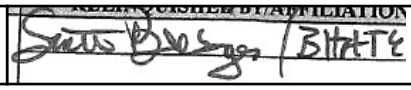
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	GASES	RSK-175
		GENERAL CHEMISTRY	SW9056
		GENERAL CHEMISTRY	SW9060
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 22.2

Constructed Depth to Well Bottom (ft) 35

Measured Depth of Well (ft): 37.33

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 5/22/2018 / 11:40

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/22/2018 / 11:40

Purge End Date/Time: 5/22/2018 / 12:10

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW14		Sample No: 35BWW14-180522								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/2018	11:45	100	0.5	22.28	0.307	24.05	5.69	18.1	352	1.25
5/22/2018	11:50	100	1	22.32	0.304	23.06	5.36	18	365	0.33
5/22/2018	11:55	100	1.5	22.35	0.303	22.95	5.13	17.7	385	0.00
5/22/2018	12:00	100	2	22.37	0.303	22.84	5.12	18.2	386	0.00
5/22/2018	12:05	100	2.5	22.38	0.303	22.79	5.11	17.8	387	0.00
5/22/2018	12:10	100	3	22.38	0.303	22.73	5.11	17.9	388	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW15**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW15-180521

DATE/TIME: 5/21/2018 / 14:40

Sample Interval: 34.39 - 34.39 Ft

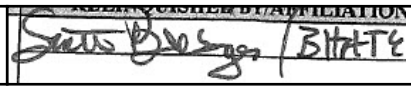
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.65

Constructed Depth to Well Bottom (ft) 48

Measured Depth of Well (ft): 50.16

Screen Interval (ft): 17.80 - 47.50

Pump Start Time: 5/21/2018 / 14:10

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/21/2018 / 14:10

Purge End Date/Time: 5/21/2018 / 14:40

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW15		Sample No: 35BWW15-180521								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/2018	14:15	100	0.5	23.70	0.285	24.87	6.25	22.5	203	1.27
5/21/2018	14:20	100	1.0	23.75	0.281	21.77	5.61	13.2	278	0.31
5/21/2018	14:25	100	1.5	23.78	0.310	20.55	5.43	8.3	325	0.00
5/21/2018	14:30	100	2.0	23.80	0.310	20.49	5.43	7.1	326	0.00
5/21/2018	14:35	100	2.5	23.81	0.310	20.43	5.42	6.5	327	0.00
5/21/2018	14:40	100	3.0	23.81	0.311	20.37	5.42	5.4	328	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW16**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW16-180524

DATE/TIME: 5/24/2018 / 13:30

Sample Interval: 29.01 - 29.01 Ft

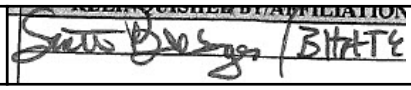
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 22.28

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 36.93

Screen Interval (ft): 18.80 - 33.50

Pump Start Time: 5/24/2018 / 13:00

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/24/2018 / 13:00

Purge End Date/Time: 5/24/2018 / 13:30

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW16		Sample No: 35BWW16-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	13:05	100	0.5	22.34	0.163	24.05	5.42	728	439	0.73
5/24/2018	13:10	100	1.0	22.40	0.178	23.49	4.97	765	471	0.12
5/24/2018	13:15	100	1.5	22.43	0.182	23.50	5.00	783	490	0.00
5/24/2018	13:20	100	2.0	22.45	0.183	23.52	5.01	784	490	0.00
5/24/2018	13:25	100	2.5	22.47	0.183	23.54	5.01	785	491	0.00
5/24/2018	13:30	100	3.0	22.48	0.183	23.55	5.02	786	491	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW17**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW17-180524

DATE/TIME: 5/24/2018 / 12:40

Sample Interval: 28.49 - 28.49 Ft

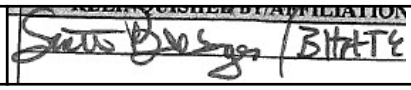
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 21.42

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 36.37

Screen Interval (ft): 18.30 - 33.00

Pump Start Time: 5/24/2018 / 12:10

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/24/2018 / 12:10

Purge End Date/Time: 5/24/2018 / 12:40

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW17		Sample No: 35BWW17-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	12:15	100	0.5	21.50	0.055	20.11	3.90	787	518	0.62
5/24/2018	12:20	100	1.0	21.55	0.056	19.63	3.80	795	535	0.00
5/24/2018	12:25	100	1.5	21.60	0.058	19.48	3.80	810	539	0.00
5/24/2018	12:30	100	2.0	21.63	0.058	19.43	3.81	811	539	0.00
5/24/2018	12:35	100	2.5	21.65	0.058	19.38	3.81	811	540	0.00
5/24/2018	12:40	100	3.0	21.66	0.058	19.35	3.81	812	540	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW18**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Cloudy, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW18-180521

DATE/TIME: 5/21/2018 / 09:25

Sample Interval: 28.06 - 28.06 Ft

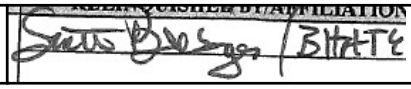
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27

Constructed Depth to Well Bottom (ft) 32.5

Measured Depth of Well (ft): 35.48

Screen Interval (ft): 17.77 - 32.50

Pump Start Time: 5/21/2018 / 08:55

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/21/2018 / 08:55

Purge End Date/Time: 5/21/2018 / 09:25

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW18		Sample No: 35BWW18-180521								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/2018	09:00	100	0.5	27.08	0.662	20.38	5.90	400	327	0.73
5/21/2018	09:05	100	1.0	27.15	0.599	19.56	5.47	351	358	0.21
5/21/2018	09:10	100	1.5	27.19	0.620	19.25	5.42	315	361	0.00
5/21/2018	09:15	100	2.0	27.22	0.620	19.19	5.41	314	362	0.00
5/21/2018	09:20	100	2.5	27.23	0.621	19.13	5.41	313	363	0.00
5/21/2018	09:25	100	3.0	27.24	0.621	19.08	5.40	312	363	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW19**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW19-180521

DATE/TIME: 5/21/2018 / 08:35

Sample Interval: 28.68 - 28.68 Ft

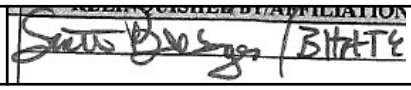
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.7

Constructed Depth to Well Bottom (ft) 33.98

Measured Depth of Well (ft): 36.73

Screen Interval (ft): 18.75 - 33.48

Pump Start Time: 5/21/2018 / 08:05

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/21/2018 / 08:05

Purge End Date/Time: 5/21/2018 / 08:35

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW19		Sample No: 35BWW19-180521								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/21/2018	08:10	100	0.5	26.77	2.52	21.58	6.21	144	323	0.49
5/21/2018	08:15	100	1.0	26.85	2.53	20.27	6.10	128	348	0.00
5/21/2018	08:20	100	1.5	26.89	2.61	19.40	5.70	113	347	0.00
5/21/2018	08:25	100	2.0	26.92	2.62	19.34	5.69	112	346	0.00
5/21/2018	08:30	100	2.5	26.94	2.62	19.28	5.68	112	345	0.00
5/21/2018	08:35	100	3.0	26.95	2.62	19.22	5.67	111	345	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW20-180524

DATE/TIME: 5/24/2018 / 09:05

Sample Interval: 27 - 27 Ft

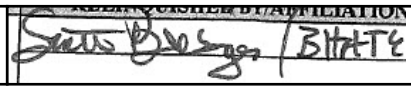
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.4

Constructed Depth to Well Bottom (ft) 30.4

Measured Depth of Well (ft): 33.08

Screen Interval (ft): 15.14 - 29.90

Pump Start Time: 5/24/2018 / 08:35

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/24/2018 / 08:35

Purge End Date/Time: 5/24/2018 / 09:05

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW20		Sample No: 35BWW20-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	08:40	100	0.5	25.48	0.260	21.68	6.45	341	326	1.85
5/24/2018	08:45	100	1.0	25.55	0.249	21.67	5.81	317	344	1.54
5/24/2018	08:50	100	1.5	25.60	0.241	21.65	5.67	275	364	0.95
5/24/2018	08:55	100	2.0	25.62	0.240	21.63	5.66	274	365	0.95
5/24/2018	09:00	100	2.5	25.64	0.240	21.61	5.66	273	365	0.94
5/24/2018	09:05	100	3.0	25.65	0.240	21.60	5.66	272	366	0.93

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW23**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW23-180522

DATE/TIME: 5/22/2018 / 13:15

Sample Interval: 28.63 - 28.63 Ft

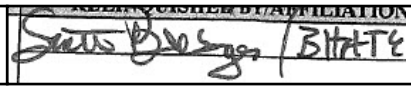
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	GASES	RSK-175
		GENERAL CHEMISTRY	SW9056
		GENERAL CHEMISTRY	SW9060
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 27.63

Constructed Depth to Well Bottom (ft) 33.61

Measured Depth of Well (ft): 33.63

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 5/22/2018 / 12:45

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/22/2018 / 12:45

Purge End Date/Time: 5/22/2018 / 13:15

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW23		Sample No: 35BWW23-180522								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/2018	12:50	100	0.5	27.7	0.463	24.83	5.74	0	355	1.31
5/22/2018	12:55	100	1	27.76	0.465	24.09	5.51	0	370	0.43
5/22/2018	13:00	100	1.5	27.8	0.465	23.3	5.2	0	390	0.00
5/22/2018	13:05	100	2	27.83	0.465	23.25	5.2	0	391	0.00
5/22/2018	13:10	100	2.5	27.85	0.466	23.19	5.19	0	392	0.00
5/22/2018	13:15	100	3	27.86	0.466	23.14	5.19	0	393	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW24**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW24-180524

DATE/TIME: 5/24/2018 / 14:20

Sample Interval: 30 - 30 Ft

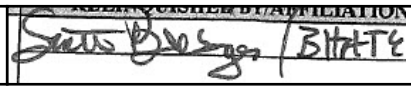
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 28.65

Constructed Depth to Well Bottom (ft) 30.2

Measured Depth of Well (ft): 32.8

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 5/24/2018 / 13:50

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/24/2018 / 13:50

Purge End Date/Time: 5/24/2018 / 14:20

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW24		Sample No: 35BWW24-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	13:55	100	0.5	28.70	1.01	22.62	5.87	89.3	421	0.93
5/24/2018	14:00	100	1.0	28.75	1.02	21.26	5.50	103	420	0.44
5/24/2018	14:05	100	1.5	28.79	1.02	20.77	5.30	112	422	0.00
5/24/2018	14:10	100	2.0	28.82	1.02	20.69	5.31	112	423	0.00
5/24/2018	14:15	100	2.5	28.84	1.01	20.60	5.31	113	424	0.00
5/24/2018	14:20	100	3.0	28.85	1.01	20.52	5.31	114	424	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW25**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW25-180523

DATE/TIME: 5/23/2018 / 10:25

Sample Interval: 27.66 - 27.66 Ft

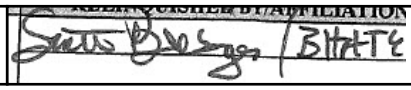
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: 35BWW25-180523FD

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180523	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/23/2018 / 09:55

Depth to Water - Initial (DTWi) (ft) 26.32

Purge End Date/Time: 5/23/2018 / 10:25

Constructed Depth to Well Bottom (ft) 30.2

PID Reading: N/A

Measured Depth of Well (ft): 32.52

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 5/23/2018 / 09:55

APTIM

Sample Collection Log

Location ID: 35BWW25		Sample No: 35BWW25-180523								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/23/2018	10:00	100	0.5	26.37	0.548	22.94	5.97	4.2	342	0.88
5/23/2018	10:05	100	1.0	26.42	0.554	21.54	5.52	2.7	370	0.22
5/23/2018	10:10	100	1.5	26.45	0.562	21.05	5.35	2.4	380	0.00
5/23/2018	10:15	100	2.0	26.47	0.563	20.94	5.35	2.0	381	0.00
5/23/2018	10:20	100	2.5	26.49	0.563	20.88	5.34	2.3	382	0.00
5/23/2018	10:25	100	3.0	26.50	0.563	20.81	5.34	2.5	383	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW26**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Sunny, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: 35BWW26-180522

DATE/TIME: 5/22/2018 / 10:00

Sample Interval: 32.91 - 32.91 Ft

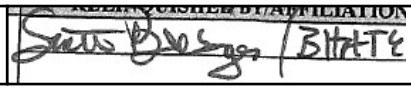
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180522	None	GASES	RSK-175
		GENERAL CHEMISTRY	SW9060
		GENERAL CHEMISTRY	SW9056
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 5/22/2018 / 09:30

Depth to Water - Initial (DTWi) (ft) 26.97

Purge End Date/Time: 5/22/2018 / 10:00

Constructed Depth to Well Bottom (ft) 35.5

PID Reading: N/A

Measured Depth of Well (ft): 38.03

Screen Interval (ft): 25.20 - 34.90

Pump Start Time: 5/22/2018 / 09:30

APTIM

Sample Collection Log

Location ID: 35BWW26		Sample No: 35BWW26-180522								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/22/2018	09:35	100	0.5	27.05	0.217	22.04	5.4	13.5	385	1.00
5/22/2018	09:40	100	1	27.1	0.223	20.7	5.13	4.3	400	0.41
5/22/2018	09:45	100	1.5	27.14	0.223	20.68	4.85	0	415	0.00
5/22/2018	09:50	100	2	27.17	0.222	20.65	4.84	0	416	0.00
5/22/2018	09:55	100	2.5	27.18	0.222	20.63	4.84	0	417	0.00
5/22/2018	10:00	100	3	27.19	0.222	20.62	4.83	0	418	0.00

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW58**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Cloudy, Air Temp:80's, Wind Speed:Slight Winds

SAMPLING INFORMATION

Sample No: LHSMW58-180524

DATE/TIME: 5/24/2018 / 10:00

Sample Interval: 30.15 - 30.15 Ft

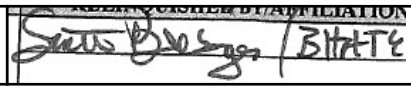
Sampling Method: LF

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-MAY2018-GW-ALSHT-180524	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	8/24/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 23.87

Constructed Depth to Well Bottom (ft) 34

Measured Depth of Well (ft): 35.23

Screen Interval (ft): 21.40 - 31.40

Pump Start Time: 5/24/2018 / 09:30

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 5/24/2018 / 09:30

Purge End Date/Time: 5/24/2018 / 10:00

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-180524								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
5/24/2018	09:35	100	0.5	23.92	0.148	21.12	5.80	5.0	360	3.05
5/24/2018	09:40	100	1.0	23.96	0.147	20.79	5.50	0.0	373	2.87
5/24/2018	09:45	100	1.5	23.99	0.148	20.77	5.15	0.0	384	2.48
5/24/2018	09:50	100	2.0	24.02	0.148	20.75	5.14	0.0	385	2.46
5/24/2018	09:55	100	2.5	24.04	0.148	20.74	5.14	0.0	385	2.45
5/24/2018	10:00	100	3.0	24.05	0.148	20.74	5.14	0.0	386	2.45

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BSW01**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BSW01-082118

DATE/TIME: 8/21/2018 / 00:00

Sample Interval: -

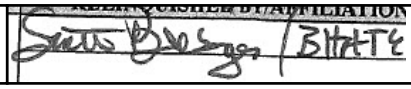
Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: no sample, surface water location is dry

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment:

Casing ID (in.):

Purge Start Date/Time: - / -

Depth to Water - Initial (DTWi) (ft)

Purge End Date/Time: 8/21/2018 / 00:00

Constructed Depth to Well Bottom (ft)

PID Reading: N/A

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Location ID: 35BSW01 Sample No: 35BSW01-082118										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BSW02**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

SAMPLING INFORMATION

Sample No: 35BSW02-082118

DATE/TIME: 8/21/2018 / 00:00

Sample Interval: -

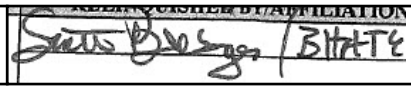
Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

Sample Notes: no sample, surface water location is dry

Chain of Custody	COC Notes	Analysis Group	Analytic Method
No COC Specified	None		

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment:

Casing ID (in.):

Purge Start Date/Time: - / -

Depth to Water - Initial (DTWi) (ft)

Purge End Date/Time: 8/21/2018 / 00:00

Constructed Depth to Well Bottom (ft)

PID Reading: N/A

Measured Depth of Well (ft): N/A

Screen Interval (ft): -

Pump Start Time:

Location ID: 35BSW02 Sample No: 35BSW02-082118										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW01**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW01-180816

DATE/TIME: 8/16/2018 / 10:10

Sample Interval: 14.22 - 14.46 Ft

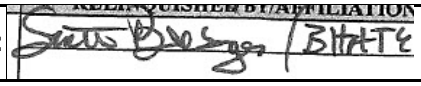
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180817	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 14.22

Constructed Depth to Well Bottom (ft) 19

Measured Depth of Well (ft): 21.08

Screen Interval (ft): 9.00 - 19.00

Pump Start Time: 8/16/2018 / 09:40

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/16/2018 / 09:40

Purge End Date/Time: 8/16/2018 / 10:10

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW01 Sample No: 35BWW01-180816										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/16/2018	09:45	100	0.5	14.30	0.259	24.30	5.28	79.1	181	2.21
8/16/2018	09:50	100	1.0	14.36	0.185	24.39	4.88	77.9	220	1.44
8/16/2018	09:55	100	1.5	14.40	0.194	24.44	4.90	77.5	258	1.09
8/16/2018	10:00	100	2.0	14.43	0.195	24.49	4.91	77.1	259	1.08
8/16/2018	10:05	100	2.5	14.45	0.195	24.55	4.92	76.9	260	1.07
8/16/2018	10:10	100	3.0	14.46	0.195	24.59	4.93	76.4	261	1.06

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW04**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW04-180822

DATE/TIME: 8/22/2018 / 10:20

Sample Interval: 24.09 - 24.3 Ft

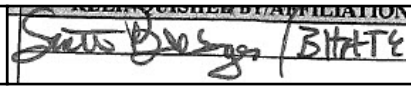
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180822	None	TOTAL ORGANIC CARBON	E415.1
		DHC IN WATER	CENSUS
		ANIONS	E300.0
		GASES	RSK-175
		VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/22/2018 / 09:45

Depth to Water - Initial (DTWi) (ft) 24.09

Purge End Date/Time: 8/22/2018 / 10:20

Constructed Depth to Well Bottom (ft) 30

PID Reading: N/A

Measured Depth of Well (ft): 33.33

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 8/22/2018 / 09:45

APTIM

Sample Collection Log

Location ID: 35BWW04		Sample No: 35BWW04-180822								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/22/2018	09:50	100	0.5	24.15	0.390	23.21	5.51	269	221	0.91
8/22/2018	09:55	100	1.0	24.20	0.398	23.0	5.36	250	249	0.79
8/22/2018	10:00	100	1.5	24.24	0.398	21.77	5.20	237	270	0.44
8/22/2018	10:05	100	2.0	24.27	0.399	21.40	5.17	231	280	0.35
8/22/2018	10:10	100	2.5	24.29	0.399	21.34	517	230	280	0.34
8/22/2018	10:15	100	3.0	24.30	0.398	21.29	5.17	229	281	0.34
8/22/2018	10:20	100	3.5	24.30	0.398	21.26	5.17	229	281	0.33

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW05**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW05-180821

DATE/TIME: 8/21/2018 / 08:40

Sample Interval: 24.63 - 24.85 Ft

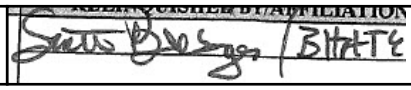
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.63

Constructed Depth to Well Bottom (ft) 36

Measured Depth of Well (ft): 38

Screen Interval (ft): 26.00 - 36.00

Pump Start Time: 8/21/2018 / 08:10

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/21/2018 / 08:10

Purge End Date/Time: 8/21/2018 / 08:40

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW05		Sample No: 35BWW05-180821								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/21/2018	08:15	100	0.5	24.70	0.308	21.39	5.50	701	136	1.31
8/21/2018	08:20	100	1.0	24.75	0.311	21.31	5.39	681	132	0.91
8/21/2018	08:25	100	1.5	24.79	0.310	21.30	5.29	660	114	0.72
8/21/2018	08:30	100	2.0	24.82	0.310	21.29	5.29	659	113	0.71
8/21/2018	08:35	100	2.5	24.84	0.310	21.28	5.29	658	112	0.71
8/21/2018	08:40	100	3.0	24.85	0.310	21.27	5.29	657	111	0.70

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW06**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW06-180821

DATE/TIME: 8/21/2018 / 09:30

Sample Interval: 25.3 - 25.5 Ft

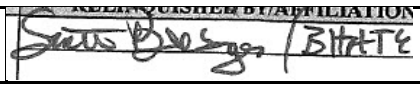
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/21/2018 / 09:00

Depth to Water - Initial (DTWi) (ft) 25.3

Purge End Date/Time: 8/21/2018 / 09:30

Constructed Depth to Well Bottom (ft) 52

PID Reading: N/A

Measured Depth of Well (ft): 54

Screen Interval (ft): 42.00 - 52.00

Pump Start Time: 8/21/2018 / 09:00

APTIM

Sample Collection Log

Location ID: 35BWW06 Sample No: 35BWW06-180821										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/21/2018	09:05	100	0.5	25.35	0.806	21.98	5.88	207	81	1.01
8/21/2018	09:10	100	1.0	25.40	0.889	22.10	5.65	175	88	0.63
8/21/2018	09:15	100	1.5	25.43	0.910	22.13	5.57	164	91	0.45
8/21/2018	09:20	100	2.0	25.46	0.910	22.17	5.57	163	91	0.44
8/21/2018	09:25	100	2.5	25.48	0.911	22.21	5.57	162	92	0.44
8/21/2018	09:30	100	3.0	25.50	0.911	22.25	5.57	162	92	0.44

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW07**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW07-180820

DATE/TIME: 8/20/2018 / 13:30

Sample Interval: 28.05 - 28.28 Ft

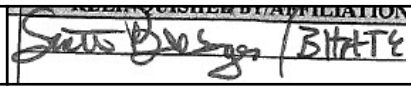
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 28.05

Constructed Depth to Well Bottom (ft) 28.5

Measured Depth of Well (ft): 31.45

Screen Interval (ft): 18.00 - 28.00

Pump Start Time: 8/20/2018 / 13:00

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/20/2018 / 13:00

Purge End Date/Time: 8/20/2018 / 13:30

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW07		Sample No: 35BWW07-180820								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/20/2018	13:05	100	0.5	28.12	0.947	28.44	5.92	80.3	187	1.07
8/20/2018	13:10	100	1.0	28.18	0.943	28.21	5.97	65.7	155	0.79
8/20/2018	13:15	100	1.5	28.22	0.950	28.12	6.0	61.2	115	0.65
8/20/2018	13:20	100	2.0	28.25	0.950	28.07	6.01	60.7	114	0.64
8/20/2018	13:25	100	2.5	28.27	0.951	28.01	6.02	59.9	113	0.64
8/20/2018	13:30	100	3.0	28.28	0.951	27.94	6.02	59.1	112	0.63

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW08**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW08-180822

DATE/TIME: 8/22/2018 / 08:25

Sample Interval: 25.73 - 25.95 Ft

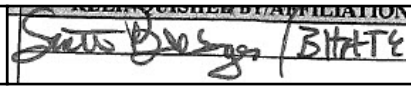
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180822	None	ANIONS	E300.0
		TOTAL ORGANIC CARBON	E415.1
		GASES	RSK-175
		VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/22/2018 / 07:55

Depth to Water - Initial (DTWi) (ft) 25.73

Purge End Date/Time: 8/22/2018 / 08:25

Constructed Depth to Well Bottom (ft) 32.5

PID Reading: N/A

Measured Depth of Well (ft): 34.27

Screen Interval (ft): 22.00 - 32.00

Pump Start Time: 8/22/2018 / 07:55

APTIM

Sample Collection Log

Location ID: 35BWW08		Sample No: 35BWW08-180822								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/22/2018	08:00	100	0.5	25.79	0.464	23.85	5.57	80.1	203	2.08
8/22/2018	08:05	100	1.0	25.85	0.467	23.16	5.48	60.3	215	1.77
8/22/2018	08:10	100	1.5	25.89	0.479	22.85	5.49	44.7	234	1.63
8/22/2018	08:15	100	2.0	25.92	0.479	22.26	5.49	44.1	235	1.62
8/22/2018	08:20	100	2.5	25.94	0.480	22.69	5.49	43.0	235	1.61
8/22/2018	08:25	100	3.0	25.95	0.481	22.64	5.49	42.8	236	1.60

Sample Collection Log

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW09**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW09-180816

DATE/TIME: 8/16/2018 / 13:05

Sample Interval: 26.76 - 26.91 Ft

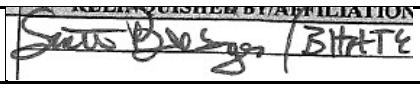
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180817	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/16/2018 / 12:35

Depth to Water - Initial (DTWi) (ft) 26.71

Purge End Date/Time: 8/16/2018 / 13:05

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.2

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 8/16/2018 / 12:35

APTIM

Sample Collection Log

Location ID: 35BWW09 Sample No: 35BWW09-180816										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/16/2018	12:40	100	0.5	26.78	0.562	31.50	6.68	131	187	1.12
8/16/2018	12:45	100	1.0	26.84	0.545	31.47	6.36	95.7	200	0.81
8/16/2018	12:50	100	1.5	26.87	0.535	31.42	6.05	74.0	212	0.63
8/16/2018	12:55	100	2.0	26.89	0.534	31.37	6.04	73.7	213	0.62
8/16/2018	13:00	100	2.5	26.90	0.534	31.33	6.03	73.1	213	0.61
8/16/2018	13:05	100	3.0	26.91	0.534	31.29	6.02	72.6	214	0.61

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW10**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW10-180817

DATE/TIME: 8/17/2018 / 08:50

Sample Interval: 25.43 - 25.63 Ft

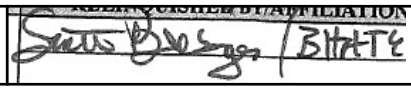
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180817	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.43

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 36.4

Screen Interval (ft): 18.23 - 33.00

Pump Start Time: 8/17/2018 / 08:20

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/17/2018 / 08:20

Purge End Date/Time: 8/17/2018 / 08:50

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW10		Sample No: 35BWW10-180817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/17/2018	08:25	100	0.5	25.50	0.330	28.31	7.87	356	176	2.11
8/17/2018	08:30	100	1.0	25.55	0.371	27.39	7.40	296	197	1.33
8/17/2018	08:35	100	1.5	25.58	0.367	26.72	7.18	280	206	1.13
8/17/2018	08:40	100	2.0	25.60	0.367	26.67	7.17	279	207	1.12
8/17/2018	08:45	100	2.5	25.62	0.366	26.63	7.16	278	207	1.11
8/17/2018	08:50	100	3.0	25.63	0.366	26.58	7.16	277	208	1.11

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW11**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW11-180817

DATE/TIME: 8/17/2018 / 09:45

Sample Interval: 24.46 - 24.69 Ft

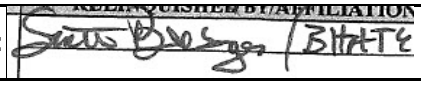
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180817	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Purging Method/Equipment: Bladder Pump

Measuring Point : Top of Casing

Casing ID (in.): 4

Purge Start Date/Time: 8/17/2018 / 09:15

Depth to Water - Initial (DTWi) (ft) 24.46

Purge End Date/Time: 8/17/2018 / 09:45

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.65

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 8/17/2018 / 09:15

Sample Collection Log

Location ID: 35BWW11 Sample No: 35BWW11-180817										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/17/2018	09:20	100	0.5	24.53	0.353	27.77	7.48	83.3	128	1.28
8/17/2018	09:25	100	1.0	24.59	0.344	27.74	6.75	67.4	140	0.76
8/17/2018	09:30	100	1.5	24.62	0.334	27.72	6.35	67.1	167	0.50
8/17/2018	09:35	100	2.0	24.65	0.333	27.70	6.34	66.9	168	0.49
8/17/2018	09:40	100	2.5	24.67	0.333	27.68	6.34	66.8	169	0.48
8/17/2018	09:45	100	3.0	24.69	0.333	27.66	6.33	66.7	170	0.48

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW12**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW12-180822

DATE/TIME: 8/22/2018 / 11:55

Sample Interval: 22.96 - 23.2 Ft

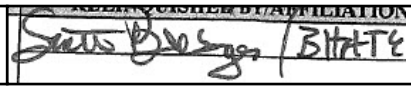
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180822	None	GASES	RSK-175
		TOTAL ORGANIC CARBON	E415.1
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS
		ANIONS	E300.0

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/22/2018 / 11:25

Depth to Water - Initial (DTWi) (ft) 22.96

Purge End Date/Time: 8/22/2018 / 11:55

Constructed Depth to Well Bottom (ft) 35.5

PID Reading: N/A

Measured Depth of Well (ft): 38.29

Screen Interval (ft): 20.30 - 35.00

Pump Start Time: 8/22/2018 / 11:25

APTIM

Sample Collection Log

Location ID: 35BWW12		Sample No: 35BWW12-180822								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/22/2018	11:30	100	0.5	23.03	0.413	22.06	5.62	495	209	1.21
8/22/2018	11:35	100	1.0	23.09	0.441	21.25	5.58	407	200	0.54
8/22/2018	11:40	100	1.5	23.13	0.459	21.20	5.55	358	200	0.26
8/22/2018	11:45	100	2.0	23.17	0.460	21.26	5.54	357	201	0.26
8/22/2018	11:50	100	2.5	23.19	0.460	21.30	5.53	356	201	0.25

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW13**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW13-180821

DATE/TIME: 8/21/2018 / 11:20

Sample Interval: 25.71 - 25.92 Ft

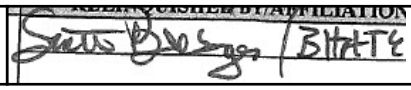
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 25.71

Constructed Depth to Well Bottom (ft) 35

Measured Depth of Well (ft): 37.8

Screen Interval (ft): 19.80 - 34.50

Pump Start Time: 8/21/2018 / 10:50

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/21/2018 / 10:50

Purge End Date/Time: 8/21/2018 / 11:20

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW13		Sample No: 35BWW13-180821								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/21/2018	10:55	100	0.5	25.77	0.159	22.36	4.69	243	340	1.69
8/21/2018	11:00	100	1.0	25.83	0.155	22.50	4.63	210	364	1.19
8/21/2018	11:05	100	1.5	25.86	0.153	22.56	4.58	194	373	0.96
8/21/2018	11:10	100	2.0	25.88	0.152	22.63	4.58	193	374	0.96
8/21/2018	11:15	100	2.5	25.90	0.152	22.69	4.58	192	375	0.95
8/21/2018	11:20	100	3.0	25.92	0.152	22.74	4.58	191	376	0.95

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW14**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW14-180822

DATE/TIME: 8/22/2018 / 13:20

Sample Interval: 23.17 - 23.89 Ft

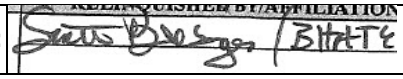
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180822	None	ANIONS	E300.0
		GASES	RSK-175
		TOTAL ORGANIC CARBON	E415.1
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Purging Method/Equipment: Bladder Pump

Measuring Point : Top of Casing

Casing ID (in.): 4

Purge Start Date/Time: 8/22/2018 / 12:45

Depth to Water - Initial (DTWi) (ft) 23.67

Purge End Date/Time: 8/22/2018 / 13:20

Constructed Depth to Well Bottom (ft) 35

PID Reading: N/A

Measured Depth of Well (ft): 37.31

Screen Interval (ft): 25.00 - 35.00

Pump Start Time: 8/22/2018 / 12:45

APTIM

Sample Collection Log

Location ID: 35BWW14 **Sample No: 35BWW14-180822**

Date of Reading	Time of Reading	Purge Rate	Total Purge	DTW	Cond.	Temp.	pH	Turbidity	ORP	DO
		(ml/min)	(L)	(ft)	(mS/cm)	(°C)		(NTU)	(mV)	(mg/L)
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/22/2018	12:50	100	0.5	23.75	0.467	28.54	6.22	83.2	204	1.32
8/22/2018	12:55	100	1.0	23.80	0.464	27.0	5.66	75.4	220	0.79
8/22/2018	13:00	100	1.5	23.84	0.459	25.95	5.42	70.1	233	0.39
8/22/2018	13:05	100	2.0	23.86	0.452	25.88	5.30	68.1	243	0.26
8/22/2018	13:10	100	2.5	23.88	0.451	25.80	5.29	67.5	244	0.26
8/22/2018	13:20	100	3.5	23.89	0.451	25.69	5.28	66.3	246	0.25
8/29/2018	13:15	100	3.0	23.89	0.451	25.74	5.28	66.9	245	0.25

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW15**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW15-180820

DATE/TIME: 8/20/2018 / 11:15

Sample Interval: 24.02 - 24.26 Ft

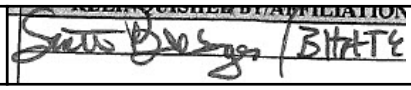
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 24.07

Constructed Depth to Well Bottom (ft) 48

Measured Depth of Well (ft): 50.15

Screen Interval (ft): 17.80 - 47.50

Pump Start Time: 8/20/2018 / 10:45

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/20/2018 / 10:45

Purge End Date/Time: 8/20/2018 / 11:15

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW15		Sample No: 35BWW15-180820								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/20/2018	10:50	100	0.5	24.12	0.405	26.55	6.12	74.4	219	1.13
8/20/2018	10:55	100	1.0	24.17	0.408	25.18	5.81	32.1	210	0.60
8/20/2018	11:00	100	1.5	24.21	0.430	23.80	5.75	24.0	209	0.49
8/20/2018	11:05	100	2.0	24.23	0.431	23.71	5.74	23.4	209	0.48
8/20/2018	11:10	100	2.5	24.25	0.431	23.60	5.74	22.9	208	0.47
8/20/2018	11:15	100	3.0	24.26	0.431	23.52	5.73	22.5	208	0.47

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW16**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW16-180817

DATE/TIME: 8/17/2018 / 10:50

Sample Interval: 23.7 - 23.91 Ft

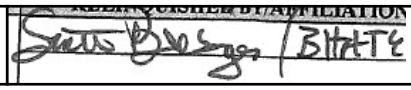
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180817	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 23.7

Constructed Depth to Well Bottom (ft) 33.5

Measured Depth of Well (ft): 36.91

Screen Interval (ft): 18.80 - 33.50

Pump Start Time: 8/17/2018 / 10:15

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/17/2018 / 10:15

Purge End Date/Time: 8/17/2018 / 10:50

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW16		Sample No: 35BWW16-180817								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/17/2018	10:20	100	0.5	23.77	0.185	29.38	6.12	7.12	218	1.12
8/17/2018	10:25	100	1.0	23.83	0.188	29.0	5.83	677	240	0.81
8/17/2018	10:30	100	1.5	23.87	0.197	28.56	5.60	605	255	0.48
8/17/2018	10:35	100	2.0	23.89	0.197	28.12	5.45	603	264	0.28
8/17/2018	10:40	100	25	23.90	0.198	28.07	5.44	602	265	0.28
8/17/2018	10:45	100	3.0	23.91	0.198	28.03	5.43	601	266	0.27
8/17/2018	10:50	100	3.5	23.91	0.198	27.97	5.43	600	267	0.27

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW17**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW17-180821

DATE/TIME: 8/21/2018 / 12:30

Sample Interval: 23.11 - 23.35 Ft

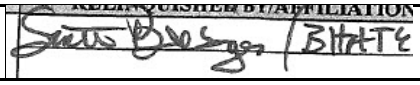
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/21/2018 / 11:55

Depth to Water - Initial (DTWi) (ft) 23.11

Purge End Date/Time: 8/21/2018 / 12:30

Constructed Depth to Well Bottom (ft) 33.5

PID Reading: N/A

Measured Depth of Well (ft): 36.34

Screen Interval (ft): 18.30 - 33.00

Pump Start Time: 8/21/2018 / 11:55

APTIM

Sample Collection Log

Location ID: 35BWW17 Sample No: 35BWW17-180821										
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/21/2018	12:00	100	0.5	23.18	0.081	23.21	4.90	701	348	2.03
8/21/2018	12:05	100	1.0	23.24	0.082	21.63	4.78	677	360	1.51
8/21/2018	12:10	100	1.5	23.28	0.083	22.18	4.77	653	362	1.32
8/21/2018	12:15	100	2.0	23.31	0.085	22.23	4.74	641	368	1.13
8/21/2018	12:20	100	2.5	23.33	0.085	22.29	4.74	640	369	1.12
8/21/2018	12:25	100	3.0	23.34	0.085	22.34	4.74	640	370	1.11
8/21/2018	12:30	100	3.5	23.35	0.085	22.37	4.74	639	370	1.10

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW18**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW18-180816

DATE/TIME: 8/16/2018 / 11:10

Sample Interval: 27.45 - 28.18 Ft

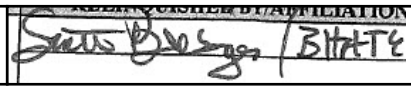
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180817	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 27.95

Constructed Depth to Well Bottom (ft) 32.5

Measured Depth of Well (ft): 35.4

Screen Interval (ft): 17.77 - 32.50

Pump Start Time: 8/16/2018 / 10:40

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/16/2018 / 10:40

Purge End Date/Time: 8/16/2018 / 11:10

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW18		Sample No: 35BWW18-180816								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/16/2018	10:45	100	0.50	28.03	0.818	25.26	5.66	277	199	1.82
8/16/2018	10:50	100	1.0	28.08	0.848	24.41	5.62	198	222	0.95
8/16/2018	10:55	100	1.5	28.12	0.864	24.21	5.60	165	225	0.85
8/16/2018	11:00	100	2.0	28.15	0.865	24.18	5.60	164	226	0.84
8/16/2018	11:05	100	2.5	28.17	0.865	24.15	5.59	163	227	0.83
8/16/2018	11:10	100	3.0	28.18	0.865	24.11	5.59	162	227	0.82

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Location ID: **35BWW19**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW19-180816

DATE/TIME: 8/16/2018 / 12:10

Sample Interval: 27.55 - 27.77 Ft

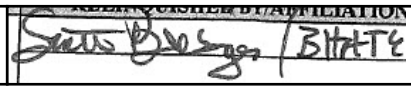
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180817	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/16/2018 / 11:35

Depth to Water - Initial (DTWi) (ft) 27.55

Purge End Date/Time: 8/16/2018 / 12:10

Constructed Depth to Well Bottom (ft) 33.98

PID Reading: N/A

Measured Depth of Well (ft): 36.65

Screen Interval (ft): 18.75 - 33.48

Pump Start Time: 8/16/2018 / 11:35

APTIM

Sample Collection Log

Location ID: 35BWW19		Sample No: 35BWW19-180816								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/16/2018	11:40	100	0.5	27.61	1.87	27.97	6.44	501	222	1.51
8/16/2018	11:45	100	1.0	27.66	1.47	27.96	6.22	447	227	0.90
8/16/2018	11:50	100	1.5	27.70	1.38	27.88	6.15	391	229	0.65
8/16/2018	11:55	100	2.0	27.73	1.37	27.94	6.16	359	229	0.50
8/16/2018	12:00	100	2.5	27.75	1.37	27.99	6.17	358	229	0.49
8/16/2018	12:05	100	3.0	27.76	1.36	28.03	6.18	357	229	0.49
8/16/2018	12:10	100	3.5	27.77	1.36	28.08	6.18	356	229	0.48

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW20**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW20-180820

DATE/TIME: 8/20/2018 / 09:25

Sample Interval: 21.8 - 27.04 Ft

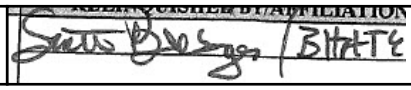
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 2

Depth to Water - Initial (DTWi) (ft) 26.8

Constructed Depth to Well Bottom (ft) 30.4

Measured Depth of Well (ft): 32.95

Screen Interval (ft): 15.14 - 29.90

Pump Start Time: 8/20/2018 / 08:55

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/20/2018 / 08:55

Purge End Date/Time: 8/20/2018 / 09:25

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW20		Sample No: 35BWW20-180820								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/20/2018	09:00	100	0.5	26.87	0.372	28.79	7.77	755	196	1.93
8/20/2018	09:05	100	1.0	26.93	0.379	28.78	7.21	693	220	1.33
8/20/2018	09:10	100	1.5	26.98	0.373	28.80	7.14	651	235	1.05
8/20/2018	09:15	100	2.0	27.01	0.372	28.82	7.14	650	236	1.04
8/20/2018	09:20	100	2.5	27.03	0.372	28.84	7.13	649	237	1.03
8/20/2018	09:25	100	3.0	27.04	0.372	28.86	7.13	648	238	1.03

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW23**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW23-180822

DATE/TIME: 8/22/2018 / 14:15

Sample Interval: 28.86 - 29.09 Ft

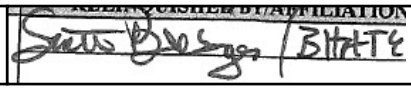
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180822	None	GASES	RSK-175
		TOTAL ORGANIC CARBON	E415.1
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS
		ANIONS	E300.0

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 28.86

Constructed Depth to Well Bottom (ft) 33.61

Measured Depth of Well (ft): 33.63

Screen Interval (ft): 20.00 - 30.00

Pump Start Time: 8/22/2018 / 13:45

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/22/2018 / 13:45

Purge End Date/Time: 8/22/2018 / 14:15

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW23		Sample No: 35BWW23-180822								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/22/2018	13:50	100	0.5	28.93	0.662	29.78	6.04	4.5	218	1.21
8/22/2018	13:55	100	1.0	28.98	0.654	29.43	5.58	4.0	240	0.81
8/22/2018	14:00	100	1.5	29.01	0.653	29.12	5.37	4.7	258	0.62
8/22/2018	14:05	100	2.0	29.04	0.652	29.05	5.36	5.5	259	0.61
8/22/2018	14:10	100	2.5	29.07	0.652	28.96	5.36	6.0	259	0.60
8/22/2018	14:15	100	3.0	29.09	0.653	28.91	5.35	3.7	261	0.59

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW24**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW24-180821

DATE/TIME: 8/21/2018 / 10:25

Sample Interval: 29.8 - 30.02 Ft

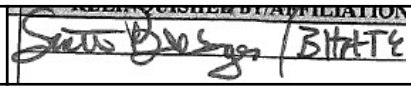
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 29.8

Constructed Depth to Well Bottom (ft) 30.2

Measured Depth of Well (ft): 32.8

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 8/21/2018 / 09:55

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/21/2018 / 09:55

Purge End Date/Time: 8/21/2018 / 10:25

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW24		Sample No: 35BWW24-180821								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/21/2018	10:00	100	0.5	29.86	1.54	22.97	6.09	80.3	176	0.91
8/21/2018	10:05	100	1.0	29.91	1.52	23.03	5.81	57.6	229	0.53
8/21/2018	10:10	100	1.5	29.95	1.50	23.19	5.71	50.1	247	0.39
8/21/2018	10:15	1000	2.0	29.98	1.50	23.24	5.70	49.4	248	0.38
8/21/2018	10:20	100	2.5	30.0	1.50	23.29	5.70	48.6	249	0.37
8/21/2018	10:25	100	3.0	30.02	1.50	23.33	5.69	48.0	250	0.37

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **35BWW25**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW25-180820

DATE/TIME: 8/20/2018 / 12:20

Sample Interval: 27.37 - 27.53 Ft

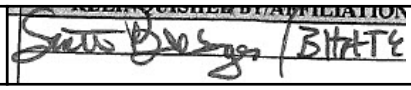
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 27.31

Constructed Depth to Well Bottom (ft) 30.2

Measured Depth of Well (ft): 32.53

Screen Interval (ft): 19.90 - 29.60

Pump Start Time: 8/20/2018 / 11:50

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/20/2018 / 11:50

Purge End Date/Time: 8/20/2018 / 12:20

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: 35BWW25		Sample No: 35BWW25-180820								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/20/2018	11:55	100	0.5	27.37	0.782	29.64	6.32	62.4	221	1.46
8/20/2018	12:00	100	1.0	27.43	0.721	29.60	6.35	52.4	224	0.51
8/20/2018	12:05	100	1.5	27.47	0.698	29.51	5.96	45.3	223	0.37
8/20/2018	12:10	100	2.0	27.49	0.697	29.44	5.95	44.7	223	0.37
8/20/2018	12:15	100	2.5	27.51	0.697	29.38	5.94	44.1	222	0.36
8/20/2018	12:20	100	3.0	27.53	0.697	29.33	5.93	43.9	222	0.36

APTIM

Sample Collection Log

Project Name: **Longhorn AAP**

Location ID: **35BWW26**

Project No: **501032**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: 35BWW26-180822

DATE/TIME: 8/22/2018 / 09:20

Sample Interval: 28.02 - 28.32 Ft

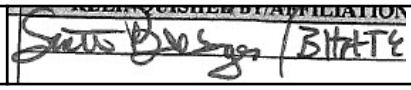
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180822	None	ANIONS	E300.0
		GASES	RSK-175
		TOTAL ORGANIC CARBON	E415.1
		VOLATILES	SW8260B
		DHC IN WATER	CENSUS

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/22/2018 / 08:50

Depth to Water - Initial (DTWi) (ft) 28.07

Purge End Date/Time: 8/22/2018 / 09:20

Constructed Depth to Well Bottom (ft) 35.5

PID Reading: N/A

Measured Depth of Well (ft): 38.03

Screen Interval (ft): 25.20 - 34.90

Pump Start Time: 8/22/2018 / 08:50

APTIM

Sample Collection Log

Location ID: 35BWW26		Sample No: 35BWW26-180822								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/22/2018	08:55	100	0.5	28.14	0.337	22.57	5.35	16.5	248	1.07
8/22/2018	09:00	100	1.0	28.20	0.328	21.95	5.0	12.2	270	0.55
8/22/2018	09:05	100	1.5	28.25	0.328	21.71	4.92	6.2	275	0.44
8/22/2018	09:10	100	2.0	28.28	0.329	21.66	4.91	1.1	276	0.43
8/22/2018	09:15	100	2.5	28.30	0.329	21.59	4.90	0.0	276	0.43
8/22/2018	09:20	100	3.0	28.32	0.330	21.56	4.89	0.0	277	0.42

Sample Collection Log

APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW58**

Sampler(s): **Scott Beesinger**

FIELD CONDITIONS

Clear

SAMPLING INFORMATION

Sample No: LHSMW58-180820

DATE/TIME: 8/20/2018 / 10:20

Sample Interval: 25.21 - 25.43 Ft

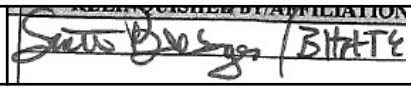
Sampling Method: BP

Sample Purpose: REG

Sample Matrix: GW

Sample Notes:

Chain of Custody	COC Notes	Analysis Group	Analytic Method
37-AUG2018-GW-ALSHT-180821	None	VOLATILES	SW8260B

Sampler:		Scott Beesinger	
QC'ed By:		Robert Mayer	9/7/2018

WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 25.21

Constructed Depth to Well Bottom (ft) 34

Measured Depth of Well (ft): 35.2

Screen Interval (ft): 21.40 - 31.40

Pump Start Time: 8/20/2018 / 09:50

Purging Method/Equipment: Bladder Pump

Purge Start Date/Time: 8/20/2018 / 09:50

Purge End Date/Time: 8/20/2018 / 10:20

PID Reading: N/A

APTIM

Sample Collection Log

Location ID: LHSMW58		Sample No: LHSMW58-180820								
Date of Reading	**Time of Reading**	**Purge Rate**	**Total Purge**	**DTW**	**Cond.**	**Temp.**	**pH**	**Turbidity**	**ORP**	**DO**
		(ml/min)	**(L)**	**(ft)**	**(mS/cm)**	**(°C)**		**(NTU)**	**(mV)**	**(mg/L)**
	Purge Stabilization Criteria	-	-	Drawdown limit 0.3 ft	±10%		±0.1 units	No criteria		± 10% or 0.2 mg/L
8/20/2018	09:55	100	0.5	25.28	0.266	26.81	6.32	88.1	227	1.88
8/20/2018	10:00	100	1.0	25.35	0.261	25.46	5.80	57.2	230	1.51
8/20/2018	10:05	100	1.5	25.38	0.258	25.61	5.44	44.0	229	1.40
8/20/2018	10:10	100	2.0	25.40	0.258	25.67	5.43	43.7	228	1.39
8/20/2018	10:15	100	2.5	25.42	0.257	25.73	5.43	42.8	228	1.38
8/20/2018	10:20	100	3.0	25.43	0.257	25.78	5.43	42.3	228	1.37

Appendix D

Laboratory Analytical Data Package

(Provided in separate PDF file on the Portal and CD)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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November 17, 2017

Jennifer Hoang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS17110537**

Laboratory Results for: **Longhorn Army Ammunition Plant**

Dear Jennifer,

ALS Environmental received 11 sample(s) on Nov 09, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West

Generated By: Dayna.Fisher
Sonia West
Project Manager

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS17110537

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17110537-01	37TB03-110817	Water		08-Nov-2017 10:00	09-Nov-2017 08:40	☐
HS17110537-02	35BWW05-110817	Groundwater		08-Nov-2017 11:25	09-Nov-2017 08:40	☐
HS17110537-03	35BWW06-110817	Groundwater		08-Nov-2017 12:10	09-Nov-2017 08:40	☐
HS17110537-04	LHSMW58-110817	Groundwater		08-Nov-2017 12:55	09-Nov-2017 08:40	☐
HS17110537-05	35BWW20-110817	Groundwater		08-Nov-2017 13:40	09-Nov-2017 08:40	☐
HS17110537-06	35BWW11-110817	Groundwater		08-Nov-2017 14:30	09-Nov-2017 08:40	☐
HS17110537-07	37TB04-110817	Water		08-Nov-2017 10:05	09-Nov-2017 08:40	☐
HS17110537-08	35BWW25-110817	Groundwater		08-Nov-2017 11:05	09-Nov-2017 08:40	☐
HS17110537-09	35BWW25-110817-FD	Groundwater		08-Nov-2017 11:05	09-Nov-2017 08:40	☐
HS17110537-10	35BWW24-110817	Groundwater		08-Nov-2017 12:05	09-Nov-2017 08:40	☐
HS17110537-11	35BWW01-110817	Groundwater		08-Nov-2017 14:35	09-Nov-2017 08:40	☐

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Work Order: HS17110537

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R305515

Sample ID: HS17110374-10MS

- MS and MSD are for an unrelated sample

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: 37TB03-110817 Lab ID:HS17110537-01
Collection Date: 08-Nov-2017 10:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 17:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 17:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 17:13
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 17:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 17:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 37TB03-110817
Collection Date: 08-Nov-2017 10:00

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 17:13
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 17:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:13
Surr: 1,2-Dichloroethane-d4	*94.9*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 17:13*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 17:13*
Surr: Dibromofluoromethane	*95.1*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 17:13*
Surr: Toluene-d8	*102*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 17:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: 35BWW05-110817 Lab ID:HS17110537-02
Collection Date: 08-Nov-2017 11:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 18:02
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 18:02
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 18:02
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 18:02
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 18:02
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW05-110817
Collection Date: 08-Nov-2017 11:25

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 18:02
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 18:02
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:02
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Tetrachloroethene	**1.5**		**0.30**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 18:02
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Trichloroethene	**7.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 18:02
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:02
Surr: 1,2-Dichloroethane-d4	*94.4*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 18:02*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 18:02*
Surr: Dibromofluoromethane	*93.3*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 18:02*
Surr: Toluene-d8	*99.9*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 18:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW06-110817
Collection Date: 08-Nov-2017 12:10

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 18:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 18:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 18:27
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 18:27
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 18:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW06-110817
Collection Date: 08-Nov-2017 12:10

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 18:27
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 18:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:27
Surr: 1,2-Dichloroethane-d4	*94.6*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 18:27*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 18:27*
Surr: Dibromofluoromethane	*94.8*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 18:27*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 18:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: LHSMW58-110817 Lab ID:HS17110537-04
Collection Date: 08-Nov-2017 12:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,1,2-Trichlor-1,2,2-trifluoroethane	**1.5**		**0.50**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 20:56
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 20:56
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 20:56
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 20:56
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 20:56
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 20:56
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: LHSMW58-110817
Collection Date: 08-Nov-2017 12:55

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 20:56
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 20:56
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:56
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Tetrachloroethene	**20**		**0.30**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 20:56
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Trichloroethene	**1.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 20:56
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:56
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 20:56*
Surr: 4-Bromofluorobenzene	*99.7*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 20:56*
Surr: Dibromofluoromethane	*94.0*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 20:56*
Surr: Toluene-d8	*101*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 20:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: 35BWW20-110817 Lab ID:HS17110537-05
Collection Date: 08-Nov-2017 13:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,1,2-Trichlor-1,2,2-trifluoroethane	**4.0**		**0.50**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 21:21
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 21:21
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 21:21
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 21:21
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 21:21
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 21:21
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW20-110817
Collection Date: 08-Nov-2017 13:40

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 21:21
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 21:21
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 21:21
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Tetrachloroethene	**25**		**0.30**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 21:21
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Trichloroethene	**4.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 21:21
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 21:21
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 21:21*
Surr: 4-Bromofluorobenzene	*99.4*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 21:21*
Surr: Dibromofluoromethane	*93.7*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 21:21*
Surr: Toluene-d8	*100*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 21:21*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW11-110817
Collection Date: 08-Nov-2017 14:30

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 18:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 18:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 18:52
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 18:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 18:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW11-110817
Collection Date: 08-Nov-2017 14:30

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 18:52
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 18:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 18:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 18:52
Surr: 1,2-Dichloroethane-d4	*95.9*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 18:52*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 18:52*
Surr: Dibromofluoromethane	*93.8*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 18:52*
Surr: Toluene-d8	*100*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 18:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: 37TB04-110817 Lab ID:HS17110537-07
Collection Date: 08-Nov-2017 10:05 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 17:38
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 17:38
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 17:38
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 17:38
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 17:38
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 37TB04-110817
Collection Date: 08-Nov-2017 10:05

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 17:38
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 17:38
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 17:38
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 17:38
Surr: 1,2-Dichloroethane-d4	*93.9*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 17:38*
Surr: 4-Bromofluorobenzene	*99.2*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 17:38*
Surr: Dibromofluoromethane	*93.8*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 17:38*
Surr: Toluene-d8	*101*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 17:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW25-110817
Collection Date: 08-Nov-2017 11:05

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 19:17
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 19:17
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 19:17
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 19:17
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 19:17
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW25-110817
Collection Date: 08-Nov-2017 11:05

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 19:17
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 19:17
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:17
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Trichloroethene	**7.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 19:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:17
Surr: 1,2-Dichloroethane-d4	*91.9*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 19:17*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 19:17*
Surr: Dibromofluoromethane	*92.5*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 19:17*
Surr: Toluene-d8	*102*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 19:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: 35BWW25-110817-FD Lab ID:HS17110537-09
Collection Date: 08-Nov-2017 11:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 19:42
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 19:42
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 19:42
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 19:42
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 19:42
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW25-110817-FD
Collection Date: 08-Nov-2017 11:05

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 19:42
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 19:42
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 19:42
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Trichloroethene	**7.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 19:42
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 19:42
Surr: 1,2-Dichloroethane-d4	*93.8*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 19:42*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 19:42*
Surr: Dibromofluoromethane	*92.4*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 19:42*
Surr: Toluene-d8	*102*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 19:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: 35BWW24-110817 Lab ID:HS17110537-10
Collection Date: 08-Nov-2017 12:05 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,1,2-Trichlor-1,2,2-trifluoroethane	**8.7**		**0.50**	**0.50**	**1.0**	**ug/L**	1	15-Nov-2017 20:07
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 20:07
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 20:07
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 20:07
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 20:07
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 20:07
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW24-110817
Collection Date: 08-Nov-2017 12:05

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-10
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 20:07
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 20:07
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:07
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:07
Surr: 1,2-Dichloroethane-d4	*92.5*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 20:07*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 20:07*
Surr: Dibromofluoromethane	*91.8*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 20:07*
Surr: Toluene-d8	*101*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 20:07*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant WorkOrder:HS17110537
Sample ID: 35BWW01-110817 Lab ID:HS17110537-11
Collection Date: 08-Nov-2017 14:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 20:31
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 20:31
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
4-Methyl-2-pentanone	10	U	0.70	10	2.0	ug/L	1	15-Nov-2017 20:31
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	15-Nov-2017 20:31
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	15-Nov-2017 20:31
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 35BWW01-110817
Collection Date: 08-Nov-2017 14:35

ANALYTICAL REPORT
WorkOrder:HS17110537
Lab ID:HS17110537-11
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: PC
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	15-Nov-2017 20:31
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	15-Nov-2017 20:31
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	15-Nov-2017 20:31
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	15-Nov-2017 20:31
Surr: 1,2-Dichloroethane-d4	*93.7*			**0**	*70-126*	*%REC*	*1*	*15-Nov-2017 20:31*
Surr: 4-Bromofluorobenzene	*99.1*			**0**	*81-113*	*%REC*	*1*	*15-Nov-2017 20:31*
Surr: Dibromofluoromethane	*92.8*			**0**	*77-123*	*%REC*	*1*	*15-Nov-2017 20:31*
Surr: Toluene-d8	*100*			**0**	*82-127*	*%REC*	*1*	*15-Nov-2017 20:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R305515	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS17110537-02	35BWW05-110817	08 Nov 2017 11:25			15 Nov 2017 18:02	1
HS17110537-03	35BWW06-110817	08 Nov 2017 12:10			15 Nov 2017 18:27	1
HS17110537-04	LHSMW58-110817	08 Nov 2017 12:55			15 Nov 2017 20:56	1
HS17110537-05	35BWW20-110817	08 Nov 2017 13:40			15 Nov 2017 21:21	1
HS17110537-06	35BWW11-110817	08 Nov 2017 14:30			15 Nov 2017 18:52	1
HS17110537-08	35BWW25-110817	08 Nov 2017 11:05			15 Nov 2017 19:17	1
HS17110537-09	35BWW25-110817-FD	08 Nov 2017 11:05			15 Nov 2017 19:42	1
HS17110537-10	35BWW24-110817	08 Nov 2017 12:05			15 Nov 2017 20:07	1
HS17110537-11	35BWW01-110817	08 Nov 2017 14:35			15 Nov 2017 20:31	1
Batch ID R305515	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS17110537-01	37TB03-110817	08 Nov 2017 10:00			15 Nov 2017 17:13	1
HS17110537-07	37TB04-110817	08 Nov 2017 10:05			15 Nov 2017 17:38	1

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-171115** Units: **ug/L** Analysis Date: **15-Nov-2017 12:39**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311133** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	10	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-171115** Units: **ug/L** Analysis Date: **15-Nov-2017 12:39**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311133** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*46.82*	*1.0*	*50*	*0*	*93.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.69*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*46.82*	*1.0*	*50*	*0*	*93.6*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MBLK Sample ID: **VBLKW-171115** Units: **ug/L** Analysis Date: **15-Nov-2017 12:39**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311133** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.09*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-171115** Units: **ug/L** Analysis Date: **15-Nov-2017 11:24**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311132** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.7	1.0	50	0	91.4	77 - 118				
1,1,1-Trichloroethane	43.46	1.0	50	0	86.9	70 - 130				
1,1,2,2-Tetrachloroethane	55.43	1.0	50	0	111	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	48.83	1.0	50	0	97.7	70 - 130				
1,1,2-Trichloroethane	48.23	1.0	50	0	96.5	77 - 113				
1,1-Dichloroethane	45.18	1.0	50	0	90.4	71 - 122				
1,1-Dichloroethene	45.09	1.0	50	0	90.2	70 - 130				
1,1-Dichloropropene	43.65	1.0	50	0	87.3	78 - 118				
1,2,3-Trichlorobenzene	50.01	1.0	50	0	100	70 - 130				
1,2,3-Trichloropropane	53.38	1.0	50	0	107	70 - 127				
1,2,4-Trichlorobenzene	48.08	1.0	50	0	96.2	77 - 126				
1,2,4-Trimethylbenzene	50.07	1.0	50	0	100	73 - 121				
1,2-Dibromo-3-chloropropane	50.49	1.0	50	0	101	70 - 130				
1,2-Dibromoethane	47.81	1.0	50	0	95.6	76 - 123				
1,2-Dichlorobenzene	48.35	1.0	50	0	96.7	77 - 113				
1,2-Dichloroethane	44.57	1.0	50	0	89.1	70 - 124				
1,2-Dichloropropane	43.86	1.0	50	0	87.7	72 - 119				
1,3,5-Trimethylbenzene	50.12	1.0	50	0	100	75 - 118				
1,3-Dichlorobenzene	48.49	1.0	50	0	97.0	78 - 118				
1,3-Dichloropropane	48.1	1.0	50	0	96.2	75 - 116				
1,4-Dichlorobenzene	47.27	1.0	50	0	94.5	79 - 113				
2,2-Dichloropropane	43.99	1.0	50	0	88.0	70 - 130				
2-Butanone	88.23	2.0	100	0	88.2	70 - 130				
2-Chlorotoluene	51.77	1.0	50	0	104	70 - 128				
2-Hexanone	88.99	2.0	100	0	89.0	70 - 130				
4-Chlorotoluene	52.45	1.0	50	0	105	74 - 126				
4-Isopropyltoluene	47.32	1.0	50	0	94.6	74 - 126				
4-Methyl-2-pentanone	92.5	2.0	100	0	92.5	70 - 130				
Acetone	89.95	2.0	100	0	90.0	70 - 130				
Benzene	43.93	1.0	50	0	87.9	74 - 120				
Bromobenzene	49.52	1.0	50	0	99.0	78 - 113				
Bromochloromethane	44.8	1.0	50	0	89.6	76 - 124				
Bromodichloromethane	44.45	1.0	50	0	88.9	74 - 122				
Bromoform	43.98	1.0	50	0	88.0	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-171115** Units: **ug/L** Analysis Date: **15-Nov-2017 11:24**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311132** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	47.8	1.0	50	0	95.6	70 - 130				
Carbon disulfide	92.88	2.0	100	0	92.9	70 - 130				
Carbon tetrachloride	42.96	1.0	50	0	85.9	71 - 125				
Chlorobenzene	47.52	1.0	50	0	95.0	76 - 113				
Chloroethane	44.41	1.0	50	0	88.8	70 - 130				
Chloroform	45.61	1.0	50	0	91.2	71 - 121				
Chloromethane	46.35	1.0	50	0	92.7	70 - 129				
cis-1,2-Dichloroethene	45.74	1.0	50	0	91.5	75 - 122				
cis-1,3-Dichloropropene	43.06	1.0	50	0	86.1	73 - 127				
Dibromochloromethane	47.37	1.0	50	0	94.7	77 - 122				
Dibromomethane	44.97	1.0	50	0	89.9	78 - 121				
Dichlorodifluoromethane	47.53	1.0	50	0	95.1	70 - 130				
Ethylbenzene	46.66	1.0	50	0	93.3	77 - 117				
Hexachlorobutadiene	39.95	1.0	50	0	79.9	70 - 130				
Isopropylbenzene	46.17	1.0	50	0	92.3	73 - 127				
m,p-Xylene	93.05	2.0	100	0	93.1	77 - 122				
Methylene chloride	44.43	2.0	50	0	88.9	70 - 127				
Naphthalene	47.46	1.0	50	0	94.9	70 - 130				
n-Butylbenzene	50.21	1.0	50	0	100	72 - 130				
n-Propylbenzene	50.24	1.0	50	0	100	73 - 124				
o-Xylene	46.11	1.0	50	0	92.2	75 - 119				
sec-Butylbenzene	47.28	1.0	50	0	94.6	73 - 128				
Styrene	47.45	1.0	50	0	94.9	72 - 126				
tert-Butylbenzene	46.98	1.0	50	0	94.0	73 - 124				
Tetrachloroethene	43.45	1.0	50	0	86.9	76 - 119				
Toluene	48.4	1.0	50	0	96.8	77 - 118				
trans-1,2-Dichloroethene	45.52	1.0	50	0	91.0	72 - 127				
trans-1,3-Dichloropropene	42.48	1.0	50	0	85.0	77 - 119				
Trichloroethene	41.27	1.0	50	0	82.5	77 - 121				
Trichlorofluoromethane	46.81	1.0	50	0	93.6	70 - 130				
Vinyl chloride	47.09	1.0	50	0	94.2	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.39*	*1.0*	*50*	*0*	*92.8*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.3*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*46.29*	*1.0*	*50*	*0*	*92.6*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

LCS Sample ID: **VLCSW-171115** Units: **ug/L** Analysis Date: **15-Nov-2017 11:24**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311132** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.62*	*1.0*	*50*	*0*	*103*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS17110374-10MS** Units: **ug/L** Analysis Date: **15-Nov-2017 15:33**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311138** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	44.24	1.0	50	0	88.5	70 - 120				
1,1,1-Trichloroethane	38.76	1.0	50	0	77.5	70 - 130				
1,1,2,2-Tetrachloroethane	56.89	1.0	50	0	114	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	41.06	1.0	50	5.8	70.5	70 - 130				
1,1,2-Trichloroethane	48.2	1.0	50	0	96.4	70 - 117				
1,1-Dichloroethane	41.95	1.0	50	0	83.9	70 - 127				
1,1-Dichloroethene	36.8	1.0	50	0	73.6	70 - 130				
1,1-Dichloropropene	38.62	1.0	50	0	77.2	70 - 129				
1,2,3-Trichlorobenzene	44.69	1.0	50	0	89.4	70 - 130				
1,2,3-Trichloropropane	54.34	1.0	50	0	109	70 - 130				
1,2,4-Trichlorobenzene	43	1.0	50	0	86.0	70 - 125				
1,2,4-Trimethylbenzene	44.86	1.0	50	0	89.7	70 - 125				
1,2-Dibromo-3-chloropropane	51.23	1.0	50	0	102	70 - 130				
1,2-Dibromoethane	47.21	1.0	50	0	94.4	70 - 124				
1,2-Dichlorobenzene	46.06	1.0	50	0	92.1	70 - 115				
1,2-Dichloroethane	45.4	1.0	50	0	90.8	70 - 127				
1,2-Dichloropropane	42.65	1.0	50	0	85.3	70 - 122				
1,3,5-Trimethylbenzene	44.49	1.0	50	0	89.0	70 - 126				
1,3-Dichlorobenzene	44.67	1.0	50	0	89.3	70 - 119				
1,3-Dichloropropane	48.06	1.0	50	0	96.1	70 - 121				
1,4-Dichlorobenzene	44.38	1.0	50	0	88.8	70 - 114				
2,2-Dichloropropane	38.86	1.0	50	0	77.7	70 - 130				
2-Butanone	94.49	2.0	100	0	94.5	70 - 130				
2-Chlorotoluene	47.8	1.0	50	0	95.6	70 - 130				
2-Hexanone	93.52	2.0	100	0	93.5	70 - 130				
4-Chlorotoluene	47.25	1.0	50	0	94.5	70 - 130				
4-Isopropyltoluene	40.16	1.0	50	0	80.3	70 - 130				
4-Methyl-2-pentanone	94.63	2.0	100	0	94.6	70 - 130				
Acetone	106.2	2.0	100	0	106	70 - 130				
Benzene	41.69	1.0	50	0	83.4	70 - 127				
Bromobenzene	47.41	1.0	50	0	94.8	70 - 115				
Bromochloromethane	43.39	1.0	50	0	86.8	70 - 127				
Bromodichloromethane	43.92	1.0	50	0	87.8	70 - 124				
Bromoform	44.9	1.0	50	0	89.8	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS17110374-10MS** Units: **ug/L** Analysis Date: **15-Nov-2017 15:33**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311138** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	39.79	1.0	50	0	79.6	70 - 130				
Carbon disulfide	71.45	2.0	100	0	71.5	70 - 130				
Carbon tetrachloride	38.05	1.0	50	0	76.1	70 - 130				
Chlorobenzene	44.82	1.0	50	0	89.6	70 - 114				
Chloroethane	35.01	1.0	50	0	70.0	70 - 130				
Chloroform	43.54	1.0	50	0	87.1	70 - 125				
Chloromethane	28.67	1.0	50	0	57.3	70 - 130				S
cis-1,2-Dichloroethene	43.33	1.0	50	0	86.7	70 - 128				
cis-1,3-Dichloropropene	42.73	1.0	50	0	85.5	70 - 125				
Dibromochloromethane	47.58	1.0	50	0	95.2	70 - 124				
Dibromomethane	45.46	1.0	50	0	90.9	70 - 124				
Dichlorodifluoromethane	16.58	1.0	50	0	33.2	70 - 130				S
Ethylbenzene	42.95	1.0	50	0	85.9	70 - 124				
Hexachlorobutadiene	30.19	1.0	50	0	60.4	70 - 130				S
Isopropylbenzene	41.33	1.0	50	0	82.7	70 - 130				
m,p-Xylene	86.16	2.0	100	0	86.2	70 - 130				
Methylene chloride	42.7	2.0	50	0	85.4	70 - 128				
Naphthalene	44.55	1.0	50	0	89.1	70 - 130				
n-Butylbenzene	41.95	1.0	50	0	83.9	70 - 130				
n-Propylbenzene	44.58	1.0	50	0	89.2	70 - 130				
o-Xylene	43.94	1.0	50	0	87.9	70 - 124				
sec-Butylbenzene	40.14	1.0	50	0	80.3	70 - 130				
Styrene	44.96	1.0	50	0	89.9	70 - 130				
tert-Butylbenzene	40.97	1.0	50	0	81.9	70 - 130				
Tetrachloroethene	40.81	1.0	50	2.65	76.3	70 - 130				
Toluene	45.47	1.0	50	0	90.9	70 - 123				
trans-1,2-Dichloroethene	40.92	1.0	50	0	81.8	70 - 130				
trans-1,3-Dichloropropene	42.92	1.0	50	0	85.8	70 - 121				
Trichloroethene	39.28	1.0	50	1.1	76.4	70 - 129				
Trichlorofluoromethane	35.82	1.0	50	0	71.6	70 - 130				
Vinyl chloride	31.63	1.0	50	0	63.3	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*46.12*	*1.0*	*50*	*0*	*92.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.99*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*45.81*	*1.0*	*50*	*0*	*91.6*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MS Sample ID: **HS17110374-10MS** Units: **ug/L** Analysis Date: **15-Nov-2017 15:33**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311138** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.44*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS17110374-10MSD** Units: **ug/L** Analysis Date: **15-Nov-2017 15:58**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311139** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.98	1.0	50	0	92.0	70 - 120	44.24	3.85	20	
1,1,1-Trichloroethane	40.71	1.0	50	0	81.4	70 - 130	38.76	4.91	20	
1,1,2,2-Tetrachloroethane	59.76	1.0	50	0	120	70 - 123	56.89	4.93	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	42.15	1.0	50	5.8	72.7	70 - 130	41.06	2.61	20	
1,1,2-Trichloroethane	49.28	1.0	50	0	98.6	70 - 117	48.2	2.21	20	
1,1-Dichloroethane	44.07	1.0	50	0	88.1	70 - 127	41.95	4.91	20	
1,1-Dichloroethene	38.89	1.0	50	0	77.8	70 - 130	36.8	5.52	20	
1,1-Dichloropropene	39.7	1.0	50	0	79.4	70 - 129	38.62	2.75	20	
1,2,3-Trichlorobenzene	60.14	1.0	50	0	120	70 - 130	44.69	29.5	20	R
1,2,3-Trichloropropane	56.02	1.0	50	0	112	70 - 130	54.34	3.03	20	
1,2,4-Trichlorobenzene	53.8	1.0	50	0	108	70 - 125	43	22.3	20	R
1,2,4-Trimethylbenzene	47.89	1.0	50	0	95.8	70 - 125	44.86	6.55	20	
1,2-Dibromo-3-chloropropane	58.31	1.0	50	0	117	70 - 130	51.23	12.9	20	
1,2-Dibromoethane	49.93	1.0	50	0	99.9	70 - 124	47.21	5.6	20	
1,2-Dichlorobenzene	48.75	1.0	50	0	97.5	70 - 115	46.06	5.68	20	
1,2-Dichloroethane	47.05	1.0	50	0	94.1	70 - 127	45.4	3.56	20	
1,2-Dichloropropane	43.95	1.0	50	0	87.9	70 - 122	42.65	2.99	20	
1,3,5-Trimethylbenzene	47.2	1.0	50	0	94.4	70 - 126	44.49	5.9	20	
1,3-Dichlorobenzene	47.39	1.0	50	0	94.8	70 - 119	44.67	5.9	20	
1,3-Dichloropropane	49.89	1.0	50	0	99.8	70 - 121	48.06	3.72	20	
1,4-Dichlorobenzene	47.06	1.0	50	0	94.1	70 - 114	44.38	5.86	20	
2,2-Dichloropropane	40.78	1.0	50	0	81.6	70 - 130	38.86	4.82	20	
2-Butanone	99.19	2.0	100	0	99.2	70 - 130	94.49	4.85	20	
2-Chlorotoluene	49.84	1.0	50	0	99.7	70 - 130	47.8	4.17	20	
2-Hexanone	96.46	2.0	100	0	96.5	70 - 130	93.52	3.1	20	
4-Chlorotoluene	48.9	1.0	50	0	97.8	70 - 130	47.25	3.42	20	
4-Isopropyltoluene	43.9	1.0	50	0	87.8	70 - 130	40.16	8.89	20	
4-Methyl-2-pentanone	98.65	2.0	100	0	98.7	70 - 130	94.63	4.16	20	
Acetone	104.7	2.0	100	0	105	70 - 130	106.2	1.43	20	
Benzene	43.17	1.0	50	0	86.3	70 - 127	41.69	3.49	20	
Bromobenzene	48.64	1.0	50	0	97.3	70 - 115	47.41	2.56	20	
Bromochloromethane	45.63	1.0	50	0	91.3	70 - 127	43.39	5.05	20	
Bromodichloromethane	45.63	1.0	50	0	91.3	70 - 124	43.92	3.81	20	
Bromoform	47.25	1.0	50	0	94.5	70 - 129	44.9	5.09	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS17110374-10MSD** Units: **ug/L** Analysis Date: **15-Nov-2017 15:58**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311139** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	40.85	1.0	50	0	81.7	70 - 130	39.79	2.64	20	
Carbon disulfide	75.49	2.0	100	0	75.5	70 - 130	71.45	5.49	20	
Carbon tetrachloride	38.24	1.0	50	0	76.5	70 - 130	38.05	0.511	20	
Chlorobenzene	46.71	1.0	50	0	93.4	70 - 114	44.82	4.15	20	
Chloroethane	37.56	1.0	50	0	75.1	70 - 130	35.01	7.01	20	
Chloroform	45.97	1.0	50	0	91.9	70 - 125	43.54	5.44	20	
Chloromethane	29.96	1.0	50	0	59.9	70 - 130	28.67	4.4	20	S
cis-1,2-Dichloroethene	45.55	1.0	50	0	91.1	70 - 128	43.33	5	20	
cis-1,3-Dichloropropene	44.14	1.0	50	0	88.3	70 - 125	42.73	3.23	20	
Dibromochloromethane	49.09	1.0	50	0	98.2	70 - 124	47.58	3.13	20	
Dibromomethane	46.82	1.0	50	0	93.6	70 - 124	45.46	2.93	20	
Dichlorodifluoromethane	17.05	1.0	50	0	34.1	70 - 130	16.58	2.79	20	S
Ethylbenzene	45.05	1.0	50	0	90.1	70 - 124	42.95	4.78	20	
Hexachlorobutadiene	37.22	1.0	50	0	74.4	70 - 130	30.19	20.8	20	R
Isopropylbenzene	43.61	1.0	50	0	87.2	70 - 130	41.33	5.37	20	
m,p-Xylene	89.84	2.0	100	0	89.8	70 - 130	86.16	4.18	20	
Methylene chloride	44.9	2.0	50	0	89.8	70 - 128	42.7	5.02	20	
Naphthalene	59.01	1.0	50	0	118	70 - 130	44.55	27.9	20	R
n-Butylbenzene	46.4	1.0	50	0	92.8	70 - 130	41.95	10.1	20	
n-Propylbenzene	46.51	1.0	50	0	93.0	70 - 130	44.58	4.25	20	
o-Xylene	45.68	1.0	50	0	91.4	70 - 124	43.94	3.88	20	
sec-Butylbenzene	43.21	1.0	50	0	86.4	70 - 130	40.14	7.36	20	
Styrene	46.77	1.0	50	0	93.5	70 - 130	44.96	3.93	20	
tert-Butylbenzene	44.11	1.0	50	0	88.2	70 - 130	40.97	7.37	20	
Tetrachloroethene	41.8	1.0	50	2.65	78.3	70 - 130	40.81	2.38	20	
Toluene	47.31	1.0	50	0	94.6	70 - 123	45.47	3.97	20	
trans-1,2-Dichloroethene	42.41	1.0	50	0	84.8	70 - 130	40.92	3.57	20	
trans-1,3-Dichloropropene	44.58	1.0	50	0	89.2	70 - 121	42.92	3.81	20	
Trichloroethene	40.76	1.0	50	1.1	79.3	70 - 129	39.28	3.69	20	
Trichlorofluoromethane	37.64	1.0	50	0	75.3	70 - 130	35.82	4.95	20	
Vinyl chloride	33.06	1.0	50	0	66.1	70 - 130	31.63	4.42	20	S
Surr: 1,2-Dichloroethane-d4	*47.05*	*1.0*	*50*	*0*	*94.1*	*70 - 126*	*46.12*	*1.98*	*20*	
Surr: 4-Bromofluorobenzene	*50.46*	*1.0*	*50*	*0*	*101*	*81 - 113*	*50.99*	*1.05*	*20*	
Surr: Dibromofluoromethane	*47.46*	*1.0*	*50*	*0*	*94.9*	*77 - 123*	*45.81*	*3.54*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: HS17110537

QC BATCH REPORT

Batch ID: R305515 **Instrument: VOA6** **Method: SW8260**

MSD Sample ID: **HS17110374-10MSD** Units: **ug/L** Analysis Date: **15-Nov-2017 15:58**
Client ID: Run ID: **VOA6_305515** SeqNo: **4311139** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.8*	*1.0*	*50*	*0*	*102*	*82 - 127*	*50.44*	*0.716*	*20*	

The following samples were analyzed in this batch:

HS17110537-01	HS17110537-02	HS17110537-03	HS17110537-04
HS17110537-05	HS17110537-06	HS17110537-07	HS17110537-08
HS17110537-09	HS17110537-10	HS17110537-11	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 17-Nov-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
WorkOrder: **HS17110537**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
Louisiana	03087 2017-2017	30-Jun-2018
North Carolina	624-2017	31-Dec-2017
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018

ALS Group USA, Corp Date: 17-Nov-17

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS17110537
Date/Time Received: **09-Nov-2017 08:40**
Received by: **JRM**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 10-Nov-2017 Date
Reviewed by: *Sonia West* eSignature — 13-Nov-2017 Date

Matrices: **WATER**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.4C / 1.7C UC/C	IR# 11	
Cooler(s)/Kit(s):	BLUE		
Date/Time sample(s) sent to storage:	11/10/2017 7:30PM		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: 37-NOV2017-GW-ALSHT-110817

TURNAROUND TIME: normal

RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-37			Email	Sonia.West@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stanciff Rd , Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Cod	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FED EX		

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1
37TB03-110817	FIELDQC	n/a	n/a	ft	LIQ	11/8/2017	1000	2		2					
35BWW05-110817	35BWW05	24.3	24.55	ft	GW	11/8/2017	1125	3		3					
35BWW06-110817	35BWW06	24.5	26.3	ft	GW	11/8/2017	1210	3		3					
LHSMW58-110817	LHSMW58	25.05	25.25	ft	GW	11/8/2017	1255	3		3					
35BWW20-110817	35BWW20	26.5	27.05	ft	GW	11/8/2017	1340	3		3					
35BWW11-110817	35BWW11	24.3	24.85	ft	GW	11/8/2017	1430	3		3					
37TB04-110817	FIELDQC	n/a	n/a	ft	LIQ	11/8/2017	1005	2		2					
35BWW25-110817	35BWW25	27.27	27.27	ft	GW	11/8/2017	1105	3		3					
35BWW25-110817-FD	35BWW25	27.27	27.27	ft	GW	11/8/2017	1105	3		3					
35BWW24-110817	35BWW24	29.87	30.14	ft	GW	11/8/2017	1205	3		3					
35BWW01-110817	35BWW01	15.42	15.98	ft	GW	11/8/2017	1435	3		3					

HS17110537

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	David Rowan /APTIM	11/8/17 1630	JM ALS Hou	11.9.17 0840

L. Blue 1.4c

00919727

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (903) 930-6199
SCOTT BEESINGER
APTIM
1203-B EAST GRAND AVE. PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 01NOV12
ACTWGT: 2.00 LB MAN
CAD: 3001130/CAFE3100
DIMS: 20x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-SW

RMA:

FedEx Express

FedEx
TRK# (0221) 7376 9749 7477

RETURNS MON-SAT
THU - 09 NOV 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US IAH

9475872 11/08 5493/7877/1045

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUST
Date: 11-8-12
Name:
Company: ALS

Y SEAL
Seal Broken By:
Date: 11/9/12

00919728

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Sharon Pennington
APTIM
2410 Cherahala Blvd
Knoxville, TN 37932
United States

Phone: 865-690-3211

Fax:

Identifier: 097PH **Date Rec:** 08/23/2018 **Report Date:** 08/29/2018

Client Project #: 501032 **Client Project Name:** Longhorn AAP - LHAAP-37

Purchase Order #: 204818

Analysis Requested: CENSUS, Miscellaneous

Reviewed By:



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MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-37

MI Project Number: **097PH**
Date Received: 08/23/2018

Sample Information

Client Sample ID:		**35BWW08-180822**	**35BWW26-180822**	**35BWW04-180822**	**35BWW12-180822**	**35BWW14-180822**
Sample Date:		08/22/2018	08/22/2018	08/22/2018	08/22/2018	08/22/2018
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		CB	CB	CB	CB	CB
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	**2.00E-01 (J)**	<5.00E-01	<1.20E+00	<1.20E+00	<5.00E-01

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-37

MI Project Number: **097PH**
Date Received: 08/23/2018

Sample Information

Client Sample ID:	**35BWW23-180822**
Sample Date:	08/22/2018
Units:	cells/mL
Analyst/Reviewer:	CB

Dechlorinating Bacteria

Dehalococcoides	*DHC*	<5.00E-01

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **8/23/2018**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	08/23/2018	08/29/2018	1 °C	99%	non-detect	non-detect

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Work Order Acknowledgement

Client:	Aptim Environmental & Infrastucture, Inc.	**Work Order:**	**HS18080946**
Project:	501032 LHAAP-37	**Date Received:**	18 Aug 2018
QC Level:	DOD IV **TAT:** 6 Business Days	**Date Due:**	28 Aug 2018

Sample Summary

Sample ID	Field ID	Matrix	Tag No	Type	Collection Date	Date Received	Hold
HS18080946-01	35BWW01-180816	Water		N	16-Aug-2018 10:10	18-Aug-2018 09:15	N
HS18080946-02	35BWW01-180816-FD	Water		FD	16-Aug-2018 10:10	18-Aug-2018 09:15	N
HS18080946-03	35BWW18-180816	Water		N	16-Aug-2018 11:10	18-Aug-2018 09:15	N
HS18080946-04	35BWW19-180816	Water		N	16-Aug-2018 12:10	18-Aug-2018 09:15	N
HS18080946-05	35BWW09-180816	Water		N	16-Aug-2018 13:05	18-Aug-2018 09:15	N
HS18080946-06	35BWW10-180816	Water		N	17-Aug-2018 08:50	18-Aug-2018 09:15	N
HS18080946-07	35BWW11-180816	Water		N	17-Aug-2018 09:45	18-Aug-2018 09:15	N
HS18080946-08	35BWW16-180816	Water		N	17-Aug-2018 10:50	18-Aug-2018 09:15	N
HS18080946-09	Trip Blank	Water	ALS-080318-7	TB	17-Aug-2018 00:00	18-Aug-2018 09:15	N

Invoice Summary

Invoice To: CB&I Federal Services, LLC **Purchase Order:** Longhorn AAP, 501032

Method	Test	Remarks	Matrix	Unit Price	Mult	Ext Price	Qty	Hold	Amount
8260_LL_W	Low Level Volatiles - SW8260C	VOC 8260	Aqueous	$39.00	1	$39.00	9	N	$351.00
						Test Total:			$351.00

Total Estimated Cost: USD $351.00

Total Estimated Cost does not include Test Groups that are on Hold.

Analysis Summary

Sample: HS18080946-01 (35BWW01-180816)

Test Group: 8260_LL_W VOC 8260

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N

Sample: HS18080946-02 (35BWW01-180816-FD)

Test Group: 8260_LL_W VOC 8260

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N

Work Order Acknowledgement

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
Sample: HS18080946-03 (35BWW18-180816)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N
Sample: HS18080946-04 (35BWW19-180816)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N
Sample: HS18080946-05 (35BWW09-180816)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N
Sample: HS18080946-06 (35BWW10-180816)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N
Sample: HS18080946-07 (35BWW11-180816)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N
Sample: HS18080946-08 (35BWW16-180816)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N
Sample: HS18080946-09 (Trip Blank)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	28-Aug-2018	N		N

APTIM

COC ID: 37-AUG2018-GW-ALSHT-1808_____ TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-37			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1
35BWW01-180816		14.22	14.46		W	8/16/18	1010	3		X				
35BWW01-180816-FD		14.22	14.46		W	8/16/18	1010	3		X				
35BWW18-180816		27.95	28.18		W	8/16/18	1110	3		X				
35BWW19-180816		27.55	27.77		W	8/16/18	1210	3		X				
35BWW09-180816		26.71	26.91		W	8/16/18	1305	3		X				
35BWW10-180816		25.43	25.63		W	8/17/18	0850	3		X				
35BWW11-180816		24.46	24.69		W	8/17/18	0945	3		X				
35BWW16-180816		23.70	23.91		W	8/17/18	1050	3		X				
TRIP BLANK					W	8/17/18		2		X				

HS18080946

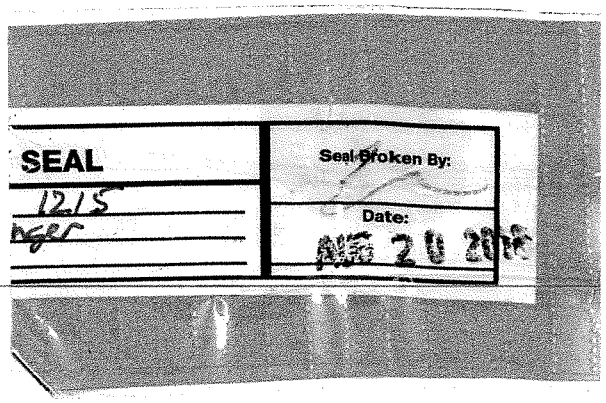
Aptim Environmental & Infrastucture, Inc.

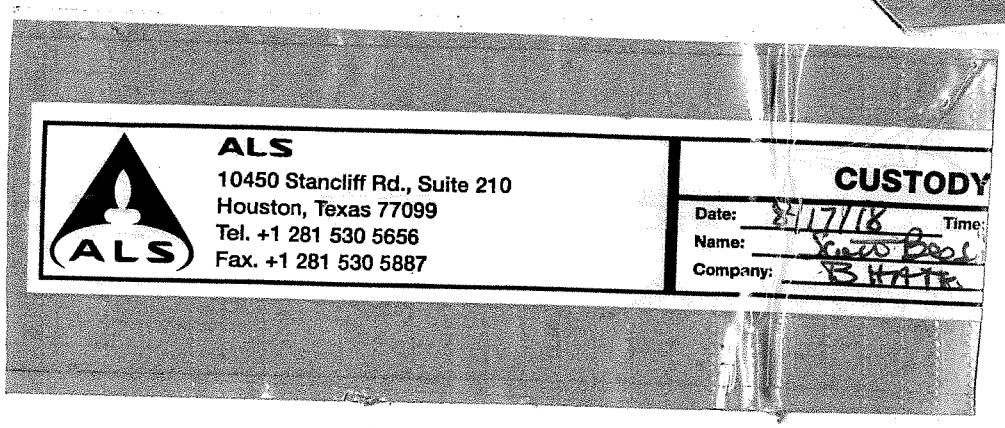
501032 LHAAP-37

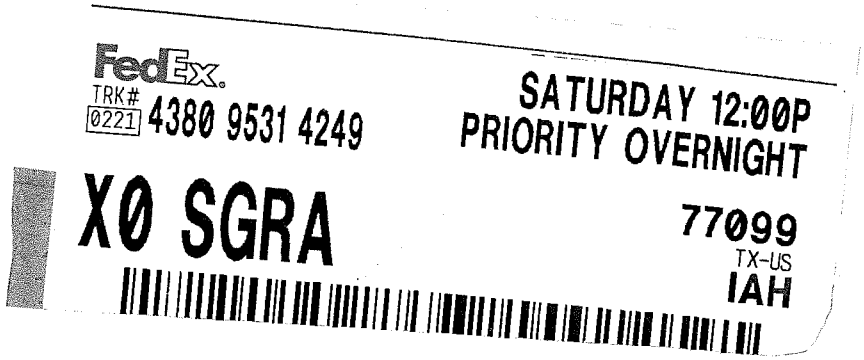
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Scott Bellinger / BHATE	8/17/18 1215	P.M. [signature] 43229 VOC 2.8° #25 CIF 0.3°	8/18/18 09:15

00919735

00919736


SEAL
12/5
Seal Broken By:
Date:
AUG 20


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY
Date: 8/17/18
Time:
Name:
Company:
BHATE


FedEx
TRK#
0221 4380 9531 4249
SATURDAY 12:00P
PRIORITY OVERNIGHT
XO SGRA
77099
TX-US
IAH

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

August 24, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18081064**

Laboratory Results for: **LHAAP-37**

Dear Sharon,

ALS Environmental received 12 sample(s) on Aug 22, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Work Order: HS18081064

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18081064-01	35BWW20_180820	Water		20-Aug-2018 09:25	22-Aug-2018 08:50	☐
HS18081064-02	LHSMW58_180820	Water		20-Aug-2018 10:20	22-Aug-2018 08:50	☐
HS18081064-03	35BWW15_180820	Water		20-Aug-2018 11:15	22-Aug-2018 08:50	☐
HS18081064-04	35BWW25_180820	Water		20-Aug-2018 12:20	22-Aug-2018 08:50	☐
HS18081064-05	35BWW25_180820-FD	Water		20-Aug-2018 12:20	22-Aug-2018 08:50	☐
HS18081064-06	35BWW07_180820	Water		20-Aug-2018 13:30	22-Aug-2018 08:50	☐
HS18081064-07	35BWW05_180821	Water		21-Aug-2018 08:40	22-Aug-2018 08:50	☐
HS18081064-08	35BWW06_180821	Water		21-Aug-2018 09:30	22-Aug-2018 08:50	☐
HS18081064-09	35BWW24_180821	Water		21-Aug-2018 10:25	22-Aug-2018 08:50	☐
HS18081064-10	35BWW13_180821	Water		21-Aug-2018 11:20	22-Aug-2018 08:50	☐
HS18081064-11	35BWW17_180821	Water		21-Aug-2018 12:30	22-Aug-2018 08:50	☐
HS18081064-12	37TB02-180820	Water	ALS-060618-56	20-Aug-2018 00:00	22-Aug-2018 08:50	☐

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
Work Order: HS18081064

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R322280

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW20_180820
Collection Date: 20-Aug-2018 09:25

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,1,2-Trichlor-1,2,2-trifluoroethane	**1.4**		**0.50**	**0.50**	**1.0**	**ug/L**	1	23-Aug-2018 23:37
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-Aug-2018 23:37
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	23-Aug-2018 23:37
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	23-Aug-2018 23:37
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	23-Aug-2018 23:37
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	23-Aug-2018 23:37
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW20_180820
Collection Date: 20-Aug-2018 09:25

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-Aug-2018 23:37
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	23-Aug-2018 23:37
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:37
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Tetrachloroethene	**19**		**0.30**	**0.50**	**1.0**	**ug/L**	1	23-Aug-2018 23:37
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Trichloroethene	**3.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	23-Aug-2018 23:37
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:37
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*70-126*	*%REC*	*1*	*23-Aug-2018 23:37*
Surr: 4-Bromofluorobenzene	*98.2*			**0**	*81-113*	*%REC*	*1*	*23-Aug-2018 23:37*
Surr: Dibromofluoromethane	*96.6*			**0**	*77-123*	*%REC*	*1*	*23-Aug-2018 23:37*
Surr: Toluene-d8	*93.1*			**0**	*82-127*	*%REC*	*1*	*23-Aug-2018 23:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: LHSMW58_180820
Collection Date: 20-Aug-2018 10:20

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 00:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 00:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 00:01
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 00:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 00:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-37 WorkOrder:HS18081064
Sample ID: LHSMW58_180820 Lab ID:HS18081064-02
Collection Date: 20-Aug-2018 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 00:01
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 00:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Tetrachloroethene	**26**		**0.30**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 00:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Trichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 00:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:01
Surr: 1,2-Dichloroethane-d4	*88.0*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 00:01*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 00:01*
Surr: Dibromofluoromethane	*97.1*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 00:01*
Surr: Toluene-d8	*91.8*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 00:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW15_180820
Collection Date: 20-Aug-2018 11:15

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.0**		**0.50**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 00:26
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,1-Dichloroethene	**1.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 00:26
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 00:26
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 00:26
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 00:26
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 00:26
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 00:26
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW15_180820
Collection Date: 20-Aug-2018 11:15

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 00:26
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 00:26
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:26
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Tetrachloroethene	**11**		**0.30**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 00:26
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Trichloroethene	**9.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 00:26
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:26
Surr: 1,2-Dichloroethane-d4	*90.1*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 00:26*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 00:26*
Surr: Dibromofluoromethane	*97.0*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 00:26*
Surr: Toluene-d8	*91.2*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 00:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW25_180820
Collection Date: 20-Aug-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 00:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 00:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 00:50
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 00:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 00:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW25_180820
Collection Date: 20-Aug-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 00:50
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 00:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 00:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Trichloroethene	**5.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 00:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 00:50
Surr: 1,2-Dichloroethane-d4	*90.5*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 00:50*
Surr: 4-Bromofluorobenzene	*96.8*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 00:50*
Surr: Dibromofluoromethane	*95.2*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 00:50*
Surr: Toluene-d8	*91.6*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 00:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW25_180820-FD
Collection Date: 20-Aug-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 01:15
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 01:15
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 01:15
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 01:15
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 01:15
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW25_180820-FD
Collection Date: 20-Aug-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 01:15
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 01:15
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:15
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Trichloroethene	**5.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 01:15
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:15
Surr: 1,2-Dichloroethane-d4	*89.4*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 01:15*
Surr: 4-Bromofluorobenzene	*97.4*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 01:15*
Surr: Dibromofluoromethane	*97.4*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 01:15*
Surr: Toluene-d8	*91.4*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 01:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW07_180820
Collection Date: 20-Aug-2018 13:30

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 01:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 01:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 01:39
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 01:39
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 01:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW07_180820
Collection Date: 20-Aug-2018 13:30

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 01:39
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 01:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 01:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 01:39
Surr: 1,2-Dichloroethane-d4	*89.0*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 01:39*
Surr: 4-Bromofluorobenzene	*98.9*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 01:39*
Surr: Dibromofluoromethane	*95.0*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 01:39*
Surr: Toluene-d8	*93.2*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 01:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW05_180821
Collection Date: 21-Aug-2018 08:40

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 02:04
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 02:04
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 02:04
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 02:04
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 02:04
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW05_180821
Collection Date: 21-Aug-2018 08:40

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 02:04
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 02:04
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:04
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Tetrachloroethene	**1.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 02:04
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Trichloroethene	**7.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 02:04
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:04
Surr: 1,2-Dichloroethane-d4	*87.6*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 02:04*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 02:04*
Surr: Dibromofluoromethane	*93.9*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 02:04*
Surr: Toluene-d8	*91.8*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 02:04*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW06_180821
Collection Date: 21-Aug-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 02:28
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 02:28
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 02:28
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 02:28
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 02:28
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW06_180821
Collection Date: 21-Aug-2018 09:30

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 02:28
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 02:28
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:28
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:28
Surr: 1,2-Dichloroethane-d4	*91.0*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 02:28*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 02:28*
Surr: Dibromofluoromethane	*96.2*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 02:28*
Surr: Toluene-d8	*93.5*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 02:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW24_180821
Collection Date: 21-Aug-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.3**		**0.50**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 02:53
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 02:53
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 02:53
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 02:53
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 02:53
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 02:53
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW24_180821
Collection Date: 21-Aug-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 02:53
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 02:53
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 02:53
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 02:53
Surr: 1,2-Dichloroethane-d4	*89.9*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 02:53*
Surr: 4-Bromofluorobenzene	*97.7*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 02:53*
Surr: Dibromofluoromethane	*96.2*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 02:53*
Surr: Toluene-d8	*91.8*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 02:53*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW13_180821
Collection Date: 21-Aug-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 03:17
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 03:17
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 03:17
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 03:17
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 03:17
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW13_180821
Collection Date: 21-Aug-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 03:17
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 03:17
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:17
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:17
Surr: 1,2-Dichloroethane-d4	*89.1*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 03:17*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 03:17*
Surr: Dibromofluoromethane	*96.2*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 03:17*
Surr: Toluene-d8	*91.9*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 03:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW17_180821
Collection Date: 21-Aug-2018 12:30

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 03:42
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 03:42
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 03:42
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 03:42
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 03:42
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 35BWW17_180821
Collection Date: 21-Aug-2018 12:30

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 03:42
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 03:42
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 03:42
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 03:42
Surr: 1,2-Dichloroethane-d4	*88.5*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 03:42*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 03:42*
Surr: Dibromofluoromethane	*96.8*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 03:42*
Surr: Toluene-d8	*91.6*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 03:42*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 37TB02-180820
Collection Date: 20-Aug-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-12
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	23-Aug-2018 23:12
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	23-Aug-2018 23:12
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	23-Aug-2018 23:12
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	23-Aug-2018 23:12
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	23-Aug-2018 23:12
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37
Sample ID: 37TB02-180820
Collection Date: 20-Aug-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18081064
Lab ID:HS18081064-12
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	23-Aug-2018 23:12
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	23-Aug-2018 23:12
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	23-Aug-2018 23:12
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	23-Aug-2018 23:12
Surr: 1,2-Dichloroethane-d4	*87.8*			**0**	*70-126*	*%REC*	*1*	*23-Aug-2018 23:12*
Surr: 4-Bromofluorobenzene	*98.3*			**0**	*81-113*	*%REC*	*1*	*23-Aug-2018 23:12*
Surr: Dibromofluoromethane	*95.6*			**0**	*77-123*	*%REC*	*1*	*23-Aug-2018 23:12*
Surr: Toluene-d8	*90.8*			**0**	*82-127*	*%REC*	*1*	*23-Aug-2018 23:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R322280	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18081064-01	35BWW20_180820	20 Aug 2018 09:25			23 Aug 2018 23:37	1
HS18081064-02	LHSMW58_180820	20 Aug 2018 10:20			24 Aug 2018 00:01	1
HS18081064-03	35BWW15_180820	20 Aug 2018 11:15			24 Aug 2018 00:26	1
HS18081064-04	35BWW25_180820	20 Aug 2018 12:20			24 Aug 2018 00:50	1
HS18081064-05	35BWW25_180820-FD	20 Aug 2018 12:20			24 Aug 2018 01:15	1
HS18081064-06	35BWW07_180820	20 Aug 2018 13:30			24 Aug 2018 01:39	1
HS18081064-07	35BWW05_180821	21 Aug 2018 08:40			24 Aug 2018 02:04	1
HS18081064-08	35BWW06_180821	21 Aug 2018 09:30			24 Aug 2018 02:28	1
HS18081064-09	35BWW24_180821	21 Aug 2018 10:25			24 Aug 2018 02:53	1
HS18081064-10	35BWW13_180821	21 Aug 2018 11:20			24 Aug 2018 03:17	1
HS18081064-11	35BWW17_180821	21 Aug 2018 12:30			24 Aug 2018 03:42	1
HS18081064-12	37TB02-180820	20 Aug 2018 00:00			23 Aug 2018 23:12	1

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180823** Units: **ug/L** Analysis Date: **23-Aug-2018 22:48**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703887** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180823** Units: **ug/L** Analysis Date: **23-Aug-2018 22:48**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703887** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.47*	*1.0*	*50*	*0*	*86.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.27*	*1.0*	*50*	*0*	*98.5*	*82 - 115*				
Surr: Dibromofluoromethane	*48.48*	*1.0*	*50*	*0*	*97.0*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180823** Units: **ug/L** Analysis Date: **23-Aug-2018 22:48**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703887** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*45.83*	*1.0*	*50*	*0*	*91.7*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180823** Units: **ug/L** Analysis Date: **23-Aug-2018 22:23**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703886** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.25	1.0	20	0	106	77 - 118				
1,1,1-Trichloroethane	19.48	1.0	20	0	97.4	70 - 130				
1,1,2,2-Tetrachloroethane	19.79	1.0	20	0	99.0	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	22.34	1.0	20	0	112	70 - 130				
1,1,2-Trichloroethane	20.98	1.0	20	0	105	77 - 113				
1,1-Dichloroethane	19.18	1.0	20	0	95.9	71 - 122				
1,1-Dichloroethene	20.21	1.0	20	0	101	70 - 130				
1,1-Dichloropropene	22.97	1.0	20	0	115	78 - 118				
1,2,3-Trichlorobenzene	22.18	1.0	20	0	111	70 - 130				
1,2,3-Trichloropropane	19.73	1.0	20	0	98.6	70 - 127				
1,2,4-Trichlorobenzene	22.55	1.0	20	0	113	77 - 126				
1,2,4-Trimethylbenzene	21.71	1.0	20	0	109	73 - 121				
1,2-Dibromo-3-chloropropane	19.52	1.0	20	0	97.6	70 - 130				
1,2-Dibromoethane	21.7	1.0	20	0	109	76 - 123				
1,2-Dichlorobenzene	21.18	1.0	20	0	106	77 - 113				
1,2-Dichloroethane	21.16	1.0	20	0	106	70 - 124				
1,2-Dichloropropane	20.84	1.0	20	0	104	72 - 119				
1,3,5-Trimethylbenzene	19.9	1.0	20	0	99.5	75 - 118				
1,3-Dichlorobenzene	21.17	1.0	20	0	106	78 - 118				
1,3-Dichloropropane	20.71	1.0	20	0	104	75 - 116				
1,4-Dichlorobenzene	20.93	1.0	20	0	105	79 - 113				
2,2-Dichloropropane	20.93	1.0	20	0	105	70 - 130				
2-Butanone	39.9	2.0	40	0	99.8	70 - 130				
2-Chlorotoluene	21.75	1.0	20	0	109	70 - 128				
2-Hexanone	42.51	2.0	40	0	106	70 - 130				
4-Chlorotoluene	22.13	1.0	20	0	111	74 - 126				
4-Isopropyltoluene	19.46	1.0	20	0	97.3	74 - 126				
4-Methyl-2-pentanone	40.97	2.0	40	0	102	70 - 130				
Acetone	40.1	2.0	40	0	100	70 - 130				
Benzene	20.3	1.0	20	0	101	74 - 120				
Bromobenzene	20.6	1.0	20	0	103	78 - 113				
Bromochloromethane	20.97	1.0	20	0	105	76 - 124				
Bromodichloromethane	21.08	1.0	20	0	105	74 - 122				
Bromoform	21.73	1.0	20	0	109	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180823** Units: **ug/L** Analysis Date: **23-Aug-2018 22:23**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703886** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	23.91	1.0	20	0	120	70 - 130				
Carbon disulfide	40.79	2.0	40	0	102	70 - 130				
Carbon tetrachloride	21.5	1.0	20	0	107	71 - 125				
Chlorobenzene	21.34	1.0	20	0	107	76 - 113				
Chloroethane	19.02	1.0	20	0	95.1	70 - 130				
Chloroform	19.52	1.0	20	0	97.6	71 - 121				
Chloromethane	18.32	1.0	20	0	91.6	70 - 129				
cis-1,2-Dichloroethene	19.89	1.0	20	0	99.4	75 - 122				
cis-1,3-Dichloropropene	22.51	1.0	20	0	113	73 - 127				
Dibromochloromethane	20.69	1.0	20	0	103	77 - 122				
Dibromomethane	21.81	1.0	20	0	109	78 - 121				
Dichlorodifluoromethane	22.4	1.0	20	0	112	70 - 130				
Ethylbenzene	22.76	1.0	20	0	114	77 - 117				
Hexachlorobutadiene	21.9	1.0	20	0	109	70 - 130				
Isopropylbenzene	21.17	1.0	20	0	106	73 - 127				
m,p-Xylene	46.57	2.0	40	0	116	77 - 122				
Methylene chloride	20.77	2.0	20	0	104	70 - 127				
Naphthalene	22.7	1.0	20	0	113	70 - 130				
n-Butylbenzene	20.56	1.0	20	0	103	72 - 130				
n-Propylbenzene	22.04	1.0	20	0	110	73 - 124				
o-Xylene	22.65	1.0	20	0	113	75 - 119				
sec-Butylbenzene	19.6	1.0	20	0	98.0	73 - 128				
Styrene	21.99	1.0	20	0	110	72 - 126				
tert-Butylbenzene	22.53	1.0	20	0	113	73 - 124				
Tetrachloroethene	21.16	1.0	20	0	106	76 - 119				
Toluene	19.83	1.0	20	0	99.2	77 - 118				
trans-1,2-Dichloroethene	20.73	1.0	20	0	104	72 - 127				
trans-1,3-Dichloropropene	22.94	1.0	20	0	115	77 - 119				
Trichloroethene	21.17	1.0	20	0	106	77 - 121				
Trichlorofluoromethane	19.8	1.0	20	0	99.0	70 - 130				
Vinyl chloride	20.39	1.0	20	0	102	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.27*	*1.0*	*50*	*0*	*92.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.71*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*48.04*	*1.0*	*50*	*0*	*96.1*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180823** Units: **ug/L** Analysis Date: **23-Aug-2018 22:23**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703886** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*44.51*	*1.0*	*50*	*0*	*89.0*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18081065-03MS** Units: **ug/L** Analysis Date: **24-Aug-2018 04:30**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703917** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.12	1.0	20	0	95.6	70 - 120				
1,1,1-Trichloroethane	18.51	1.0	20	0	92.5	70 - 130				
1,1,2,2-Tetrachloroethane	15.53	1.0	20	0	77.7	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	20.24	1.0	20	0	101	70 - 130				
1,1,2-Trichloroethane	18.14	1.0	20	0	90.7	70 - 117				
1,1-Dichloroethane	17.68	1.0	20	0	88.4	70 - 127				
1,1-Dichloroethene	19.3	1.0	20	0	96.5	70 - 130				
1,1-Dichloropropene	20.75	1.0	20	0	104	70 - 129				
1,2,3-Trichlorobenzene	16.03	1.0	20	0	80.1	70 - 130				
1,2,3-Trichloropropane	15.32	1.0	20	0	76.6	70 - 130				
1,2,4-Trichlorobenzene	16.78	1.0	20	0	83.9	70 - 125				
1,2,4-Trimethylbenzene	17.56	1.0	20	0	87.8	70 - 125				
1,2-Dibromo-3-chloropropane	14.43	1.0	20	0	72.2	70 - 130				
1,2-Dibromoethane	18.76	1.0	20	0	93.8	70 - 124				
1,2-Dichlorobenzene	17.59	1.0	20	0	87.9	70 - 115				
1,2-Dichloroethane	18.75	1.0	20	0	93.8	70 - 127				
1,2-Dichloropropane	19	1.0	20	0	95.0	70 - 122				
1,3,5-Trimethylbenzene	17.4	1.0	20	0	87.0	70 - 126				
1,3-Dichlorobenzene	17.89	1.0	20	0	89.5	70 - 119				
1,3-Dichloropropane	18.73	1.0	20	0	93.6	70 - 121				
1,4-Dichlorobenzene	17.65	1.0	20	0	88.3	70 - 114				
2,2-Dichloropropane	17.24	1.0	20	0	86.2	70 - 130				
2-Butanone	31.35	2.0	40	0	78.4	70 - 130				
2-Chlorotoluene	19.01	1.0	20	0	95.1	70 - 130				
2-Hexanone	31.24	2.0	40	0	78.1	70 - 130				
4-Chlorotoluene	19.13	1.0	20	0	95.6	70 - 130				
4-Isopropyltoluene	16.39	1.0	20	0	82.0	70 - 130				
4-Methyl-2-pentanone	32.28	2.0	40	0	80.7	70 - 130				
Acetone	31.02	2.0	40	0	77.6	70 - 130				
Benzene	18.78	1.0	20	0	93.9	70 - 127				
Bromobenzene	17.97	1.0	20	0	89.8	70 - 115				
Bromochloromethane	19.29	1.0	20	0	96.4	70 - 127				
Bromodichloromethane	19.22	1.0	20	0	96.1	70 - 124				
Bromoform	18.75	1.0	20	0	93.7	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18081065-03MS** Units: **ug/L** Analysis Date: **24-Aug-2018 04:30**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703917** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	21.47	1.0	20	0	107	70 - 130				
Carbon disulfide	38.21	2.0	40	0	95.5	70 - 130				
Carbon tetrachloride	21.56	1.0	20	0	108	70 - 130				
Chlorobenzene	19.36	1.0	20	0	96.8	70 - 114				
Chloroethane	18.23	1.0	20	0	91.2	70 - 130				
Chloroform	18.37	1.0	20	0	91.8	70 - 125				
Chloromethane	15.91	1.0	20	0	79.6	70 - 130				
cis-1,2-Dichloroethene	18.6	1.0	20	0	93.0	70 - 128				
cis-1,3-Dichloropropene	19.17	1.0	20	0	95.8	70 - 125				
Dibromochloromethane	18.8	1.0	20	0	94.0	70 - 124				
Dibromomethane	19.19	1.0	20	0	96.0	70 - 124				
Dichlorodifluoromethane	20.55	1.0	20	0	103	70 - 130				
Ethylbenzene	21.13	1.0	20	0	106	70 - 124				
Hexachlorobutadiene	18.48	1.0	20	0	92.4	70 - 130				
Isopropylbenzene	19.23	1.0	20	0	96.2	70 - 130				
m,p-Xylene	42.01	2.0	40	0	105	70 - 130				
Methylene chloride	17.69	2.0	20	0	88.5	70 - 128				
Naphthalene	15.1	1.0	20	0	75.5	70 - 130				
n-Butylbenzene	17.16	1.0	20	0	85.8	70 - 130				
n-Propylbenzene	19.37	1.0	20	0	96.9	70 - 130				
o-Xylene	20.42	1.0	20	0	102	70 - 124				
sec-Butylbenzene	17.54	1.0	20	0	87.7	70 - 130				
Styrene	19.3	1.0	20	0	96.5	70 - 130				
tert-Butylbenzene	20.34	1.0	20	0	102	70 - 130				
Tetrachloroethene	19.5	1.0	20	0	97.5	70 - 130				
Toluene	18.75	1.0	20	0	93.8	70 - 123				
trans-1,2-Dichloroethene	18.84	1.0	20	0	94.2	70 - 130				
trans-1,3-Dichloropropene	19.63	1.0	20	0	98.1	70 - 121				
Trichloroethene	20.02	1.0	20	0	100	70 - 129				
Trichlorofluoromethane	19.71	1.0	20	0	98.6	70 - 130				
Vinyl chloride	19.57	1.0	20	0	97.9	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.39*	*1.0*	*50*	*0*	*92.8*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.13*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*47.36*	*1.0*	*50*	*0*	*94.7*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18081065-03MS** Units: **ug/L** Analysis Date: **24-Aug-2018 04:30**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703917** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*44.7*	*1.0*	*50*	*0*	*89.4*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18081065-03MSD** Units: **ug/L** Analysis Date: **24-Aug-2018 04:55**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703918** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.12	1.0	20	0	95.6	70 - 120	19.12	0.0181	20	
1,1,1-Trichloroethane	18.05	1.0	20	0	90.2	70 - 130	18.51	2.5	20	
1,1,2,2-Tetrachloroethane	15.94	1.0	20	0	79.7	70 - 123	15.53	2.6	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	20.32	1.0	20	0	102	70 - 130	20.24	0.418	20	
1,1,2-Trichloroethane	18.27	1.0	20	0	91.4	70 - 117	18.14	0.699	20	
1,1-Dichloroethane	17.2	1.0	20	0	86.0	70 - 127	17.68	2.76	20	
1,1-Dichloroethene	18.62	1.0	20	0	93.1	70 - 130	19.3	3.58	20	
1,1-Dichloropropene	20.28	1.0	20	0	101	70 - 129	20.75	2.3	20	
1,2,3-Trichlorobenzene	17.54	1.0	20	0	87.7	70 - 130	16.03	9.01	20	
1,2,3-Trichloropropane	15.73	1.0	20	0	78.7	70 - 130	15.32	2.68	20	
1,2,4-Trichlorobenzene	17.41	1.0	20	0	87.1	70 - 125	16.78	3.7	20	
1,2,4-Trimethylbenzene	18.3	1.0	20	0	91.5	70 - 125	17.56	4.12	20	
1,2-Dibromo-3-chloropropane	15.72	1.0	20	0	78.6	70 - 130	14.43	8.52	20	
1,2-Dibromoethane	19.03	1.0	20	0	95.1	70 - 124	18.76	1.43	20	
1,2-Dichlorobenzene	17.79	1.0	20	0	89.0	70 - 115	17.59	1.16	20	
1,2-Dichloroethane	17.94	1.0	20	0	89.7	70 - 127	18.75	4.43	20	
1,2-Dichloropropane	18.83	1.0	20	0	94.2	70 - 122	19	0.898	20	
1,3,5-Trimethylbenzene	17.62	1.0	20	0	88.1	70 - 126	17.4	1.23	20	
1,3-Dichlorobenzene	18.24	1.0	20	0	91.2	70 - 119	17.89	1.91	20	
1,3-Dichloropropane	18.12	1.0	20	0	90.6	70 - 121	18.73	3.32	20	
1,4-Dichlorobenzene	18.13	1.0	20	0	90.6	70 - 114	17.65	2.68	20	
2,2-Dichloropropane	17.17	1.0	20	0	85.8	70 - 130	17.24	0.39	20	
2-Butanone	30.94	2.0	40	0	77.3	70 - 130	31.35	1.34	20	
2-Chlorotoluene	19.36	1.0	20	0	96.8	70 - 130	19.01	1.84	20	
2-Hexanone	31.62	2.0	40	0	79.1	70 - 130	31.24	1.2	20	
4-Chlorotoluene	19.41	1.0	20	0	97.1	70 - 130	19.13	1.49	20	
4-Isopropyltoluene	16.7	1.0	20	0	83.5	70 - 130	16.39	1.85	20	
4-Methyl-2-pentanone	32.83	2.0	40	0	82.1	70 - 130	32.28	1.69	20	
Acetone	30.82	2.0	40	0	77.1	70 - 130	31.02	0.644	20	
Benzene	18.57	1.0	20	0	92.9	70 - 127	18.78	1.12	20	
Bromobenzene	18.42	1.0	20	0	92.1	70 - 115	17.97	2.5	20	
Bromochloromethane	18.71	1.0	20	0	93.5	70 - 127	19.29	3.06	20	
Bromodichloromethane	19.08	1.0	20	0	95.4	70 - 124	19.22	0.746	20	
Bromoform	18.27	1.0	20	0	91.3	70 - 129	18.75	2.58	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18081065-03MSD** Units: **ug/L** Analysis Date: **24-Aug-2018 04:55**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703918** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	20.8	1.0	20	0	104	70 - 130	21.47	3.17	20	
Carbon disulfide	36.96	2.0	40	0	92.4	70 - 130	38.21	3.31	20	
Carbon tetrachloride	20.35	1.0	20	0	102	70 - 130	21.56	5.79	20	
Chlorobenzene	18.74	1.0	20	0	93.7	70 - 114	19.36	3.21	20	
Chloroethane	17.72	1.0	20	0	88.6	70 - 130	18.23	2.86	20	
Chloroform	17.68	1.0	20	0	88.4	70 - 125	18.37	3.84	20	
Chloromethane	15.75	1.0	20	0	78.7	70 - 130	15.91	1.04	20	
cis-1,2-Dichloroethene	18.49	1.0	20	0	92.5	70 - 128	18.6	0.57	20	
cis-1,3-Dichloropropene	19.36	1.0	20	0	96.8	70 - 125	19.17	1.01	20	
Dibromochloromethane	18.58	1.0	20	0	92.9	70 - 124	18.8	1.18	20	
Dibromomethane	19.92	1.0	20	0	99.6	70 - 124	19.19	3.73	20	
Dichlorodifluoromethane	19.28	1.0	20	0	96.4	70 - 130	20.55	6.35	20	
Ethylbenzene	20.41	1.0	20	0	102	70 - 124	21.13	3.48	20	
Hexachlorobutadiene	18.49	1.0	20	0	92.5	70 - 130	18.48	0.0762	20	
Isopropylbenzene	18.94	1.0	20	0	94.7	70 - 130	19.23	1.53	20	
m,p-Xylene	40.59	2.0	40	0	101	70 - 130	42.01	3.43	20	
Methylene chloride	18.07	2.0	20	0	90.4	70 - 128	17.69	2.13	20	
Naphthalene	16.05	1.0	20	0	80.2	70 - 130	15.1	6.05	20	
n-Butylbenzene	17.36	1.0	20	0	86.8	70 - 130	17.16	1.16	20	
n-Propylbenzene	19.69	1.0	20	0	98.4	70 - 130	19.37	1.6	20	
o-Xylene	20.1	1.0	20	0	101	70 - 124	20.42	1.55	20	
sec-Butylbenzene	17.72	1.0	20	0	88.6	70 - 130	17.54	0.995	20	
Styrene	18.93	1.0	20	0	94.6	70 - 130	19.3	1.93	20	
tert-Butylbenzene	20.28	1.0	20	0	101	70 - 130	20.34	0.28	20	
Tetrachloroethene	19.31	1.0	20	0	96.5	70 - 130	19.5	0.999	20	
Toluene	18.33	1.0	20	0	91.7	70 - 123	18.75	2.27	20	
trans-1,2-Dichloroethene	19.46	1.0	20	0	97.3	70 - 130	18.84	3.24	20	
trans-1,3-Dichloropropene	19.87	1.0	20	0	99.3	70 - 121	19.63	1.22	20	
Trichloroethene	19.64	1.0	20	0	98.2	70 - 129	20.02	1.95	20	
Trichlorofluoromethane	18.99	1.0	20	0	95.0	70 - 130	19.71	3.73	20	
Vinyl chloride	18.54	1.0	20	0	92.7	70 - 130	19.57	5.42	20	
Surr: 1,2-Dichloroethane-d4	*46.34*	*1.0*	*50*	*0*	*92.7*	*70 - 126*	*46.39*	*0.117*	*20*	
Surr: 4-Bromofluorobenzene	*50.52*	*1.0*	*50*	*0*	*101*	*81 - 113*	*51.13*	*1.22*	*20*	
Surr: Dibromofluoromethane	*48.14*	*1.0*	*50*	*0*	*96.3*	*77 - 123*	*47.36*	*1.63*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: HS18081064

QC BATCH REPORT

Batch ID: R322280 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18081065-03MSD** Units: **ug/L** Analysis Date: **24-Aug-2018 04:55**
Client ID: Run ID: **VOA2_322280** SeqNo: **4703918** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*44.45*	*1.0*	*50*	*0*	*88.9*	*82 - 127*	*44.7*	*0.579*	*20*	

The following samples were analyzed in this batch:

HS18081064-01	HS18081064-02	HS18081064-03	HS18081064-04
HS18081064-05	HS18081064-06	HS18081064-07	HS18081064-08
HS18081064-09	HS18081064-10	HS18081064-11	HS18081064-12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 24-Aug-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37
WorkOrder: **HS18081064**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 24-Aug-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

00919779

Date: 24-Aug-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18081064

Date/Time Received: **22-Aug-2018 08:50**
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 22-Aug-2018 Date

Reviewed by: *RJ Modashia* eSignature — 22-Aug-2018 Date

Matrices: **Water**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.2c/0.8c U/C	IR11	
Cooler(s)/Kit(s):	43902		
Date/Time sample(s) sent to storage:	8/22/18 12:10		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: 37-AUG2018-GW-ALSHT-1808 TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name	Longhorn AAP	Lab Name	ALS Laboratories	Email Invoice To	FedInvoices@CBIFederalServices.com
Project Number	501032	Lab Contact	RJ Modashia		
	LHAAP-37	Email	RJ.Modashia@alsglobal.com	Email Report To	Sharon Pennington@CBIFederalServices.com
Address	1203-B East Grand Avenue	Address	10450 Stancliff Rd., Suite 210	Mail Reports To	Sharon Pennington
	PMB 202			Address	2410 Cherahala Blvd.
City	Marshall State TX	City	Houston State TX	City	Knoxville State TN
Postal Code	75670 Country USA	Postal Code	77099 Country USA	Postal Code	37932 Country USA
Phone Number	713.243.7264	Phone Number	281.575.2279 or 281.530.5656		
Project Manager	Praveen Srivastav			Shipping Company	

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1
35BWW20-180820		26.80	27.04		W	8/20/18	0925	3		X				
LHSMW58-180820		25.21	25.43		W	8/20/18	1020	3		X				
35BWW15-180820		24.07	24.26		W	8/20/18	1115	3		X				
35BWW25-180820		27.31	27.53		W	8/20/18	1220	3		X				
35BWW25-180820-FD		27.31	27.53		W	8/20/18	1220	3		X				
35BWW07-180820		28.05	28.28		W	8/20/18	1330	3		X				
35BWW05-180821		24.63	24.85		W	8/21/18	0840	3		X				
35BWW06-180821		25.30	25.50		W	8/21/18	0930	3		X				
35BWW24-180821		29.80	30.02		W	8/21/18	1025	3		X				
35BWW13-180821		25.71	25.92		W	8/21/18	1120	3		X				
35BWW17-180821		23.11	23.35		W	8/21/18	1230	3		X				
TRip BLANK					W	8/21/18		2		X				

HS18081064

Aptim Environmental & Infrastucture, Inc.

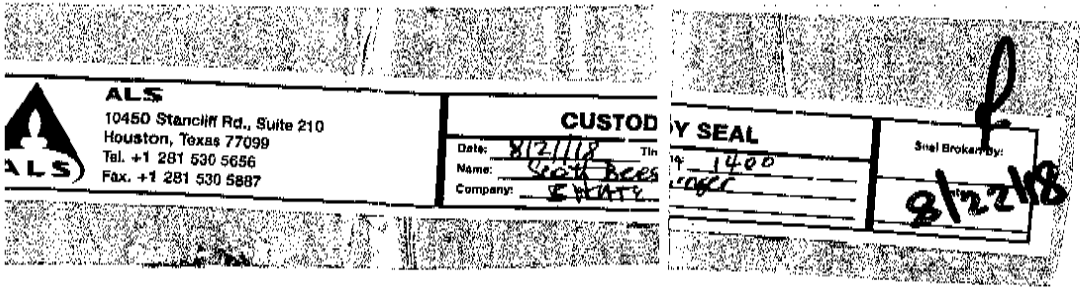
Longhorn Army Ammunition Plant

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Scott Bessinger / BHATE	8/21/18 1400	RG	8-22-18 08:50

43902

Temp ulc 1.2

00919780

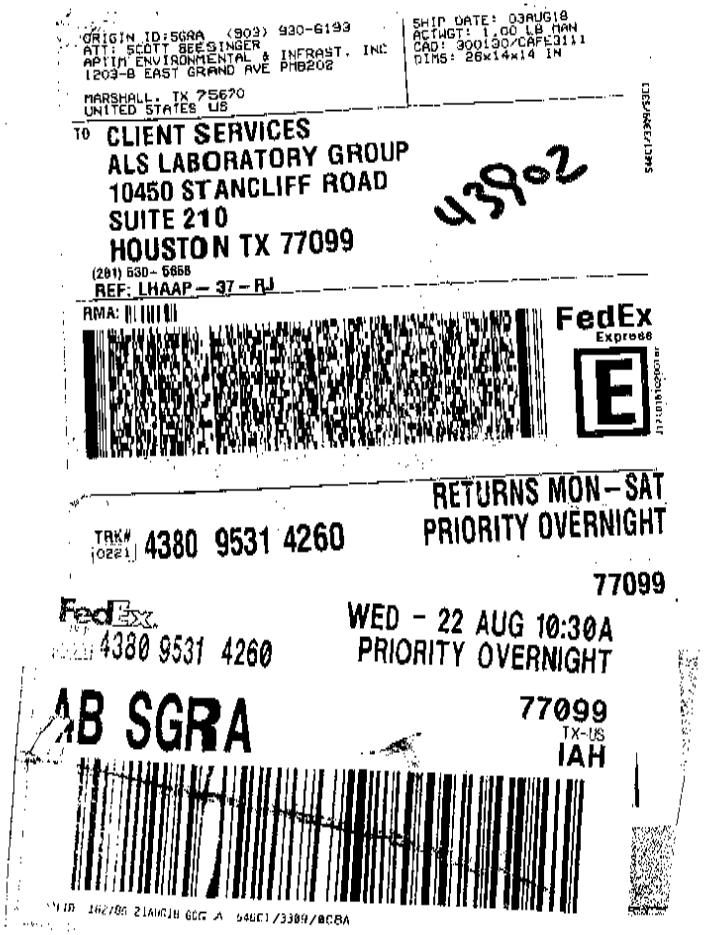


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 8/21/18 Time: 1400
Name: Scott Beesinger
Company: EHATE

Seal Broken By: 8/22/18



ORIGIN ID:SGRA (903) 930-6193
ATT: SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFRAST. INC
1203-B EAST GRAND AVE PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 03AUG18
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3111
DIMS: 26x14x14 IN

TO CLIENT SERVICES
ALS LABORATORY GROUP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-37-RJ

43902

RMA:

FedEx Express

E

RETURNS MON-SAT
PRIORITY OVERNIGHT

TRK# 0221 4380 9531 4260

77099

FedEx
4380 9531 4260

WED - 22 AUG 10:30A
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

00919781

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

September 07, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18081130**

Laboratory Results for: **Longhorn Army Ammunition Plant / LHAAP-37**

Dear Sharon,

ALS Environmental received 8 sample(s) on Aug 23, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Work Order: HS18081130

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18081130-01	35BWW08-180822	Water		22-Aug-2018 08:25	23-Aug-2018 08:50	☐
HS18081130-02	35BWW26-180822	Water		22-Aug-2018 09:20	23-Aug-2018 08:50	☐
HS18081130-03	35BWW04-180822	Water		22-Aug-2018 10:20	23-Aug-2018 08:50	☐
HS18081130-04	35BWW12-180822	Water		22-Aug-2018 11:55	23-Aug-2018 08:50	☐
HS18081130-05	35BWW12-180822-FD	Water		22-Aug-2018 11:55	23-Aug-2018 08:50	☐
HS18081130-06	35BWW14-180822	Water		22-Aug-2018 13:20	23-Aug-2018 08:50	☐
HS18081130-07	35BWW23-180822	Water		22-Aug-2018 14:15	23-Aug-2018 08:50	☐
HS18081130-08	37TB03-180822	Water	ALS-080318-6	22-Aug-2018 00:00	23-Aug-2018 08:50	☐

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant / LHAAP-37
Work Order:

Work Order Comments

• The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R322367

Sample ID: 35BWW04-180822 (HS18081130-03MS)

• Some compounds outside the control limits on the MS/MSD

Sample ID: VLCSW-180824

• trans-1,3-Dichloropropene exceeded %recovery limits on LCS. Samples in the batch are ND.

WetChemistry by Method SW9060

Batch ID: R322499

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R322396,R322506

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW08-180822 Lab ID:HS18081130-01
Collection Date: 22-Aug-2018 08:25 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 14:06
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 14:06
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 14:06
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 14:06
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 14:06
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW08-180822
Collection Date: 22-Aug-2018 08:25

ANALYTICAL REPORT
WorkOrder:HS18081130
Lab ID:HS18081130-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 14:06
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 14:06
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:06
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:06
Surr: 1,2-Dichloroethane-d4	*88.8*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 14:06*
Surr: 4-Bromofluorobenzene	*97.8*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 14:06*
Surr: Dibromofluoromethane	*93.0*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 14:06*
Surr: Toluene-d8	*92.0*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 14:06*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**10.3**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 20:04
Nitrogen, Nitrate (As N)	**0.311**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-Aug-2018 20:04
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 20:04
Sulfate	**64.4**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 20:04
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.854**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	25-Aug-2018 23:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18081130
Sample ID:	35BWW08-180822	Lab ID:HS18081130-01
Collection Date:	22-Aug-2018 08:25	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Sep-2018 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW26-180822 Lab ID:HS18081130-02
Collection Date: 22-Aug-2018 09:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 14:31
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 14:31
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 14:31
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 14:31
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 14:31
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW26-180822
Collection Date: 22-Aug-2018 09:20

ANALYTICAL REPORT
WorkOrder:HS18081130
Lab ID:HS18081130-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 14:31
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 14:31
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:31
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:31
Surr: 1,2-Dichloroethane-d4	*89.6*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 14:31*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 14:31*
Surr: Dibromofluoromethane	*93.8*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 14:31*
Surr: Toluene-d8	*91.9*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 14:31*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**30.3**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 20:18
Nitrogen, Nitrate (As N)	**0.0360**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-Aug-2018 20:18
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 20:18
Sulfate	**27.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 20:18
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.865**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	25-Aug-2018 23:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18081130
Sample ID:	35BWW26-180822	Lab ID:HS18081130-02
Collection Date:	22-Aug-2018 09:20	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Sep-2018 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW04-180822 Lab ID:HS18081130-03
Collection Date: 22-Aug-2018 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 12:03
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 12:03
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 12:03
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 12:03
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 12:03
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW04-180822
Collection Date: 22-Aug-2018 10:20

ANALYTICAL REPORT
WorkOrder:HS18081130
Lab ID:HS18081130-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 12:03
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 12:03
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 12:03
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Tetrachloroethene	**2.2**		**0.30**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 12:03
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 12:03
Surr: 1,2-Dichloroethane-d4	*90.0*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 12:03*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 12:03*
Surr: Dibromofluoromethane	*96.4*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 12:03*
Surr: Toluene-d8	*91.8*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 12:03*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**3.78**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 20:33
Nitrogen, Nitrate (As N)	**0.0490**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-Aug-2018 20:33
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 20:33
Sulfate	**26.5**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 20:33
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**1.73**		**0.500**	**0.600**	**1.00**	**mg/L**	1	25-Aug-2018 23:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18081130
Sample ID:	35BWW04-180822	Lab ID:HS18081130-03
Collection Date:	22-Aug-2018 10:20	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Sep-2018 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW12-180822 Lab ID:HS18081130-04
Collection Date: 22-Aug-2018 11:55 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 14:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 14:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 14:55
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 14:55
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 14:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW12-180822 Lab ID:HS18081130-04
Collection Date: 22-Aug-2018 11:55 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 14:55
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 14:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 14:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Tetrachloroethene	**7.3**		**0.30**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 14:55
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 14:55
Surr: 1,2-Dichloroethane-d4	*90.8*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 14:55*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 14:55*
Surr: Dibromofluoromethane	*94.6*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 14:55*
Surr: Toluene-d8	*93.7*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 14:55*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**8.40**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 21:16
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 21:16
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 21:16
Sulfate	**47.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 21:16
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.754**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	26-Aug-2018 01:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18081130
Sample ID:	35BWW12-180822	Lab ID:HS18081130-04
Collection Date:	22-Aug-2018 11:55	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Sep-2018 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW12-180822-FD Lab ID:HS18081130-05
Collection Date: 22-Aug-2018 11:55 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 15:20
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 15:20
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 15:20
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 15:20
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 15:20
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW12-180822-FD Lab ID:HS18081130-05
Collection Date: 22-Aug-2018 11:55 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 15:20
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 15:20
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:20
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Tetrachloroethene	**7.6**		**0.30**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 15:20
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:20
Surr: 1,2-Dichloroethane-d4	*90.2*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 15:20*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 15:20*
Surr: Dibromofluoromethane	*95.2*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 15:20*
Surr: Toluene-d8	*93.7*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 15:20*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**8.14**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 21:31
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 21:31
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 21:31
Sulfate	**44.8**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 21:31
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.851**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	26-Aug-2018 01:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18081130
Sample ID:	35BWW12-180822-FD	Lab ID:HS18081130-05
Collection Date:	22-Aug-2018 11:55	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Sep-2018 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW14-180822 Lab ID:HS18081130-06
Collection Date: 22-Aug-2018 13:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,1,2-Trichlor-1,2,2-trifluoroethane	**8.4**		**0.50**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 15:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,1-Dichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 15:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 15:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 15:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 15:44
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 15:44
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 15:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW14-180822 Lab ID:HS18081130-06
Collection Date: 22-Aug-2018 13:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
cis-1,2-Dichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 15:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 15:44
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 15:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 15:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Tetrachloroethene	**31**		**0.30**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 15:44
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Trichloroethene	**12**		**0.20**	**0.50**	**1.0**	**ug/L**	1	24-Aug-2018 15:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 15:44
Surr: 1,2-Dichloroethane-d4	*90.8*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 15:44*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 15:44*
Surr: Dibromofluoromethane	*96.0*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 15:44*
Surr: Toluene-d8	*93.7*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 15:44*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**10.0**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 21:46
Nitrogen, Nitrate (As N)	**0.423**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-Aug-2018 21:46
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 21:46
Sulfate	**52.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 21:46
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.961**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	26-Aug-2018 01:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18081130
Sample ID:	35BWW14-180822	Lab ID:HS18081130-06
Collection Date:	22-Aug-2018 13:20	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Sep-2018 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 35BWW23-180822 Lab ID:HS18081130-07
Collection Date: 22-Aug-2018 14:15 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 16:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 16:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 16:09
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 16:09
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 16:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW23-180822
Collection Date: 22-Aug-2018 14:15

ANALYTICAL REPORT
WorkOrder:HS18081130
Lab ID:HS18081130-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 16:09
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 16:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 16:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 16:09
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 16:09*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 16:09*
Surr: Dibromofluoromethane	*95.6*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 16:09*
Surr: Toluene-d8	*91.9*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 16:09*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**58.1**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-Aug-2018 22:00
Nitrogen, Nitrate (As N)	**0.104**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-Aug-2018 22:00
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-Aug-2018 22:00
Sulfate	**102**		**0.400**	**1.00**	**1.00**	**mg/L**	2	27-Aug-2018 13:51
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**1.16**		**0.500**	**0.600**	**1.00**	**mg/L**	1	26-Aug-2018 02:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW23-180822
Collection Date: 22-Aug-2018 14:15

ANALYTICAL REPORT
WorkOrder:HS18081130
Lab ID:HS18081130-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	07-Sep-2018 16:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 37TB03-180822 Lab ID:HS18081130-08
Collection Date: 22-Aug-2018 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 11:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 11:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	24-Aug-2018 11:39
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	24-Aug-2018 11:39
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	24-Aug-2018 11:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18081130
Sample ID: 37TB03-180822 Lab ID:HS18081130-08
Collection Date: 22-Aug-2018 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	24-Aug-2018 11:39
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	24-Aug-2018 11:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	24-Aug-2018 11:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	24-Aug-2018 11:39
Surr: 1,2-Dichloroethane-d4	*89.7*			**0**	*70-126*	*%REC*	*1*	*24-Aug-2018 11:39*
Surr: 4-Bromofluorobenzene	*97.3*			**0**	*81-113*	*%REC*	*1*	*24-Aug-2018 11:39*
Surr: Dibromofluoromethane	*98.1*			**0**	*77-123*	*%REC*	*1*	*24-Aug-2018 11:39*
Surr: Toluene-d8	*91.1*			**0**	*82-127*	*%REC*	*1*	*24-Aug-2018 11:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R322367	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18081130-01	35BWW08-180822	22 Aug 2018 08:25			24 Aug 2018 14:06	1
HS18081130-02	35BWW26-180822	22 Aug 2018 09:20			24 Aug 2018 14:31	1
HS18081130-03	35BWW04-180822	22 Aug 2018 10:20			24 Aug 2018 12:03	1
HS18081130-04	35BWW12-180822	22 Aug 2018 11:55			24 Aug 2018 14:55	1
HS18081130-05	35BWW12-180822-FD	22 Aug 2018 11:55			24 Aug 2018 15:20	1
HS18081130-06	35BWW14-180822	22 Aug 2018 13:20			24 Aug 2018 15:44	1
HS18081130-07	35BWW23-180822	22 Aug 2018 14:15			24 Aug 2018 16:09	1
HS18081130-08	37TB03-180822	22 Aug 2018 00:00			24 Aug 2018 11:39	1
Batch ID R322396	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS18081130-01	35BWW08-180822	22 Aug 2018 08:25			23 Aug 2018 20:04	1
HS18081130-02	35BWW26-180822	22 Aug 2018 09:20			23 Aug 2018 20:18	1
HS18081130-03	35BWW04-180822	22 Aug 2018 10:20			23 Aug 2018 20:33	1
HS18081130-04	35BWW12-180822	22 Aug 2018 11:55			23 Aug 2018 21:16	1
HS18081130-05	35BWW12-180822-FD	22 Aug 2018 11:55			23 Aug 2018 21:31	1
HS18081130-06	35BWW14-180822	22 Aug 2018 13:20			23 Aug 2018 21:46	1
HS18081130-07	35BWW23-180822	22 Aug 2018 14:15			23 Aug 2018 22:00	1
Batch ID R322499	**Test Name :** TOTAL ORGANIC CARBON BY SW9060A			**Matrix:** Water		
HS18081130-01	35BWW08-180822	22 Aug 2018 08:25			25 Aug 2018 23:23	1
HS18081130-02	35BWW26-180822	22 Aug 2018 09:20			25 Aug 2018 23:40	1
HS18081130-03	35BWW04-180822	22 Aug 2018 10:20			25 Aug 2018 23:58	1
HS18081130-04	35BWW12-180822	22 Aug 2018 11:55			26 Aug 2018 01:24	1
HS18081130-05	35BWW12-180822-FD	22 Aug 2018 11:55			26 Aug 2018 01:42	1
HS18081130-06	35BWW14-180822	22 Aug 2018 13:20			26 Aug 2018 01:59	1
HS18081130-07	35BWW23-180822	22 Aug 2018 14:15			26 Aug 2018 02:16	1
Batch ID R322506	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS18081130-07	35BWW23-180822	22 Aug 2018 14:15			27 Aug 2018 13:51	2
Batch ID R323059	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Water		
HS18081130-01	35BWW08-180822	22 Aug 2018 08:25			07 Sep 2018 16:20	1
HS18081130-02	35BWW26-180822	22 Aug 2018 09:20			07 Sep 2018 16:20	1
HS18081130-03	35BWW04-180822	22 Aug 2018 10:20			07 Sep 2018 16:20	1
HS18081130-04	35BWW12-180822	22 Aug 2018 11:55			07 Sep 2018 16:20	1
HS18081130-05	35BWW12-180822-FD	22 Aug 2018 11:55			07 Sep 2018 16:20	1
HS18081130-06	35BWW14-180822	22 Aug 2018 13:20			07 Sep 2018 16:20	1
HS18081130-07	35BWW23-180822	22 Aug 2018 14:15			07 Sep 2018 16:20	1

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180824** Units: **ug/L** Analysis Date: **24-Aug-2018 11:14**
Client ID: Run ID: **VOA2_322367** SeqNo: **4705279** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180824** Units: **ug/L** Analysis Date: **24-Aug-2018 11:14**
Client ID: Run ID: **VOA2_322367** SeqNo: **4705279** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*43.89*	*1.0*	*50*	*0*	*87.8*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.21*	*1.0*	*50*	*0*	*98.4*	*82 - 115*				
Surr: Dibromofluoromethane	*47.61*	*1.0*	*50*	*0*	*95.2*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180824** Units: **ug/L** Analysis Date: **24-Aug-2018 11:14**
Client ID: Run ID: **VOA2_322367** SeqNo: **4705279** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*46.34*	*1.0*	*50*	*0*	*92.7*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180824** Units: **ug/L** Analysis Date: **24-Aug-2018 10:50**
Client ID: Run ID: **VOA2_322367** SeqNo: **4705278** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	21.21	1.0	20	0	106	77 - 118				
1,1,1-Trichloroethane	19.55	1.0	20	0	97.7	70 - 130				
1,1,2,2-Tetrachloroethane	18.56	1.0	20	0	92.8	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	23.82	1.0	20	0	119	70 - 130				
1,1,2-Trichloroethane	20.32	1.0	20	0	102	77 - 113				
1,1-Dichloroethane	19.65	1.0	20	0	98.2	71 - 122				
1,1-Dichloroethene	20.48	1.0	20	0	102	70 - 130				
1,1-Dichloropropene	22.92	1.0	20	0	115	78 - 118				
1,2,3-Trichlorobenzene	20.47	1.0	20	0	102	70 - 130				
1,2,3-Trichloropropane	18.64	1.0	20	0	93.2	70 - 127				
1,2,4-Trichlorobenzene	21.54	1.0	20	0	108	77 - 126				
1,2,4-Trimethylbenzene	21.08	1.0	20	0	105	73 - 121				
1,2-Dibromo-3-chloropropane	18.18	1.0	20	0	90.9	70 - 130				
1,2-Dibromoethane	21.51	1.0	20	0	108	76 - 123				
1,2-Dichlorobenzene	20.26	1.0	20	0	101	77 - 113				
1,2-Dichloroethane	20.78	1.0	20	0	104	70 - 124				
1,2-Dichloropropane	21.31	1.0	20	0	107	72 - 119				
1,3,5-Trimethylbenzene	19.95	1.0	20	0	99.7	75 - 118				
1,3-Dichlorobenzene	20.41	1.0	20	0	102	78 - 118				
1,3-Dichloropropane	20.48	1.0	20	0	102	75 - 116				
1,4-Dichlorobenzene	20.38	1.0	20	0	102	79 - 113				
2,2-Dichloropropane	23.72	1.0	20	0	119	70 - 130				
2-Butanone	37.88	2.0	40	0	94.7	70 - 130				
2-Chlorotoluene	21.89	1.0	20	0	109	70 - 128				
2-Hexanone	38.63	2.0	40	0	96.6	70 - 130				
4-Chlorotoluene	21.85	1.0	20	0	109	74 - 126				
4-Isopropyltoluene	19.63	1.0	20	0	98.2	74 - 126				
4-Methyl-2-pentanone	39.45	2.0	40	0	98.6	70 - 130				
Acetone	35.97	2.0	40	0	89.9	70 - 130				
Benzene	20.84	1.0	20	0	104	74 - 120				
Bromobenzene	20.23	1.0	20	0	101	78 - 113				
Bromochloromethane	21.53	1.0	20	0	108	76 - 124				
Bromodichloromethane	21.72	1.0	20	0	109	74 - 122				
Bromoform	21.43	1.0	20	0	107	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180824** Units: **ug/L** Analysis Date: **24-Aug-2018 10:50**
Client ID: Run ID: **VOA2_322367** SeqNo: **4705278** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	22.66	1.0	20	0	113	70 - 130				
Carbon disulfide	41.16	2.0	40	0	103	70 - 130				
Carbon tetrachloride	24.17	1.0	20	0	121	71 - 125				
Chlorobenzene	21.17	1.0	20	0	106	76 - 113				
Chloroethane	17.93	1.0	20	0	89.7	70 - 130				
Chloroform	19.57	1.0	20	0	97.8	71 - 121				
Chloromethane	19.19	1.0	20	0	95.9	70 - 129				
cis-1,2-Dichloroethene	20.83	1.0	20	0	104	75 - 122				
cis-1,3-Dichloropropene	23.13	1.0	20	0	116	73 - 127				
Dibromochloromethane	21.23	1.0	20	0	106	77 - 122				
Dibromomethane	21.68	1.0	20	0	108	78 - 121				
Dichlorodifluoromethane	23.53	1.0	20	0	118	70 - 130				
Ethylbenzene	23.13	1.0	20	0	116	77 - 117				
Hexachlorobutadiene	22.17	1.0	20	0	111	70 - 130				
Isopropylbenzene	21.28	1.0	20	0	106	73 - 127				
m,p-Xylene	47.38	2.0	40	0	118	77 - 122				
Methylene chloride	20.47	2.0	20	0	102	70 - 127				
Naphthalene	19.6	1.0	20	0	98.0	70 - 130				
n-Butylbenzene	20.53	1.0	20	0	103	72 - 130				
n-Propylbenzene	22.32	1.0	20	0	112	73 - 124				
o-Xylene	22.84	1.0	20	0	114	75 - 119				
sec-Butylbenzene	19.91	1.0	20	0	99.6	73 - 128				
Styrene	22.14	1.0	20	0	111	72 - 126				
tert-Butylbenzene	22.54	1.0	20	0	113	73 - 124				
Tetrachloroethene	21.98	1.0	20	0	110	76 - 119				
Toluene	20.27	1.0	20	0	101	77 - 118				
trans-1,2-Dichloroethene	21.32	1.0	20	0	107	72 - 127				
trans-1,3-Dichloropropene	24.25	1.0	20	0	121	77 - 119				S
Trichloroethene	22.59	1.0	20	0	113	77 - 121				
Trichlorofluoromethane	19.33	1.0	20	0	96.7	70 - 130				
Vinyl chloride	19.45	1.0	20	0	97.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*45.48*	*1.0*	*50*	*0*	*91.0*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.71*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*46.66*	*1.0*	*50*	*0*	*93.3*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180824** Units: **ug/L** Analysis Date: **24-Aug-2018 10:50**
Client ID: Run ID: **VOA2_322367** SeqNo: **4705278** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*44.3*	*1.0*	*50*	*0*	*88.6*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18081130-03MS** Units: **ug/L** Analysis Date: **24-Aug-2018 12:28**
Client ID: **35BWW04-180822** Run ID: **VOA2_322367** SeqNo: **4705282** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	17.4	1.0	20	0	87.0	70 - 120				
1,1,1-Trichloroethane	16.12	1.0	20	0	80.6	70 - 130				
1,1,2,2-Tetrachloroethane	15.14	1.0	20	0	75.7	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	18.45	1.0	20	0	92.3	70 - 130				
1,1,2-Trichloroethane	17.01	1.0	20	0	85.0	70 - 117				
1,1-Dichloroethane	15.96	1.0	20	0	79.8	70 - 127				
1,1-Dichloroethene	15.79	1.0	20	0	79.0	70 - 130				
1,1-Dichloropropene	18.59	1.0	20	0	92.9	70 - 129				
1,2,3-Trichlorobenzene	14.96	1.0	20	0	74.8	70 - 130				
1,2,3-Trichloropropane	15.17	1.0	20	0	75.8	70 - 130				
1,2,4-Trichlorobenzene	14.72	1.0	20	0	73.6	70 - 125				
1,2,4-Trimethylbenzene	15.88	1.0	20	0	79.4	70 - 125				
1,2-Dibromo-3-chloropropane	13.6	1.0	20	0	68.0	70 - 130				S
1,2-Dibromoethane	17.69	1.0	20	0	88.5	70 - 124				
1,2-Dichlorobenzene	15.84	1.0	20	0	79.2	70 - 115				
1,2-Dichloroethane	16.99	1.0	20	0	85.0	70 - 127				
1,2-Dichloropropane	17.37	1.0	20	0	86.8	70 - 122				
1,3,5-Trimethylbenzene	15.1	1.0	20	0	75.5	70 - 126				
1,3-Dichlorobenzene	16.22	1.0	20	0	81.1	70 - 119				
1,3-Dichloropropane	16.59	1.0	20	0	82.9	70 - 121				
1,4-Dichlorobenzene	16.2	1.0	20	0	81.0	70 - 114				
2,2-Dichloropropane	19.58	1.0	20	0	97.9	70 - 130				
2-Butanone	31.45	2.0	40	0	78.6	70 - 130				
2-Chlorotoluene	16.72	1.0	20	0	83.6	70 - 130				
2-Hexanone	33.08	2.0	40	0	82.7	70 - 130				
4-Chlorotoluene	17	1.0	20	0	85.0	70 - 130				
4-Isopropyltoluene	14.87	1.0	20	0	74.3	70 - 130				
4-Methyl-2-pentanone	32.98	2.0	40	0	82.4	70 - 130				
Acetone	28.84	2.0	40	0	72.1	70 - 130				
Benzene	17.08	1.0	20	0	85.4	70 - 127				
Bromobenzene	15.94	1.0	20	0	79.7	70 - 115				
Bromochloromethane	17.02	1.0	20	0	85.1	70 - 127				
Bromodichloromethane	17.33	1.0	20	0	86.6	70 - 124				
Bromoform	17.49	1.0	20	0	87.4	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18081130-03MS** Units: **ug/L** Analysis Date: **24-Aug-2018 12:28**
Client ID: **35BWW04-180822** Run ID: **VOA2_322367** SeqNo: **4705282** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	17.4	1.0	20	0	87.0	70 - 130				
Carbon disulfide	33.99	2.0	40	0	85.0	70 - 130				
Carbon tetrachloride	16.9	1.0	20	0	84.5	70 - 130				
Chlorobenzene	17.26	1.0	20	0	86.3	70 - 114				
Chloroethane	13.93	1.0	20	0	69.6	70 - 130				S
Chloroform	16.19	1.0	20	0	81.0	70 - 125				
Chloromethane	13.73	1.0	20	0	68.6	70 - 130				S
cis-1,2-Dichloroethene	16.44	1.0	20	0	82.2	70 - 128				
cis-1,3-Dichloropropene	18.77	1.0	20	0	93.8	70 - 125				
Dibromochloromethane	17.34	1.0	20	0	86.7	70 - 124				
Dibromomethane	17.84	1.0	20	0	89.2	70 - 124				
Dichlorodifluoromethane	13.3	1.0	20	0	66.5	70 - 130				S
Ethylbenzene	18.28	1.0	20	0	91.4	70 - 124				
Hexachlorobutadiene	15.87	1.0	20	0	79.3	70 - 130				
Isopropylbenzene	16.97	1.0	20	0	84.9	70 - 130				
m,p-Xylene	37.42	2.0	40	0	93.5	70 - 130				
Methylene chloride	15.66	2.0	20	0	78.3	70 - 128				
Naphthalene	14.34	1.0	20	0	71.7	70 - 130				
n-Butylbenzene	15.67	1.0	20	0	78.3	70 - 130				
n-Propylbenzene	17.02	1.0	20	0	85.1	70 - 130				
o-Xylene	18.22	1.0	20	0	91.1	70 - 124				
sec-Butylbenzene	15.49	1.0	20	0	77.5	70 - 130				
Styrene	17.74	1.0	20	0	88.7	70 - 130				
tert-Butylbenzene	17.04	1.0	20	0	85.2	70 - 130				
Tetrachloroethene	19.09	1.0	20	2.202	84.4	70 - 130				
Toluene	16.75	1.0	20	0	83.8	70 - 123				
trans-1,2-Dichloroethene	17	1.0	20	0	85.0	70 - 130				
trans-1,3-Dichloropropene	19.34	1.0	20	0	96.7	70 - 121				
Trichloroethene	18.17	1.0	20	0	90.9	70 - 129				
Trichlorofluoromethane	15.02	1.0	20	0	75.1	70 - 130				
Vinyl chloride	13.82	1.0	20	0	69.1	70 - 130				S
Surr: 1,2-Dichloroethane-d4	*45.49*	*1.0*	*50*	*0*	*91.0*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.01*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*46.72*	*1.0*	*50*	*0*	*93.4*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18081130-03MS** Units: **ug/L** Analysis Date: **24-Aug-2018 12:28**
Client ID: **35BWW04-180822** Run ID: **VOA2_322367** SeqNo: **4705282** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*44.44*	*1.0*	*50*	*0*	*88.9*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18081130-03MSD** Units: **ug/L** Analysis Date: **24-Aug-2018 12:52**
Client ID: **35BWW04-180822** Run ID: **VOA2_322367** SeqNo: **4705283** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	17.3	1.0	20	0	86.5	70 - 120	17.4	0.577	20	
1,1,1-Trichloroethane	15.65	1.0	20	0	78.2	70 - 130	16.12	2.97	20	
1,1,2,2-Tetrachloroethane	15.04	1.0	20	0	75.2	70 - 123	15.14	0.681	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	16.62	1.0	20	0	83.1	70 - 130	18.45	10.4	20	
1,1,2-Trichloroethane	16.97	1.0	20	0	84.8	70 - 117	17.01	0.216	20	
1,1-Dichloroethane	15.62	1.0	20	0	78.1	70 - 127	15.96	2.18	20	
1,1-Dichloroethene	15.66	1.0	20	0	78.3	70 - 130	15.79	0.825	20	
1,1-Dichloropropene	16.84	1.0	20	0	84.2	70 - 129	18.59	9.86	20	
1,2,3-Trichlorobenzene	15.15	1.0	20	0	75.8	70 - 130	14.96	1.3	20	
1,2,3-Trichloropropane	15.42	1.0	20	0	77.1	70 - 130	15.17	1.66	20	
1,2,4-Trichlorobenzene	15	1.0	20	0	75.0	70 - 125	14.72	1.88	20	
1,2,4-Trimethylbenzene	15.89	1.0	20	0	79.4	70 - 125	15.88	0.0372	20	
1,2-Dibromo-3-chloropropane	14.76	1.0	20	0	73.8	70 - 130	13.6	8.23	20	
1,2-Dibromoethane	17.85	1.0	20	0	89.3	70 - 124	17.69	0.906	20	
1,2-Dichlorobenzene	16.06	1.0	20	0	80.3	70 - 115	15.84	1.4	20	
1,2-Dichloroethane	17.44	1.0	20	0	87.2	70 - 127	16.99	2.59	20	
1,2-Dichloropropane	17.15	1.0	20	0	85.8	70 - 122	17.37	1.23	20	
1,3,5-Trimethylbenzene	15.42	1.0	20	0	77.1	70 - 126	15.1	2.11	20	
1,3-Dichlorobenzene	16.6	1.0	20	0	83.0	70 - 119	16.22	2.28	20	
1,3-Dichloropropane	16.94	1.0	20	0	84.7	70 - 121	16.59	2.08	20	
1,4-Dichlorobenzene	16.3	1.0	20	0	81.5	70 - 114	16.2	0.658	20	
2,2-Dichloropropane	19.19	1.0	20	0	95.9	70 - 130	19.58	2.05	20	
2-Butanone	31.99	2.0	40	0	80.0	70 - 130	31.45	1.7	20	
2-Chlorotoluene	16.7	1.0	20	0	83.5	70 - 130	16.72	0.117	20	
2-Hexanone	32.53	2.0	40	0	81.3	70 - 130	33.08	1.67	20	
4-Chlorotoluene	17	1.0	20	0	85.0	70 - 130	17	0.00219	20	
4-Isopropyltoluene	15.02	1.0	20	0	75.1	70 - 130	14.87	0.985	20	
4-Methyl-2-pentanone	33.28	2.0	40	0	83.2	70 - 130	32.98	0.924	20	
Acetone	31.61	2.0	40	0	79.0	70 - 130	28.84	9.17	20	
Benzene	16.77	1.0	20	0	83.8	70 - 127	17.08	1.88	20	
Bromobenzene	16.58	1.0	20	0	82.9	70 - 115	15.94	3.93	20	
Bromochloromethane	17.63	1.0	20	0	88.2	70 - 127	17.02	3.51	20	
Bromodichloromethane	17.44	1.0	20	0	87.2	70 - 124	17.33	0.647	20	
Bromoform	17.37	1.0	20	0	86.8	70 - 129	17.49	0.689	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18081130-03MSD** Units: **ug/L** Analysis Date: **24-Aug-2018 12:52**
Client ID: **35BWW04-180822** Run ID: **VOA2_322367** SeqNo: **4705283** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	16.11	1.0	20	0	80.6	70 - 130	17.4	7.67	20	
Carbon disulfide	33.82	2.0	40	0	84.6	70 - 130	33.99	0.503	20	
Carbon tetrachloride	15.87	1.0	20	0	79.3	70 - 130	16.9	6.3	20	
Chlorobenzene	17.31	1.0	20	0	86.5	70 - 114	17.26	0.293	20	
Chloroethane	13.44	1.0	20	0	67.2	70 - 130	13.93	3.54	20	S
Chloroform	16.3	1.0	20	0	81.5	70 - 125	16.19	0.641	20	
Chloromethane	12.7	1.0	20	0	63.5	70 - 130	13.73	7.74	20	S
cis-1,2-Dichloroethene	17.36	1.0	20	0	86.8	70 - 128	16.44	5.43	20	
cis-1,3-Dichloropropene	18.92	1.0	20	0	94.6	70 - 125	18.77	0.784	20	
Dibromochloromethane	17.07	1.0	20	0	85.4	70 - 124	17.34	1.55	20	
Dibromomethane	17.56	1.0	20	0	87.8	70 - 124	17.84	1.56	20	
Dichlorodifluoromethane	12.66	1.0	20	0	63.3	70 - 130	13.3	4.98	20	S
Ethylbenzene	18.21	1.0	20	0	91.1	70 - 124	18.28	0.363	20	
Hexachlorobutadiene	15.02	1.0	20	0	75.1	70 - 130	15.87	5.44	20	
Isopropylbenzene	16.89	1.0	20	0	84.4	70 - 130	16.97	0.499	20	
m,p-Xylene	36.45	2.0	40	0	91.1	70 - 130	37.42	2.61	20	
Methylene chloride	16.42	2.0	20	0	82.1	70 - 128	15.66	4.72	20	
Naphthalene	14.55	1.0	20	0	72.8	70 - 130	14.34	1.48	20	
n-Butylbenzene	15.4	1.0	20	0	77.0	70 - 130	15.67	1.7	20	
n-Propylbenzene	16.96	1.0	20	0	84.8	70 - 130	17.02	0.341	20	
o-Xylene	18.16	1.0	20	0	90.8	70 - 124	18.22	0.384	20	
sec-Butylbenzene	15.09	1.0	20	0	75.4	70 - 130	15.49	2.66	20	
Styrene	17.38	1.0	20	0	86.9	70 - 130	17.74	2.05	20	
tert-Butylbenzene	16.82	1.0	20	0	84.1	70 - 130	17.04	1.29	20	
Tetrachloroethene	19	1.0	20	2.202	84.0	70 - 130	19.09	0.476	20	
Toluene	16.65	1.0	20	0	83.2	70 - 123	16.75	0.657	20	
trans-1,2-Dichloroethene	15.84	1.0	20	0	79.2	70 - 130	17	7.09	20	
trans-1,3-Dichloropropene	18.66	1.0	20	0	93.3	70 - 121	19.34	3.59	20	
Trichloroethene	17.68	1.0	20	0	88.4	70 - 129	18.17	2.74	20	
Trichlorofluoromethane	14.13	1.0	20	0	70.6	70 - 130	15.02	6.13	20	
Vinyl chloride	14.66	1.0	20	0	73.3	70 - 130	13.82	5.84	20	
Surr: 1,2-Dichloroethane-d4	*46.53*	*1.0*	*50*	*0*	*93.1*	*70 - 126*	*45.49*	*2.26*	*20*	
Surr: 4-Bromofluorobenzene	*51.35*	*1.0*	*50*	*0*	*103*	*81 - 113*	*51.01*	*0.661*	*20*	
Surr: Dibromofluoromethane	*48.01*	*1.0*	*50*	*0*	*96.0*	*77 - 123*	*46.72*	*2.72*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322367 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS18081130-03MSD** Units: **ug/L** Analysis Date: **24-Aug-2018 12:52**
Client ID: **35BWW04-180822** Run ID: **VOA2_322367** SeqNo: **4705283** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*44.93*	*1.0*	*50*	*0*	*89.9*	*82 - 127*	*44.44*	*1.1*	*20*	

The following samples were analyzed in this batch:

HS18081130-01	HS18081130-02	HS18081130-03	HS18081130-04
HS18081130-05	HS18081130-06	HS18081130-07	HS18081130-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322396 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-082318** Units: **mg/L** Analysis Date: **23-Aug-2018 11:16**
Client ID: Run ID: **ICS2100_322396** SeqNo: **4705815** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-082318** Units: **mg/L** Analysis Date: **23-Aug-2018 11:31**
Client ID: Run ID: **ICS2100_322396** SeqNo: **4705816** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.66	0.500	20	0	103	80 - 120				
Nitrogen, Nitrate (As N)	4.071	0.100	4	0	102	80 - 120				
Nitrogen, Nitrite (As N)	4.322	0.100	4	0	108	80 - 120				
Sulfate	20.47	0.500	20	0	102	80 - 120				

LCSD Sample ID: **WLCSDW1-082318** Units: **mg/L** Analysis Date: **23-Aug-2018 11:45**
Client ID: Run ID: **ICS2100_322396** SeqNo: **4705817** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.68	0.500	20	0	103	80 - 120	20.66	0.0774	20	
Nitrogen, Nitrate (As N)	4.085	0.100	4	0	102	80 - 120	4.071	0.343	20	
Nitrogen, Nitrite (As N)	4.324	0.100	4	0	108	80 - 120	4.322	0.0463	20	
Sulfate	20.53	0.500	20	0	103	80 - 120	20.47	0.288	20	

MS Sample ID: **HS18081130-03MS** Units: **mg/L** Analysis Date: **23-Aug-2018 20:47**
Client ID: **35BWW04-180822** Run ID: **ICS2100_322396** SeqNo: **4705840** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	13.91	0.500	10	3.779	101	80 - 120				
Nitrogen, Nitrate (As N)	1.904	0.100	2	0.049	92.8	80 - 120				
Nitrogen, Nitrite (As N)	1.998	0.100	2	0	99.9	80 - 120				
Sulfate	37.4	0.500	10	26.54	109	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322396 **Instrument: ICS2100** **Method: SW9056**

MS Sample ID: **HS18081104-06MS** Units: **mg/L** Analysis Date: **23-Aug-2018 12:14**
Client ID: Run ID: **ICS2100_322396** SeqNo: **4705819** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	85.59	0.500	10	76.57	90.2	80 - 120				O
Nitrogen, Nitrate (As N)	3.17	0.100	2	1.192	98.9	80 - 120				
Nitrogen, Nitrite (As N)	2.035	0.100	2	-0.016	103	80 - 120				
Sulfate	30.96	0.500	10	21.1	98.7	80 - 120				

MSD Sample ID: **HS18081130-03MSD** Units: **mg/L** Analysis Date: **23-Aug-2018 21:02**
Client ID: **35BWW04-180822** Run ID: **ICS2100_322396** SeqNo: **4705841** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	13.97	0.500	10	3.779	102	80 - 120	13.91	0.452	20	
Nitrogen, Nitrate (As N)	1.908	0.100	2	0.049	93.0	80 - 120	1.904	0.21	20	
Nitrogen, Nitrite (As N)	2.009	0.100	2	0	100	80 - 120	1.998	0.549	20	
Sulfate	37.42	0.500	10	26.54	109	80 - 120	37.4	0.0588	20	

MSD Sample ID: **HS18081104-06MSD** Units: **mg/L** Analysis Date: **23-Aug-2018 12:29**
Client ID: Run ID: **ICS2100_322396** SeqNo: **4705820** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	87.35	0.500	10	76.57	108	80 - 120	85.59	2.04	20	O
Nitrogen, Nitrate (As N)	3.225	0.100	2	1.192	102	80 - 120	3.17	1.72	20	
Nitrogen, Nitrite (As N)	2.081	0.100	2	-0.016	105	80 - 120	2.035	2.24	20	
Sulfate	31.42	0.500	10	21.1	103	80 - 120	30.96	1.47	20	

The following samples were analyzed in this batch: HS18081130-01 HS18081130-02 HS18081130-03 HS18081130-04 HS18081130-05 HS18081130-06 HS18081130-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322499 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **WBLKW2-180825** Units: **mg/L** Analysis Date: **25-Aug-2018 18:43**
Client ID: Run ID: **TOC_02_322499** SeqNo: **4708187** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW2-180825** Units: **mg/L** Analysis Date: **25-Aug-2018 18:58**
Client ID: Run ID: **TOC_02_322499** SeqNo: **4708188** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.43	1.00	10	0	94.3	85 - 115				

LCSD Sample ID: **WLCSDW2-180825** Units: **mg/L** Analysis Date: **25-Aug-2018 19:13**
Client ID: Run ID: **TOC_02_322499** SeqNo: **4708189** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.426	1.00	10	0	94.3	85 - 115	9.43	0.0424	20	

MS Sample ID: **HS18081169-01MS** Units: **mg/L** Analysis Date: **25-Aug-2018 19:44**
Client ID: Run ID: **TOC_02_322499** SeqNo: **4708191** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	38.21	1.00	10	28.43	97.8	80 - 120				

MS Sample ID: **HS18081130-03MS** Units: **mg/L** Analysis Date: **26-Aug-2018 00:15**
Client ID: **35BWW04-180822** Run ID: **TOC_02_322499** SeqNo: **4708207** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.58	1.00	10	1.733	88.5	80 - 120				

MSD Sample ID: **HS18081169-01MSD** Units: **mg/L** Analysis Date: **25-Aug-2018 19:59**
Client ID: Run ID: **TOC_02_322499** SeqNo: **4708192** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	38.32	1.00	10	28.43	98.9	80 - 120	38.21	0.287	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322499 **Instrument: TOC_02** **Method: SW9060**

MSD Sample ID: **HS18081130-03MSD** Units: **mg/L** Analysis Date: **26-Aug-2018 00:32**
Client ID: **35BWW04-180822** Run ID: **TOC_02_322499** SeqNo: **4708208** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.51	1.00	10	1.733	87.8	80 - 120	10.58	0.664	20	

The following samples were analyzed in this batch: HS18081130-01 HS18081130-02 HS18081130-03 HS18081130-04 HS18081130-05 HS18081130-06 HS18081130-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18081130

QC BATCH REPORT

Batch ID: R322506 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-082718** Units: **mg/L** Analysis Date: **27-Aug-2018 12:40**
Client ID: Run ID: **ICS2100_322506** SeqNo: **4708293** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-082718** Units: **mg/L** Analysis Date: **27-Aug-2018 12:54**
Client ID: Run ID: **ICS2100_322506** SeqNo: **4708294** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	19.49	0.500	20	0	97.4	80 - 120				

LCSD Sample ID: **WLCSDW1-082718** Units: **mg/L** Analysis Date: **27-Aug-2018 13:09**
Client ID: Run ID: **ICS2100_322506** SeqNo: **4708295** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	20.2	0.500	20	0	101	80 - 120	19.49	3.56	20	

MS Sample ID: **HS18080943-01MS** Units: **mg/L** Analysis Date: **27-Aug-2018 16:49**
Client ID: Run ID: **ICS2100_322506** SeqNo: **4708301** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	52.73	0.500	10	43.84	88.9	80 - 120				O

MSD Sample ID: **HS18080943-01MSD** Units: **mg/L** Analysis Date: **27-Aug-2018 17:04**
Client ID: Run ID: **ICS2100_322506** SeqNo: **4708302** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	53.02	0.500	10	43.84	91.8	80 - 120	52.73	0.548	20	O

The following samples were analyzed in this batch: HS18081130-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 07-Sep-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: **HS18081130**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019
Kansas	E-10352 2018-2019	31-Jul-2019
Oklahoma	2018-156	31-Aug-2019

Date: 07-Sep-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18081130

Date/Time Received: **23-Aug-2018 08:50**
Received by: **NDR**

Checklist completed by: *Pablo Marinez* eSignature — 23-Aug-2018 Date

Reviewed by: *RJ Modashia* eSignature — 23-Aug-2018 Date

Matrices: **WATER**

Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.6C/2.3C UC/C	IR # 25	
Cooler(s)/Kit(s):	43317		
Date/Time sample(s) sent to storage:	8/23/2018 13:15		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Quantity does not match CoC = 11 bottles Rec'd = 12 bottles

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of _____

COC ID: 37-AUG2018-GW-ALSHT-180822

TURNAROUND TIME: normal

RUSH:

PROJECT/CLIENT INFO		LABORATORY		OTHER INFO	
Facility Name	Longhorn AAP	Lab Name	ALS Laboratories	Email Invoice To	FedInvoices@CBIFederalServices.com
Project Number	501032	Lab Contact	RJ Modashia		
	LHAAP-37	Email	RJ.Modashia@alsglobal.com	Email Report To	Sharon.Pennington@CBIFederalServices.com
Address	1203-B East Grand Avenue	Address	10450 Stancliff Rd., Suite 210	Mail Reports To	Sharon Pennington
	PMB 202			Address	2410 Cherahala Blvd
City	Marshall State TX	City	Houston State TX	City	Knoxville State TN
Postal Code	75670 Country USA	Postal Code	77099 Country USA	Postal Code	37932 Country USA
Phone Number	713 243 7264	Phone Number	281.575.2279 or 281.530.5656		
Project Manager	Praveen Srivastav			Shipping Company	

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1
35BWW08-180822		25.73	25.95		WG	8/22/18	0825	11	X	X	X	X	X
35BWW26-180822		28.07	28.32		WG	8/22/18	0920	11	X	X	X	X	X
35BWW04-180822		24.07	24.30		WG	8/22/18	1020	11	X	X	X	X	X
35BWW04-180822-MS		24.07	24.30		WG	8/22/18	1020	11	X	X	X	X	X
35BWW04-180822-MSD		24.07	24.30		WG	8/22/18	1020	11	X	X	X	X	X
35BWW12-180822		22.96	23.20		WG	8/22/18	1155	11	X	X	X	X	X
35BWW12-180822-FD		22.96	23.20		WG	8/22/18	1155	11	X	X	X	X	X
35BWW14-180822		23.67	23.89		WG	8/22/18	1320	11	X	X	X	X	X
35BWW23-180822		28.86	29.09		WG	8/22/18	1415	11	X	X	X	X	X
Trip Blank					W	8/22/18		2	X				

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant / LHAAP-37

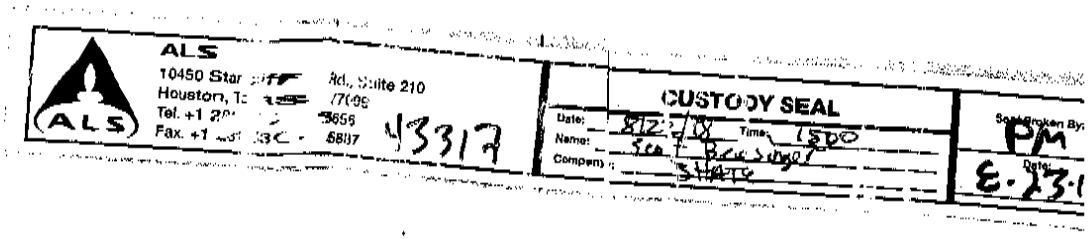
HS18081130

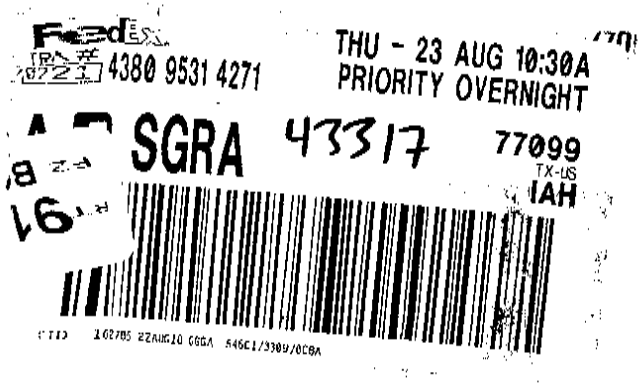
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Scott Bilbeyer / BHATE	8/22/18 1500	NA	8-23-18 07:50

43317

Temp ac - 2.6
KA25 [illegible]

00919829





ALS
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Houston, T[illegible] 77099
Tel. +1 2[illegible] 5656
Fax. +1 [illegible] 5887

43317

CUSTODY SEAL

Date: 8/22/18 Time: 1500
Name: Scott Brassinger
Company: SHATE

Seal Broken By: PM
Date: 8-23-1

FedEx
TRK # 0721 4380 9531 4271

THU - 23 AUG 10:30A
PRIORITY OVERNIGHT

SGRA 43317 77099
TX-US
IAH

91

00919830

LABORATORY REPORT

September 7, 2018

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS18081130

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on August 24, 2018. For your reference, these analyses have been assigned our service request number P1804415.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Kaneko
By Kate Kaneko at 2:02 pm, 09/07/18

Kate Kaneko
Project Manager

Client: ALS Laboratory Group Service Request No: P1804415
Project: HS18081130

CASE NARRATIVE

The samples were received intact under chain of custody on August 24, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The samples labeled "35BWW08-180822", "35BWW26-180822", "35BWW14-180822", and "35BWW23-180822" had a pH of 5. This lower pH may cause a high bias in carbon dioxide.

The recovery for carbon dioxide in the laboratory control sample and its duplicate were low compared to the DOD control limits. However the recoveries were within range of the laboratory generated control limits. The results may be bisased low.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS18081130

Service Request: P1804415

Date Received: 8/24/2018
Time Received: 14:42

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
35BWW08-180822	P1804415-001	Water	8/22/2018	08:25	X	X
35BWW26-180822	P1804415-002	Water	8/22/2018	09:20	X	X
35BWW04-180822	P1804415-003	Water	8/22/2018	10:20	X	X
35BWW12-180822	P1804415-004	Water	8/22/2018	11:55	X	X
35BWW12-180822-FD	P1804415-005	Water	8/22/2018	11:55	X	X
35BWW14-180822	P1804415-006	Water	8/22/2018	13:20	X	X
35BWW23-180822	P1804415-007	Water	8/22/2018	14:15	X	X

P180 4415

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9693

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18081130
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18081130-01**	**35BWW08-180822**	**Water**	**22 Aug 2018 08:25**
	MEE + CO2. DOD IV. Equis EDD			07 Sep 2018
2.	**HS18081130-02**	**35BWW26-180822**	**Water**	**22 Aug 2018 09:20**
	MEE + CO2. DOD IV. Equis EDD			07 Sep 2018
3.	**HS18081130-03**	**35BWW04-180822**	**Water**	**22 Aug 2018 10:20**
	MEE + CO2. DOD IV. Equis EDD			07 Sep 2018
4.	**HS18081130-04**	**35BWW12-180822**	**Water**	**22 Aug 2018 11:55**
	MEE + CO2. DOD IV. Equis EDD			07 Sep 2018
5.	**HS18081130-05**	**35BWW12-180822-FD**	**Water**	**22 Aug 2018 11:55**
	MEE + CO2. DOD IV. Equis EDD			07 Sep 2018
6.	**HS18081130-06**	**35BWW14-180822**	**Water**	**22 Aug 2018 13:20**
	MEE + CO2. DOD IV. Equis EDD			07 Sep 2018
7.	**HS18081130-07**	**35BWW23-180822**	**Water**	**22 Aug 2018 14:15**
	MEE + CO2. DOD IV. Equis EDD			07 Sep 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

P180 4415 00919836

Subcontract Chain of Custody

COC ID: 9693

QC Level: DOD IV (DoD Data Package)

Relinquished By: R G [illegible] Date/Time: 8/23/15 1830

Received By: [illegible] Date/Time: 8/24/15 0930

Cooler ID(s): [illegible] Temperature(s): 2° WET ICE

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1804415

Project: HS18081130

Sample(s) received on: 8/24/18 Date opened: 8/24/18 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C Thermometer ID CO907034581 Wet Ice			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1804415-001.01	40mL VOA NP		6		A	MR 8/29/18
P1804415-001.02	40mL VOA NP				A	
P1804415-001.03	40mL VOA NP				A	
P1804415-001.04	40ml VOA HCL		1		A	MR 8/30/18
P1804415-001.05	40ml VOA HCL				A	
P1804415-001.06	40ml VOA HCL				A	
P1804415-002.01	40mL VOA NP		5		A	MR 8/29/18
P1804415-002.02	40mL VOA NP				A	
P1804415-002.03	40mL VOA NP				A	
P1804415-002.04	40ml VOA HCL		1		A	MR 8/30/18
P1804415-002.05	40ml VOA HCL				A	
P1804415-002.06	40ml VOA HCL				A	
P1804415-003.01	40mL VOA NP		6		A	MR 8/29/18
P1804415-003.02	40mL VOA NP				A	
P1804415-003.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1804415

Project: HS18081130

Sample(s) received on: 8/24/18 Date opened: 8/24/18 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1804415-003.04	40ml VOA HCL		1		A	MR 8/30/18
P1804415-003.05	40ml VOA HCL				A	
P1804415-003.06	40ml VOA HCL				A	
P1804415-003.07	40mL VOA NP				A	
P1804415-003.08	40mL VOA NP				A	
P1804415-003.09	40mL VOA NP				A	
P1804415-003.10	40mL VOA NP				A	
P1804415-003.11	40mL VOA NP				A	
P1804415-003.12	40mL VOA NP				A	
P1804415-003.13	40ml VOA HCL				A	
P1804415-003.14	40ml VOA HCL				A	
P1804415-003.15	40ml VOA HCL				A	
P1804415-003.16	40ml VOA HCL				A	
P1804415-003.17	40ml VOA HCL				A	
P1804415-003.18	40ml VOA HCL				A	
P1804415-004.01	40mL VOA NP		6		A	MR 8/29/18
P1804415-004.02	40mL VOA NP				A	
P1804415-004.03	40mL VOA NP				A	
P1804415-004.04	40ml VOA HCL		1		A	MR 8/30/18
P1804415-004.05	40ml VOA HCL				A	
P1804415-004.06	40ml VOA HCL				A	
P1804415-005.01	40mL VOA NP		5		A	MR 8/29/18
P1804415-005.02	40mL VOA NP				A	
P1804415-005.03	40mL VOA NP				A	
P1804415-005.04	40ml VOA HCL		1		A	MR 8/30/18
P1804415-005.05	40ml VOA HCL				A	
P1804415-005.06	40ml VOA HCL				A	
P1804415-006.01	40mL VOA NP		5		A	MR 8/29/18
P1804415-006.02	40mL VOA NP				A	
P1804415-006.03	40mL VOA NP				A	
P1804415-006.04	40ml VOA HCL		1		A	MR 8/30/18
P1804415-006.05	40ml VOA HCL				A	
P1804415-006.06	40ml VOA HCL				A	
P1804415-007.01	40mL VOA NP				A	
P1804415-007.02	40mL VOA NP				A	
P1804415-007.03	40mL VOA NP				A	
P1804415-007.04	40ml VOA HCL				A	
P1804415-007.05	40ml VOA HCL				A	
P1804415-007.06	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS18081130** ALS Project ID: P1804415

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 8/22/18
Analyst: Wade Henton Date Received: 8/24/18
Matrix: Water Date Analyzed: 8/29/18
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW08-180822	P1804415-001	0.050	**350,000**	2,000	1,700	740	**L, !**
35BWW26-180822	P1804415-002	0.050	**450,000**	2,000	1,700	740	**L, !**
35BWW04-180822	P1804415-003	0.050	**500,000**	2,000	1,700	740	**L**
35BWW12-180822	P1804415-004	0.050	**320,000**	2,000	1,700	740	**L**
35BWW12-180822-FD	P1804415-005	0.050	**340,000**	2,000	1,700	740	**L**
35BWW14-180822	P1804415-006	0.050	**520,000**	2,000	1,700	740	**L, !**
35BWW23-180822	P1804415-007	0.050	**500,000**	2,000	1,700	740	**L, !**
Method Control Sample	P180829-MB	0.10	860	1,000	860	370	**U, L**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
L = Laboratory control sample recovery outside the specified limits, results may be biased low.
! = See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1804415
Client Project ID: **HS18081130** ALS Sample ID: P180829-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 8/29/18
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	17,600	18,100	**77**	**79**	80-122	3	15	**L**

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.
L = Laboratory control sample recovery outside the specified limits, results may be biased low.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW08-180822**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P1804415-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/22/18
Date Received: 8/24/18
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW26-180822**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P1804415-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/22/18
Date Received: 8/24/18
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW04-180822**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P1804415-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/22/18
Date Received: 8/24/18
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-180822**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P1804415-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/22/18
Date Received: 8/24/18
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.73**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-180822-FD**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P1804415-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/22/18
Date Received: 8/24/18
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.73**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW14-180822**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P1804415-006

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/22/18
Date Received: 8/24/18
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.2**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW23-180822**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P1804415-007

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/22/18
Date Received: 8/24/18
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P180830-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.57**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS18081130**

ALS Project ID: P1804415
ALS Sample ID: P180830-LCS
P180830-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 8/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.07	2.04	**83**	**82**	73-125	1	12	
74-85-1	Ethene	4.37	4.15	3.98	**95**	**91**	72-133	4	7	
74-84-0	Ethane	4.69	4.30	4.12	**92**	**88**	74-131	4	6	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 15:54:24
Operator : WH
Sample : P1804415-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:16:17 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.965f	672090	0.141	ppm
2)	Carbon monoxide	1.965f	672090	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.003	3751927	15984.065	ppm
6)	Methane (FID)	1.119	1000	0.106	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

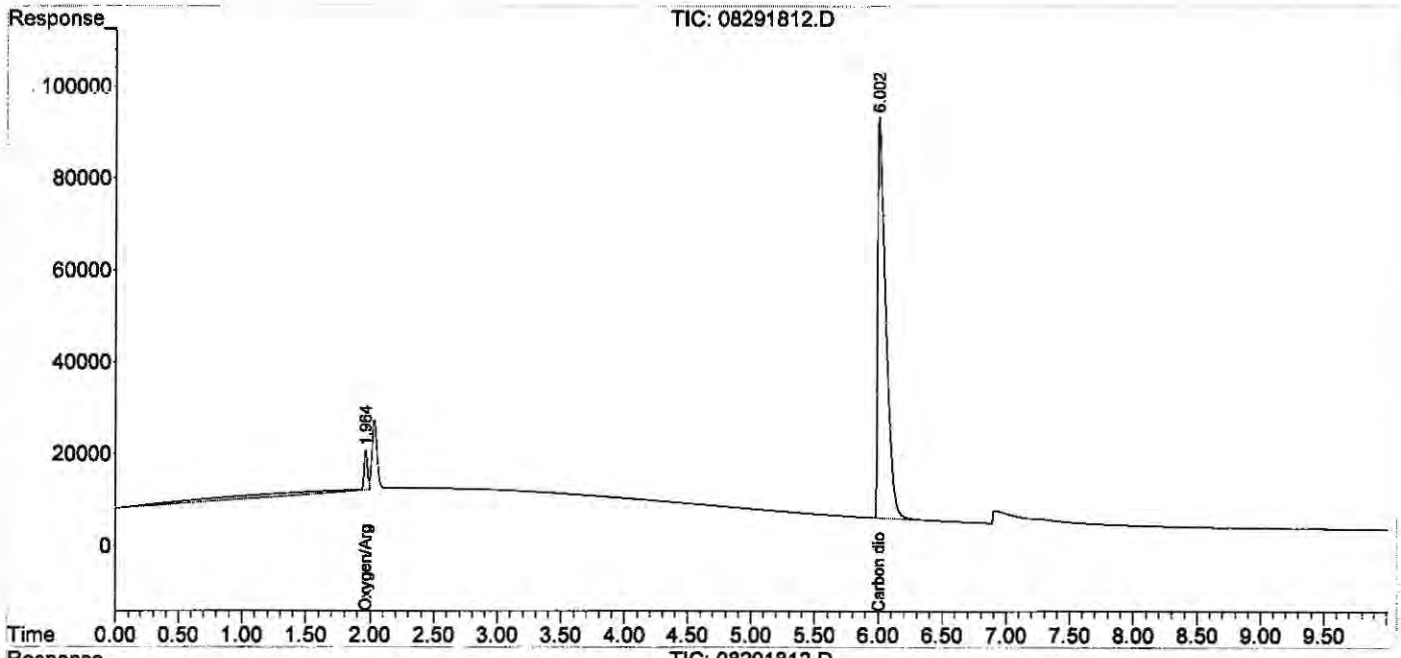
(f)=RT Delta > 1/2 Window (m)=manual int.

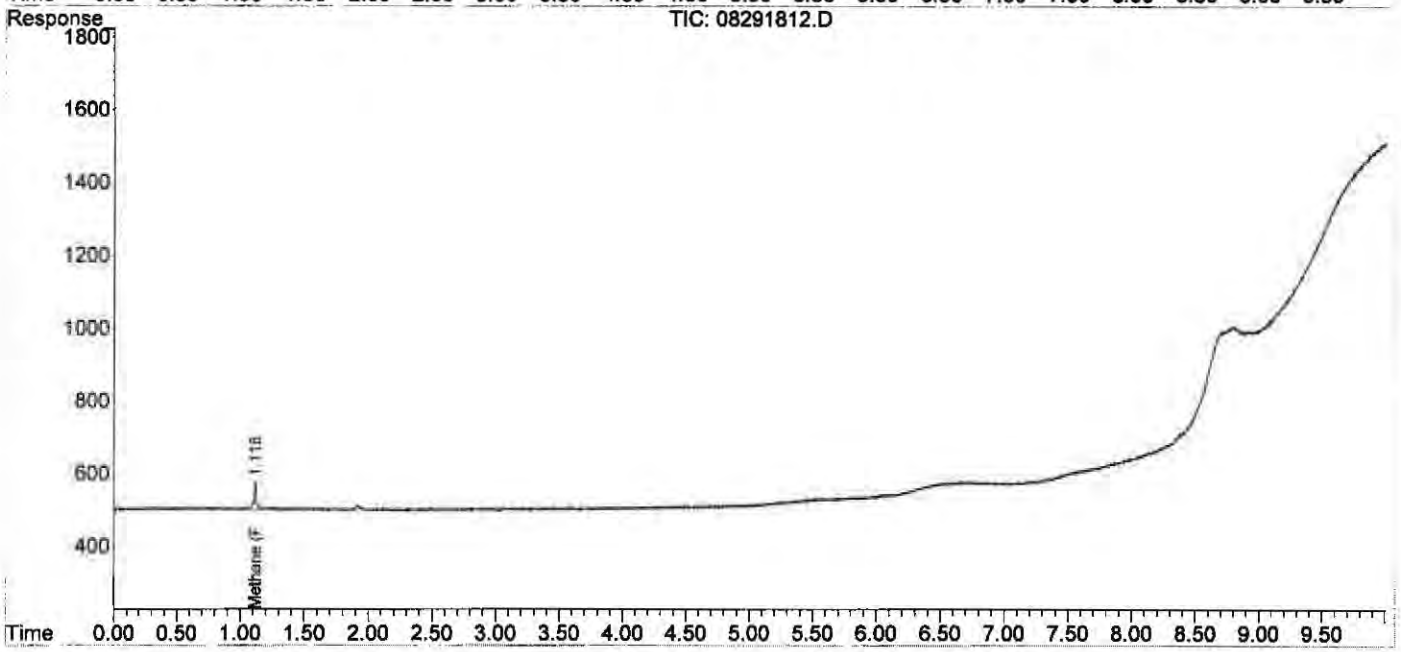
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 15:54:24
Operator : WH
Sample : P1804415-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:16:17 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:10:25
Operator : WH
Sample : P1804415-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 09:59:52 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.964f	93223	0.020	ppm
2)	Carbon monoxide	1.964f	93223	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.993	4830786	20580.252	ppm
6)	Methane (FID)	1.088	244	0.026	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

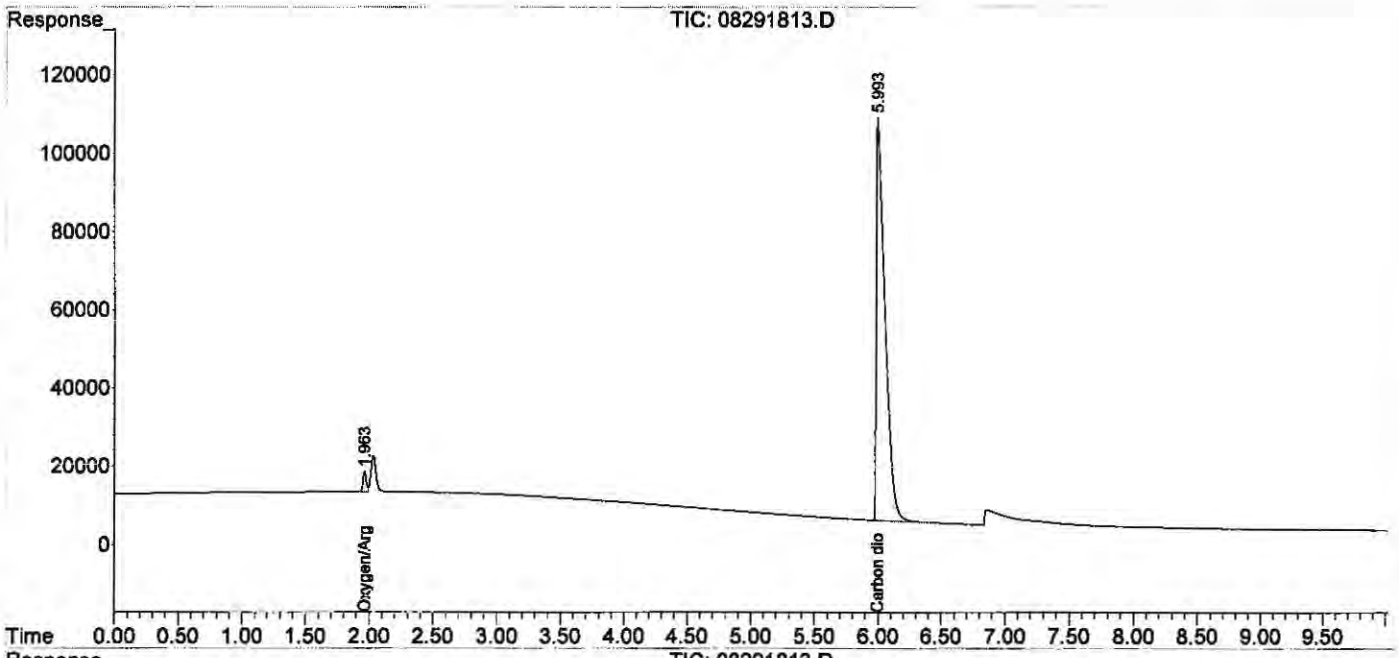
(f)=RT Delta > 1/2 Window (m)=manual int.

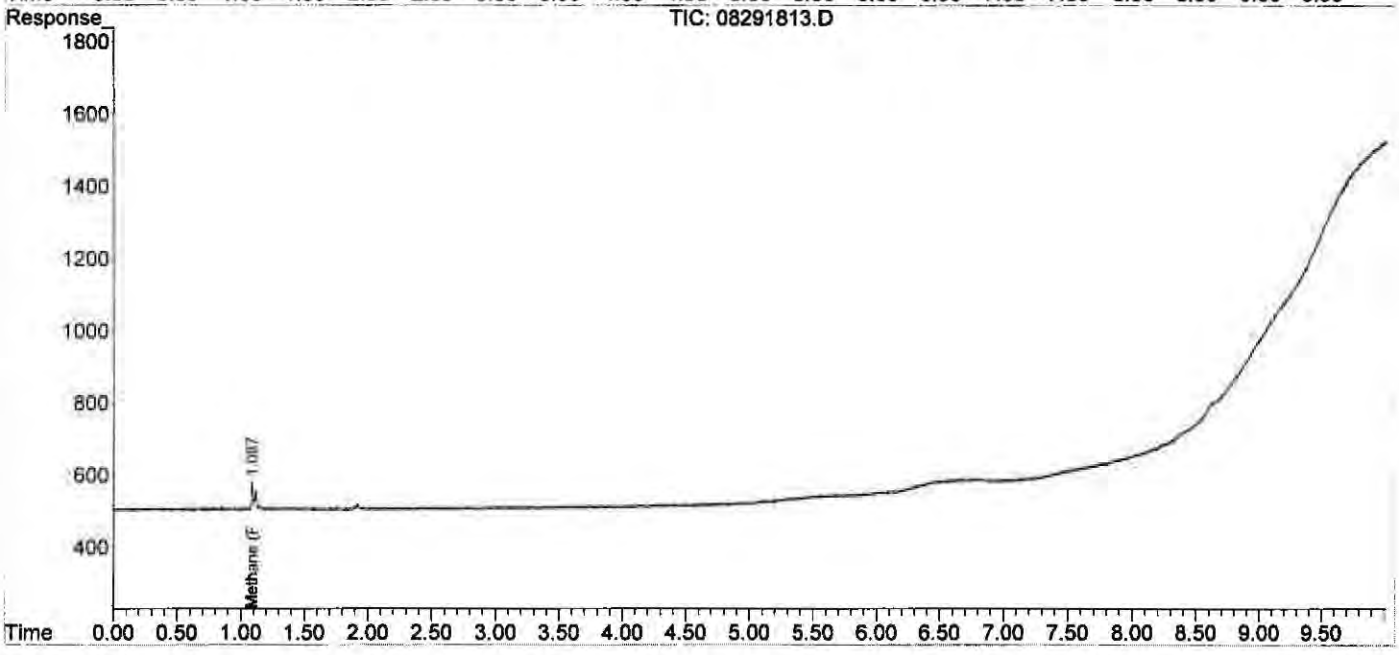
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:10:25
Operator : WH
Sample : P1804415-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 09:59:52 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:36:21
Operator : WH
Sample : P1804415-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:44:30 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.963f	669279	0.141	ppm
2)	Carbon monoxide	1.963f	669279	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.989	5412929	23060.313	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

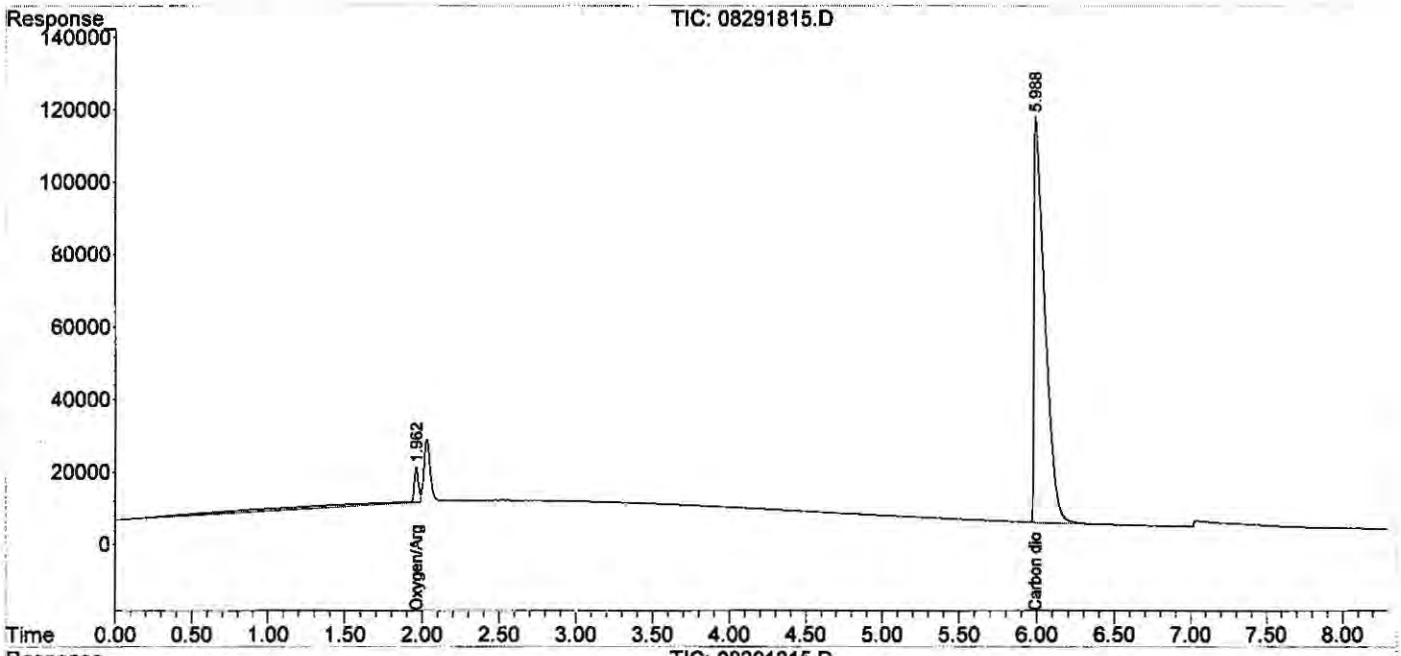
(f)=RT Delta > 1/2 Window (m)=manual int.

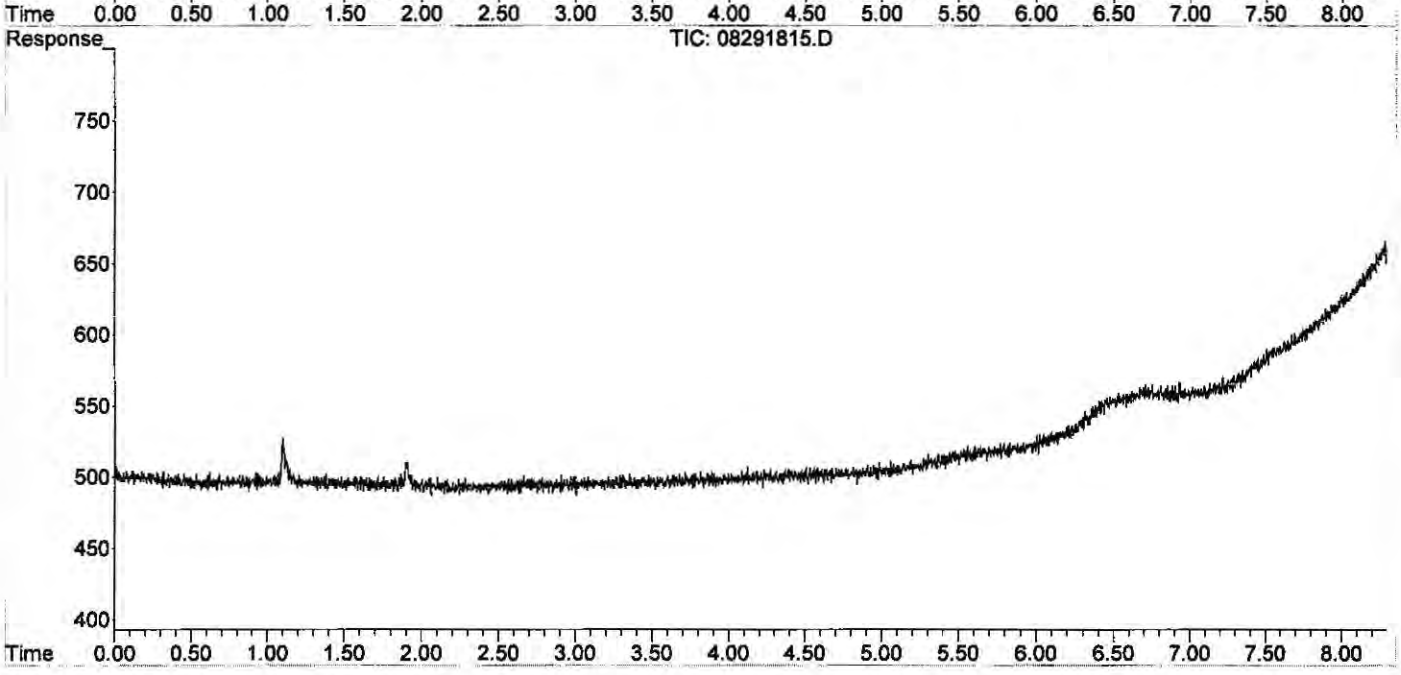
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:36:21
Operator : WH
Sample : P1804415-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:44:30 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:47:05
Operator : WH
Sample : P1804415-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:59:32 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.956f	657853	0.138	ppm
2)	Carbon monoxide	1.956f	657853	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.009	3413757	14543.384	ppm
6)	Methane (FID)	1.096	3181	0.337	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

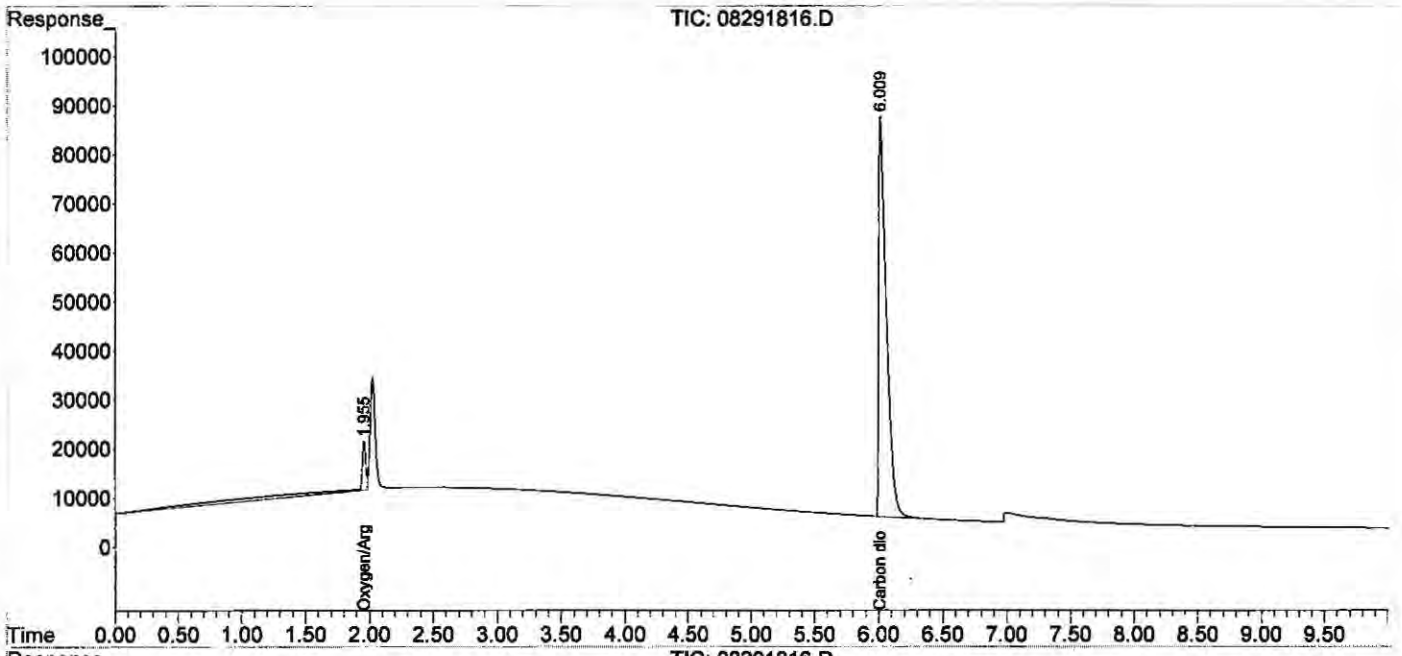
(f)=RT Delta > 1/2 Window (m)=manual int.

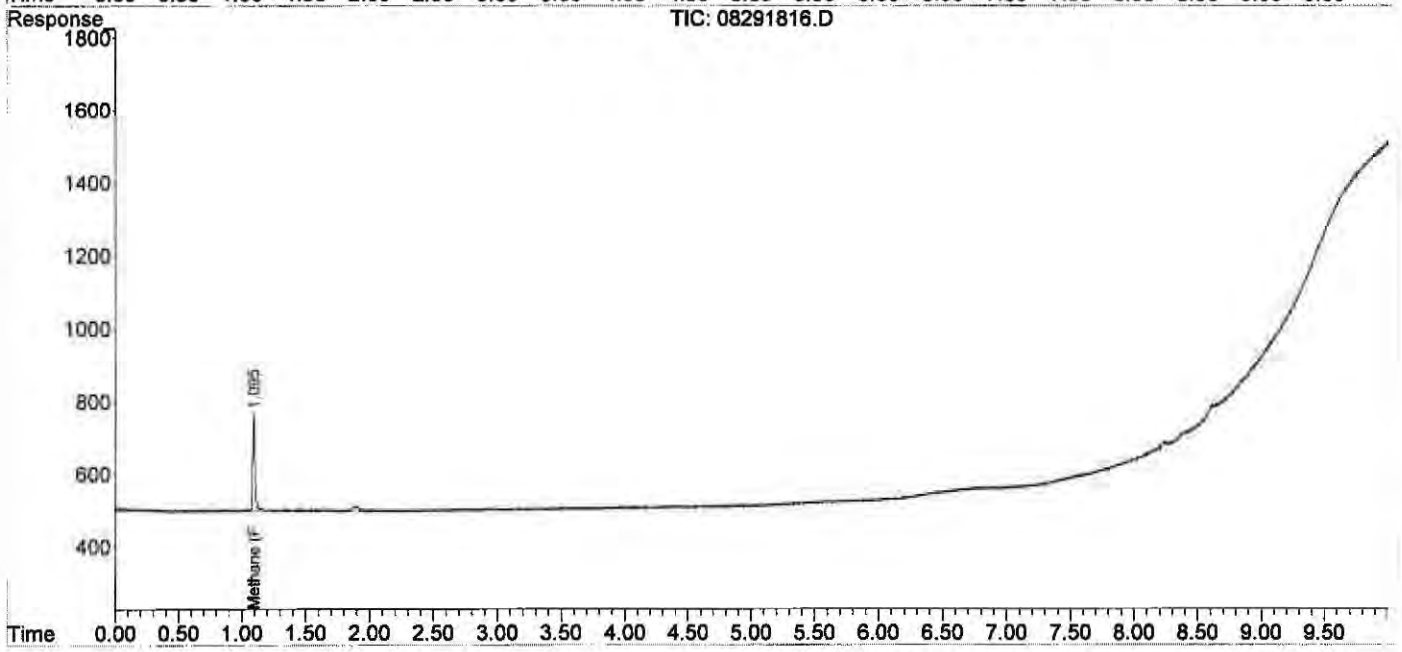
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:47:05
Operator : WH
Sample : P1804415-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:59:32 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291817.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:00:54
Operator : WH
Sample : P1804415-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:08:15 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Oxygen/Argon	1.960f	177287	0.037 ppm
2)	Carbon monoxide	1.960f	177287	N.D. ppm
3)	Methane (TCD)	0.000	0	N.D. ppm
4)	Carbon dioxide	6.004	3606885	15366.154 ppm
6)	Methane (FID)	1.101	2768	0.293 ppm
7)	Ethylene	0.000	0	N.D. ppm
8)	Ethane	0.000	0	N.D. ppm
9)	Propylene	0.000	0	N.D. ppm
10)	Propane	0.000	0	N.D. ppm
11)	Isobutylene	0.000	0	N.D. ppm
12)	Isobutane	0.000	0	N.D. ppm
13)	n-Butane	0.000	0	N.D. ppm

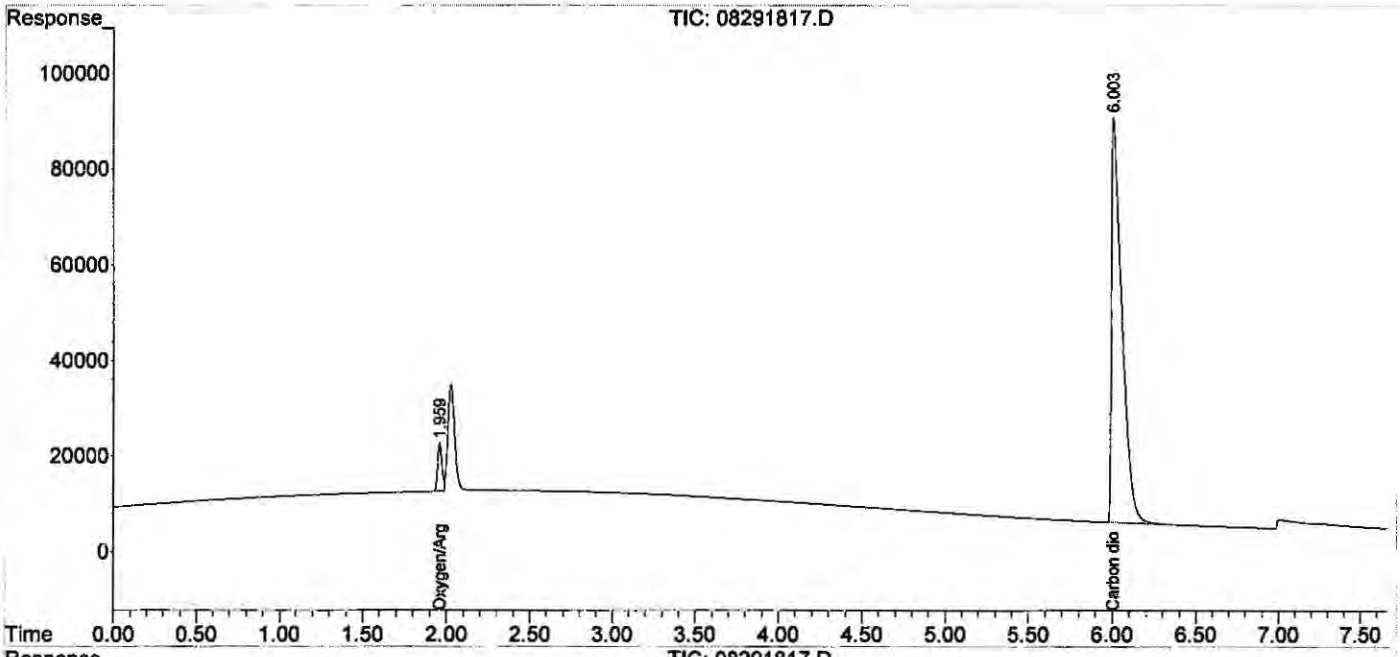
(f)=RT Delta > 1/2 Window (m)=manual int.

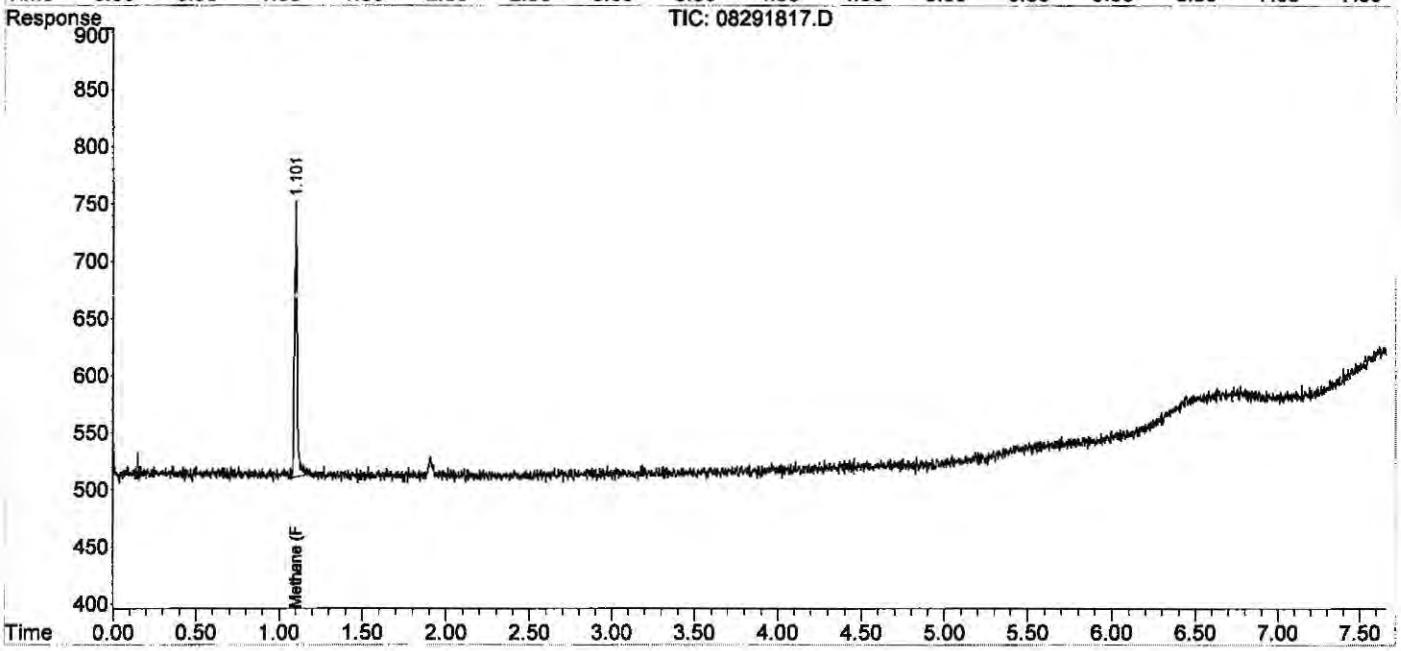
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291817.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:00:54
Operator : WH
Sample : P1804415-005 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:08:15 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291818.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:10:41
Operator : WH
Sample : P1804415-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:17:46 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.906f	683689	0.144	ppm
2)	Carbon monoxide	1.906f	683689	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.984	5605575	23881.029	ppm
6)	Methane (FID)	1.099	4760	0.504	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

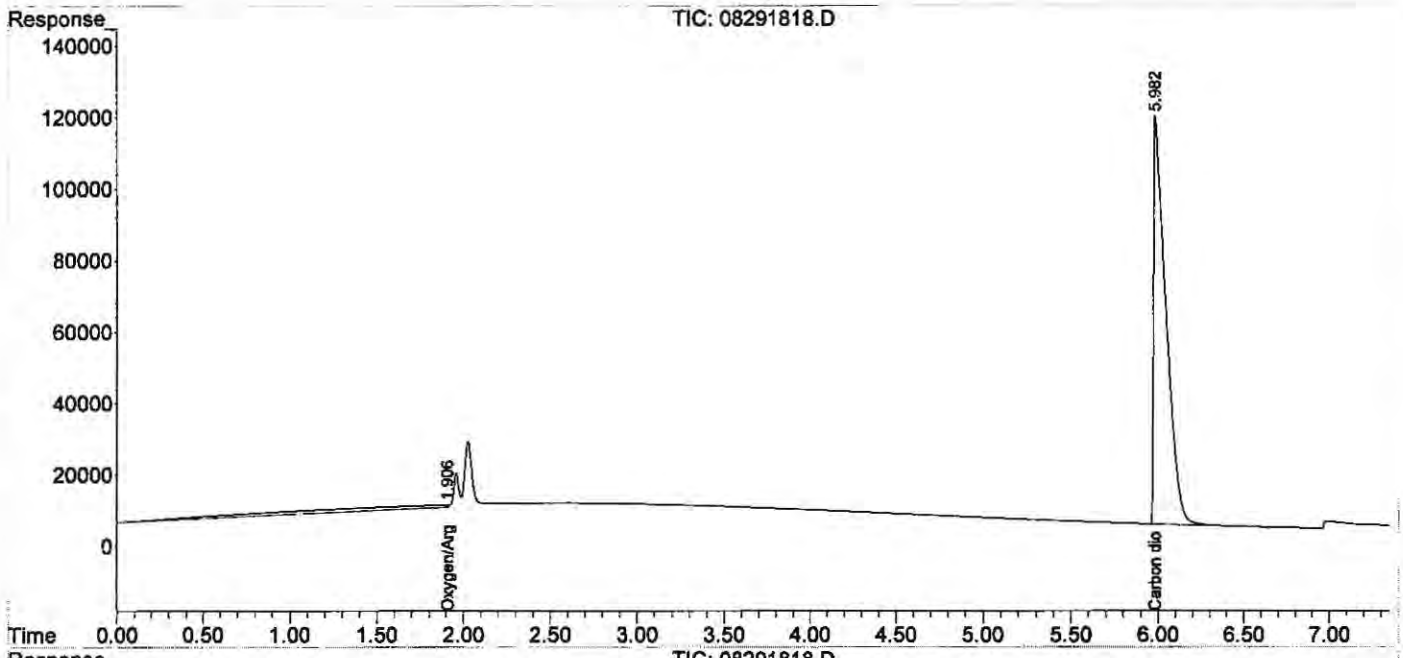
(f)=RT Delta > 1/2 Window (m)=manual int.

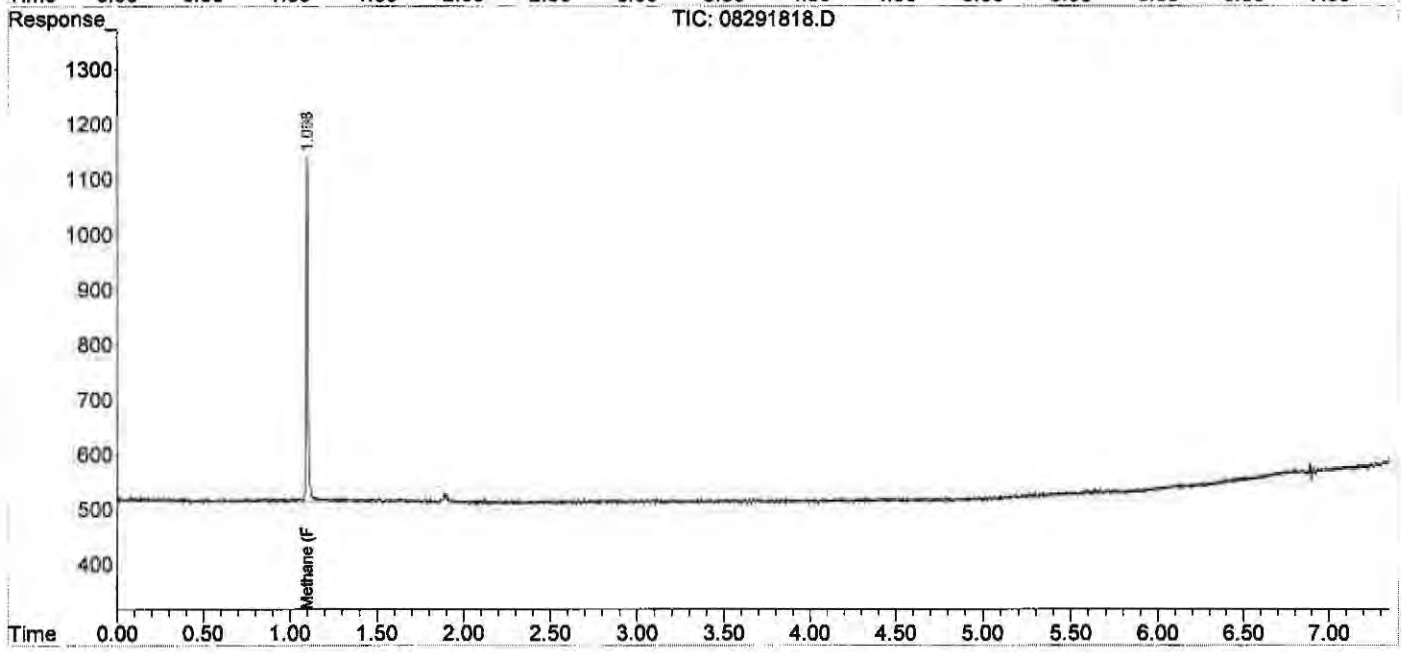
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291818.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:10:41
Operator : WH
Sample : P1804415-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:17:46 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291819.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:20:19
Operator : WH
Sample : P1804415-007 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:27:32 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.963f	675118	0.142	ppm
2)	Carbon monoxide	1.963f	675118	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.989	5345857	22774.572	ppm
6)	Methane (FID)	1.095	1853	0.196	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

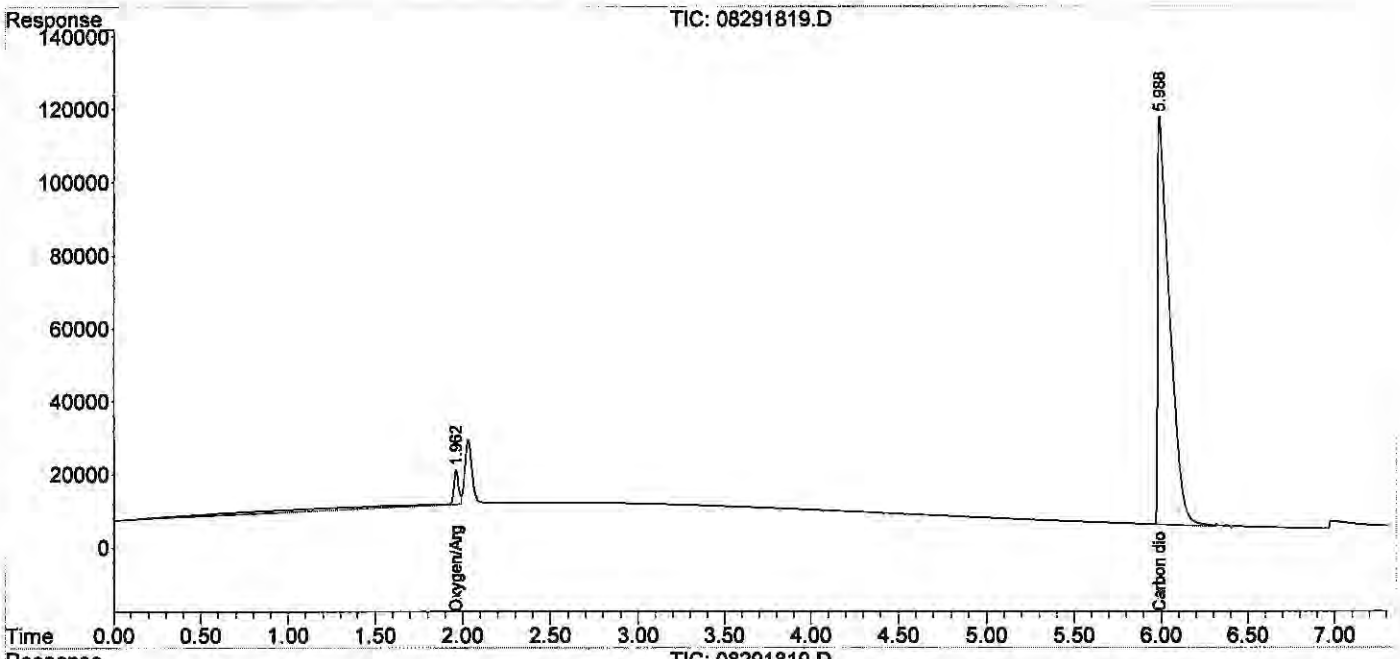
(f)=RT Delta > 1/2 Window (m)=manual int.

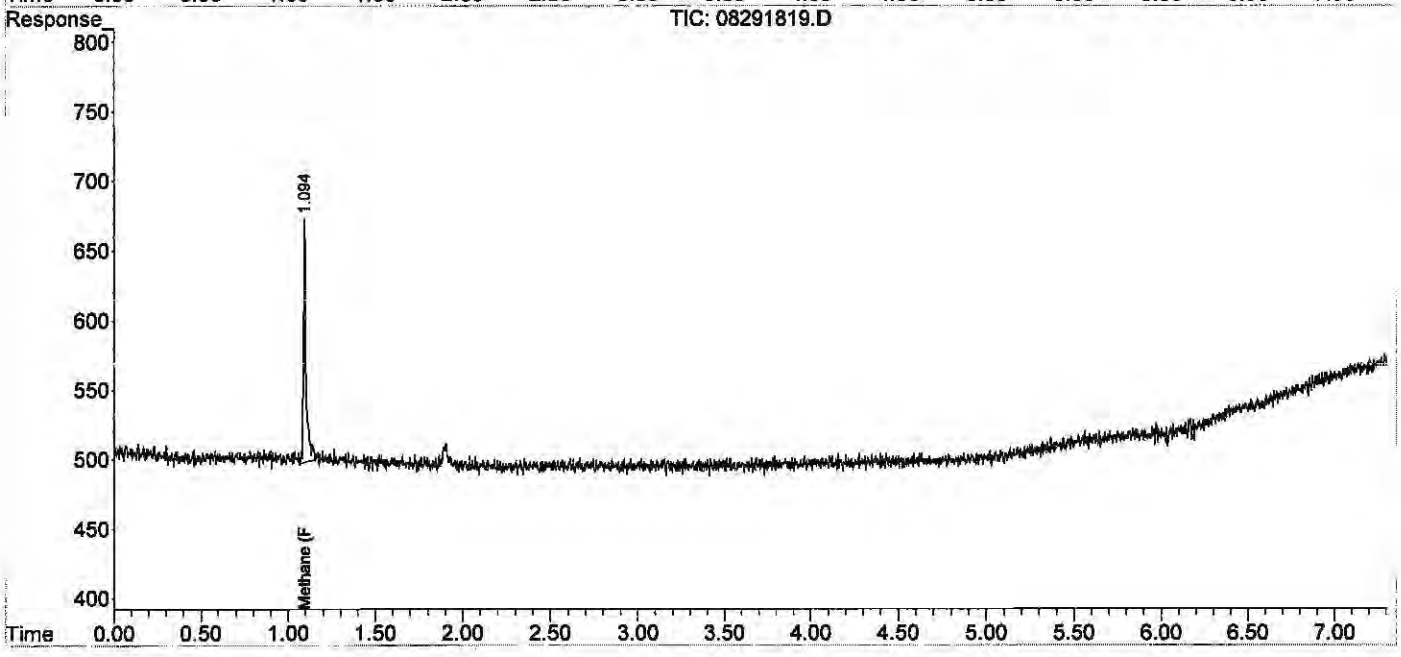
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291819.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:20:19
Operator : WH
Sample : P1804415-007 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:27:32 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 13:33:01
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:25:54 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.964f	414818	0.087	ppm
2)	Carbon monoxide	1.964f	414818	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.090	3513	0.372	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

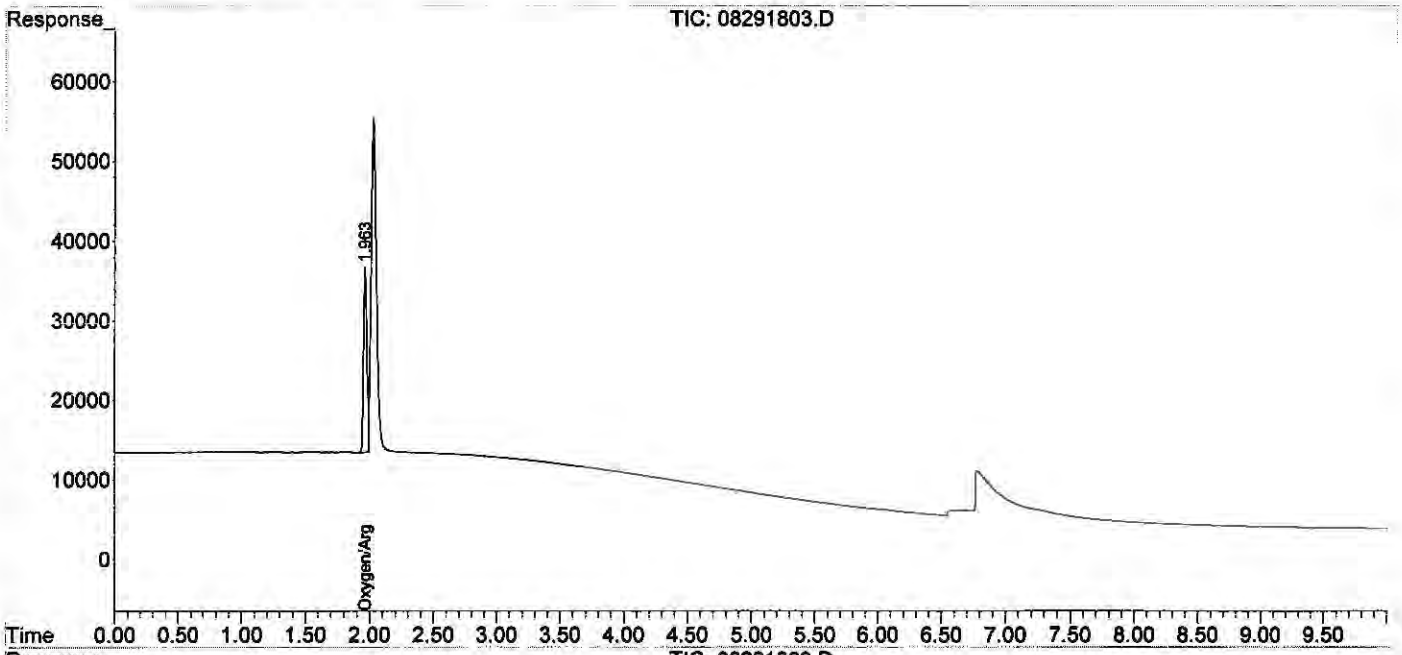
(f)=RT Delta > 1/2 Window (m)=manual int.

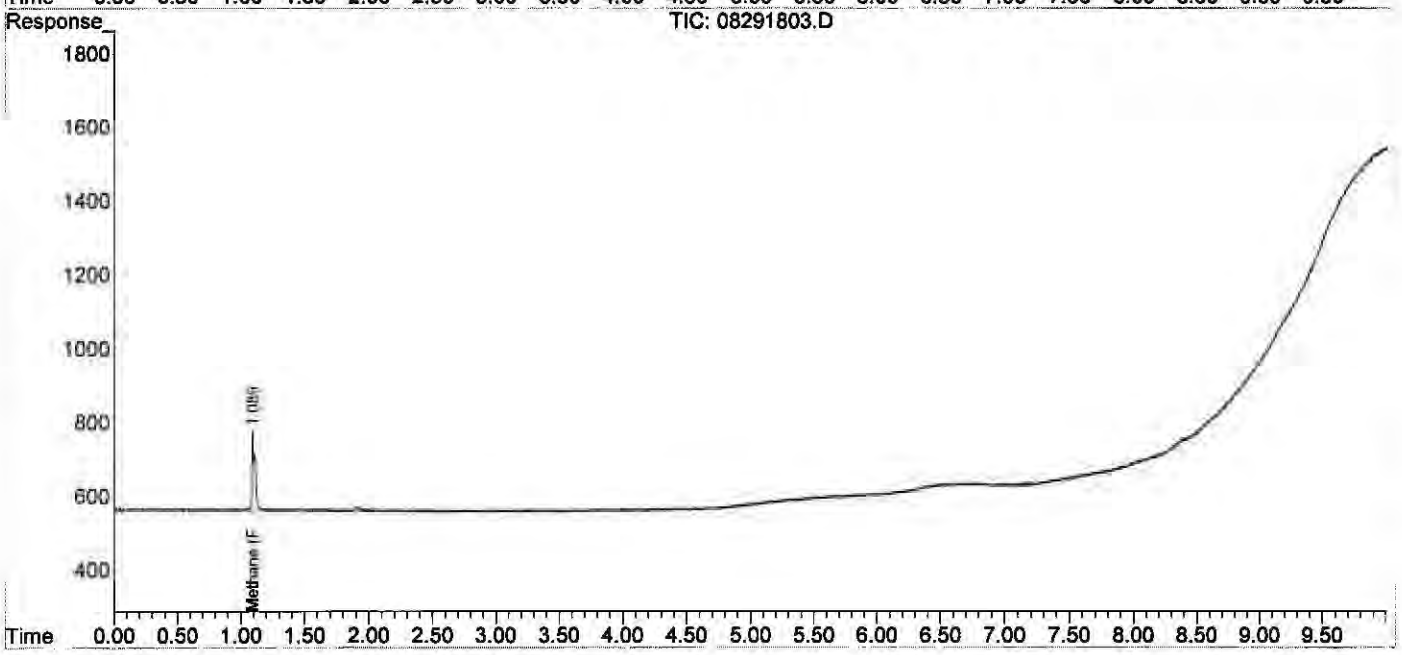
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 13:33:01
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:25:54 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : WH | Instrument : GC#10
Service Request: P1804415 | Date Analysis : 08/29/18 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std s32-07261801	0.100	4538.196
ACTUAL		5000.00
%Difference		9.2%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
tcd lcs s32-05011801	0.100	804.862
tcd lcsd s32-05011801	0.100	830.463
P1804415-001 50ul	0.100	15984.07
P1804415-002 50ul	0.100	20580.25
P1804415-003 50ul	0.100	23060.31
P1804415-004 50ul	0.100	14543.38
P1804415-005 50ul	0.100	15366.15
P1804415-006 50ul	0.100	23881.03
P1804415-007 50ul	0.100	22774.57

FINAL HEAD SPACE RESULT (ppm)

		Carbon Dioxide
	WWL	44.10
	HENRY'S CONSTANT	1.42E+03
	RL	100.00
mcs 0.1ml		0.000
tcd lcs s32-05011801		8048.620
tcd lcsd s32-05011801		8304.630
P1804415-C01 50ul		159840.65
P1804415-C02 50ul		205802.52
P1804415-C03 50ul		230603.13
P1804415-C04 50ul		145433.84
P1804415-C05 50ul		153661.54
P1804415-C06 50ul		238810.29
P1804415-C07 50ul		227745.72

std s32-07261801	5105.528	17:10:41	0.00
ACTUAL	5000.00		
%Difference	2.1%		

00919866

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 12:18:11
Operator : WH
Sample : std s32-07261801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 12:57:17 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.947f	1096267	0.230	ppm
2)	Carbon monoxide	1.947f	1096267	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.053	1065247	4538.196	ppm
6)	Methane (FID)	1.045	1496	0.158	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

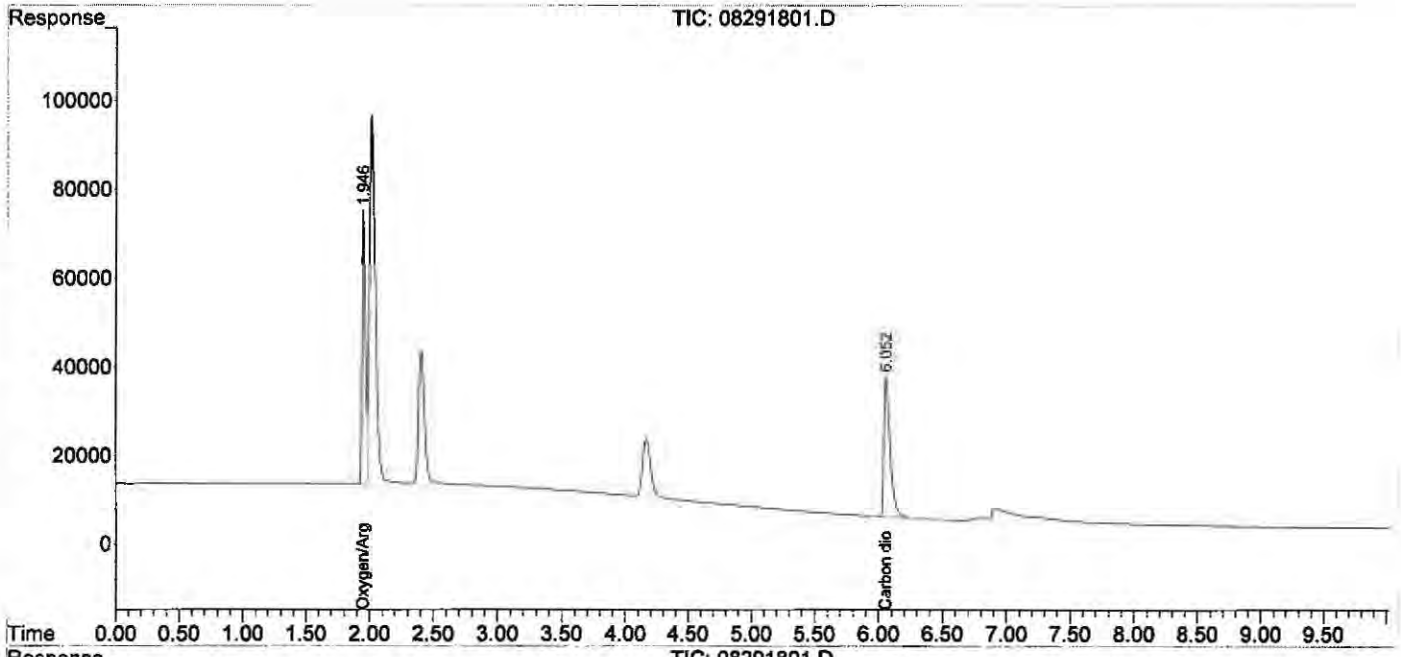
MR 8/31/18

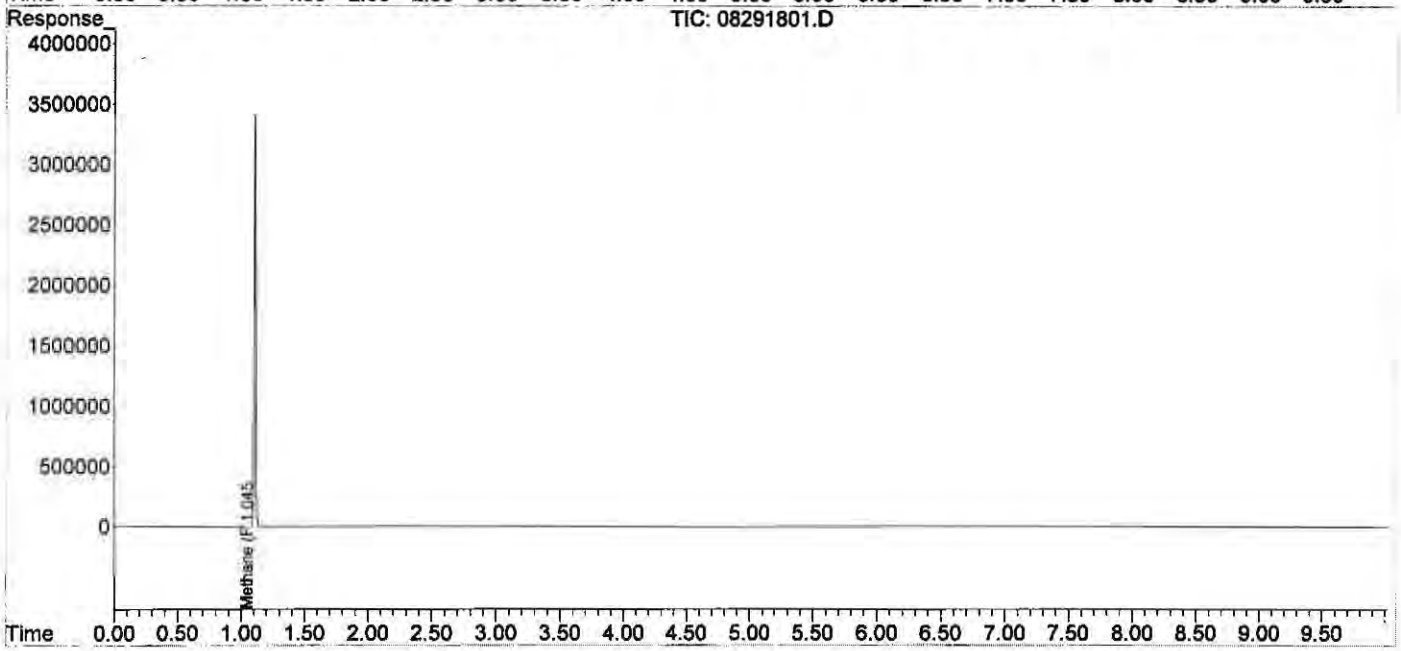
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 12:18:11
Operator : WH
Sample : std s32-07261801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 12:57:17 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:24:12
Operator : WH
Sample : std s32-07261801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:33:43 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.949f	956939	0.201	ppm
2)	Carbon monoxide	1.949f	956939	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.051	1084954	4622.150	ppm
6)	Methane (FID)	1.102	33789327	3576.417	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

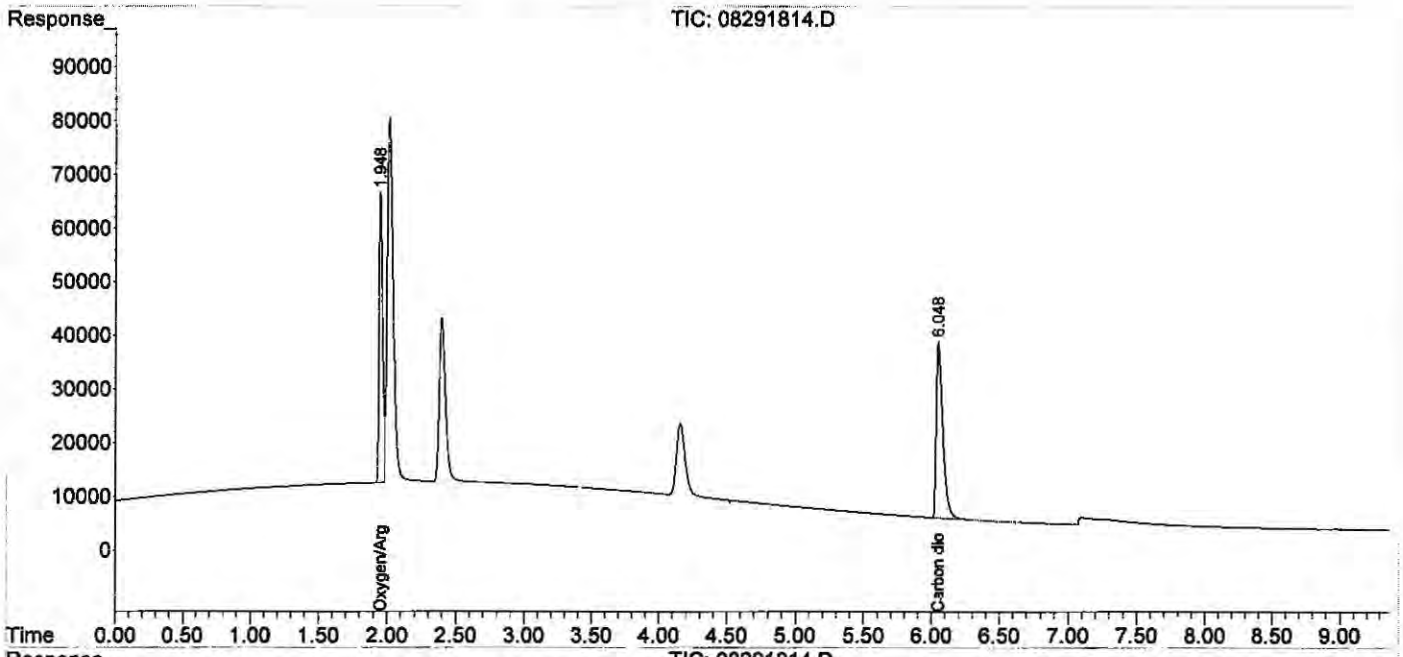
(f)=RT Delta > 1/2 Window (m)=manual int.

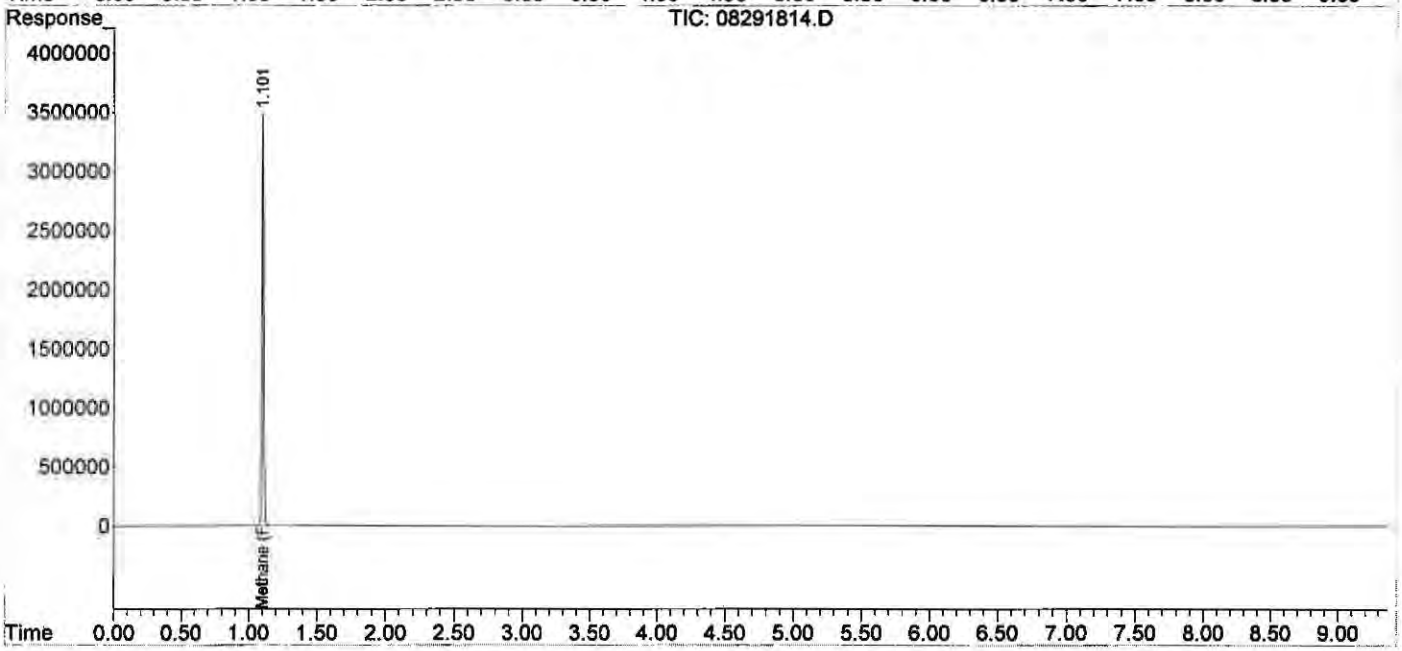
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 16:24:12
Operator : WH
Sample : std s32-07261801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:33:43 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291822.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:55:01
Operator : WH
Sample : std s32-07261801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 18:01:49 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.953f	1645227	0.346	ppm
2)	Carbon monoxide	1.953f	1645227	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.055	1198416	5105.528	ppm
6)	Methane (FID)	1.099	35588962	3766.899	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

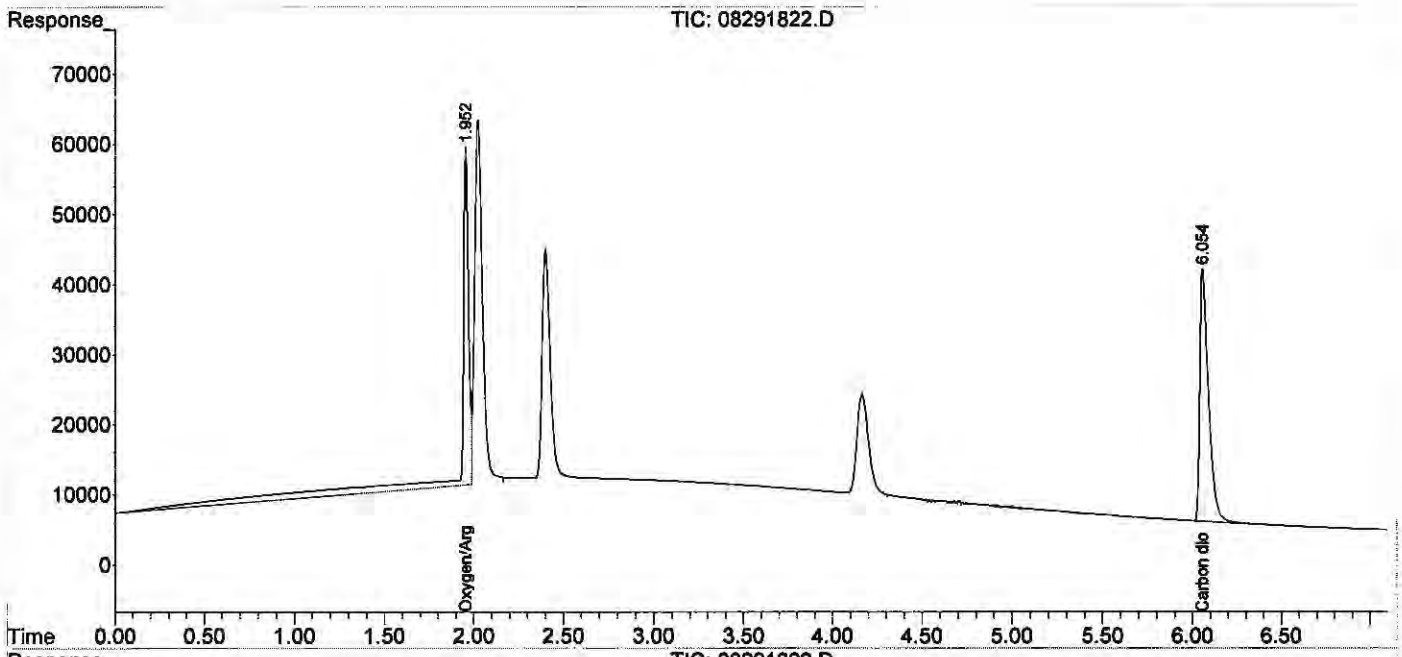
(f)=RT Delta > 1/2 Window (m)=manual int.

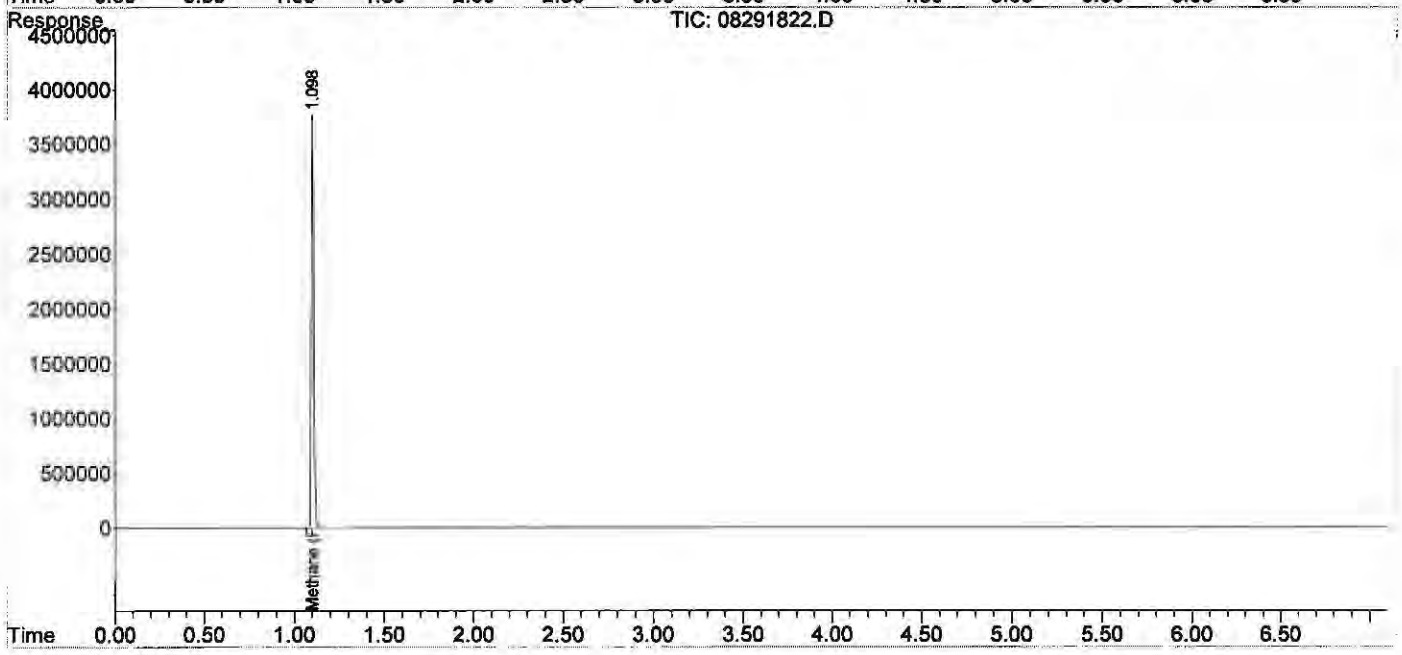
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291822.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:55:01
Operator : WH
Sample : std s32-07261801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 18:01:49 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291820.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:29:37
Operator : WH
Sample : tcd lcs s32-05011801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:44:56 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.934f	1294346	0.272	ppm
2)	Carbon monoxide	1.934f	1294346	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.070	188925	804.862	ppm
6)	Methane (FID)	1.094	28679241	3035.542	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

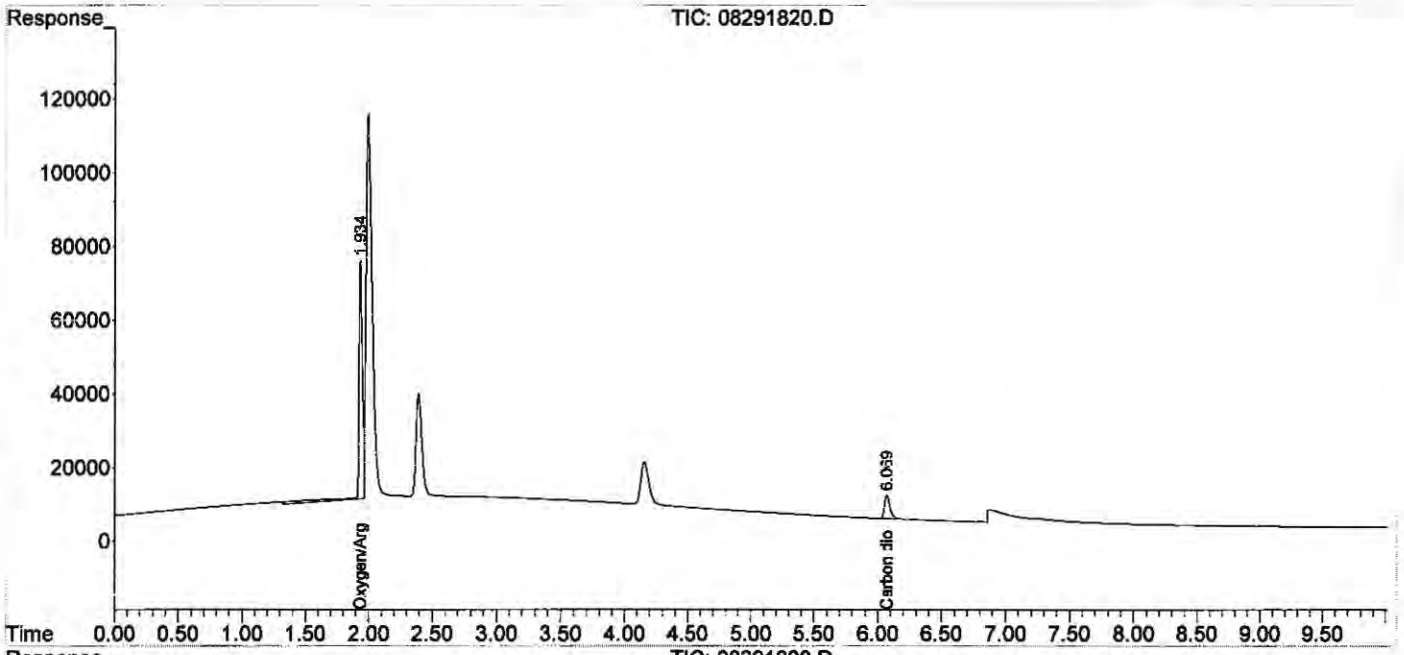
(f)=RT Delta > 1/2 Window (m)=manual int.

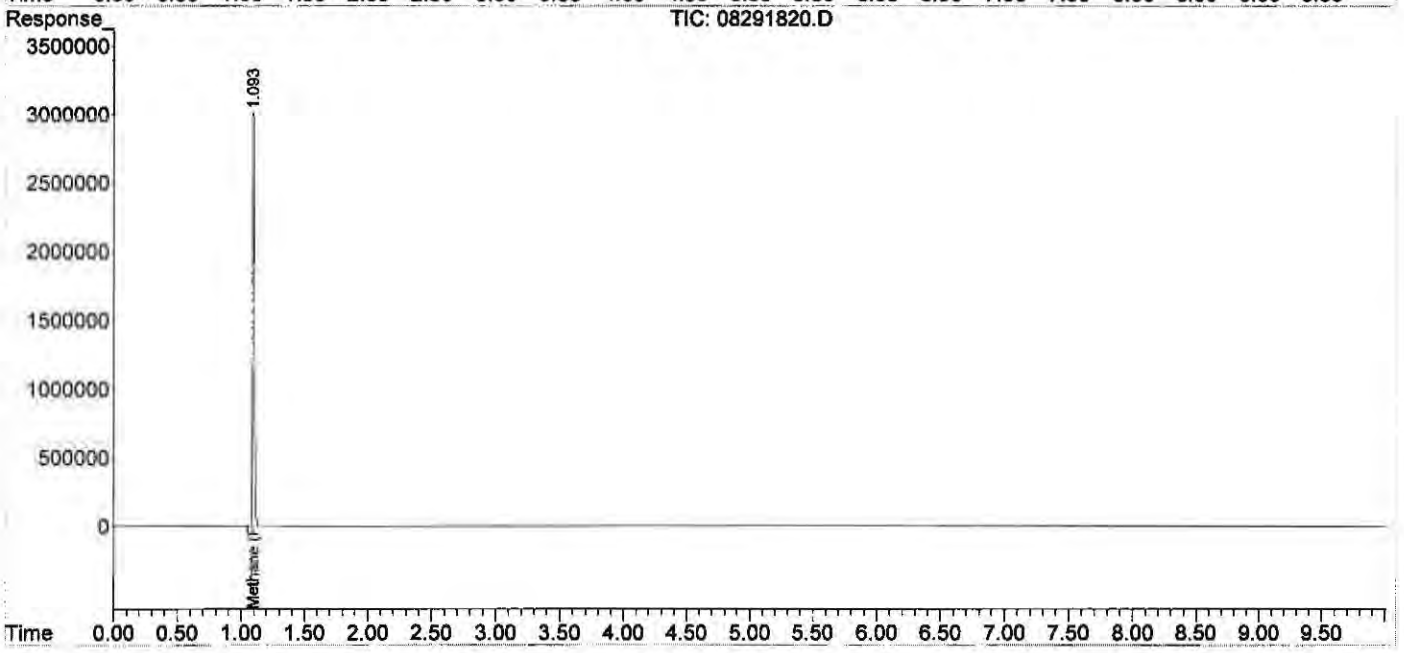
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291820.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:29:37
Operator : WH
Sample : tcd lcs s32-05011801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:44:56 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291821.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:45:58
Operator : WH
Sample : tcd lcsd s32-05011801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:52:44 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.947f	1019725	0.214	ppm
2)	Carbon monoxide	1.947f	1019725	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.074	194934	830.463	ppm
6)	Methane (FID)	1.101	29149179	3085.282	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

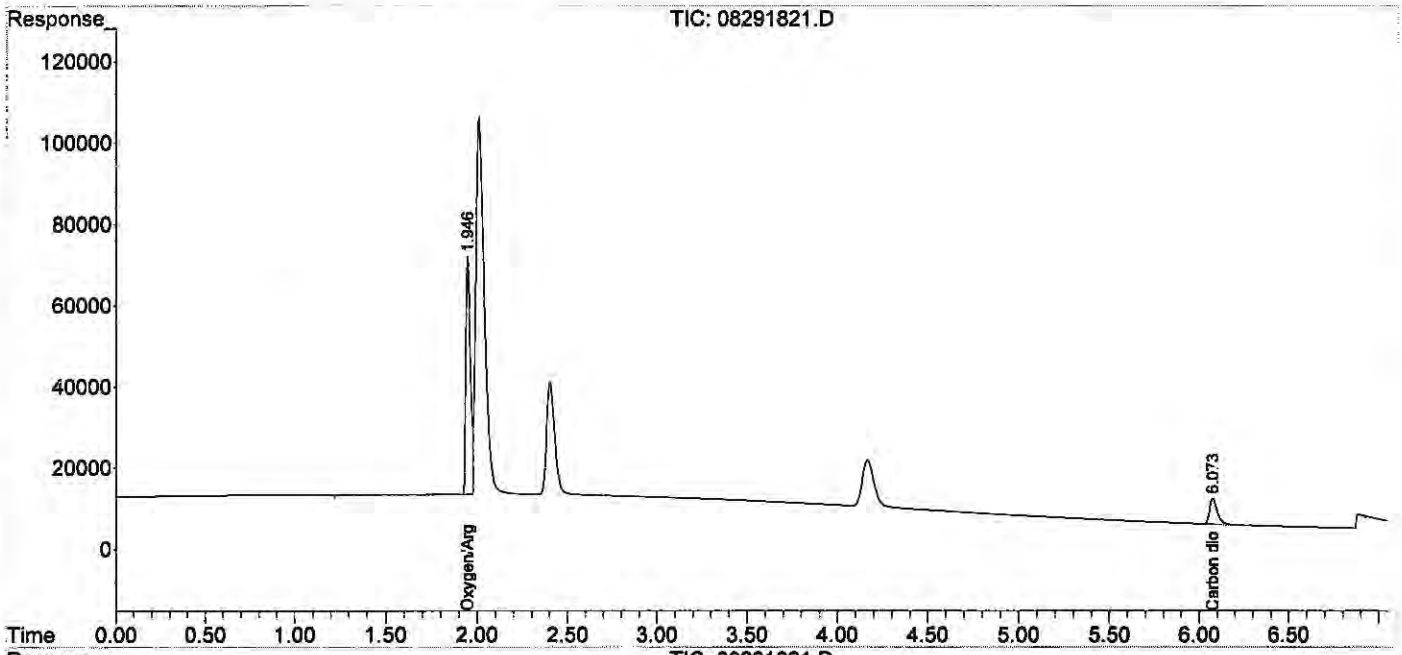
(f)=RT Delta > 1/2 Window (m)=manual int.

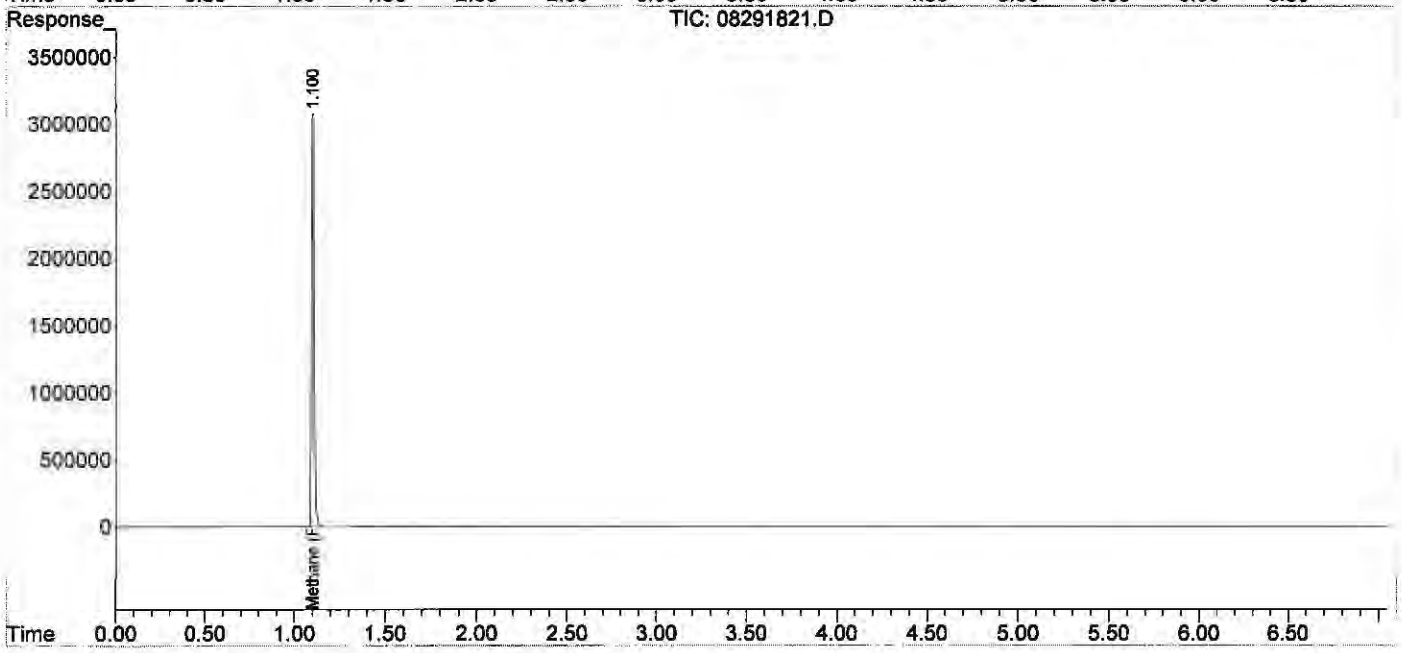
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2018_08\29\
Data File : 08291821.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2018, 17:45:58
Operator : WH
Sample : tcd lcsd s32-05011801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 17:52:44 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

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

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

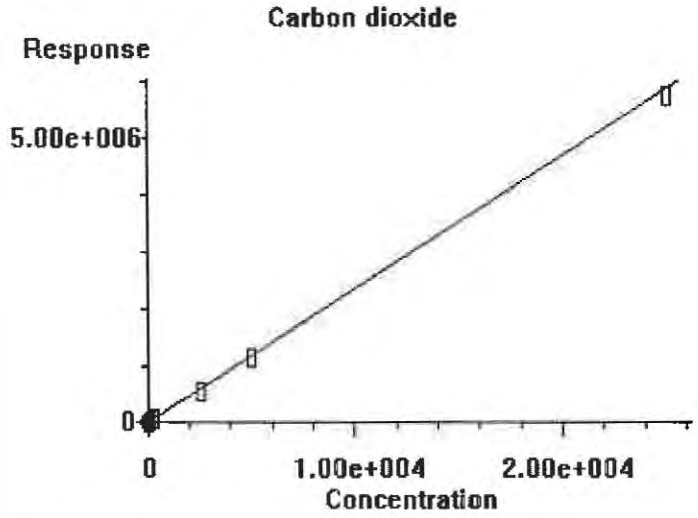
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

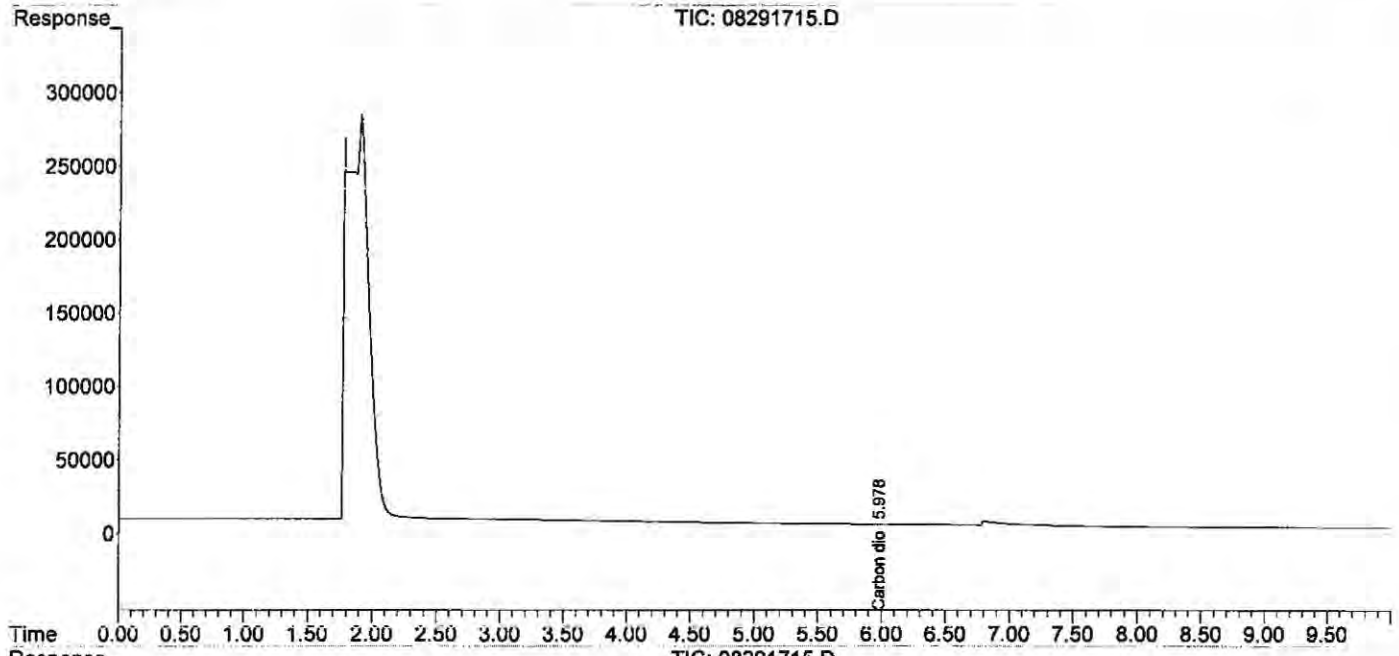
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

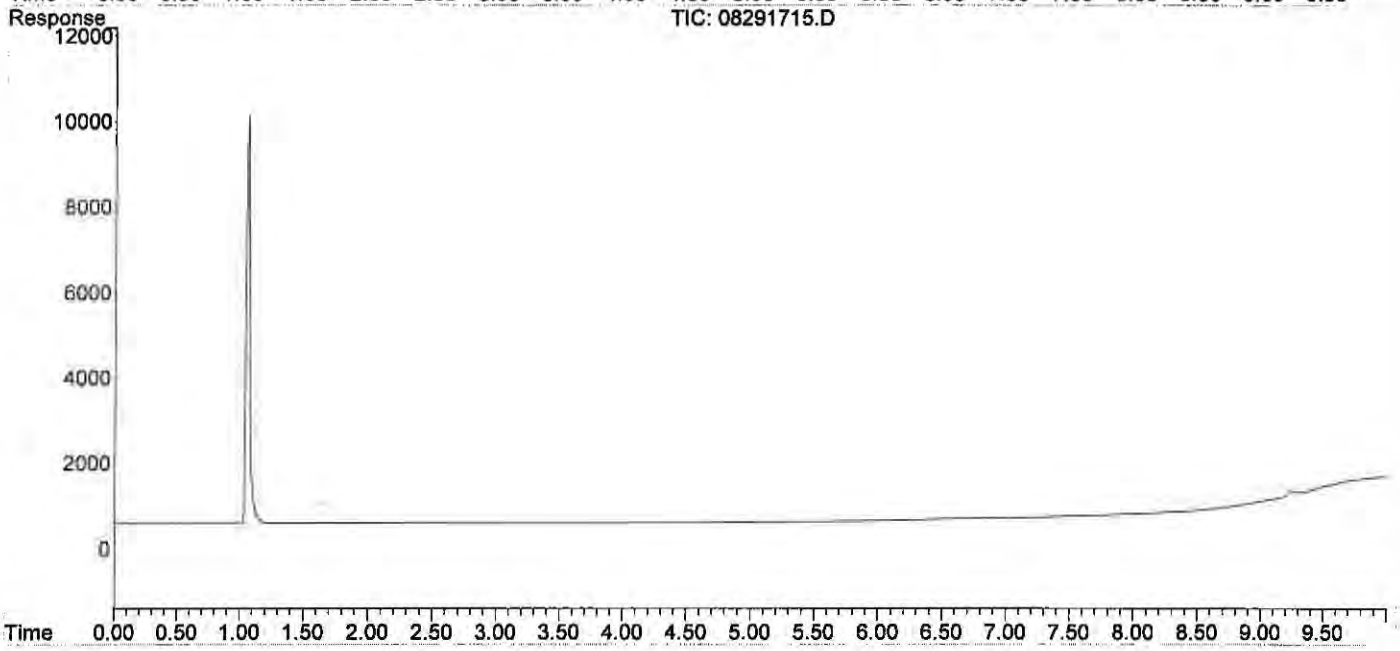
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



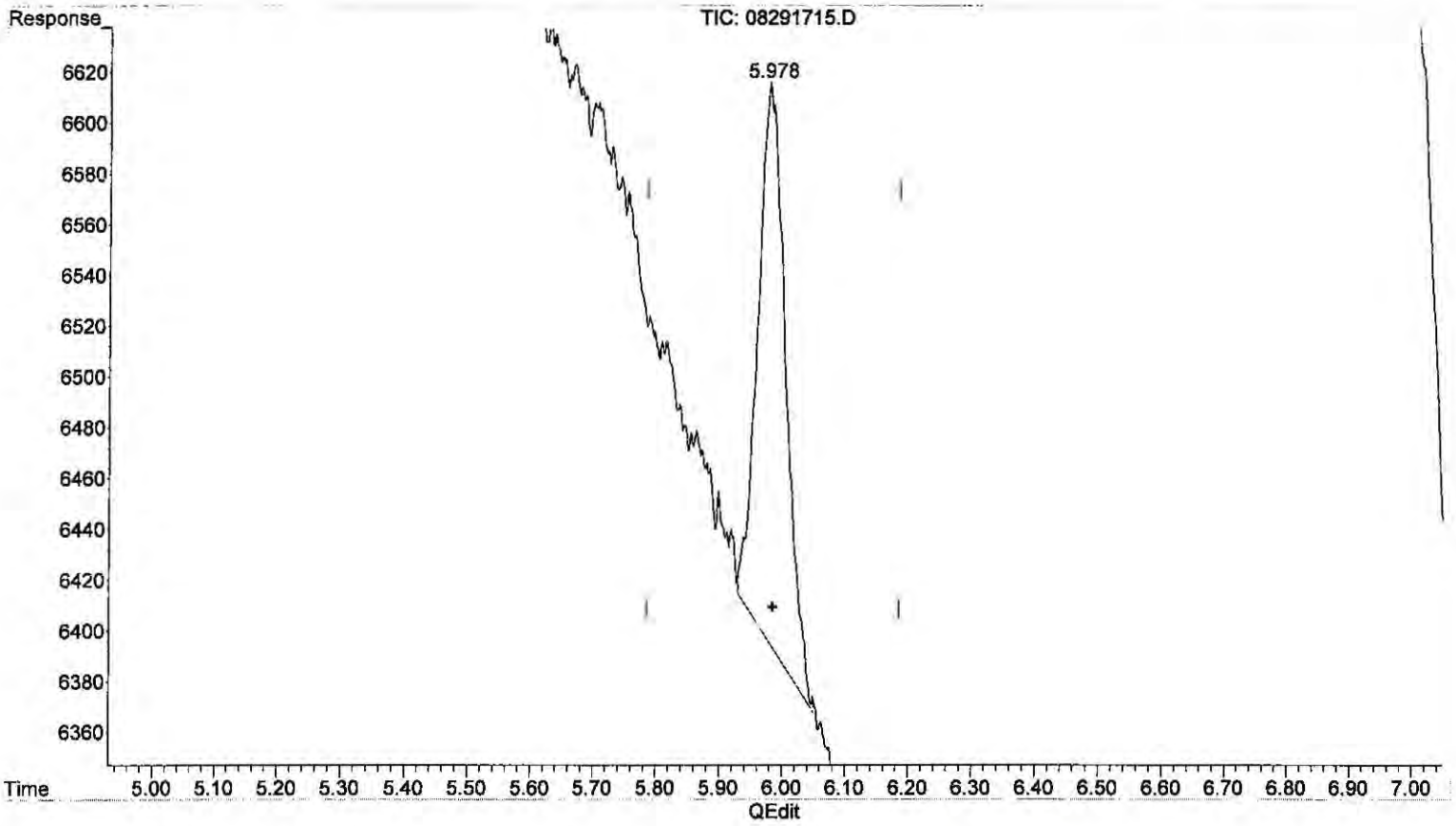


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 30 13:17:47 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

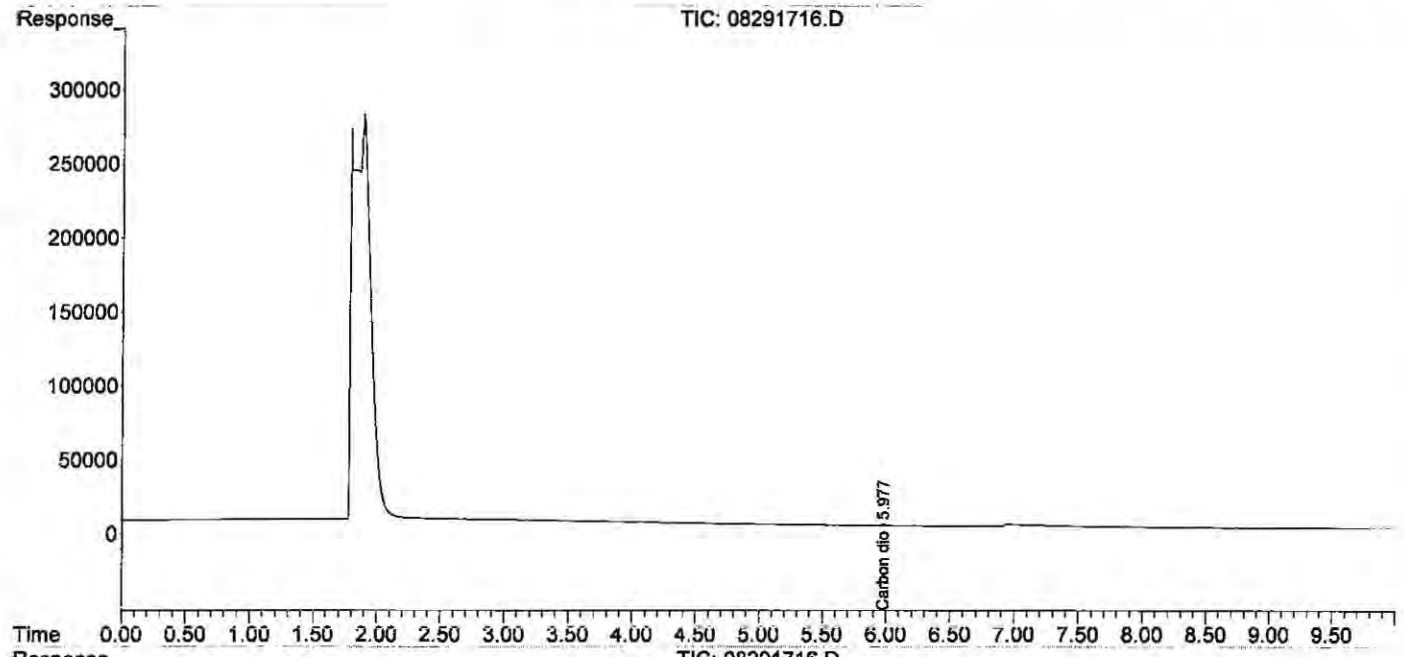
(f)=RT Delta > 1/2 Window (m)=manual int.

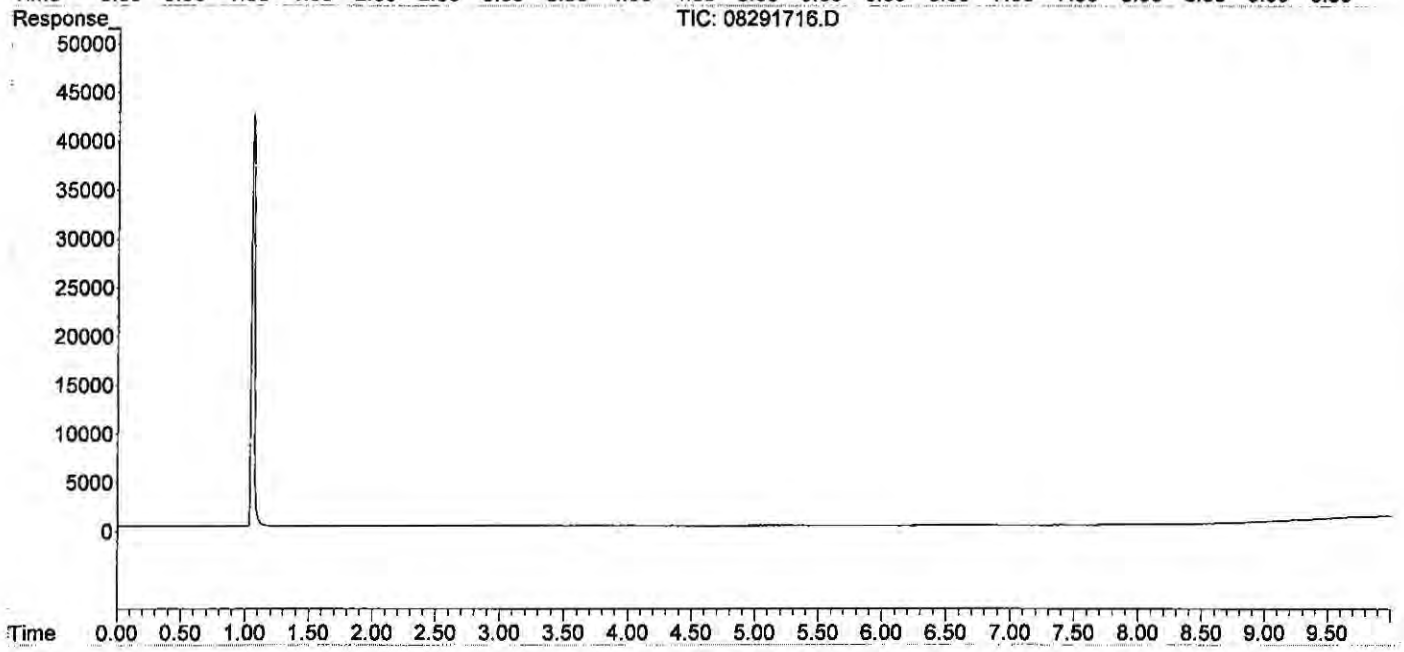
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

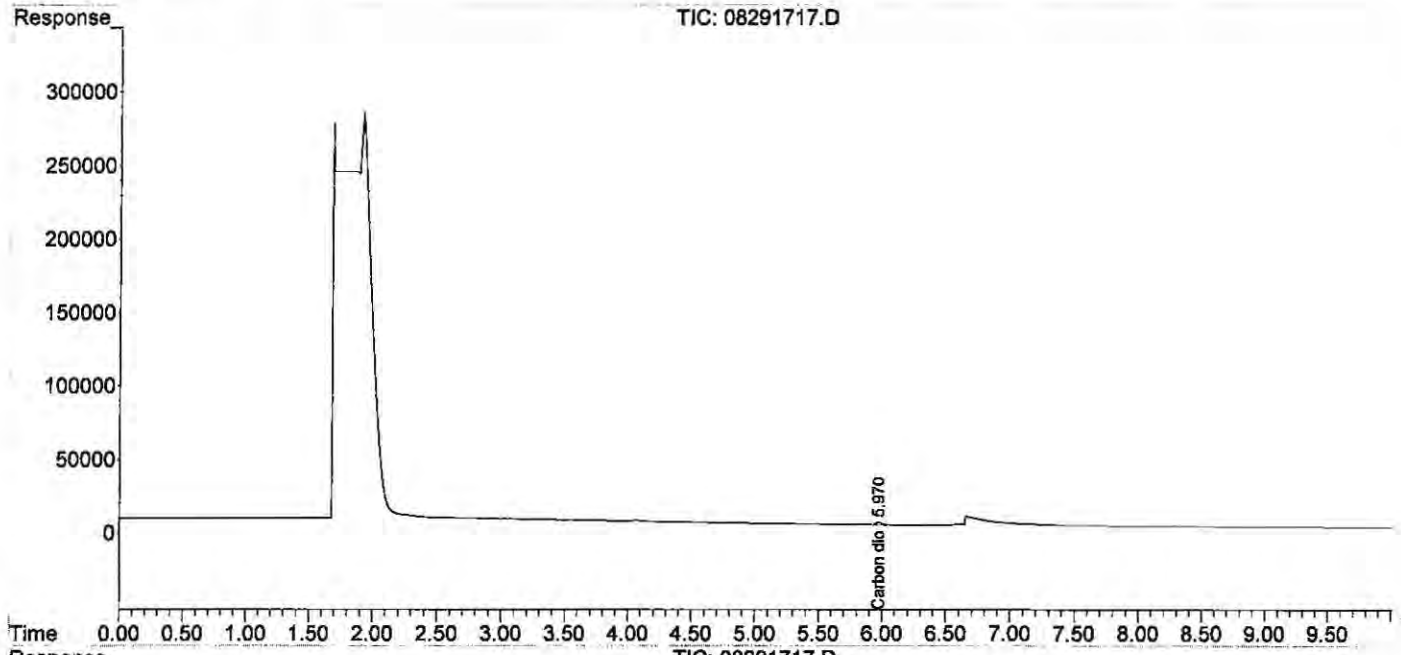
(f)=RT Delta > 1/2 Window (m)=manual int.

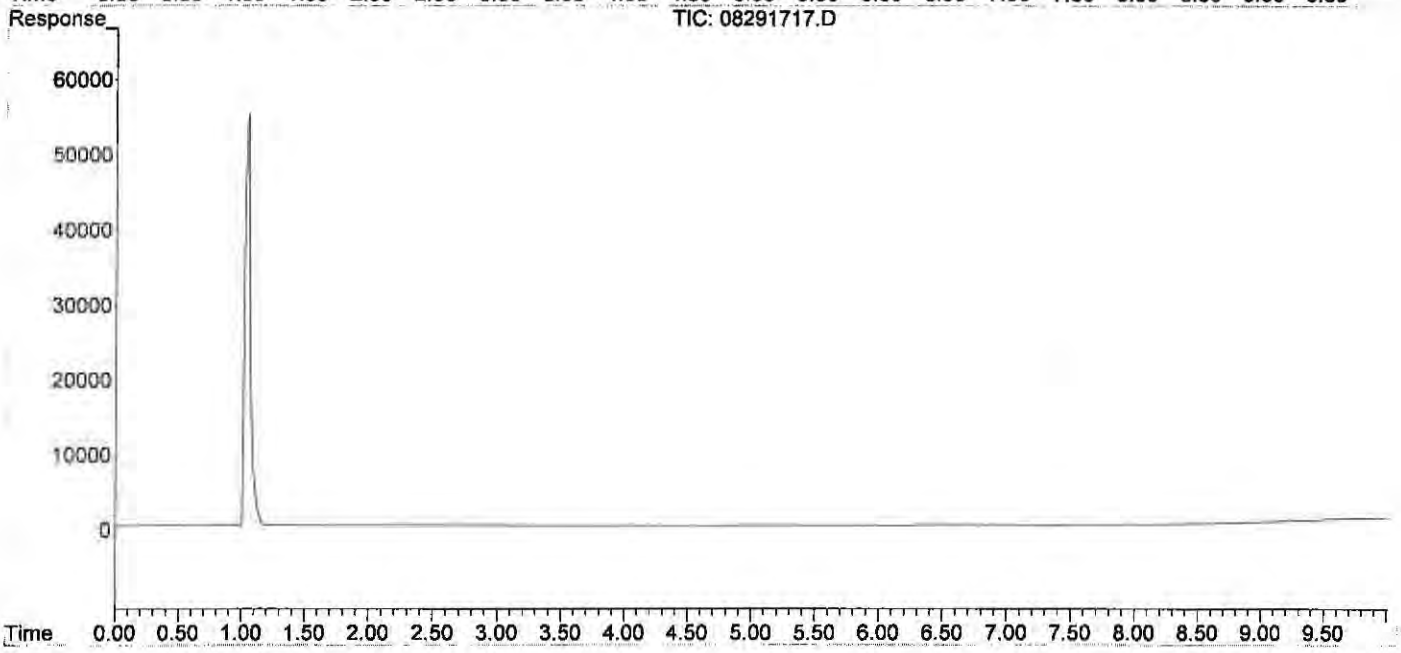
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



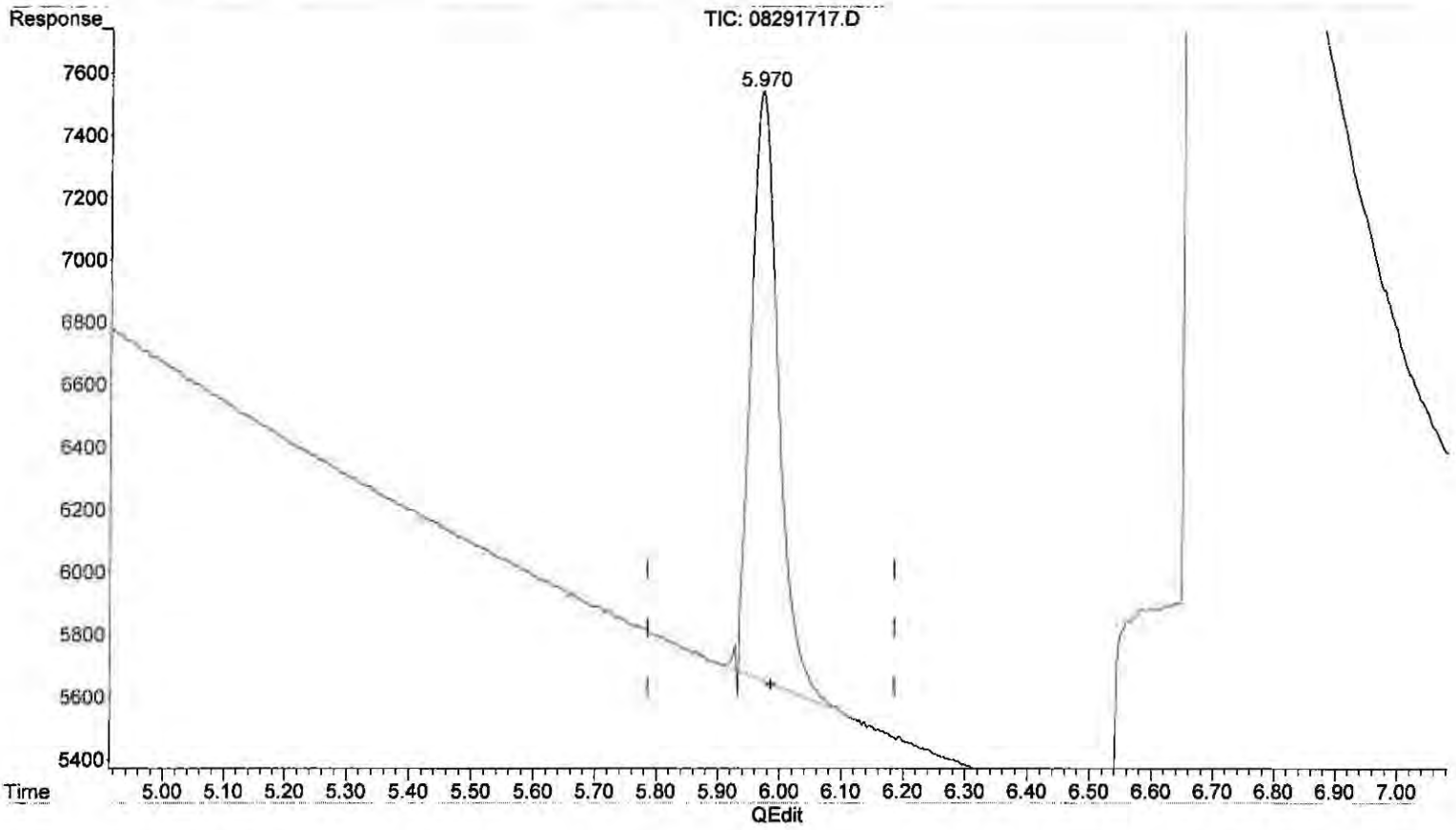


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

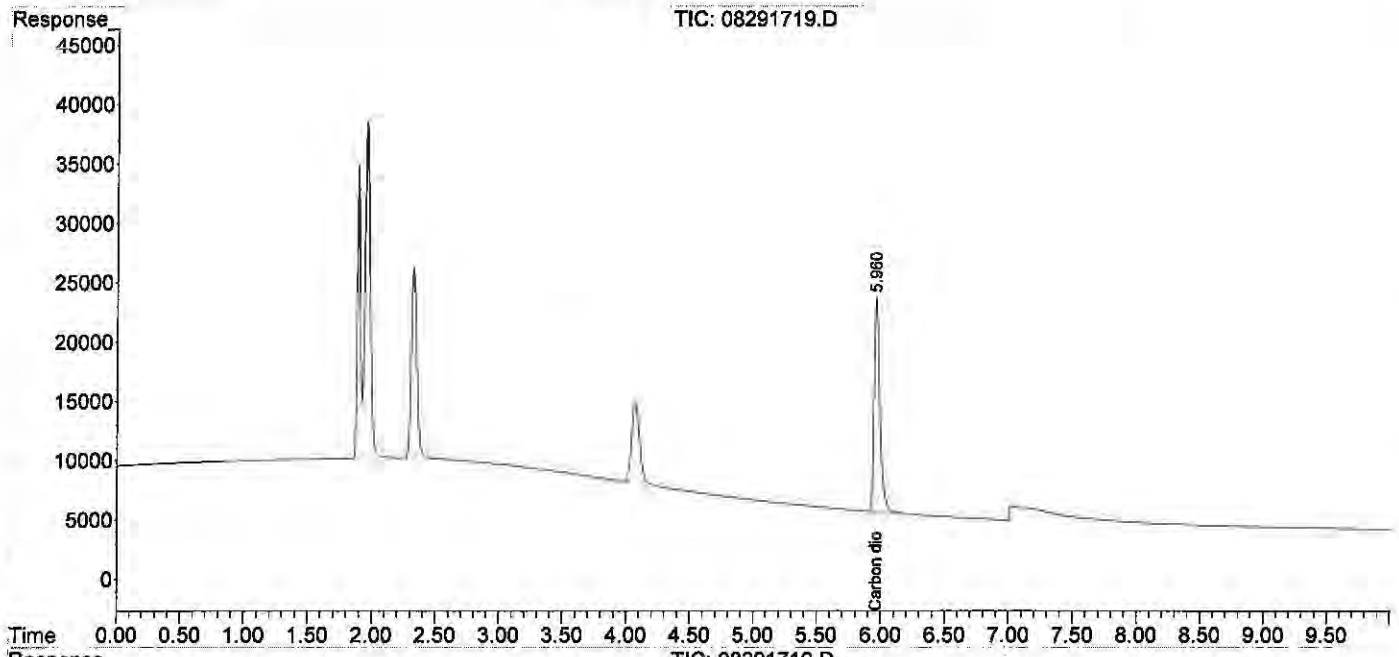
(f)=RT Delta > 1/2 Window (m)=manual int.

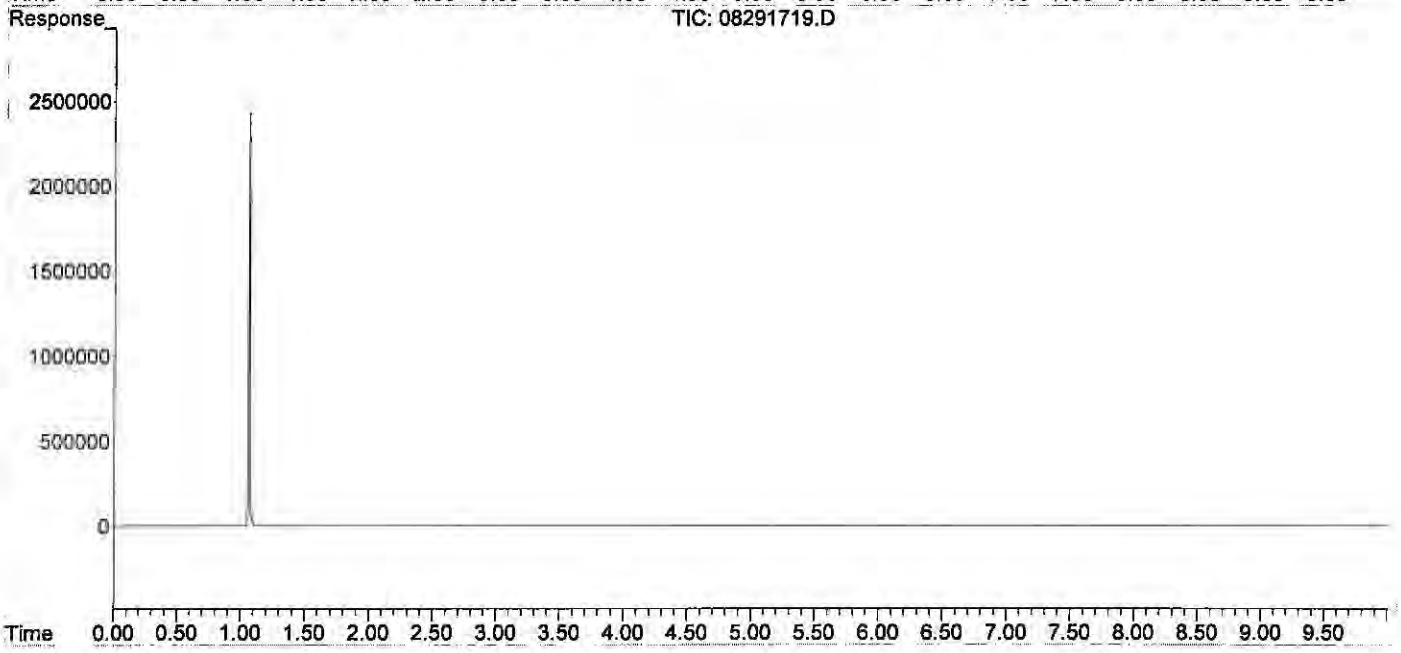
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

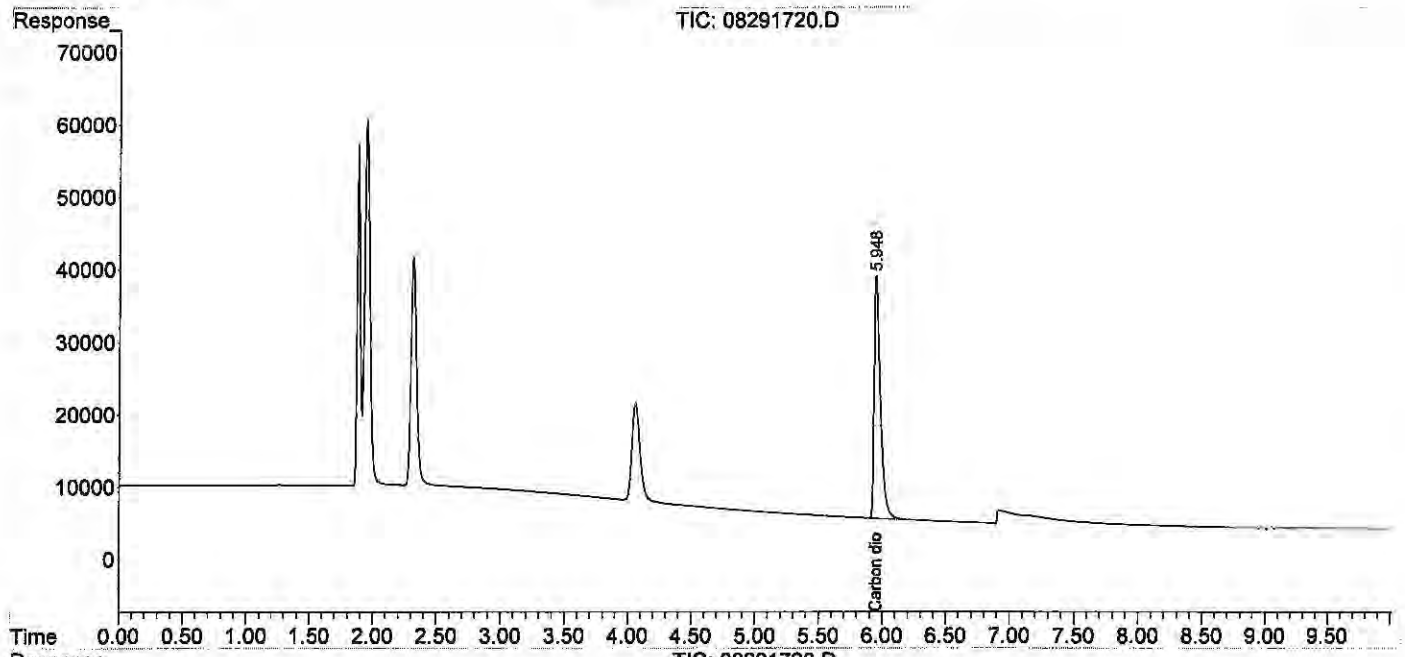
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

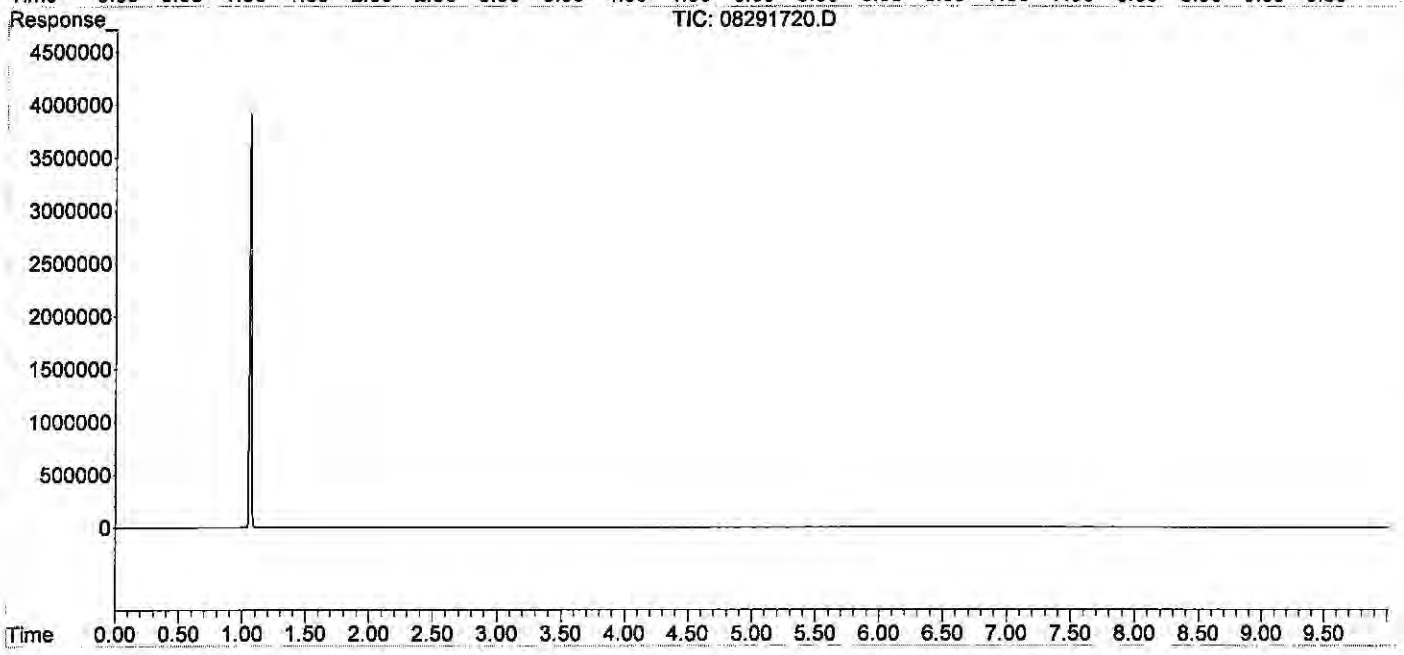
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

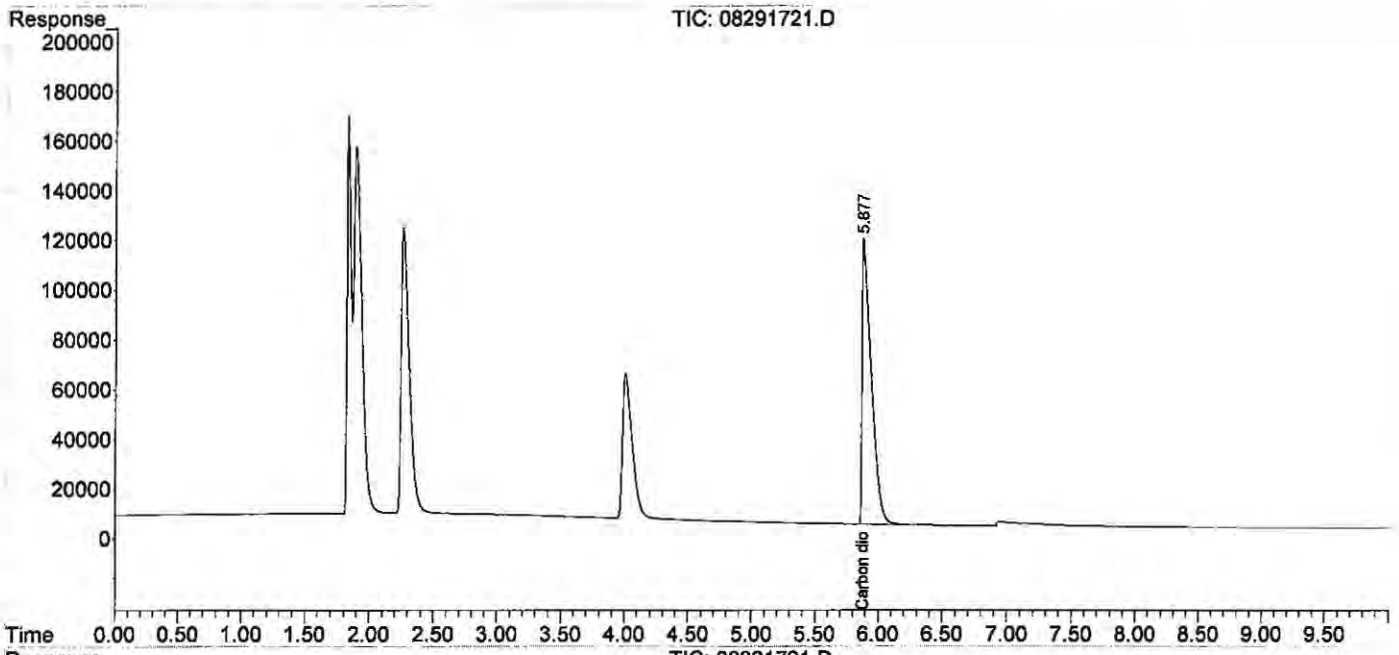
(f)=RT Delta > 1/2 Window (m)=manual int.

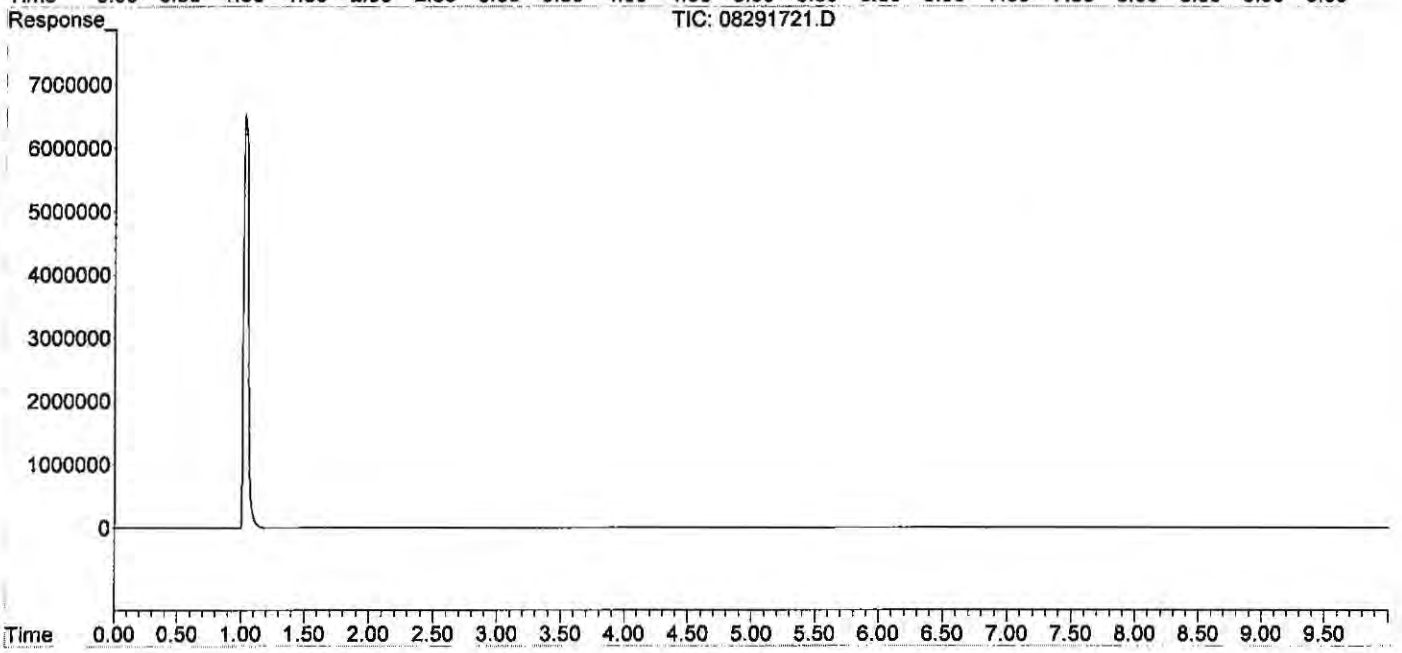
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.886	536422	0.113	ppm
2)	Carbon monoxide	1.886	536422	N.D.	ppm
3)	Methane (TCD)	4.059f	626500	66244.710	ppm
4)	Carbon dioxide	5.947	1163775	4957.948	ppm
6)	Methane (FID)	1.062	37290742	3947.023	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

Actual %D
5000 99.16

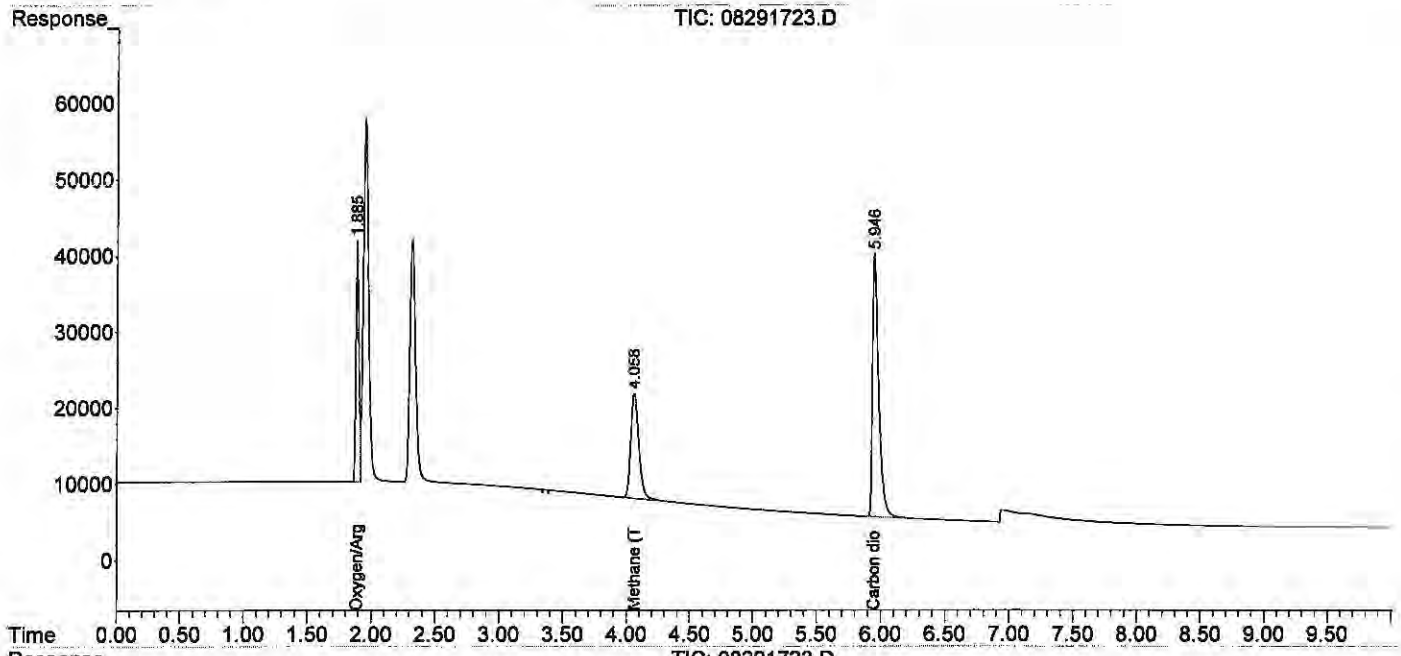
(f)=RT Delta > 1/2 Window (m)=manual int.

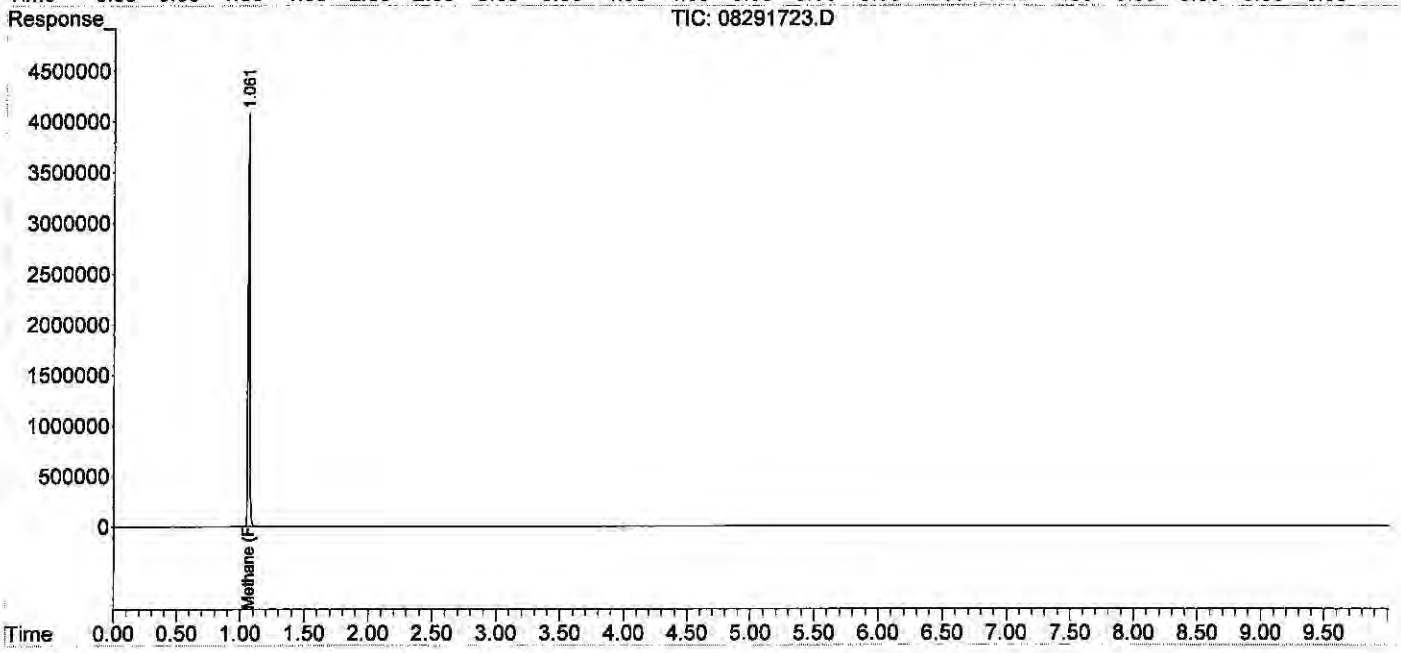
9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2018_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-18, 12:18:11	08291801.D	std s32-07261801		WH	RSKBOTH.M	pass
2	29-Aug-18, 12:58:58	08291802.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	29-Aug-18, 13:33:01	08291803.D	mcs 0.1ml		WH	RSKBOTH.M	pass
4	29-Aug-18, 13:58:02	08291804.D	XXtcd lcs		WH	RSKBOTH.M	
5	29-Aug-18, 14:13:10	08291805.D	XXtcd lcsd		WH	RSKBOTH.M	
6	29-Aug-18, 14:29:48	08291806.D	P1804417-001 0.1ml		WH	RSKBOTH.M	
7	29-Aug-18, 14:43:02	08291807.D	P1804417-002 0.1ml		WH	RSKBOTH.M	
8	29-Aug-18, 14:56:28	08291808.D	P1804417-003 0.1ml		WH	RSKBOTH.M	
9	29-Aug-18, 15:12:49	08291809.D	P1804417-004 0.1ml		WH	RSKBOTH.M	
10	29-Aug-18, 15:26:12	08291810.D	XXP1804415-001 0.1		WH	RSKBOTH.M	
11	29-Aug-18, 15:40:57	08291811.D	XXP1804415-002 0.1		WH	RSKBOTH.M	
12	29-Aug-18, 15:54:24	08291812.D	P1804415-001 50ul		WH	RSKBOTH.M	
13	29-Aug-18, 16:10:25	08291813.D	P1804415-002 50ul		WH	RSKBOTH.M	
14	29-Aug-18, 16:24:12	08291814.D	std s32-07261801		WH	RSKBOTH.M	pass
15	29-Aug-18, 16:36:21	08291815.D	P1804415-003 50ul		WH	RSKBOTH.M	
16	29-Aug-18, 16:47:05	08291816.D	P1804415-004 50ul		WH	RSKBOTH.M	
17	29-Aug-18, 17:00:54	08291817.D	P1804415-005 50ul		WH	RSKBOTH.M	
18	29-Aug-18, 17:10:41	08291818.D	P1804415-006 50ul		WH	RSKBOTH.M	
19	29-Aug-18, 17:20:19	08291819.D	P1804415-007 50ul		WH	RSKBOTH.M	
20	29-Aug-18, 17:29:37	08291820.D	tcd lcs s32-05011801		WH	RSKBOTH.M	pass
21	29-Aug-18, 17:45:58	08291821.D	tcd lcsd s32-05011801		WH	RSKBOTH.M	pass
22	29-Aug-18, 17:55:01	08291822.D	std s32-07261801		WH	RSKBOTH.M	pass

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 11:39:10
Operator : WH
Sample : P1804415-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:03:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.095	1133	0.125	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

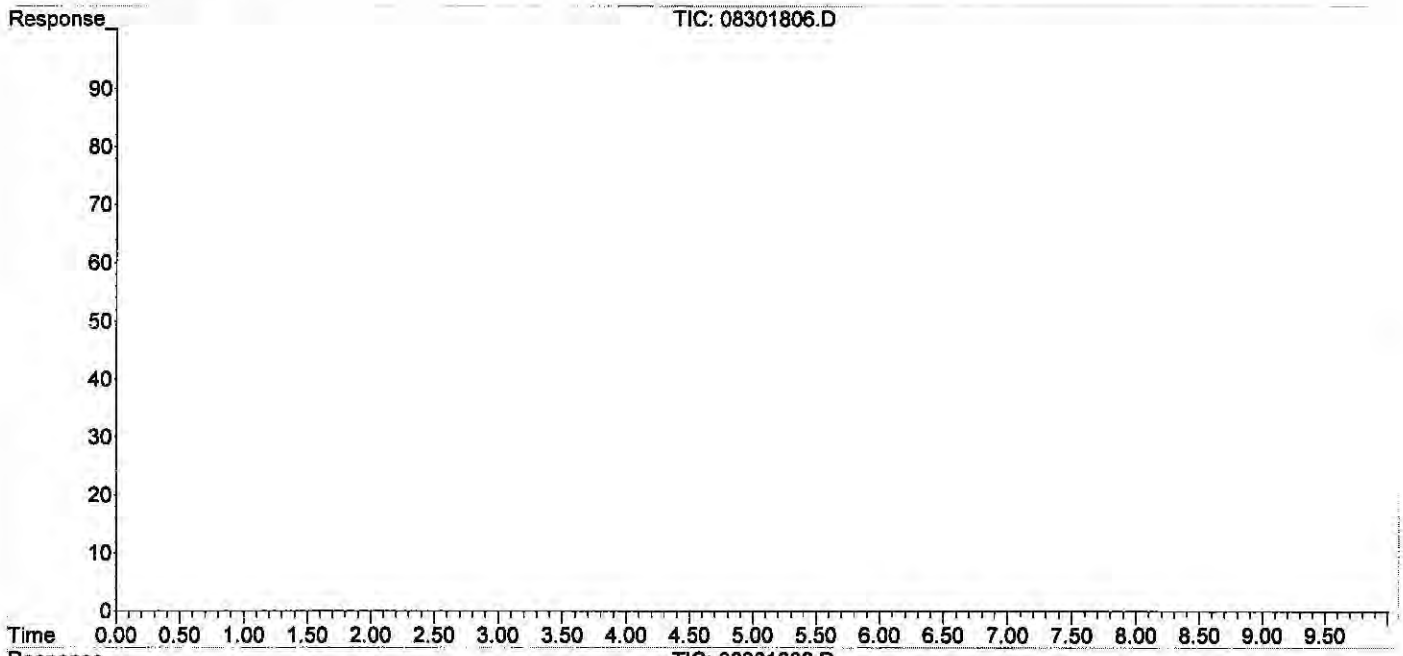
(f)=RT Delta > 1/2 Window (m)=manual int.

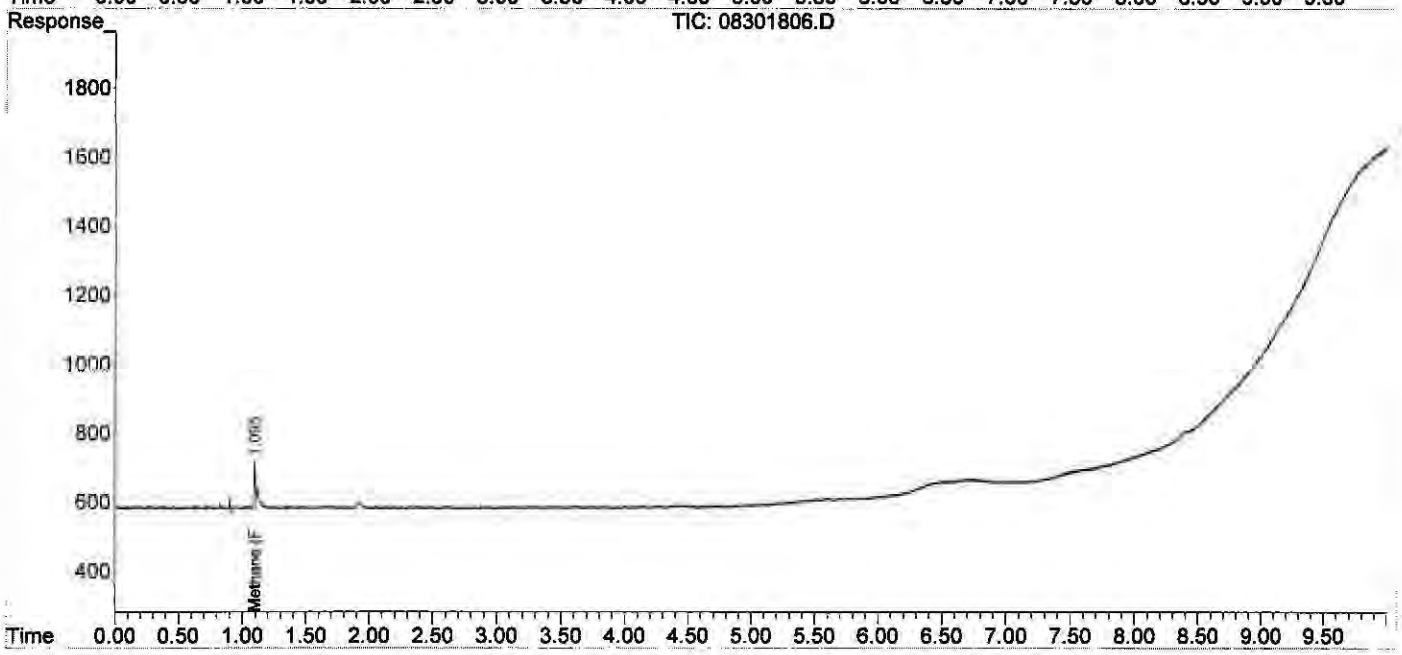
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 11:39:10
Operator : WH
Sample : P1804415-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:03:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



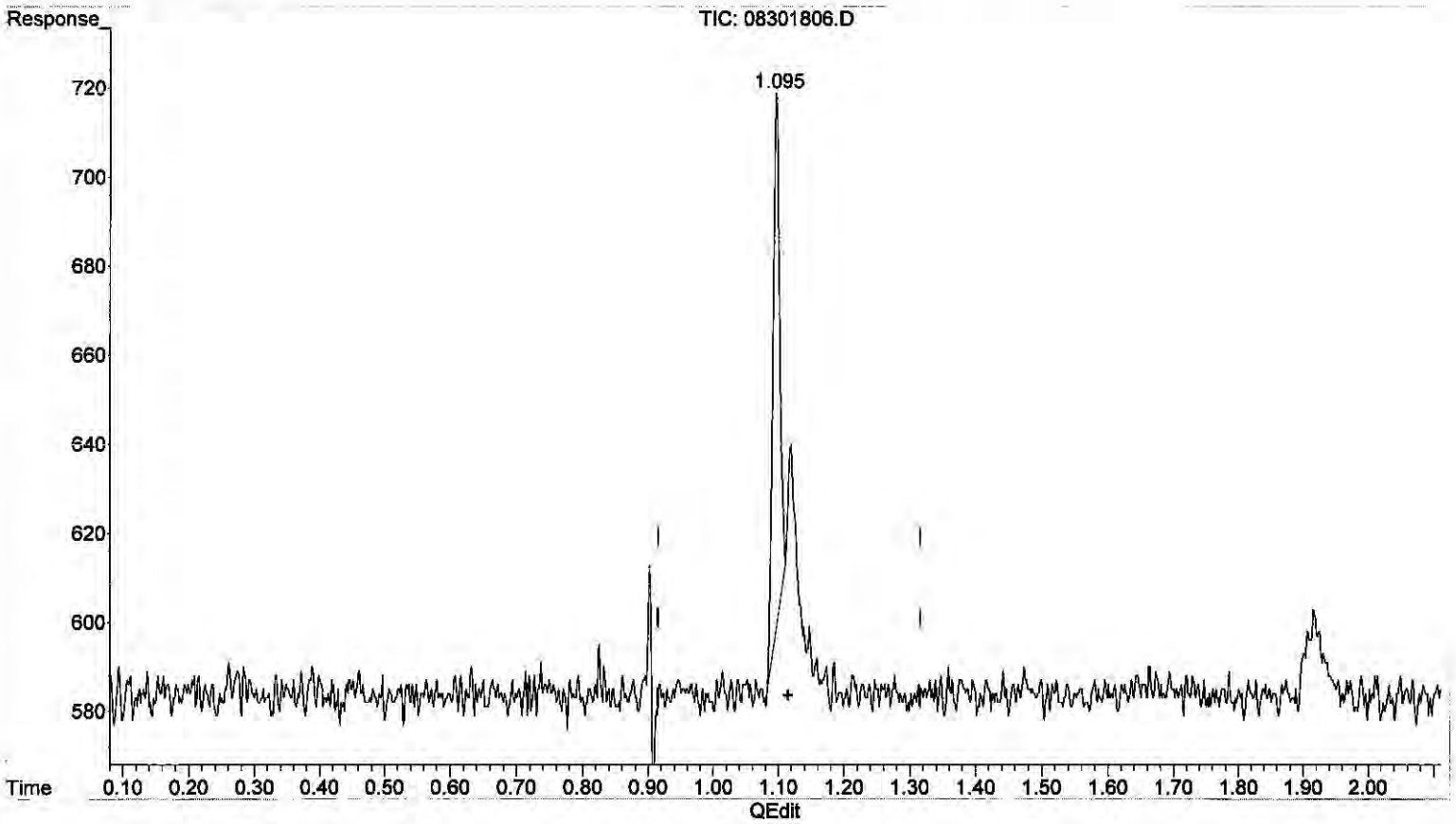


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 11:39:10
Operator : WH
Sample : P1804415-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:03:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.096min 0.092 ppm

response 837

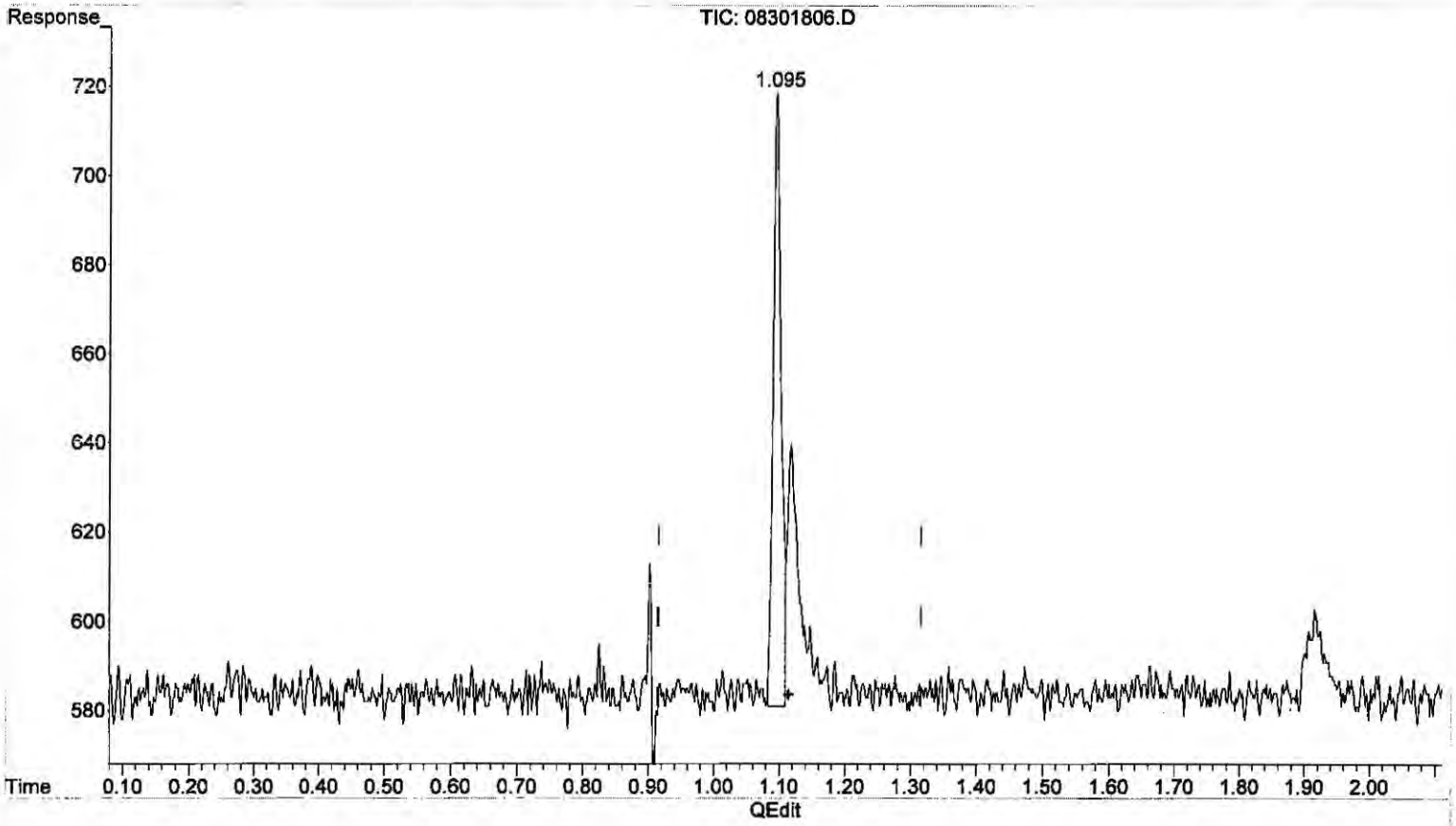
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 11:39:10
Operator : WH
Sample : P1804415-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:03:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)
1.095min 0.125 ppm m
response 1133

MR 8/31/18
BLC
8/31/18

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:00:05
Operator : WH
Sample : P1804415-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:05:02 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.096	1221	0.135	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

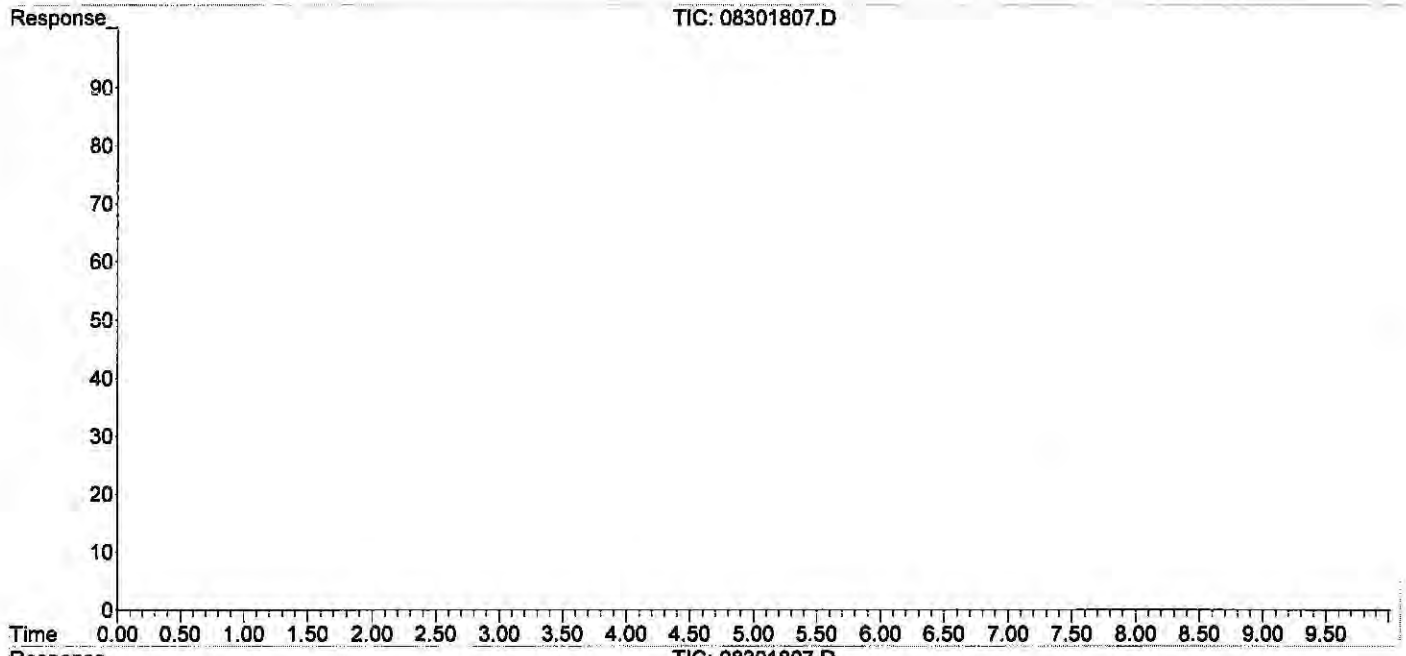
(f)=RT Delta > 1/2 Window (m)=manual int.

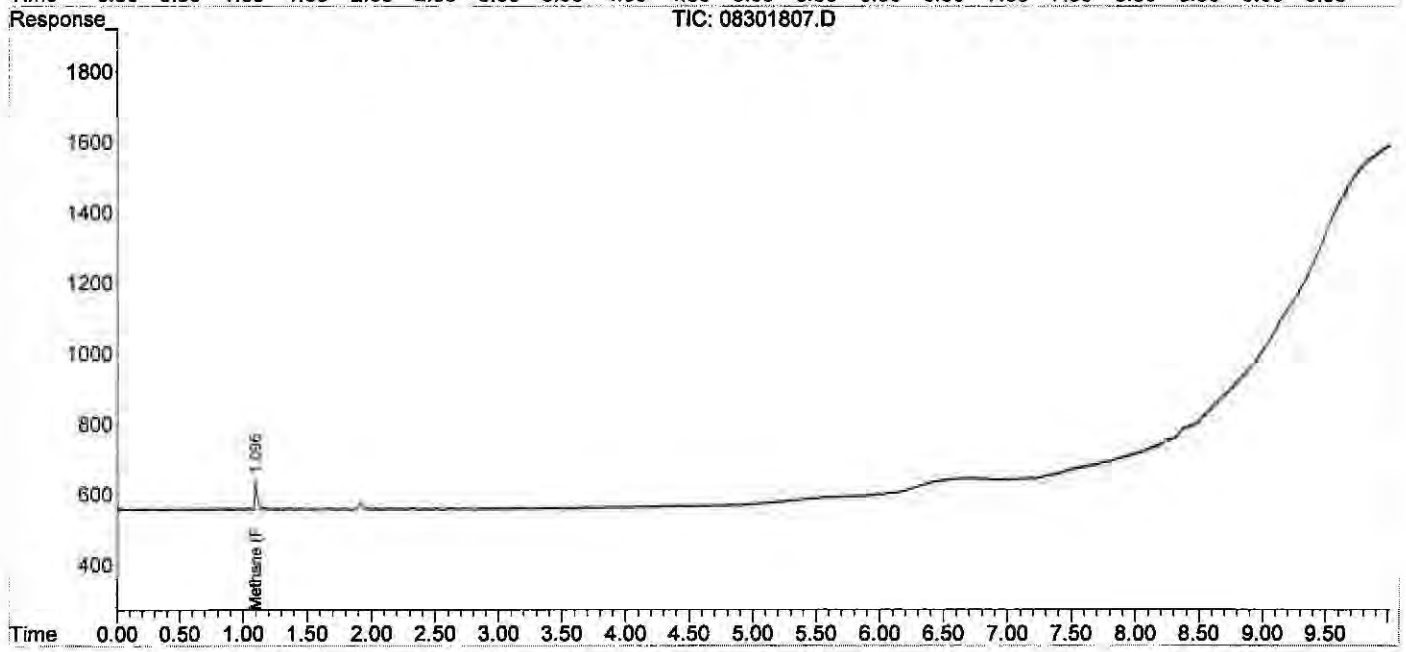
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:00:05
Operator : WH
Sample : P1804415-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:05:02 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



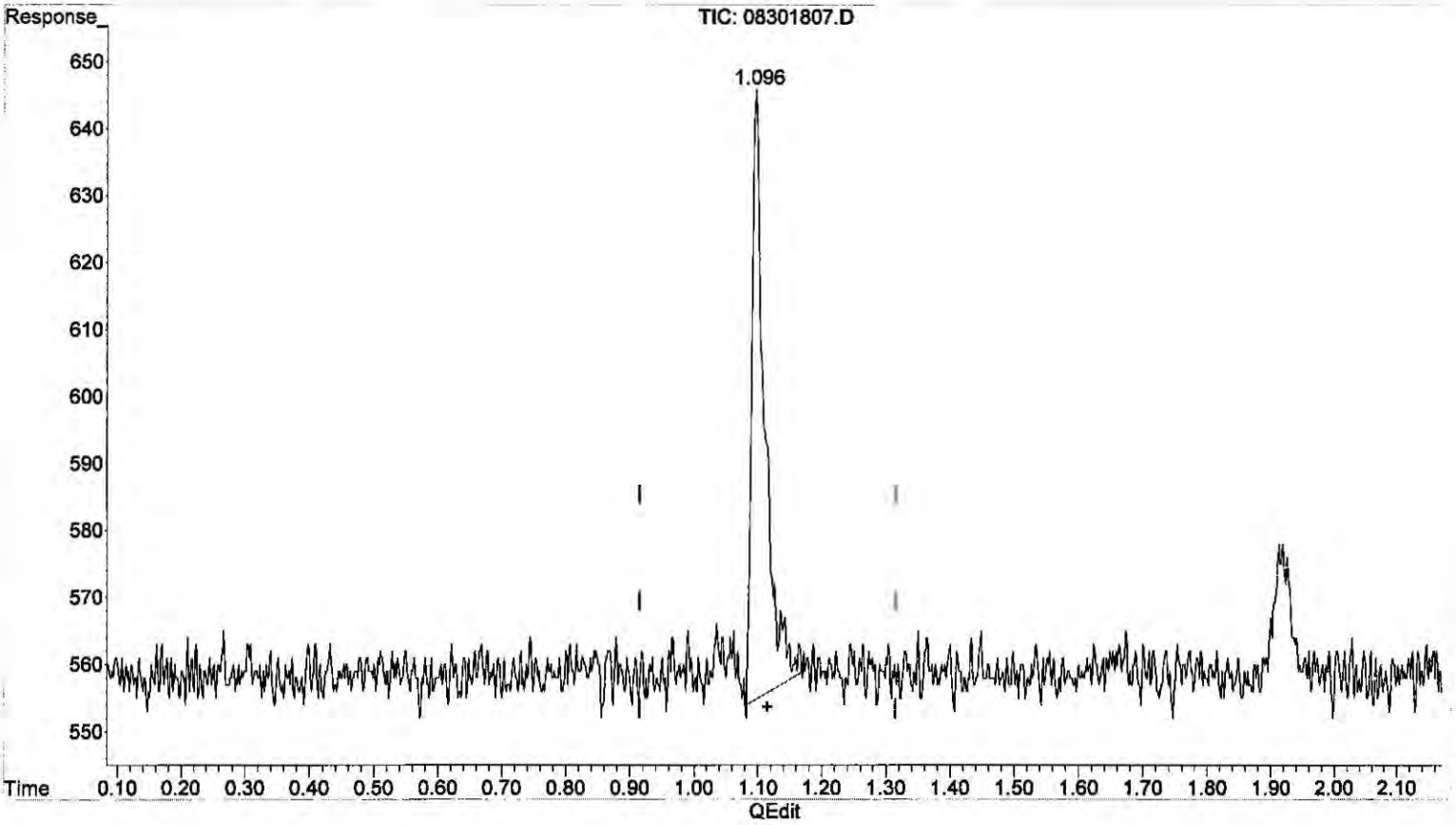


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:00:05
Operator : WH
Sample : P1804415-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:05:02 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.097min 0.141 ppm

response 1280

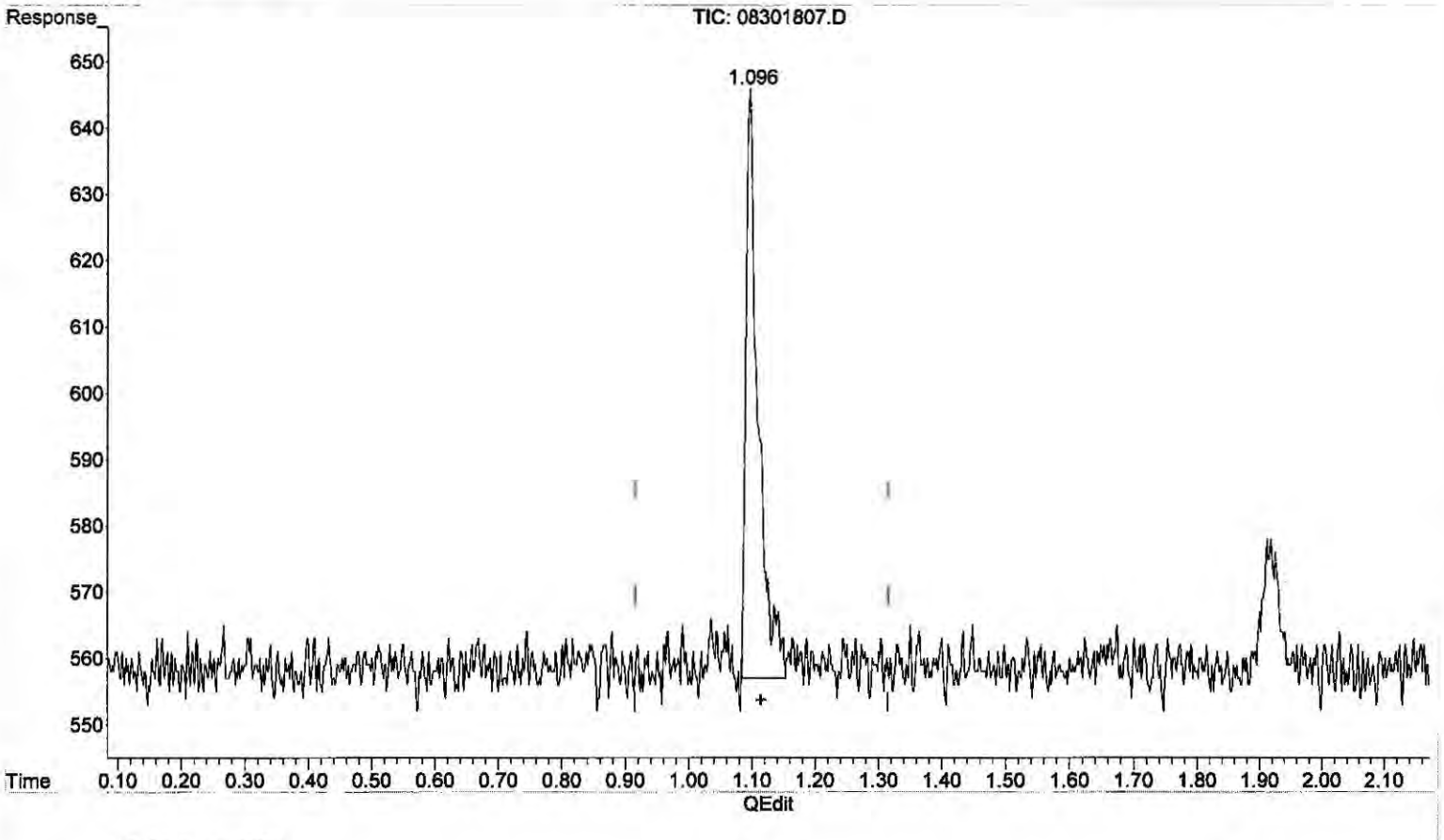
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:00:05
Operator : WH
Sample : P1804415-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:05:02 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.096min 0.135 ppm m

response 1221

MR 8/31/18
BLC

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:13:59
Operator : WH
Sample : P1804415-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:11:51 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.095	1675	0.185	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

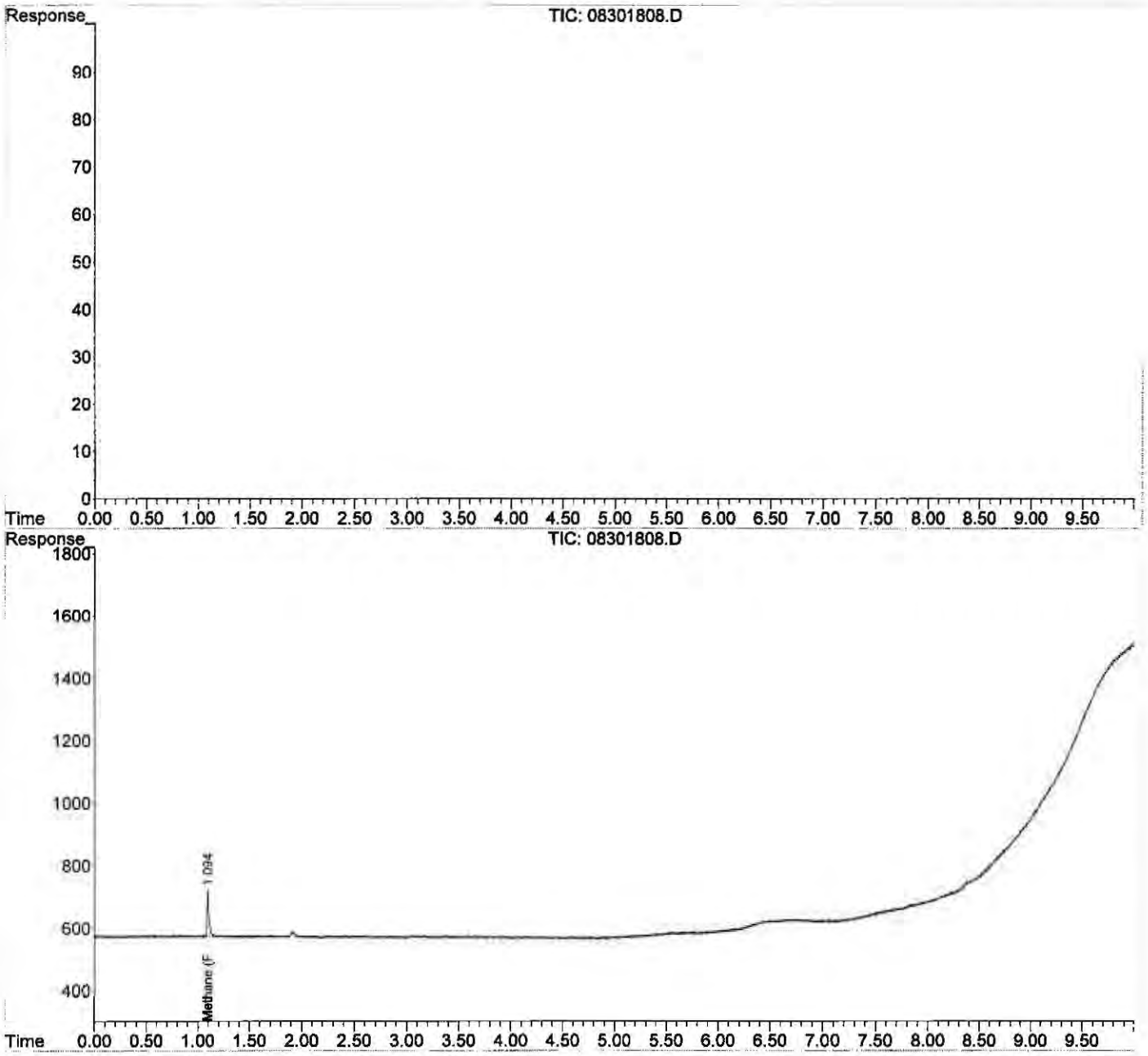
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:13:59
Operator : WH
Sample : P1804415-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:11:51 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:34:44
Operator : WH
Sample : P1804415-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:12:12 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.104	3496	0.385	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

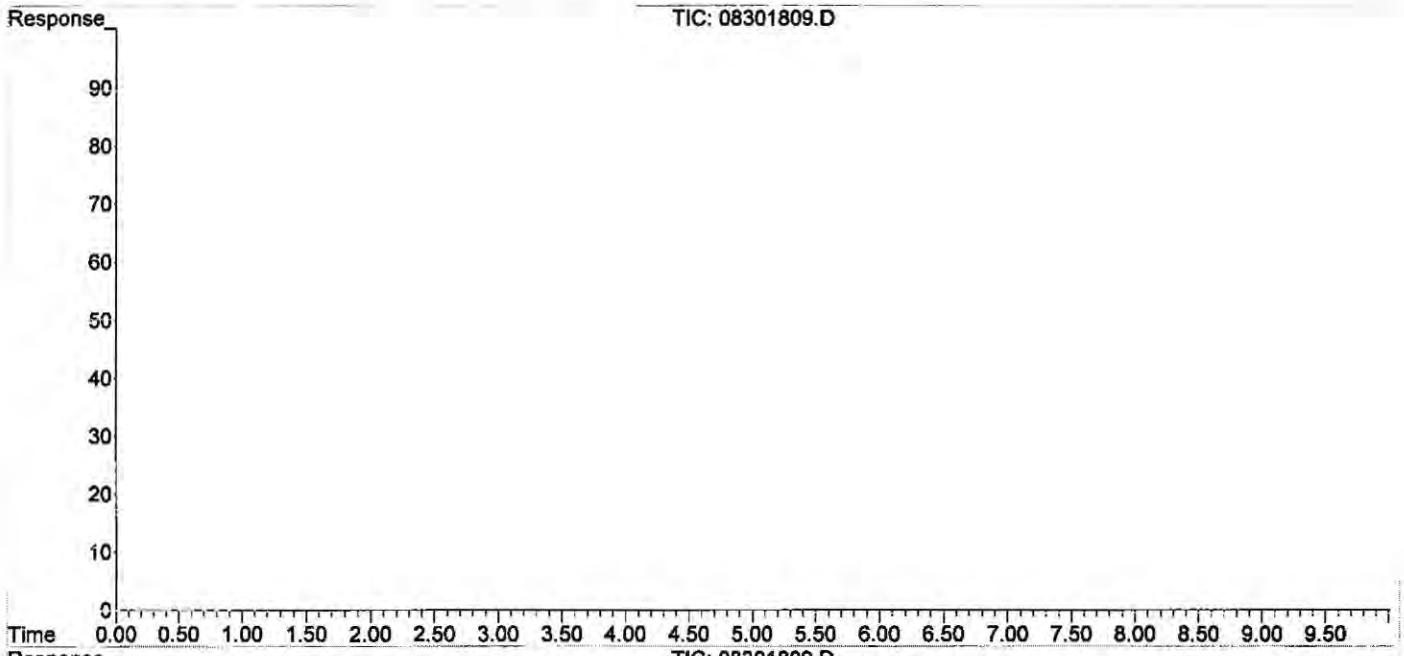
(f)=RT Delta > 1/2 Window (m)=manual int.

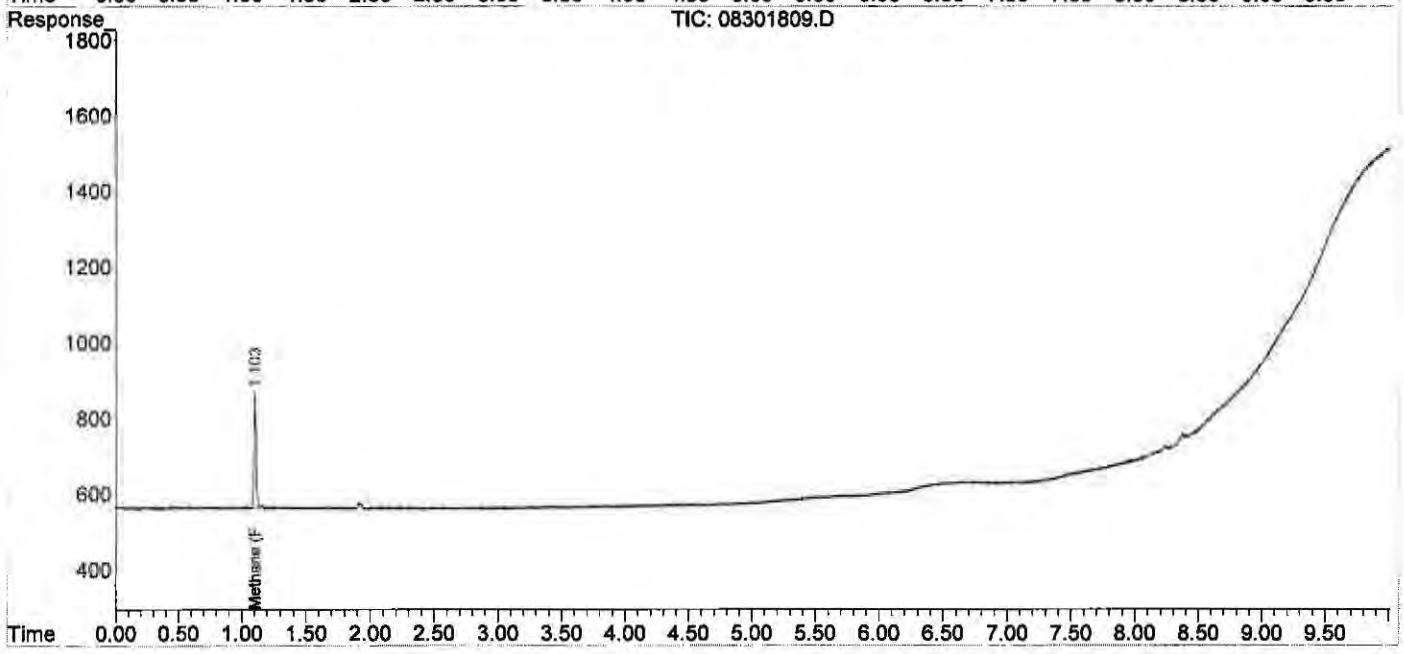
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:34:44
Operator : WH
Sample : P1804415-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:12:12 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:51:25
Operator : WH
Sample : P1804415-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:12:30 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.106	3481	0.384	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

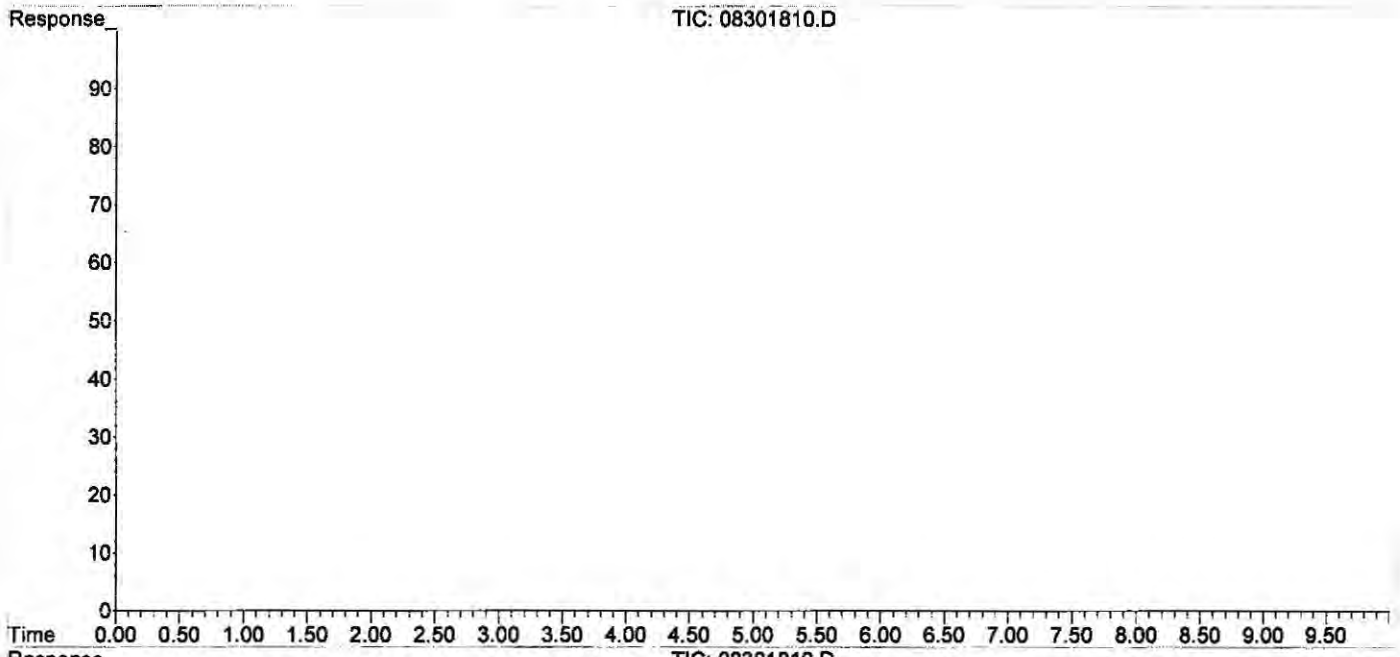
(f)=RT Delta > 1/2 Window (m)=manual int.

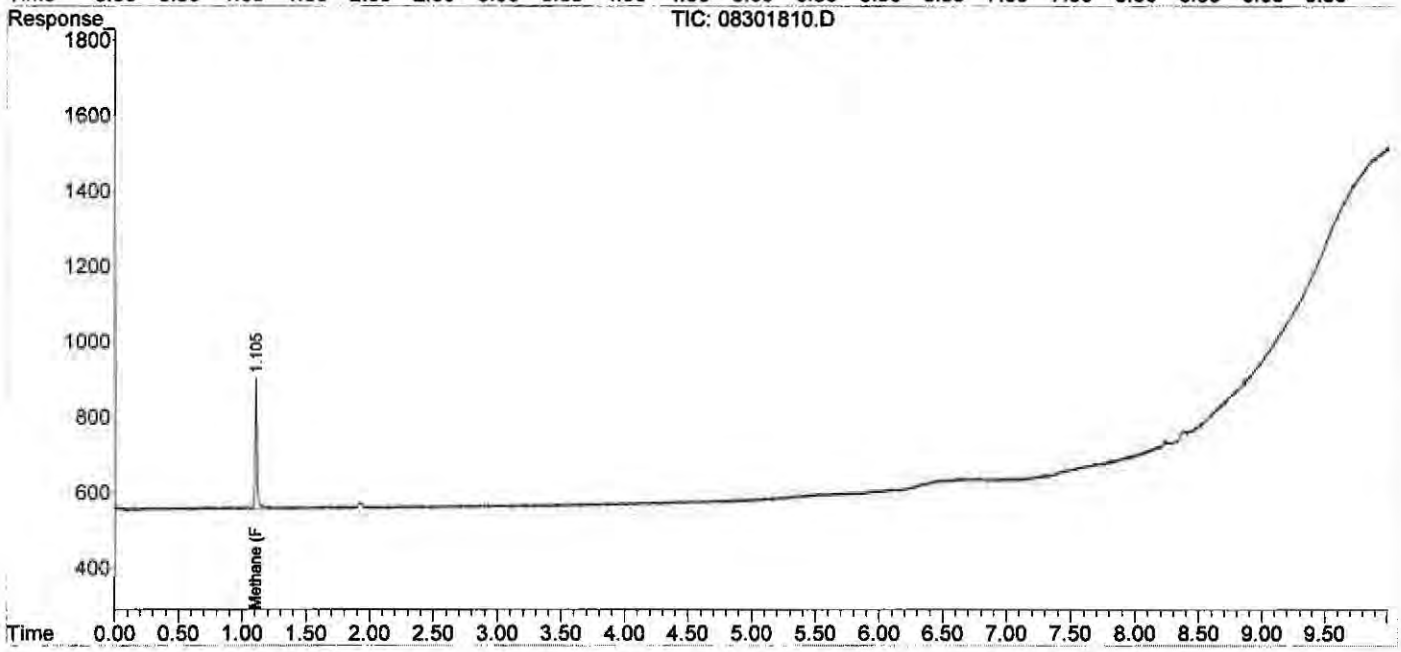
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 12:51:25
Operator : WH
Sample : P1804415-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:12:30 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 13:33:13
Operator : WH
Sample : P1804415-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:12:46 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.104	10324	1.138	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

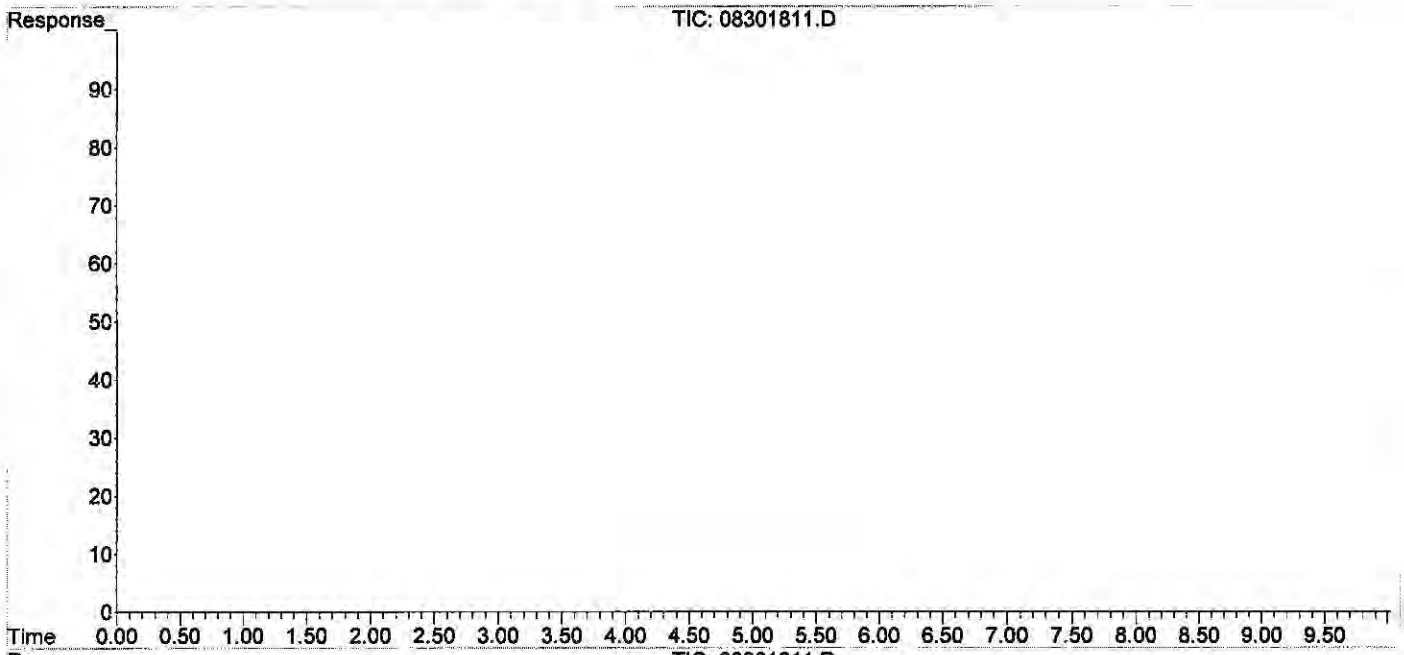
(f)=RT Delta > 1/2 Window (m)=manual int.

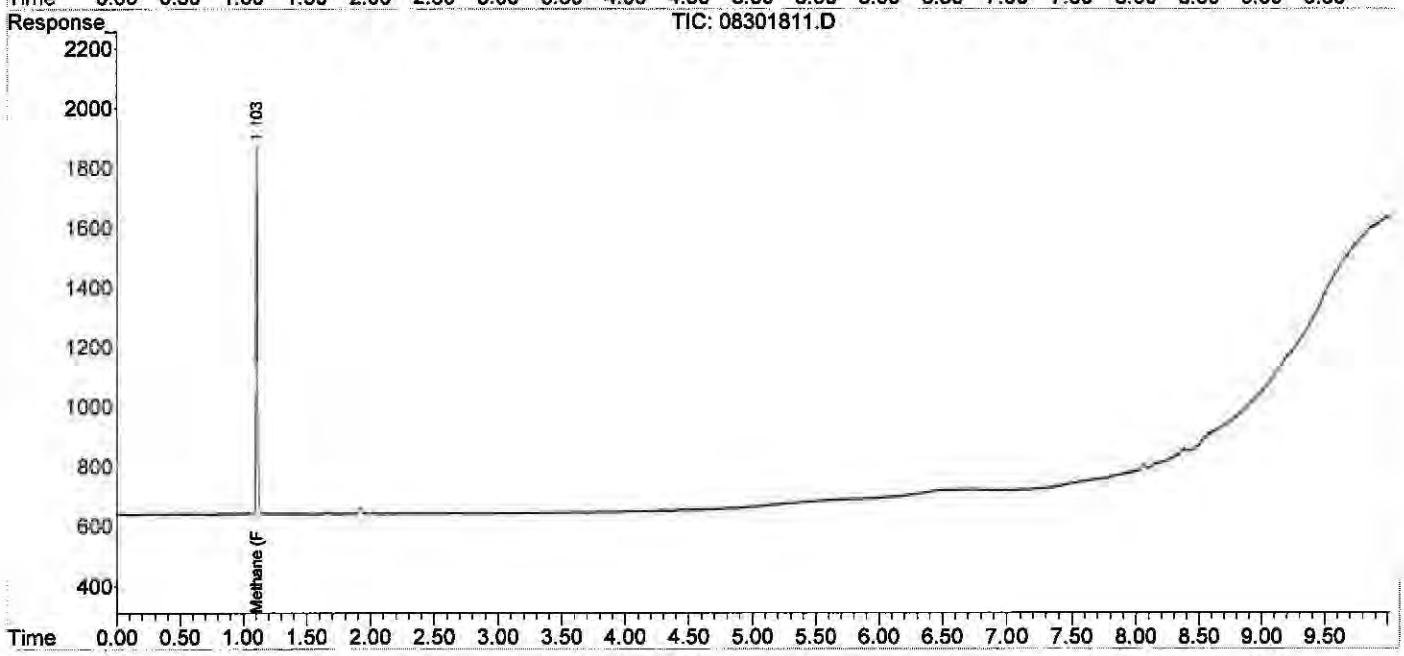
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 13:33:13
Operator : WH
Sample : P1804415-006 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:12:46 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 14:21:05
Operator : WH
Sample : P1804415-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:13:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

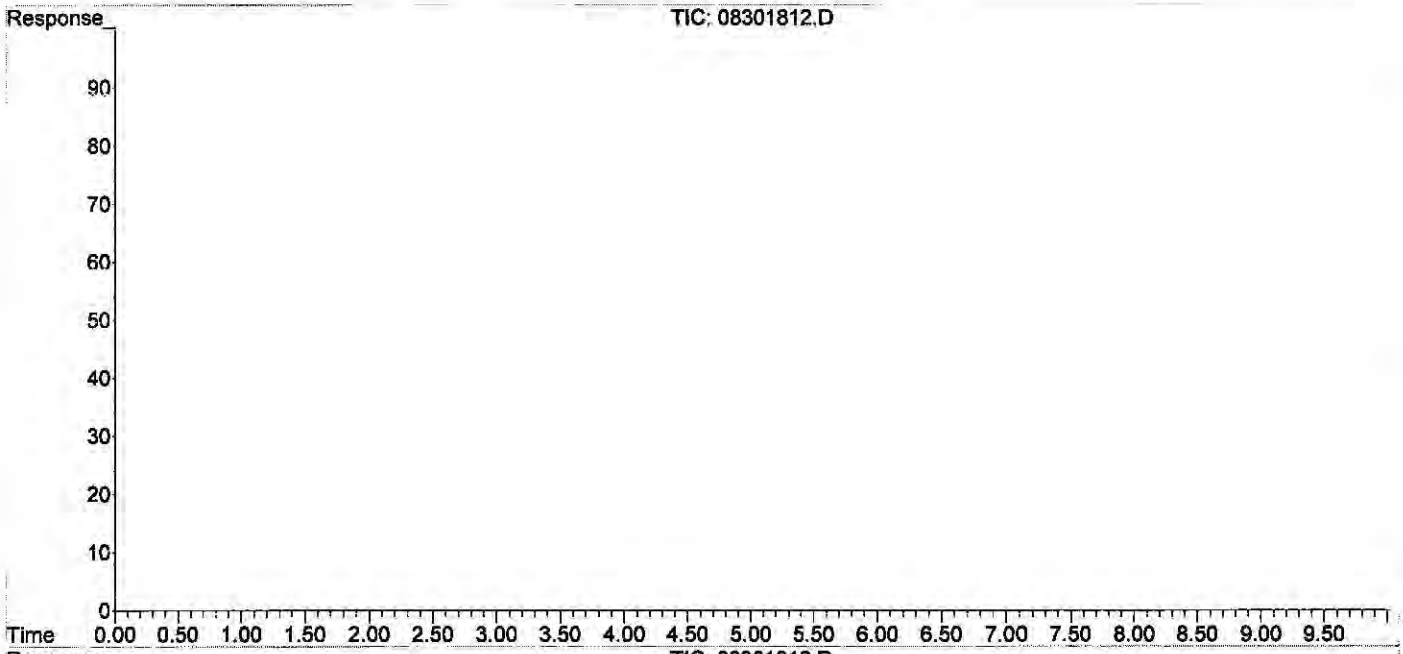
(f)=RT Delta > 1/2 Window (m)=manual int.

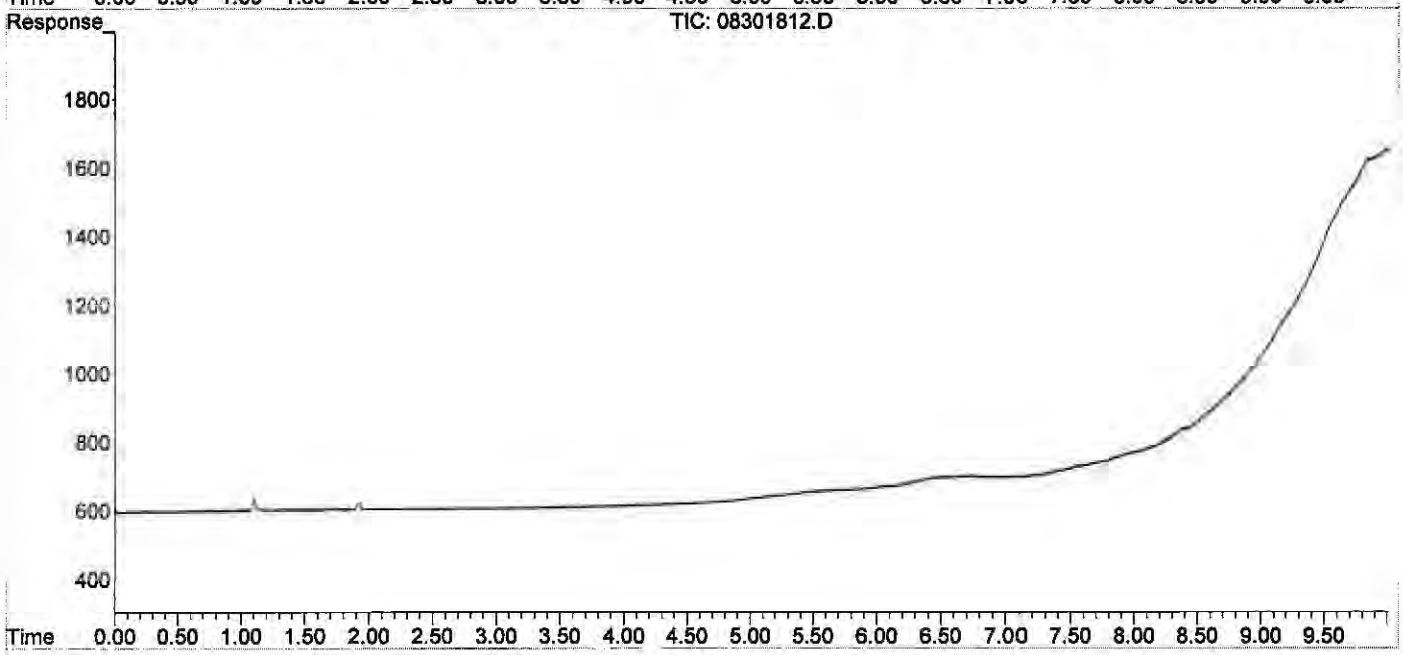
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 14:21:05
Operator : WH
Sample : P1804415-007 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 31 11:13:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 10:14:18
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 10:39:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.108	2699	0.298	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

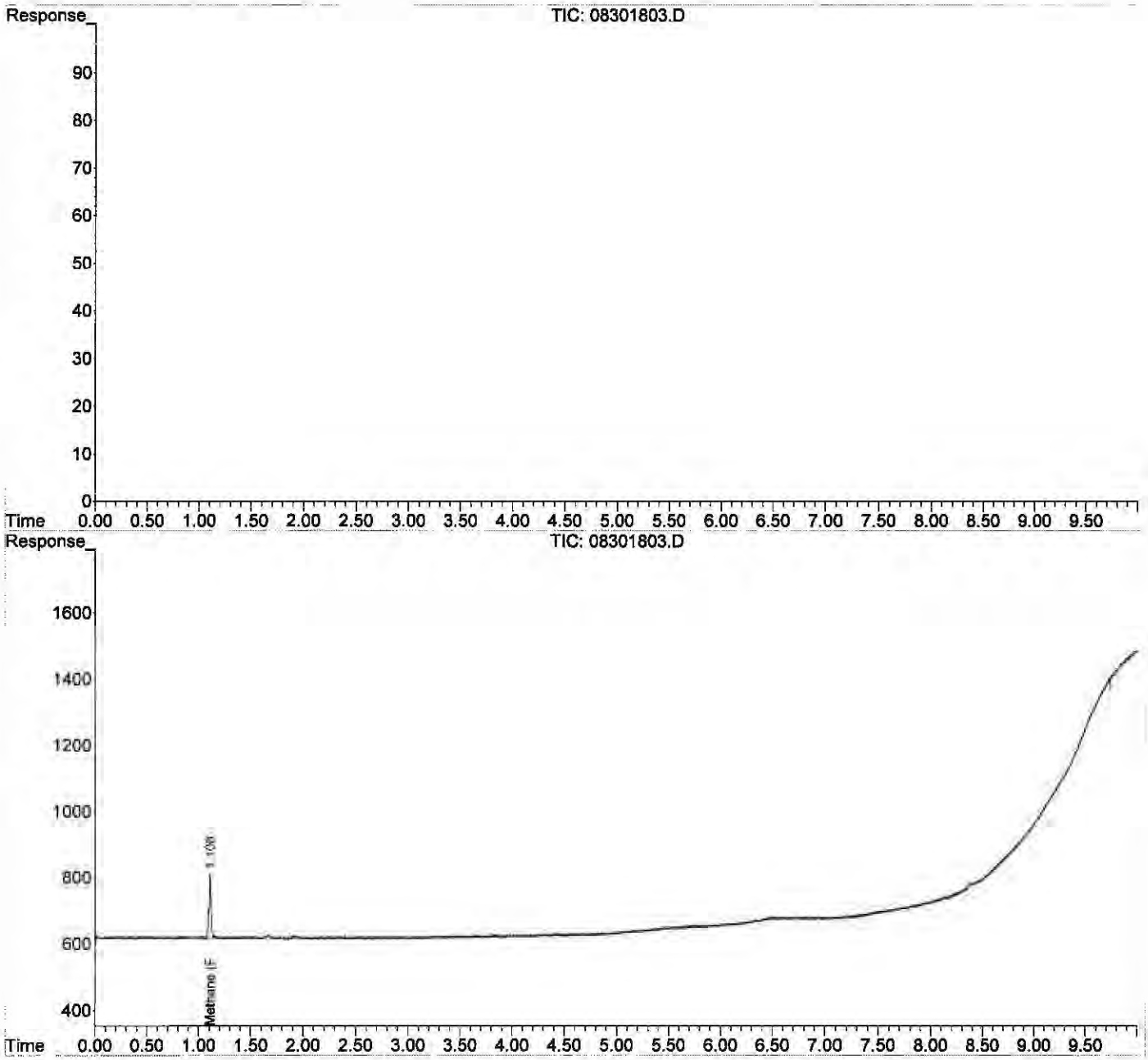
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 10:14:18
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 10:39:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

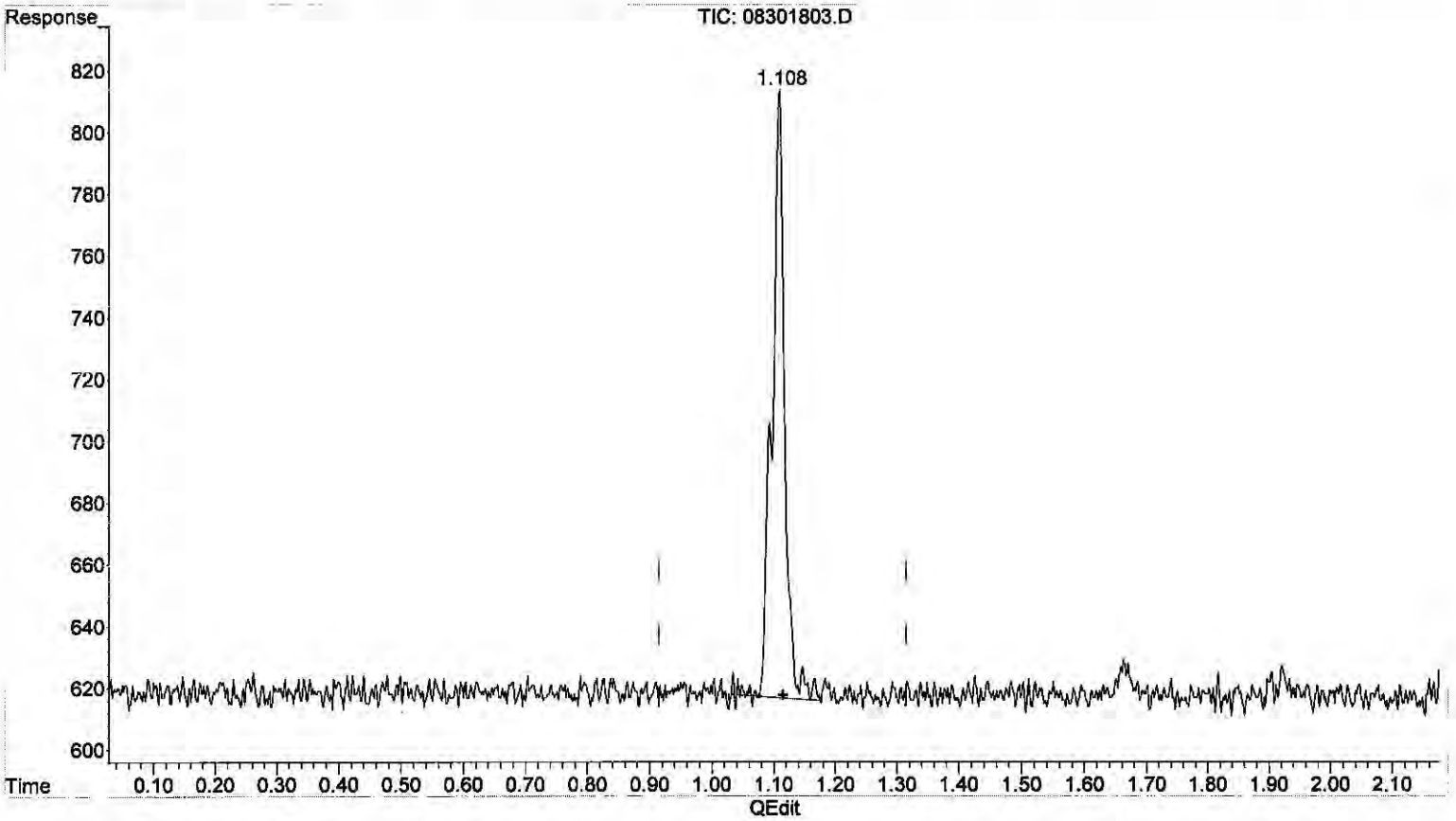


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 10:14:18
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 10:39:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.108min 0.309 ppm

response 2799

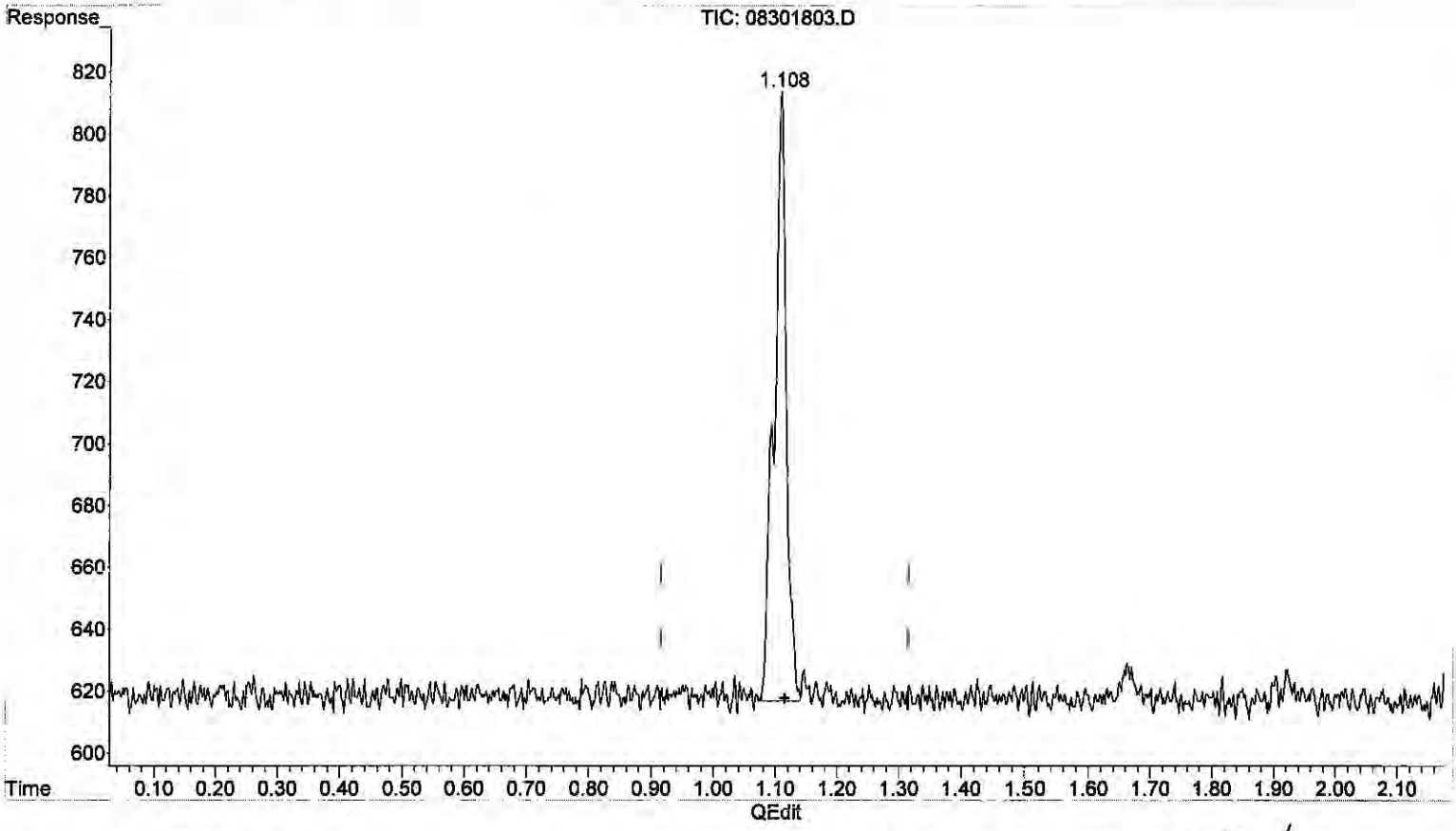
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 10:14:18
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 10:39:04 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)
1.108min 0.298 ppm m
response 2699

MR 8/31/18
DLC

W# 9/4/18

(+) = Expected Retention Time
RS091217_R.M Thu Aug 30 10:39:38 2018

ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1804415
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 08/30/18
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Ini. Vol.	Methane	Ethylene	Ethane
std s32-07231801	0.100	1.507	1.507	1.447
ACTUAL		1.51	1.51	1.51
%Difference		0.2%	0.2%	4.2%
mcs 0.1ml	0.100	0.298	0.000	0.000
rb 0.1ml	0.100	0.066	0.000	0.000
fid lcs s30-05241604	0.100	1.384	0.935	1.144
fid lcsd s30-05241604	0.100	1.369	0.897	1.096
P1804415-001 0.1ml	0.100	0.125	0.000	0.000
P1804415-002 0.1ml	0.100	0.135	0.000	0.000
P1804415-003 0.1ml	0.100	0.185	0.000	0.000
P1804415-004 0.1ml	0.100	0.385	0.000	0.000
P1804415-005 0.1ml	0.100	0.384	0.000	0.000
P1804415-006 0.1ml	0.100	1.138	0.000	0.000
P1804415-007 0.1ml	0.100	0.000	0.000	0.000

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	2.980	0.000	0.000
fid lcs s30-05241604	13.840	9.350	11.440
fid lcsd s30-05241604	13.690	8.970	10.960
P1804415-001 0.1ml	1.250	0.000	0.000
P1804415-002 0.1ml	1.350	0.000	0.000
P1804415-003 0.1ml	1.850	0.000	0.000
P1804415-004 0.1ml	3.850	0.000	0.000
P1804415-005 0.1ml	3.840	0.000	0.000
P1804415-006 0.1ml	11.380	0.000	0.000
P1804415-007 0.1ml	0.000	0.000	0.000

std s32-07231801		1.667	1.592	1.569	13:33:13	1.14	0.00	0.00
ACTUAL		1.51	1.51	1.51				
%Difference		10.4%	5.4%	3.9%				

00919919

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 09:43:29
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 09:55:26 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.107	13666	1.507	ppm
7)	Ethylene	1.662	25220	1.507	ppm
8)	Ethane	1.922	24522	1.447	ppm
9)	Propylene	4.293	34525	1.473	ppm
10)	Propane	4.417	35586	1.430	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.632f	45789	1.720	ppm
13)	n-Butane	6.632f	45789	1.720	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

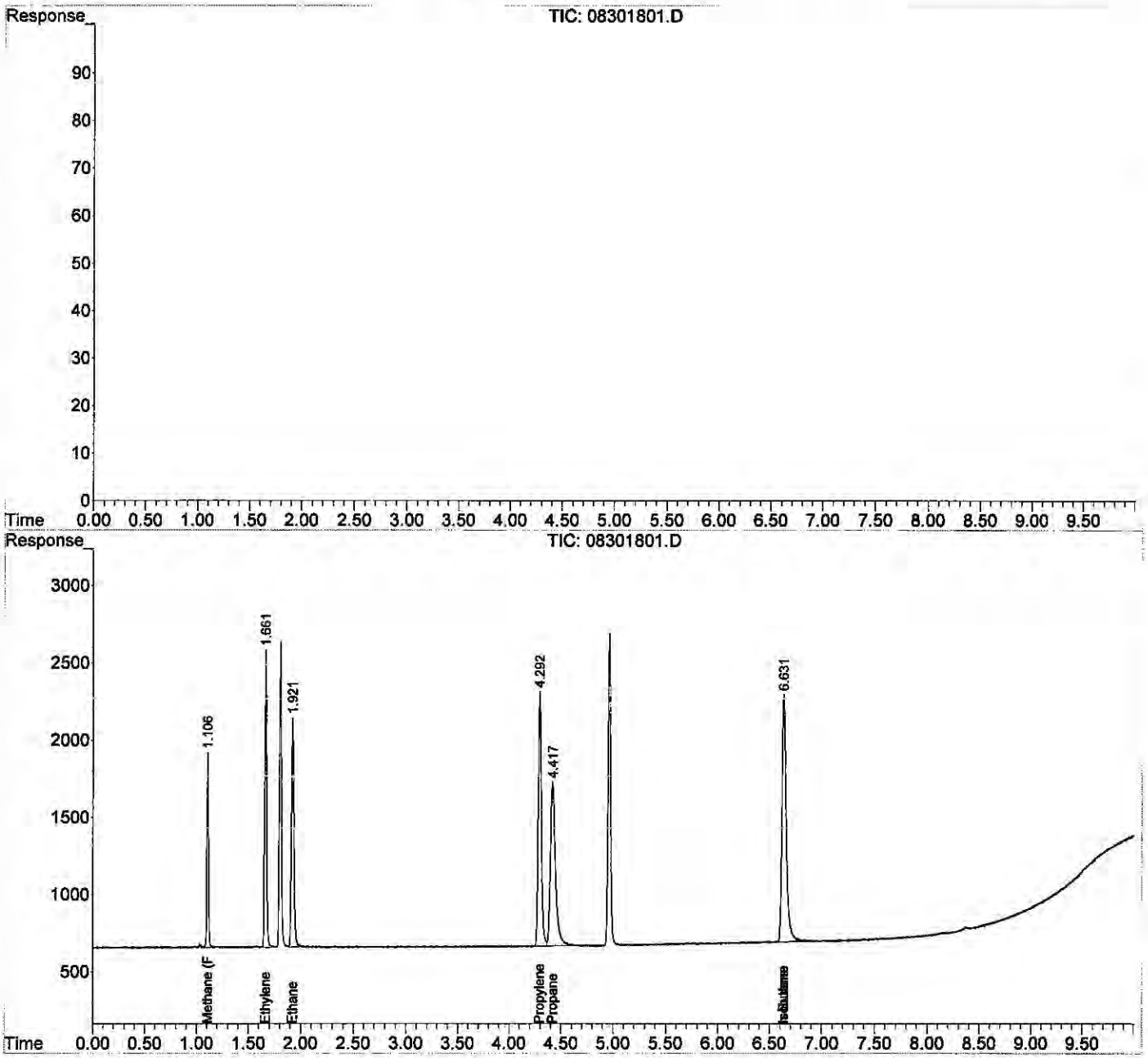
MR 8/31/18

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 09:43:29
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 09:55:26 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301818.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 17:11:23
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 17:26:52 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.102	15119	1.667	ppm
7)	Ethylene	1.658	26649	1.592	ppm
8)	Ethane	1.918	26601	1.569	ppm
9)	Propylene	4.293	38586	1.647	ppm
10)	Propane	4.418	39334	1.581	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.633f	51135	1.921	ppm
13)	n-Butane	6.633f	51135	1.921	ppm

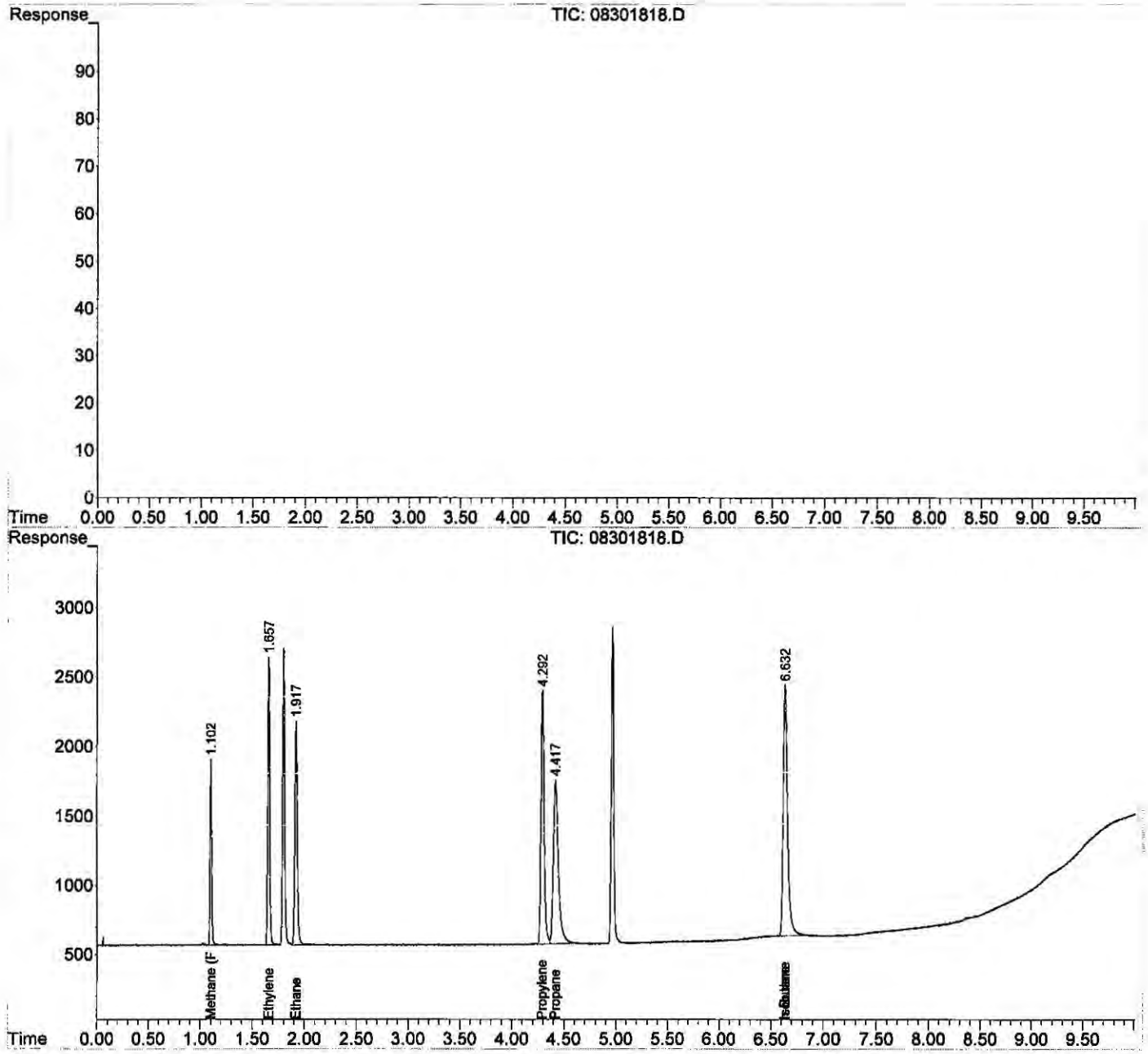
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301818.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 17:11:23
Operator : WH
Sample : std s32-07231801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 17:26:52 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 16:34:15
Operator : WH
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 17:09:40 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.104	12554	1.384	ppm
7)	Ethylene	1.660	15642	0.935	ppm
8)	Ethane	1.920	19391	1.144	ppm
9)	Propylene	4.294	20812	0.888	ppm
10)	Propane	4.419	28682	1.153	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.635f	35888	1.348	ppm
13)	n-Butane	6.635f	35888	1.348	ppm

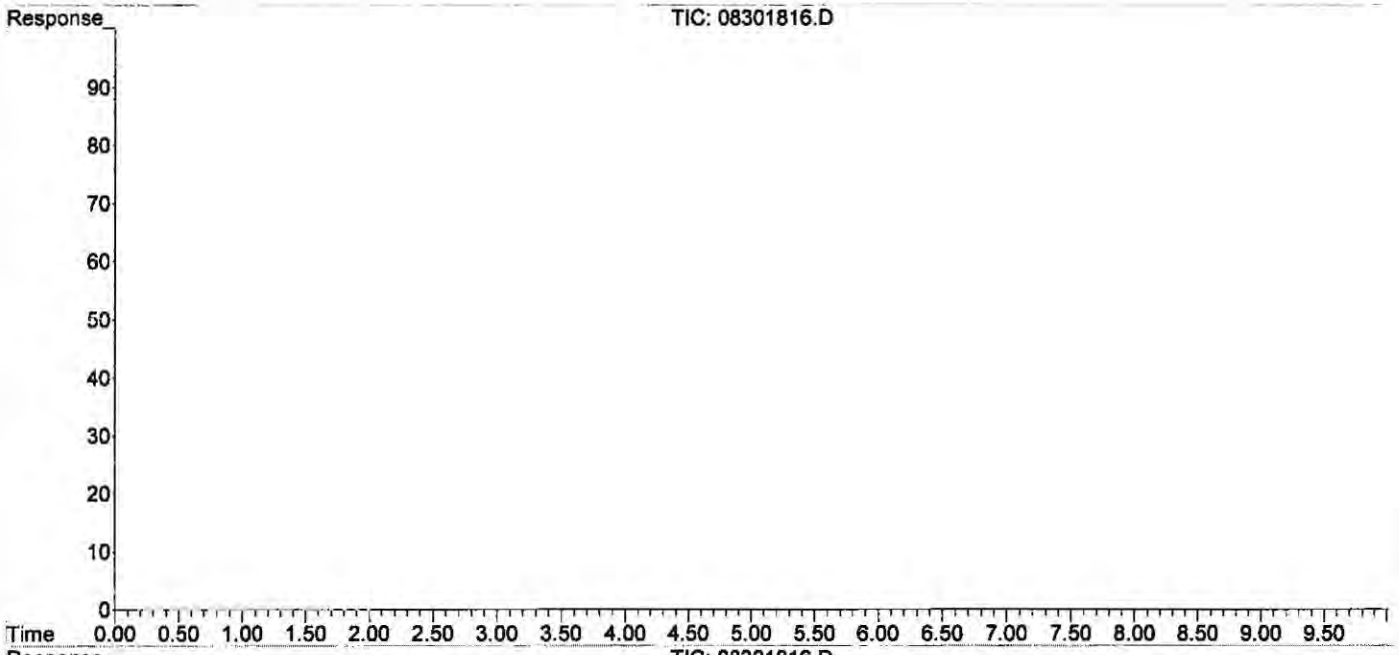
(f)=RT Delta > 1/2 Window (m)=manual int.

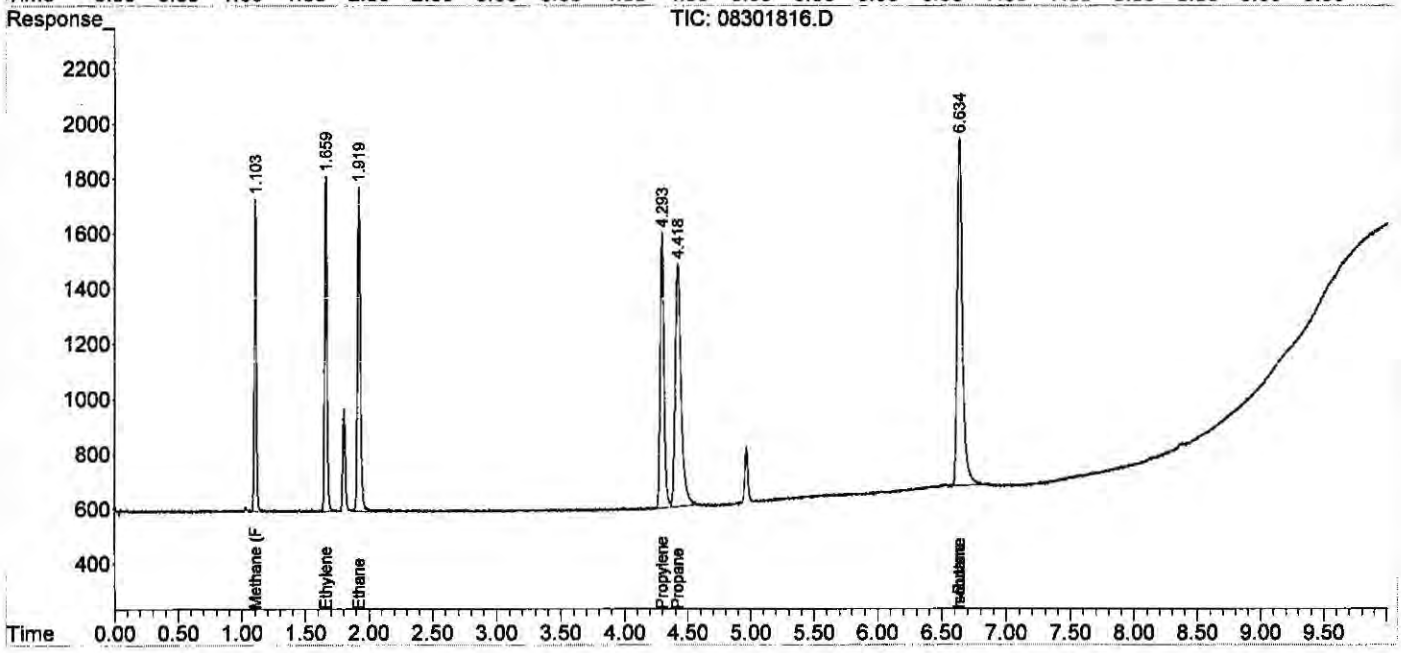
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301816.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 16:34:15
Operator : WH
Sample : fid lcs s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 17:09:40 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301817.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 16:51:21
Operator : WH
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 17:09:52 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.103	12418	1.369	ppm
7)	Ethylene	1.660	15003	0.897	ppm
8)	Ethane	1.920	18571	1.096	ppm
9)	Propylene	4.295	20081	0.857	ppm
10)	Propane	4.420	27951	1.123	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.634f	34982	1.314	ppm
13)	n-Butane	6.634f	34982	1.314	ppm

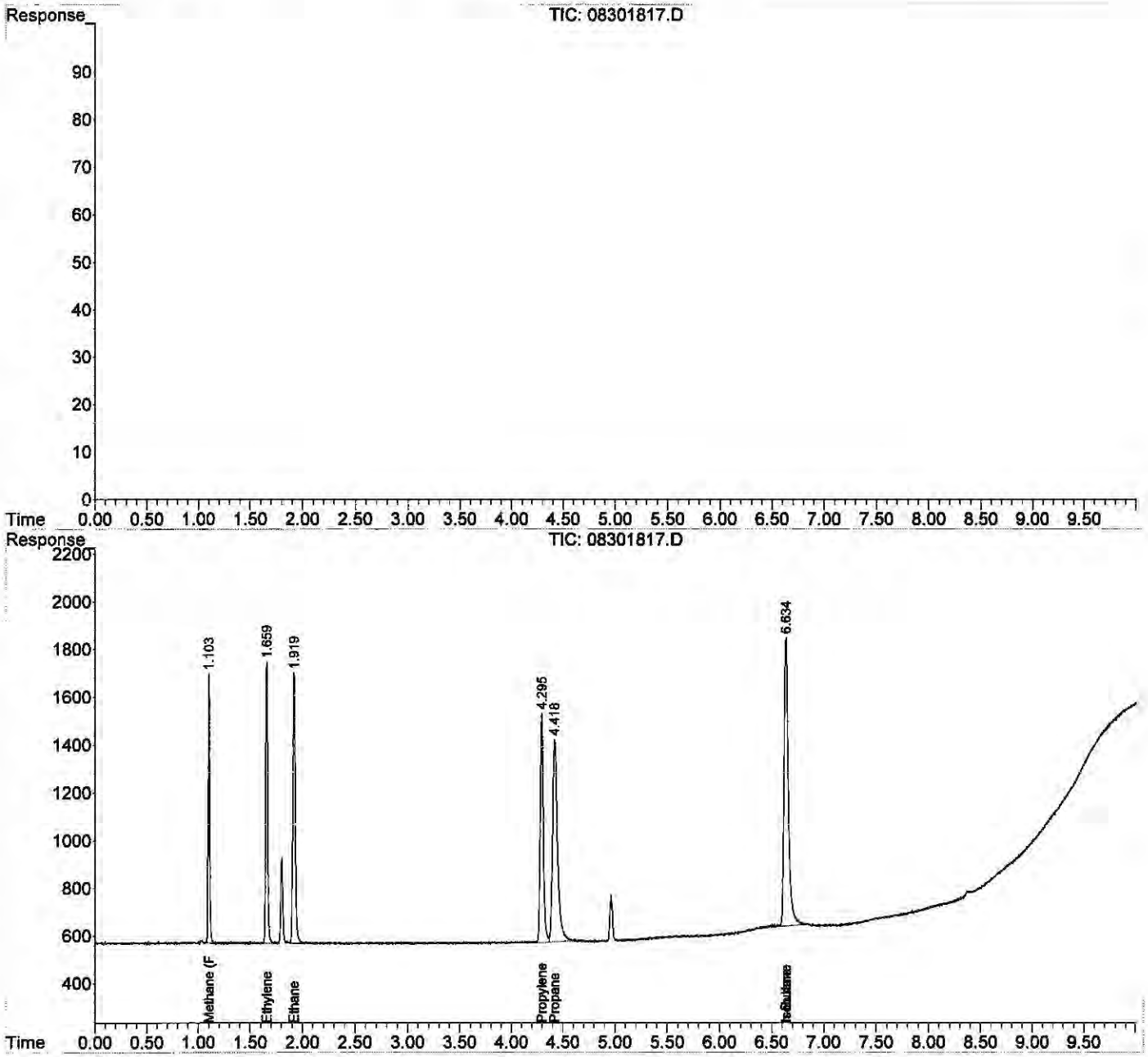
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2018_08\30\
Data File : 08301817.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 30-Aug-2018, 16:51:21
Operator : WH
Sample : fid lcsd s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 30 17:09:52 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

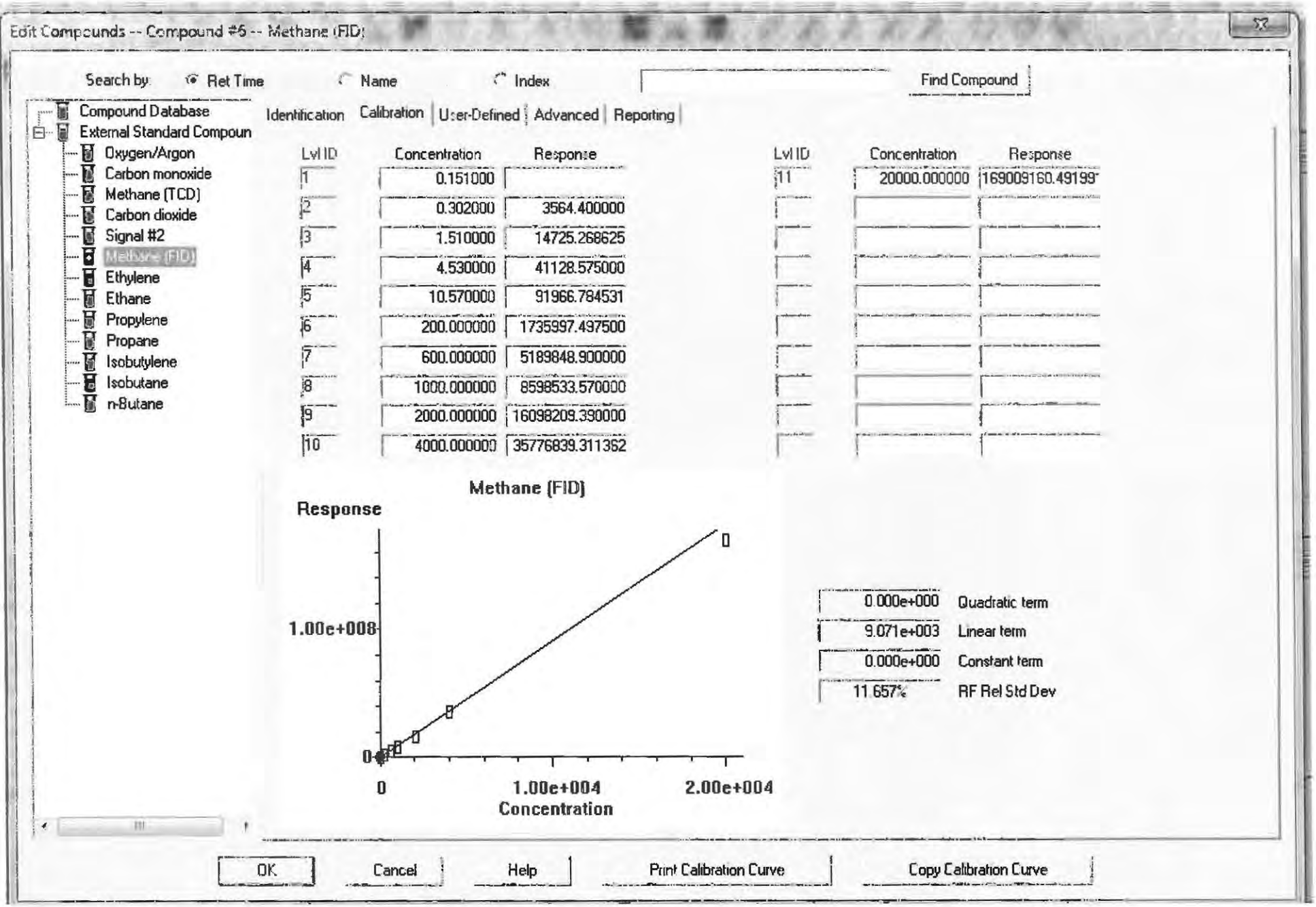
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

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

RS091217_R.M Wed Sep 13 15:11:48 2017


Edit Compounds -- Compound #6 -- Methane (FID)
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compoun
Oxygen/Argon
Carbon monoxide
Methane (TCD)
Carbon dioxide
Signal #2
Methane (FID)
Ethylene
Ethane
Propylene
Propane
Isobutylene
Isobutane
n-Butane
Identification Calibration User-Defined Advanced Reporting
Lvl ID Concentration Response
1 0.151000
2 0.302000 3564.400000
3 1.510000 14725.268625
4 4.530000 41128.575000
5 10.570000 91966.784531
6 200.000000 1735997.497500
7 600.000000 5189848.900000
8 1000.000000 8598533.570000
9 2000.000000 16098209.390000
10 4000.000000 35776839.311362
Lvl ID Concentration Response
11 20000.000000 169009160.49199
Methane (FID)
Response
1.00e+008
0
0
1.00e+004
2.00e+004
Concentration
0.000e+000 Quadratic term
9.071e+003 Linear term
0.000e+000 Constant term
11.657% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

00919929

Edit Compounds -- Compound #7 -- Ethylene

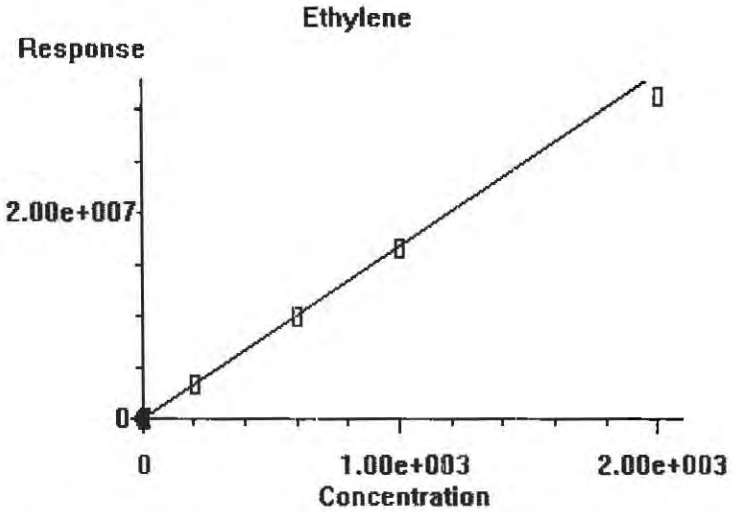
Search by: Ret Time | Name | Index | Find Compound

Compound Database
External Standard Compoun
- Oxygen/Argon
- Carbon monoxide
- Methane (TCD)
- Carbon dioxide
- Signal #2
- Methane (FID)
- Ethylene
- Ethane
- Propylene
- Propane
- Isobutylene
- Isobutane
- n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

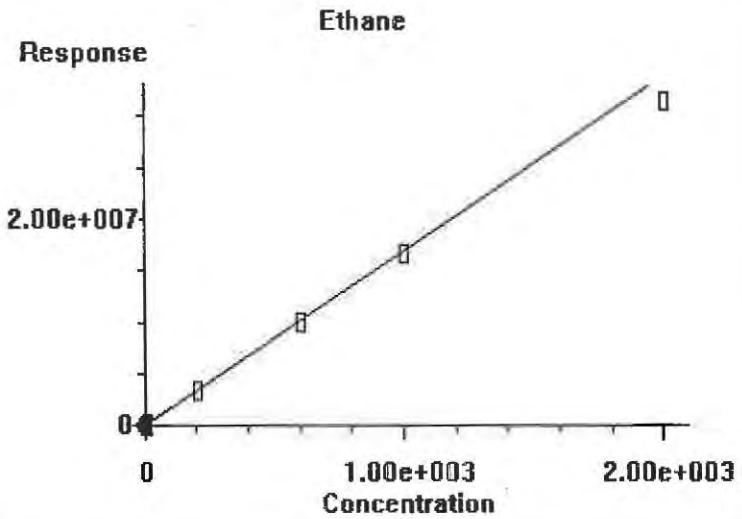
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #9 -- Propylene

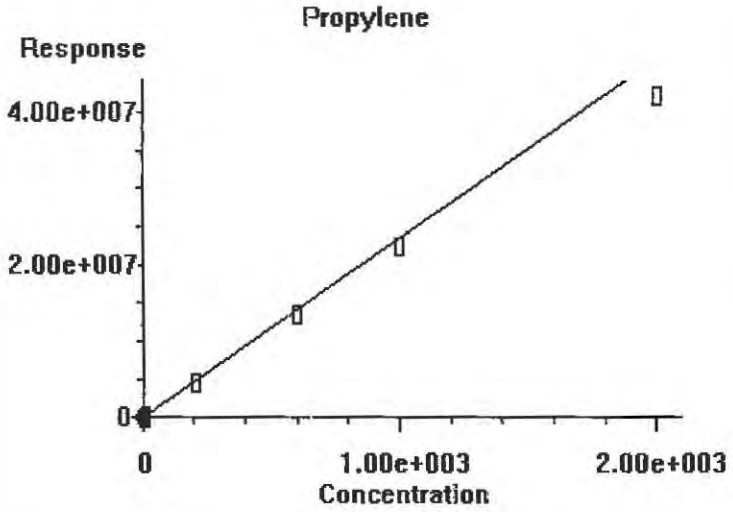
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

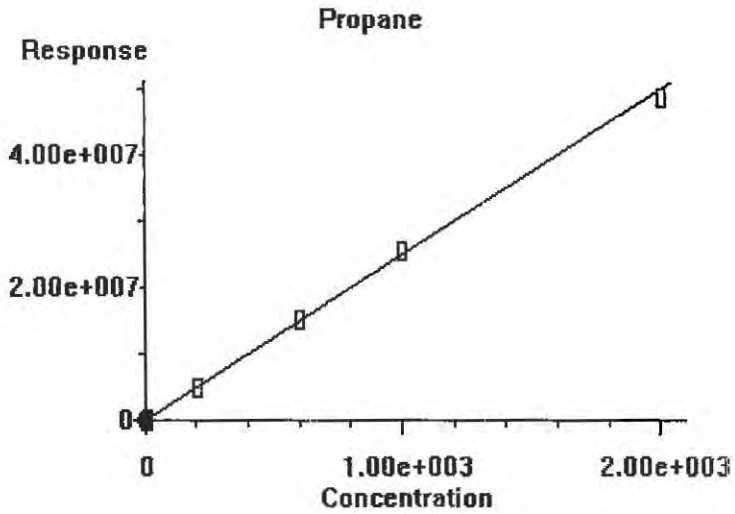
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

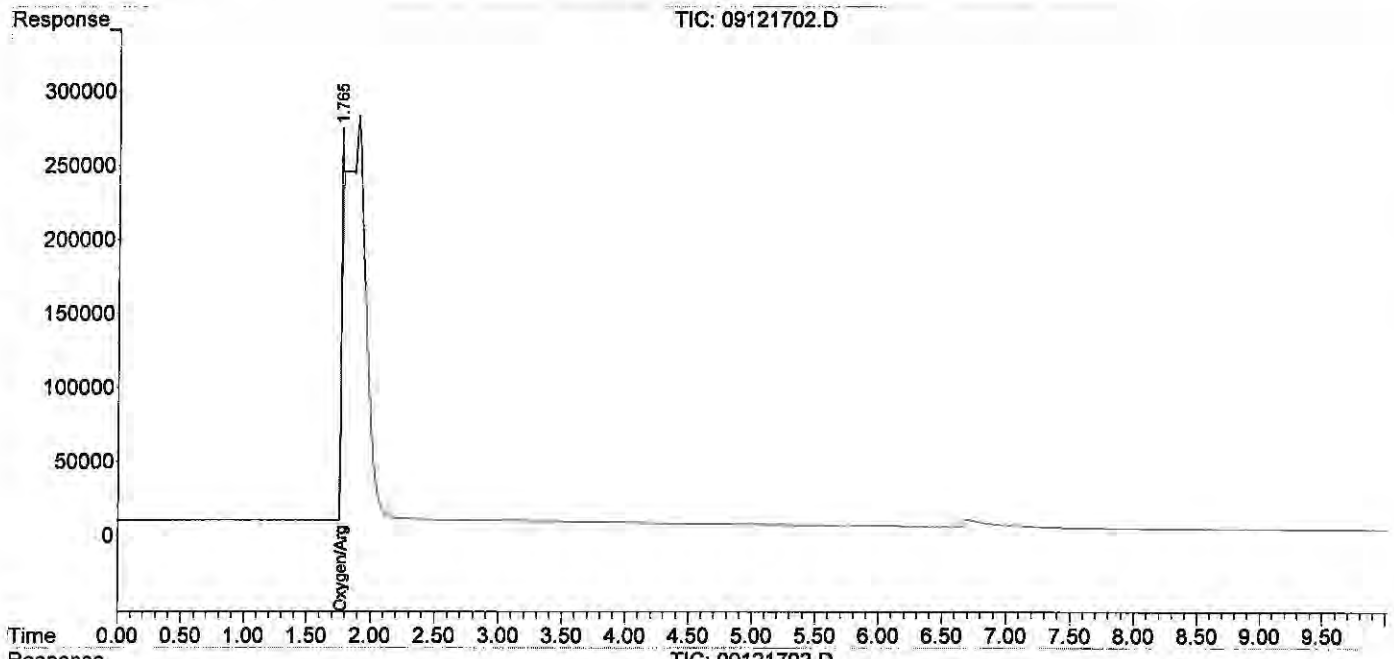
(f)=RT Delta > 1/2 Window (m)=manual int.

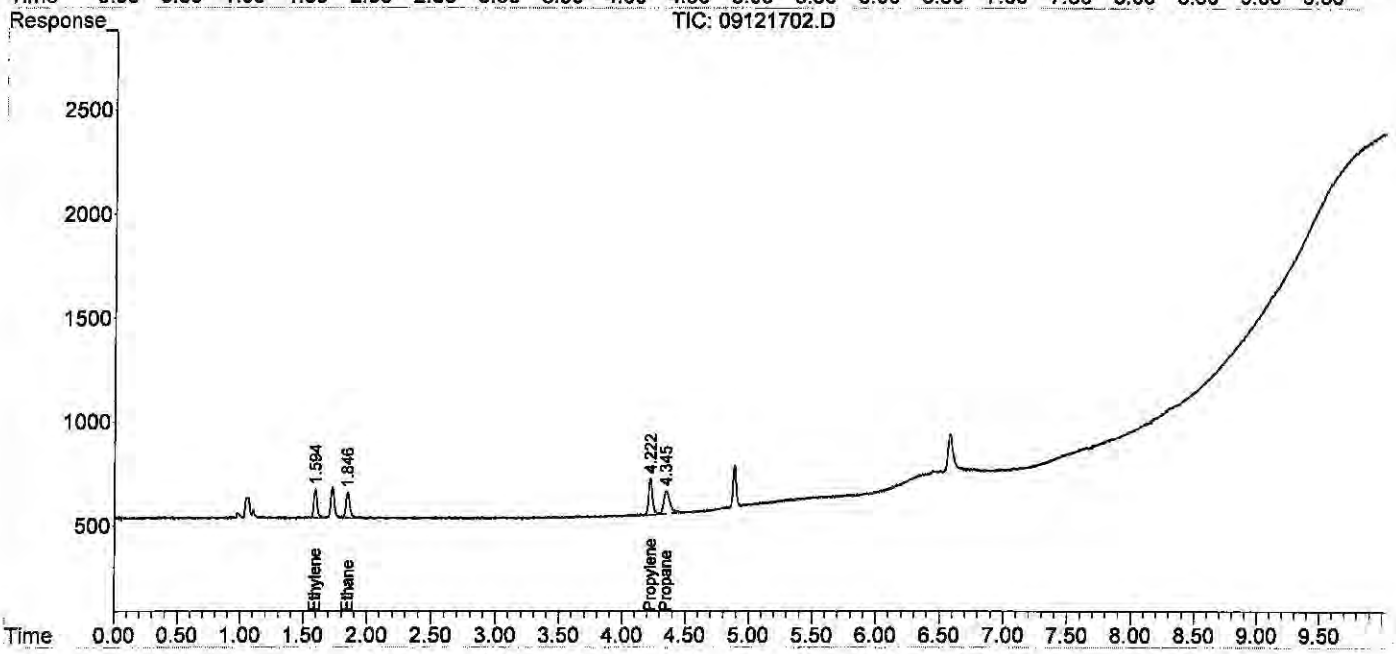
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

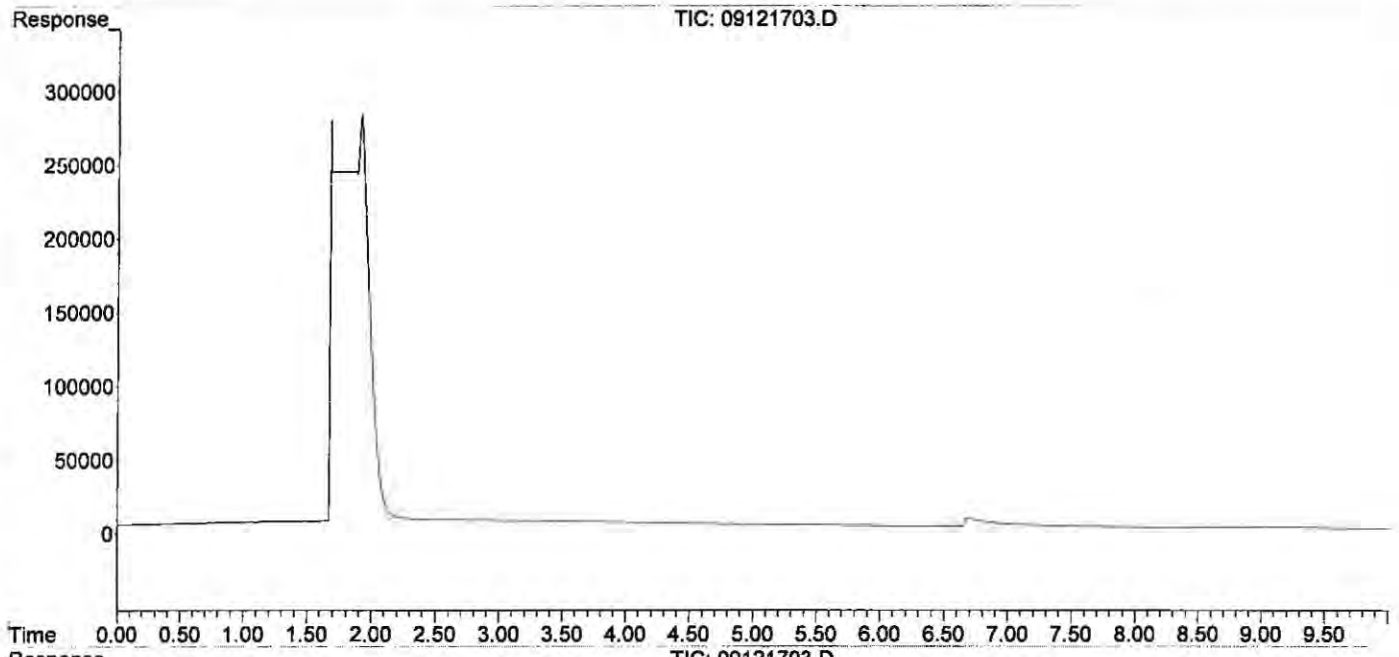
(f)=RT Delta > 1/2 Window (m)=manual int.

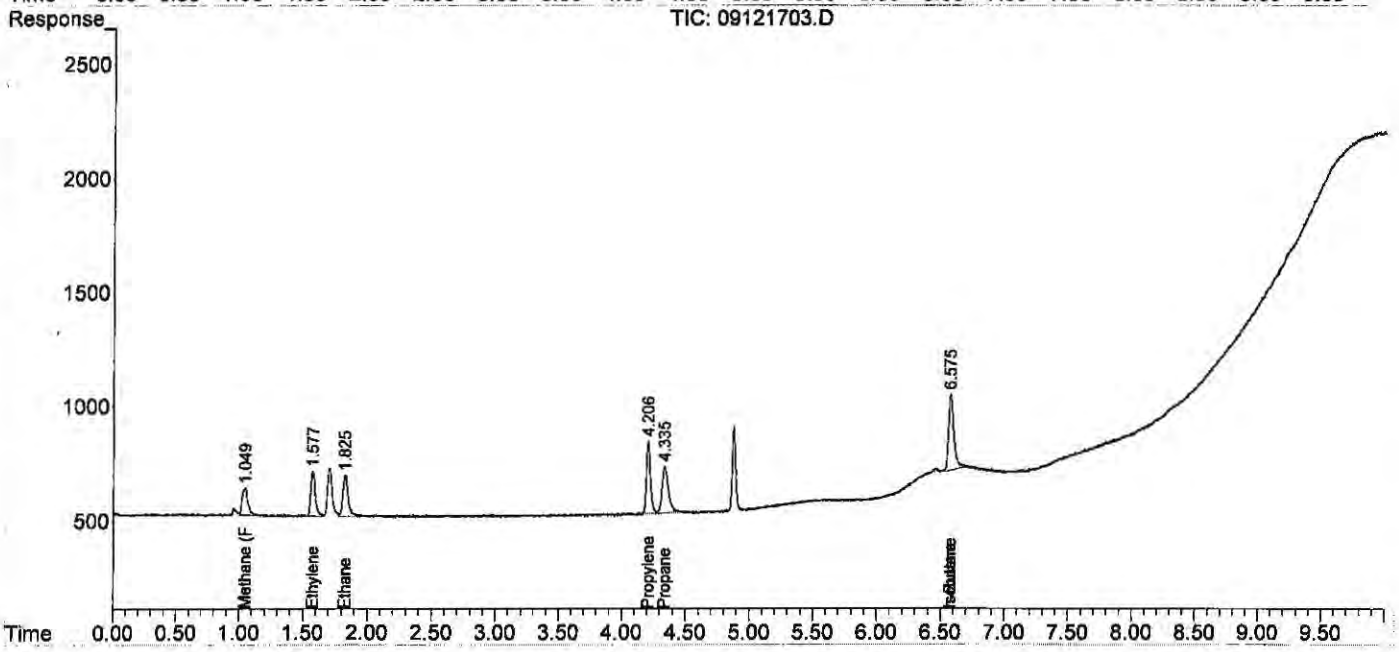
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



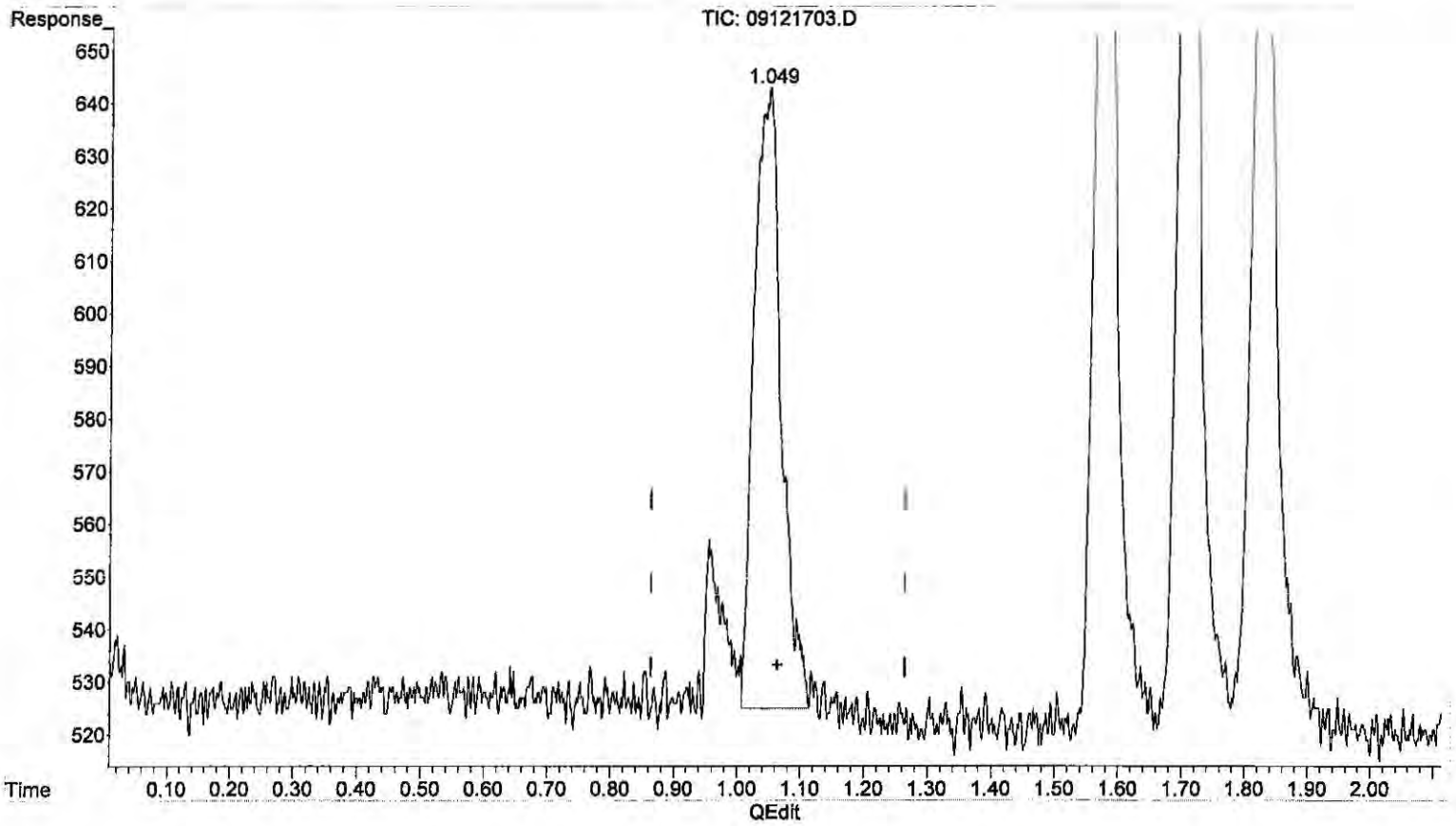


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

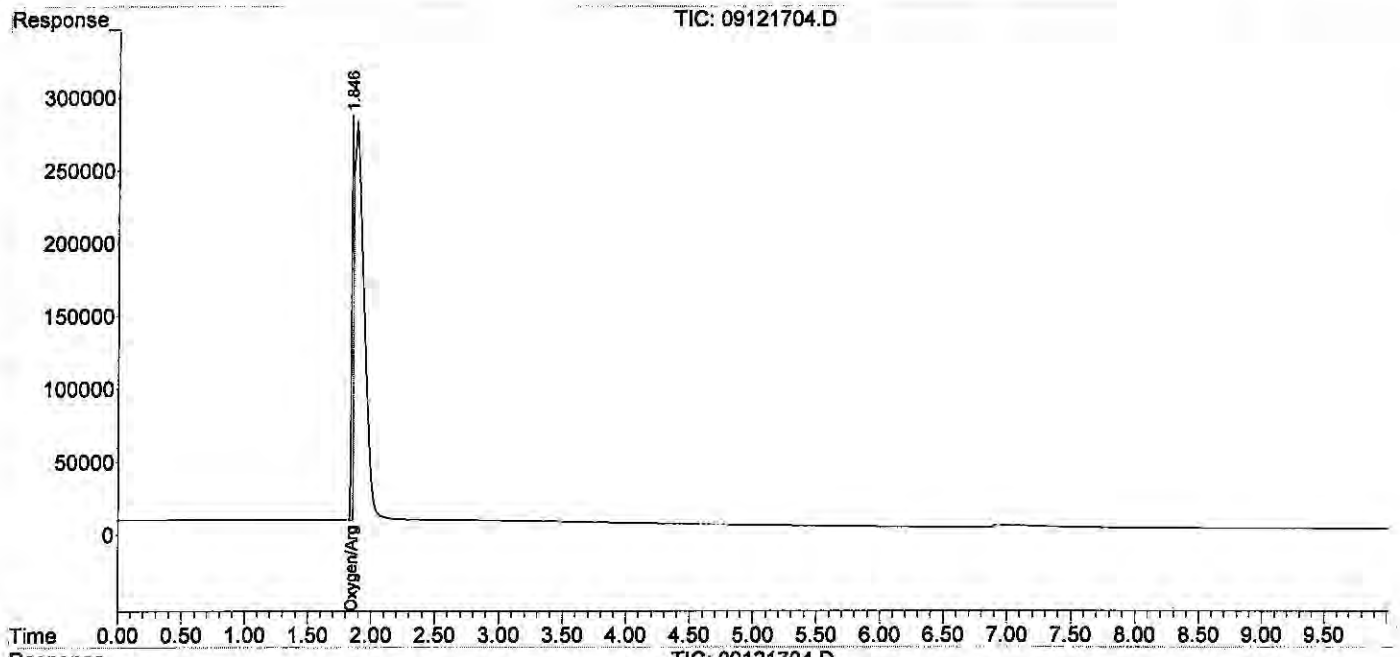
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

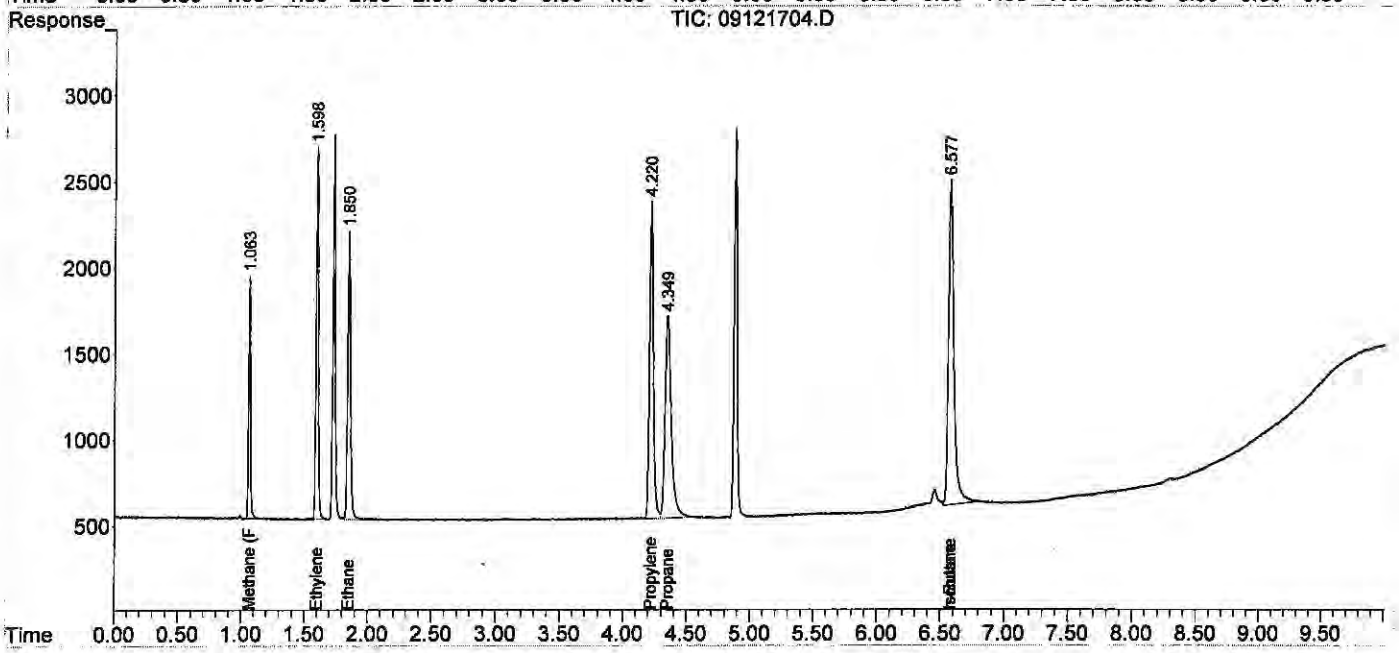
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

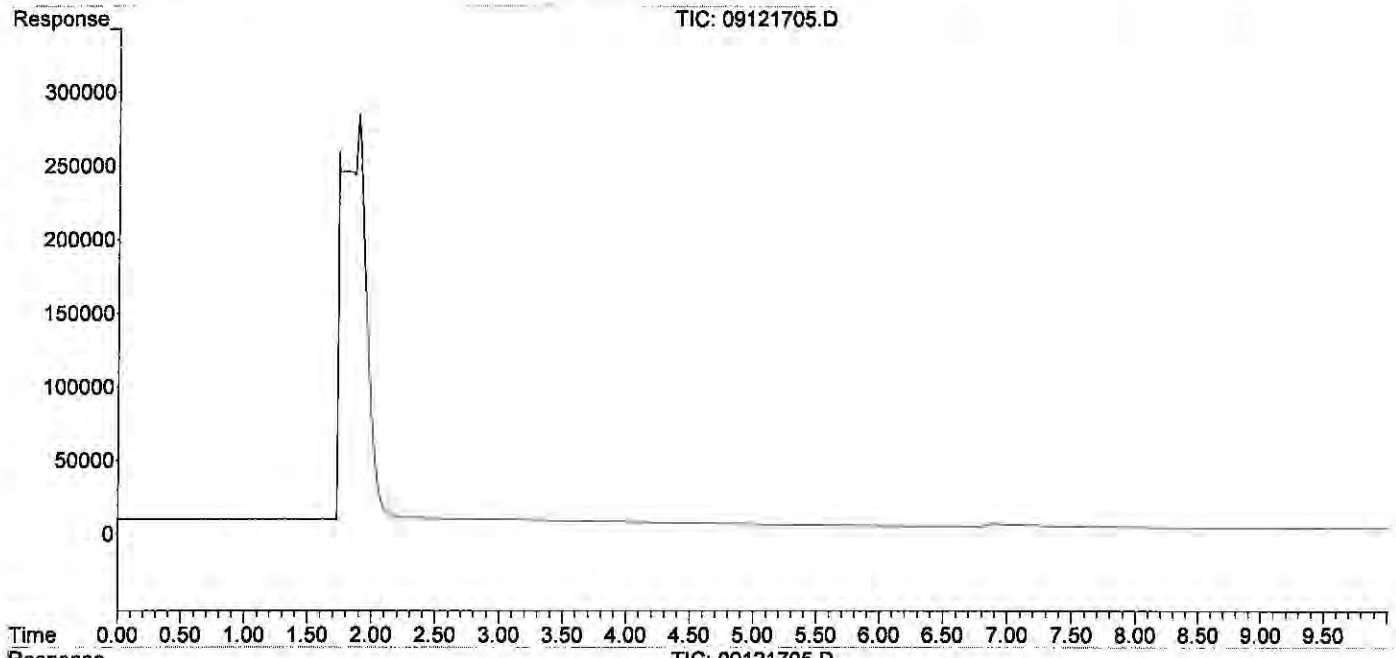
(f)=RT Delta > 1/2 Window (m)=manual int.

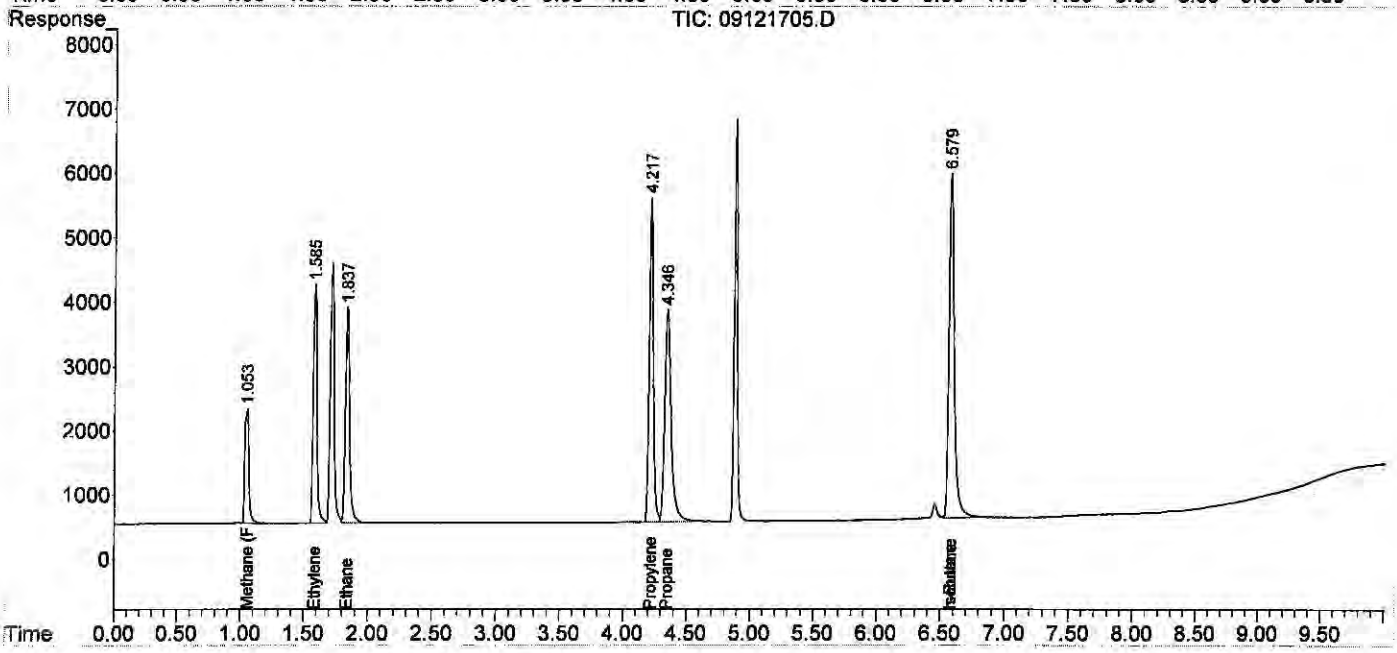
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

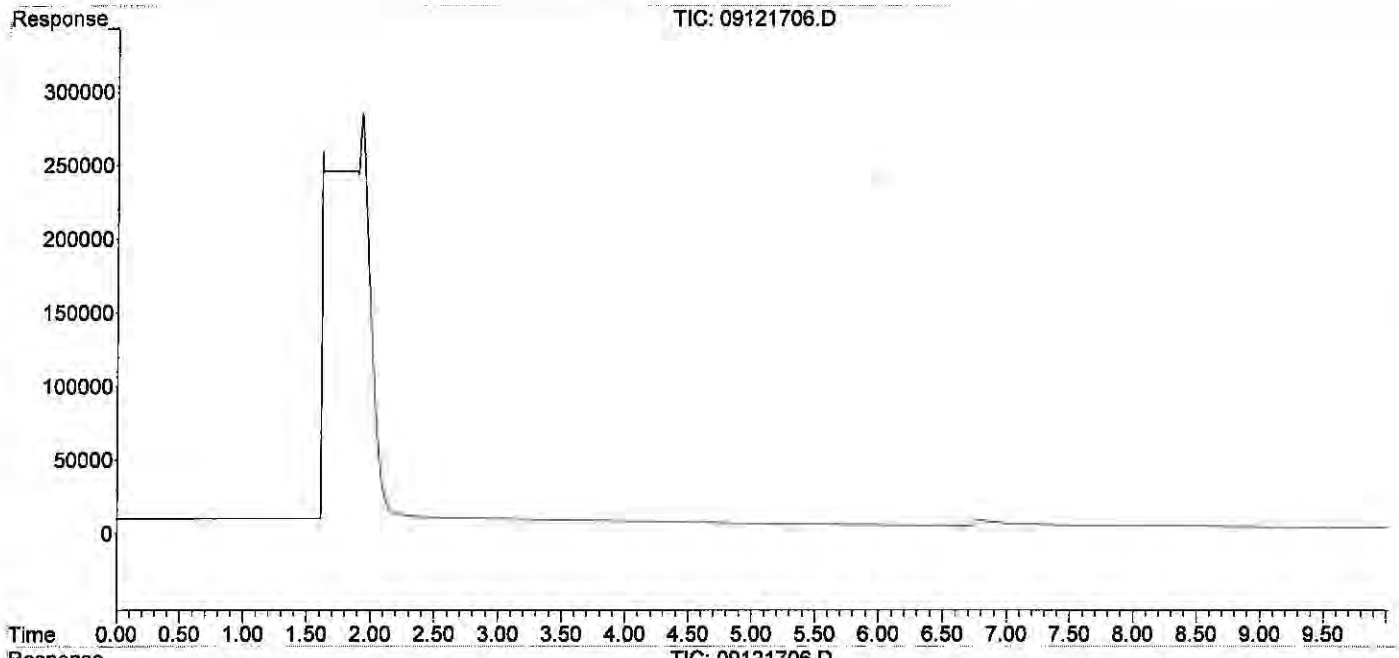
(f)=RT Delta > 1/2 Window (m)=manual int.

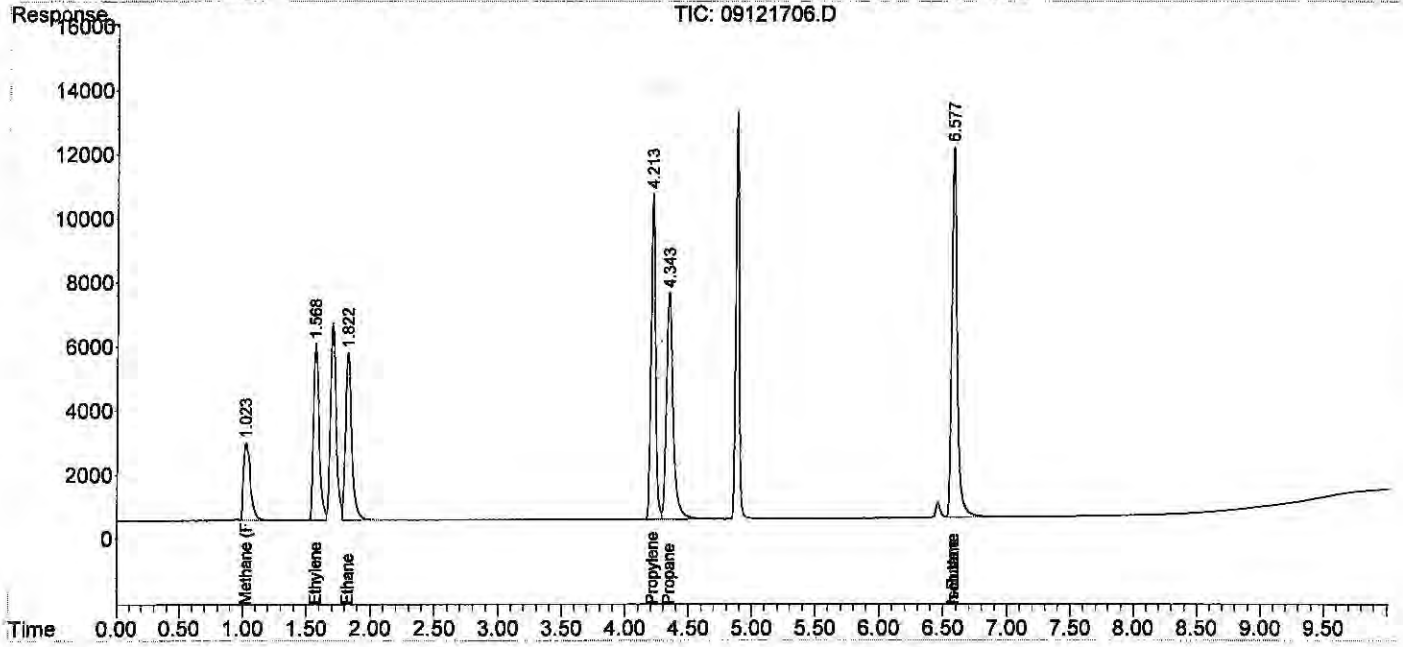
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

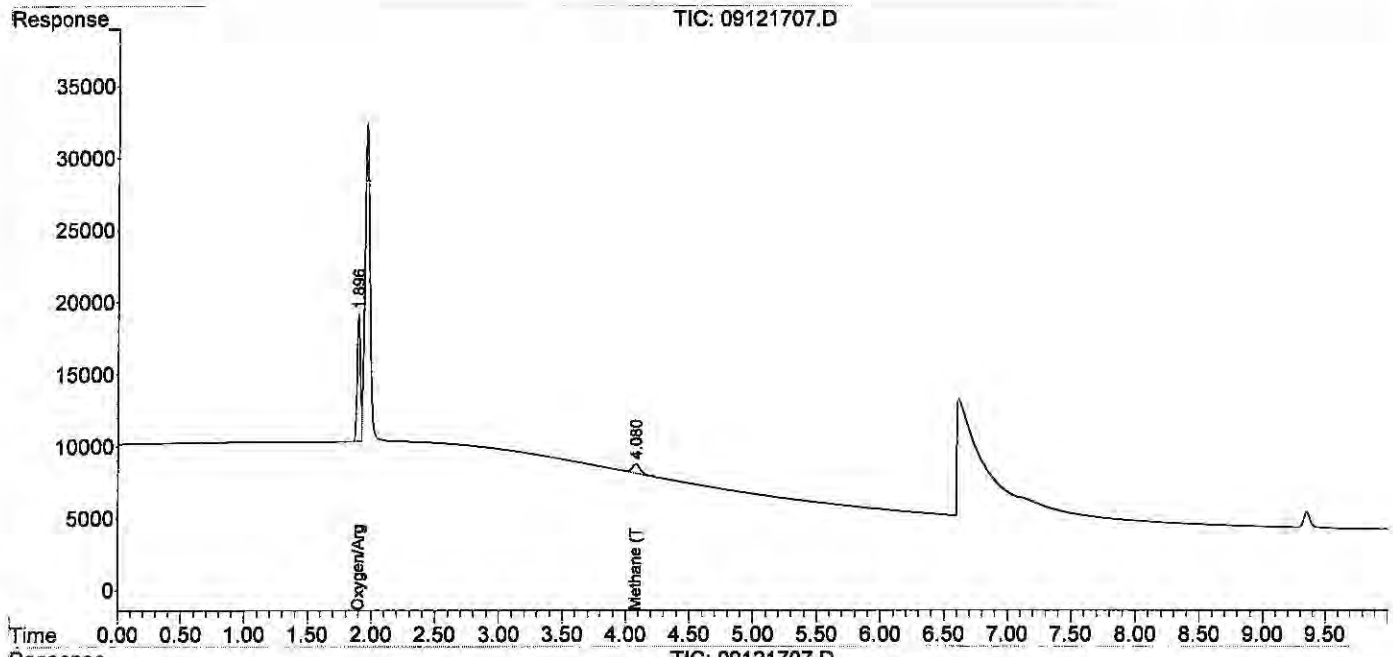
(f)=RT Delta > 1/2 Window (m)=manual int.

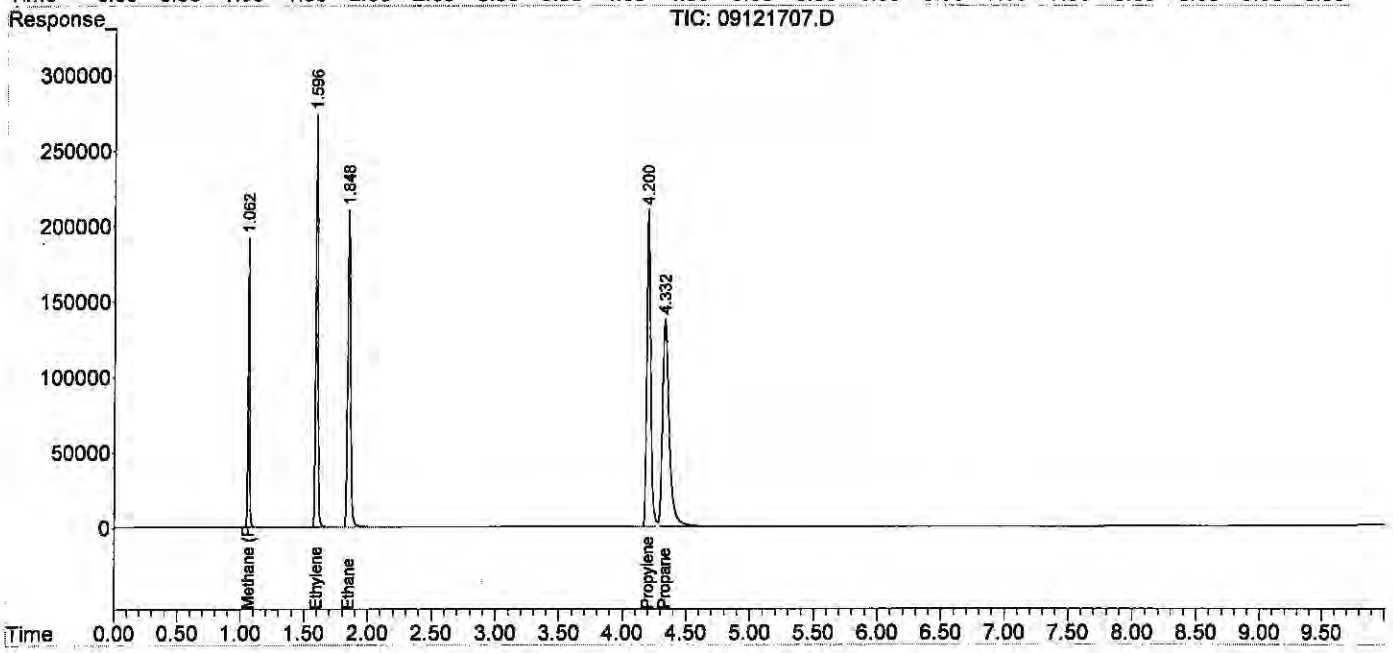
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

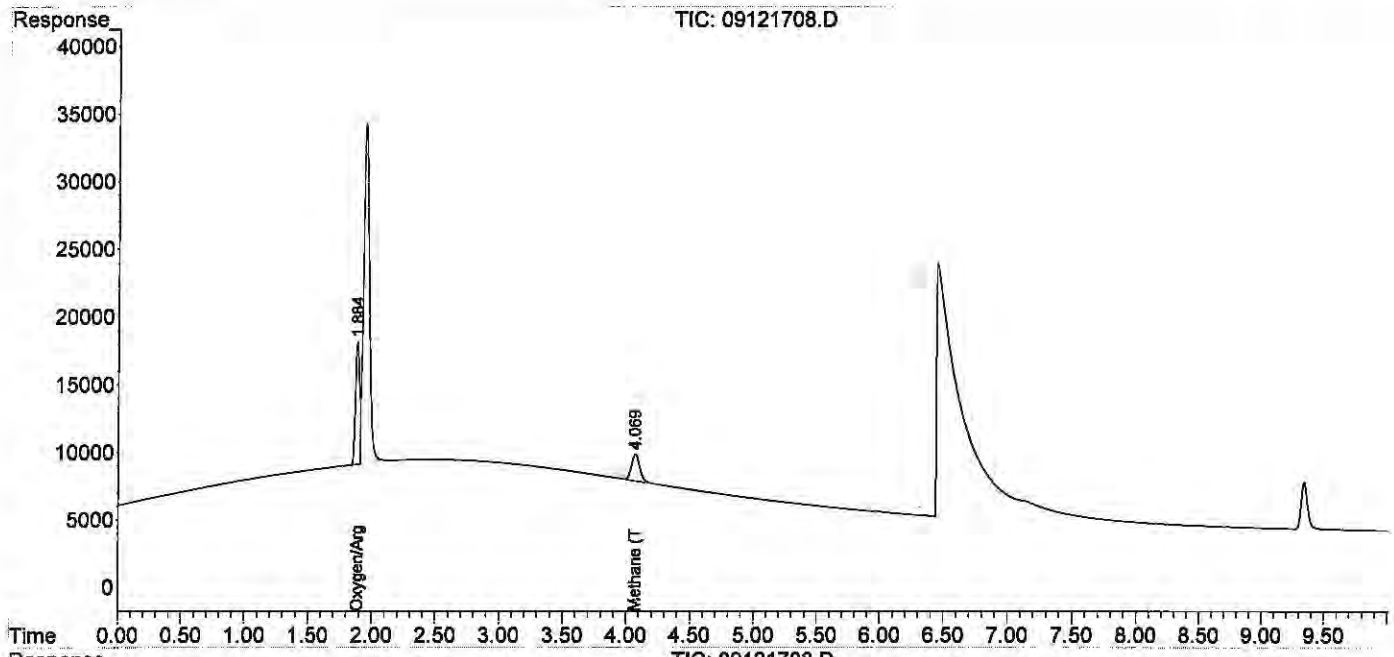
(f)=RT Delta > 1/2 Window (m)=manual int.

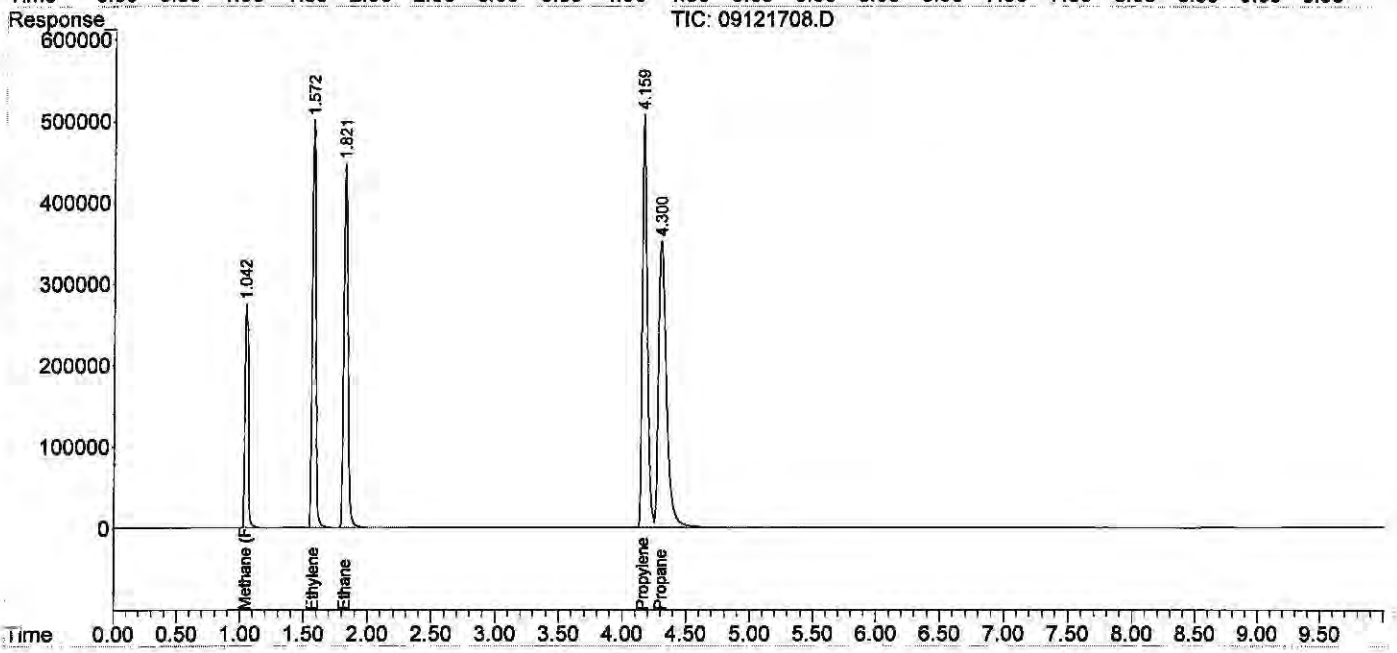
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

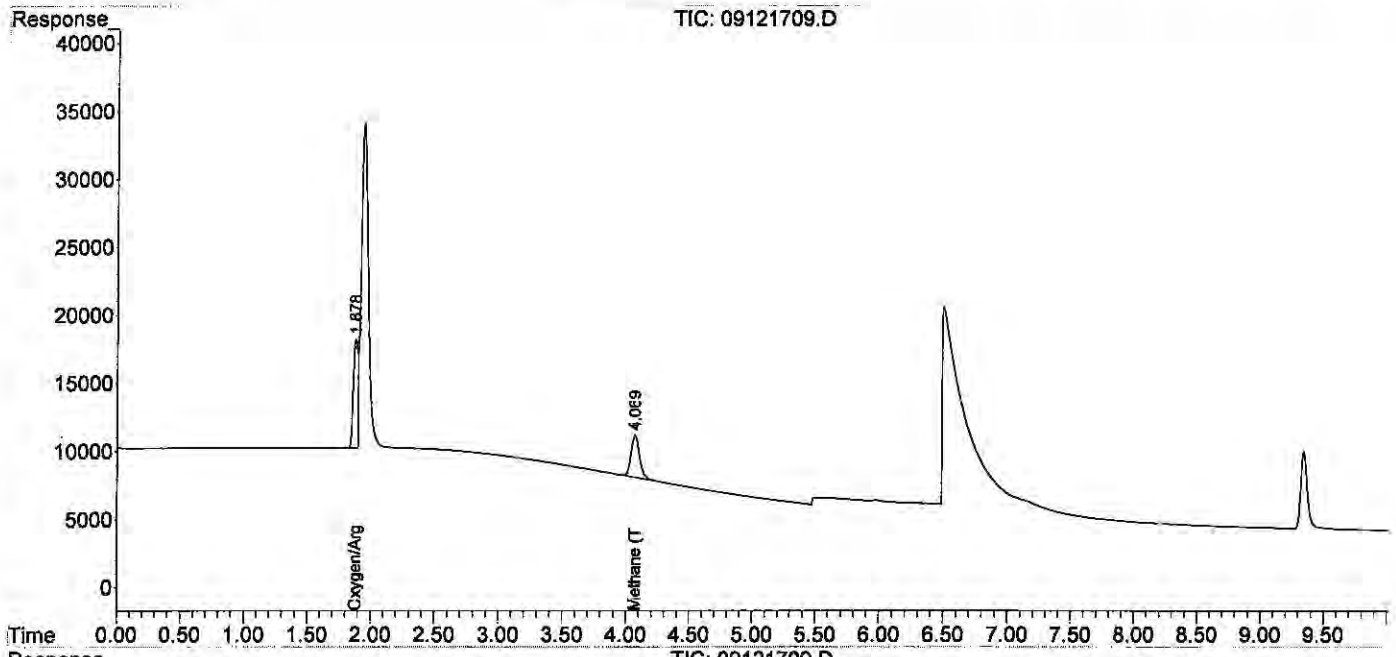
(f)=RT Delta > 1/2 Window (m)=manual int.

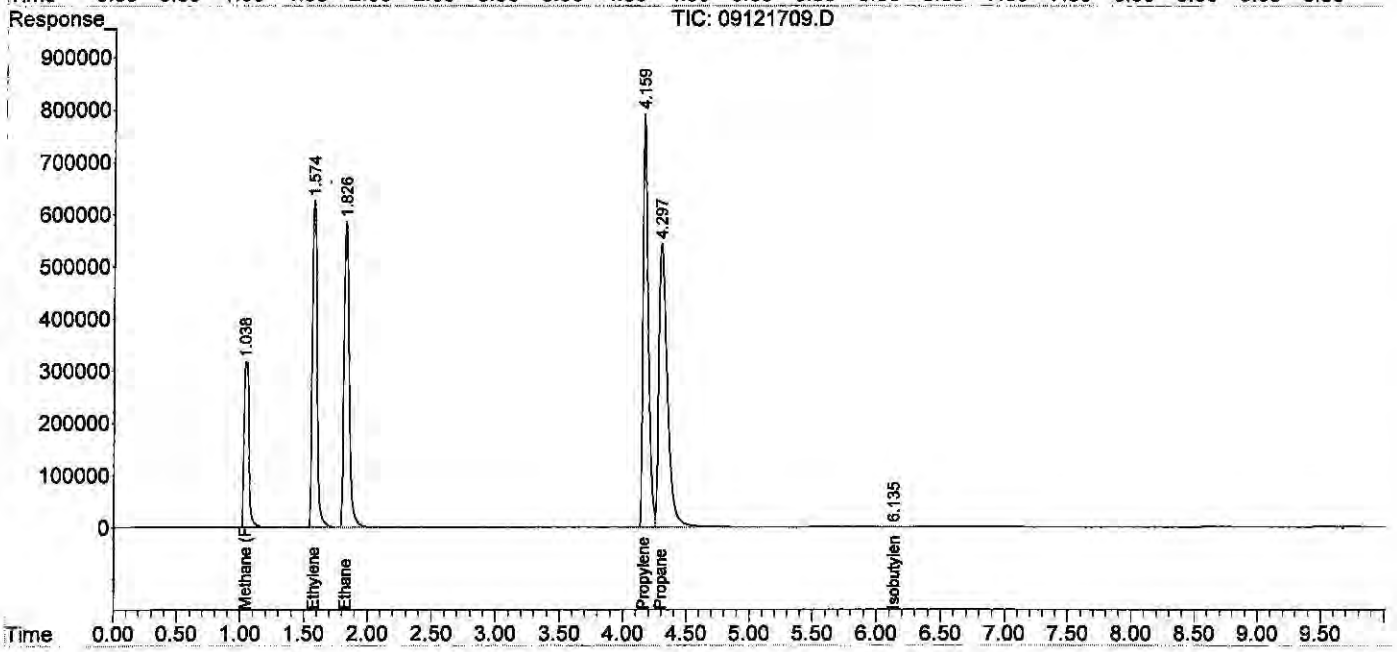
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

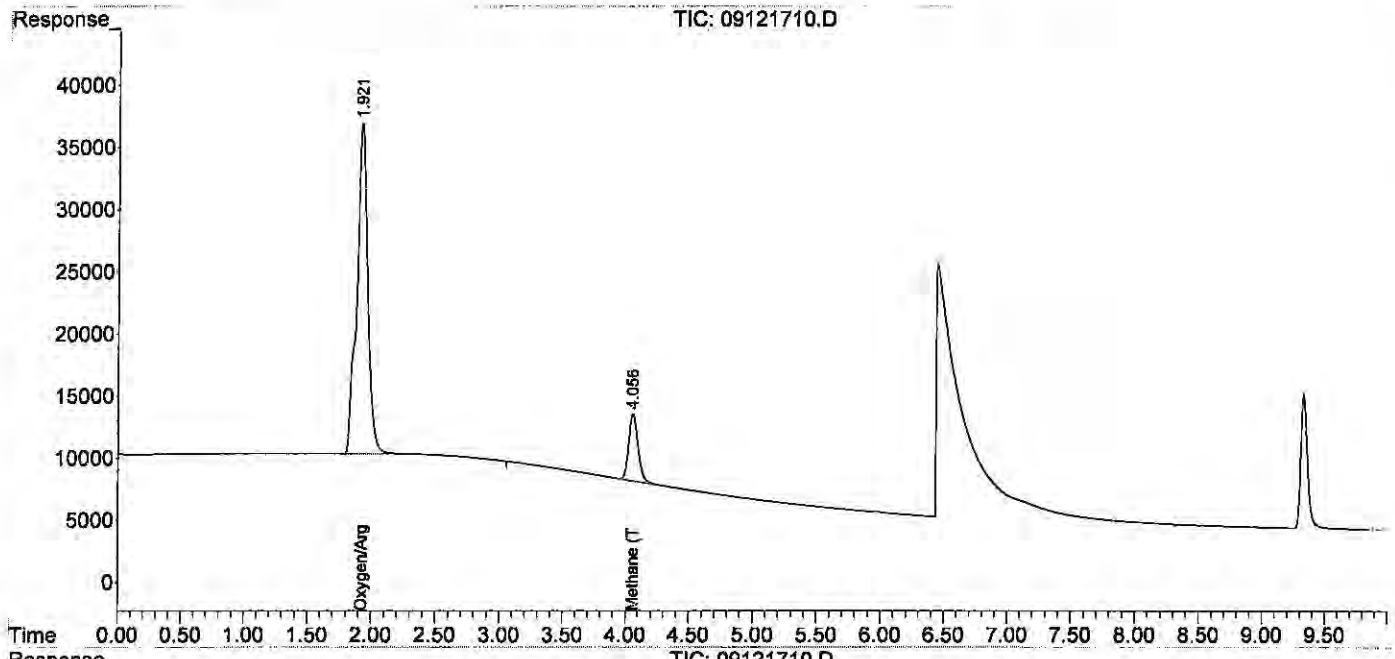
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

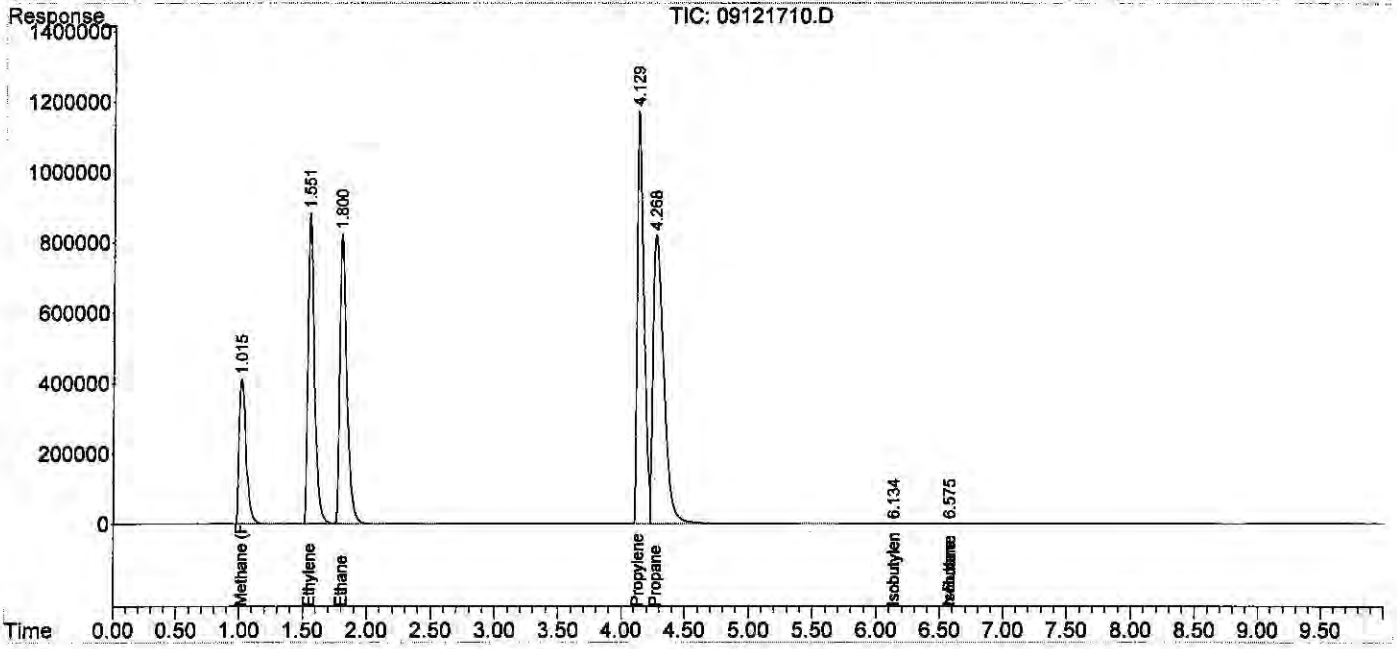
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



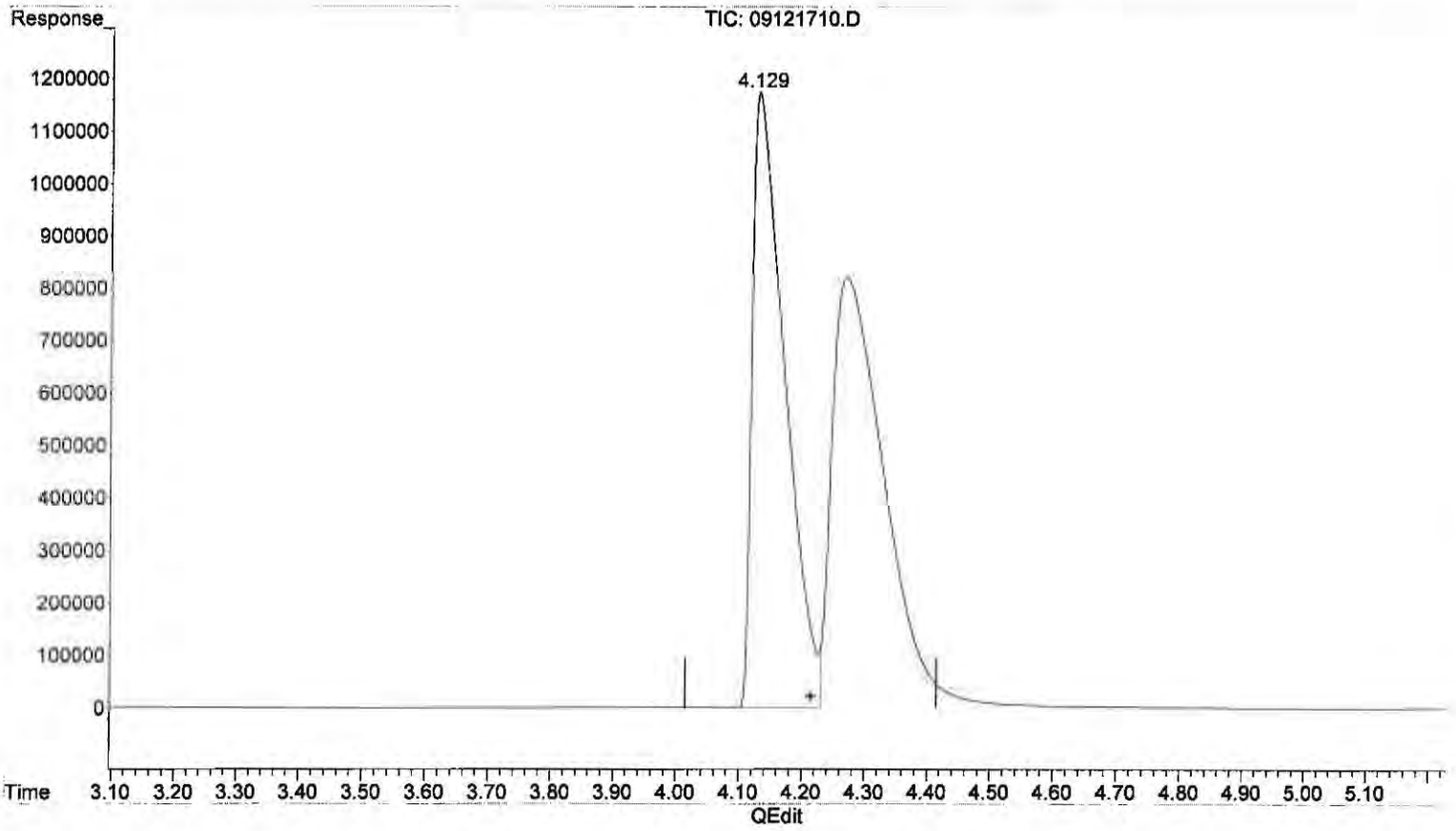


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene
4.129min 1775.341 ppm m
response 42124690

(+) = Expected Retention Time
RS091217_R.M Wed Sep 13 15:08:03 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

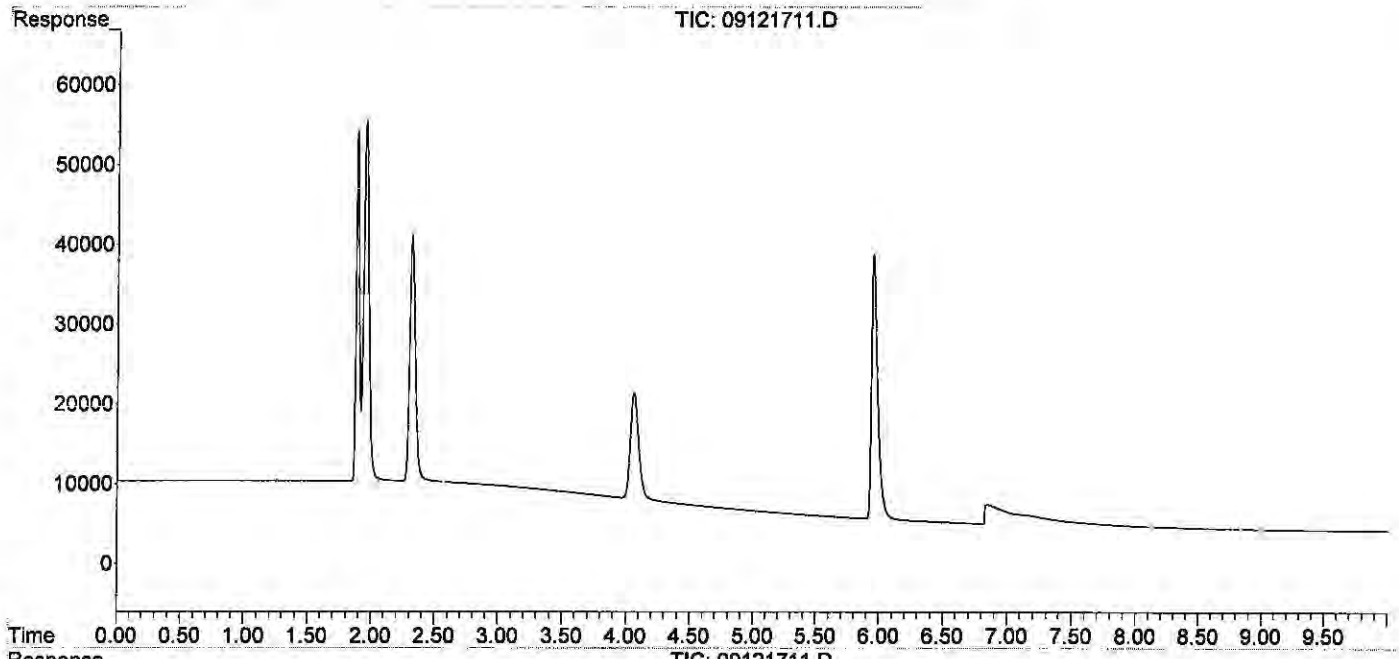
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

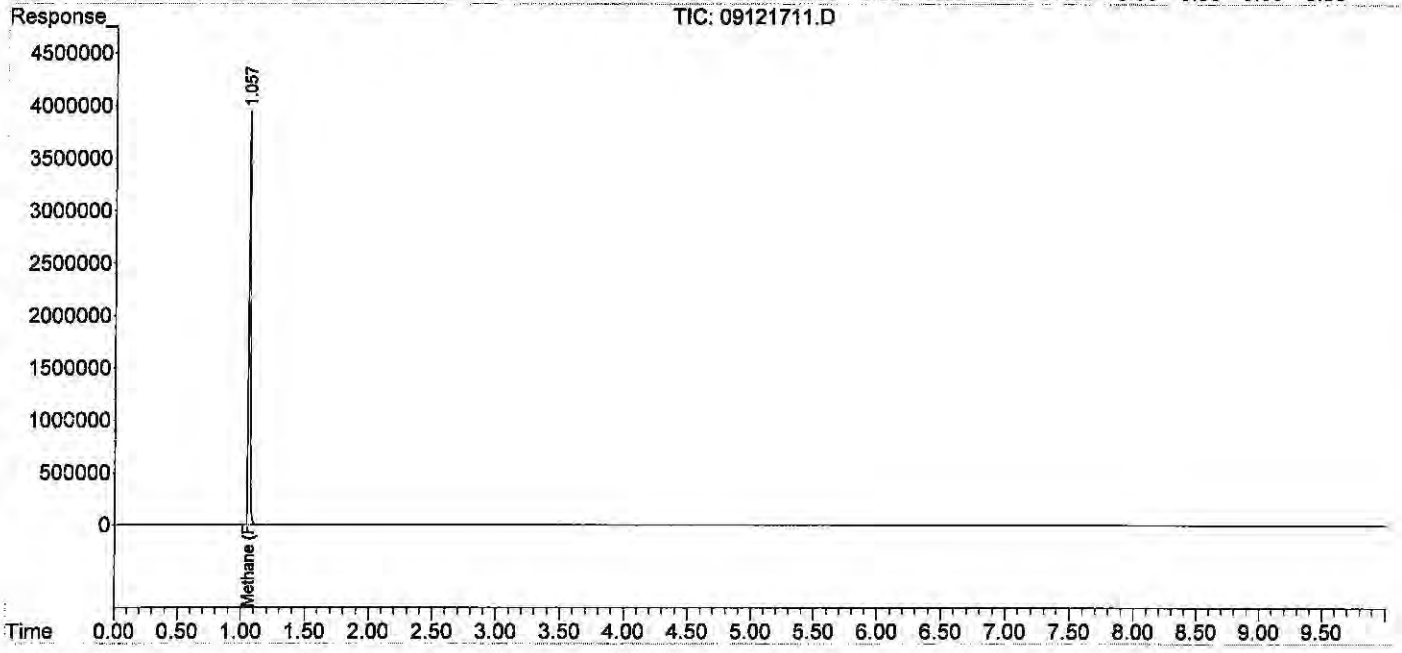
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

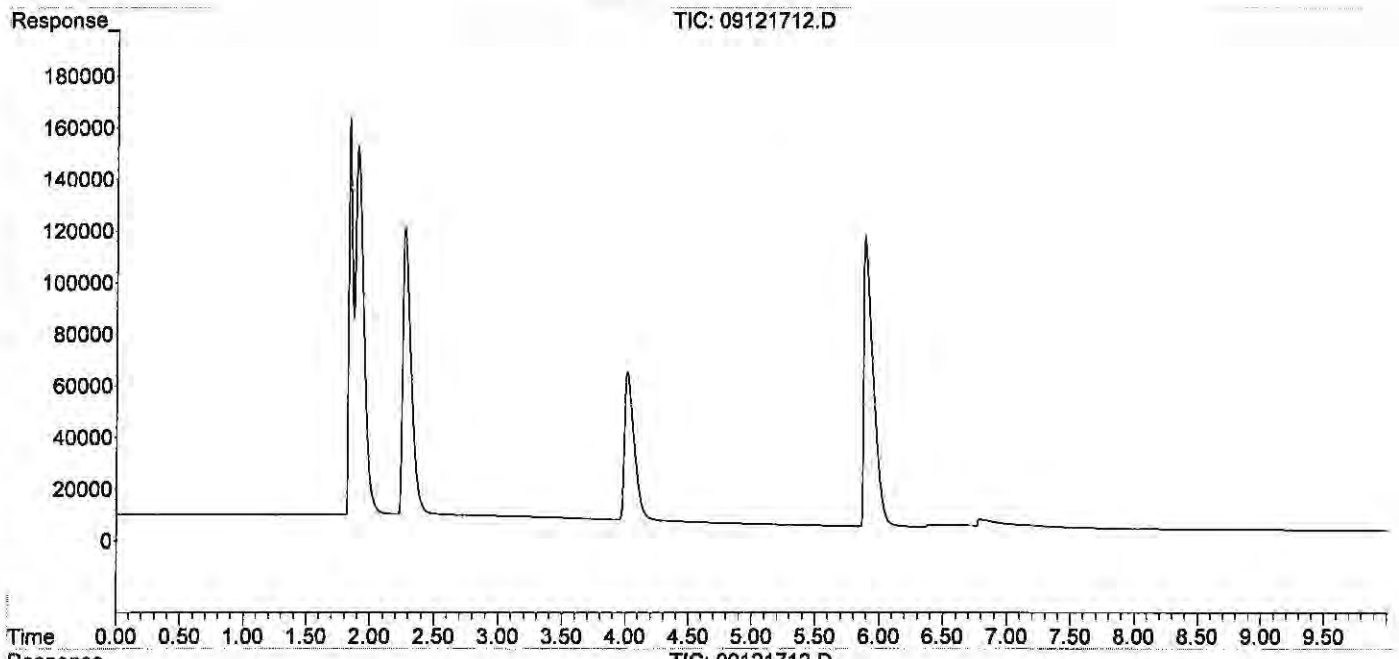
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

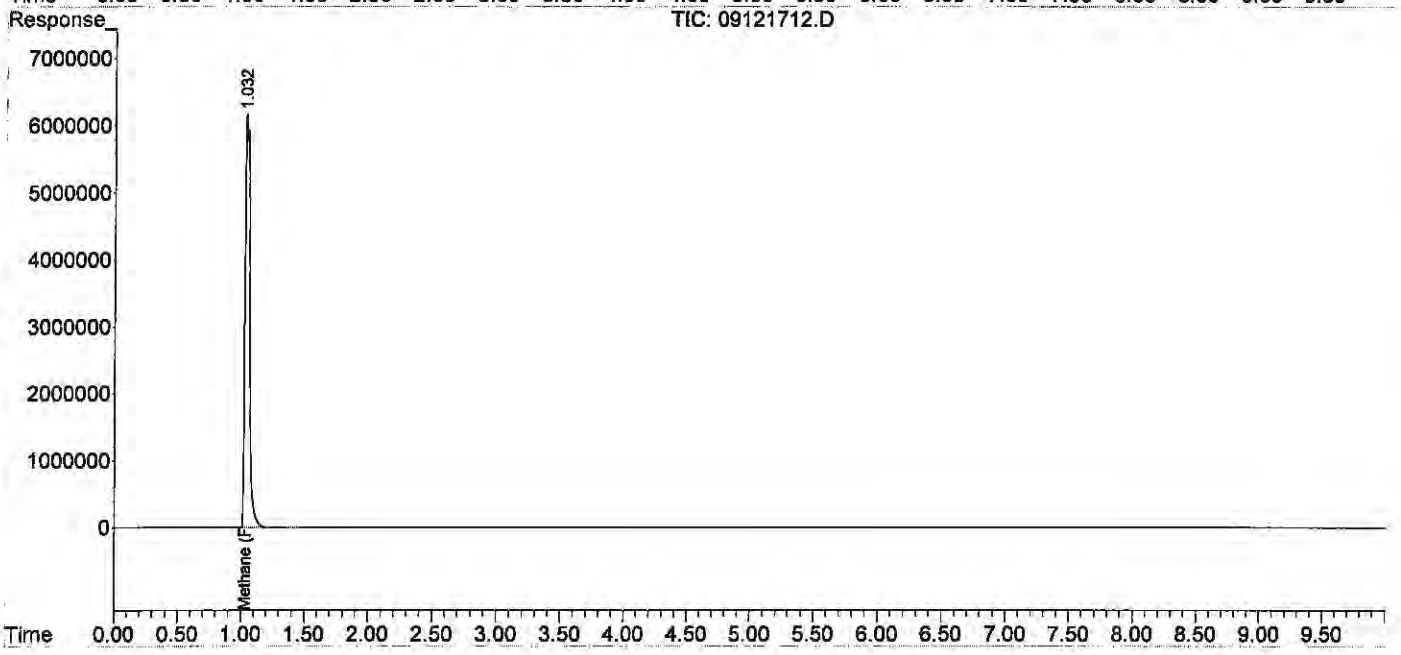
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

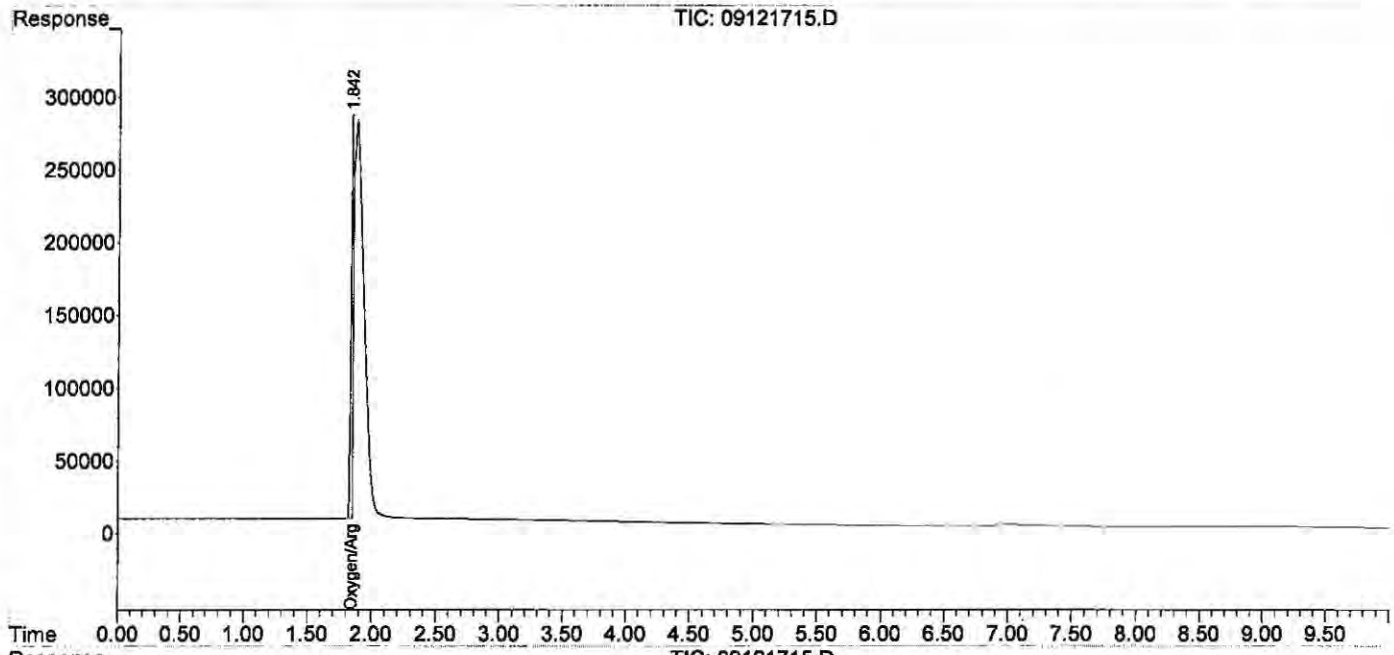
(f)=RT Delta > 1/2 Window (m)=manual int.

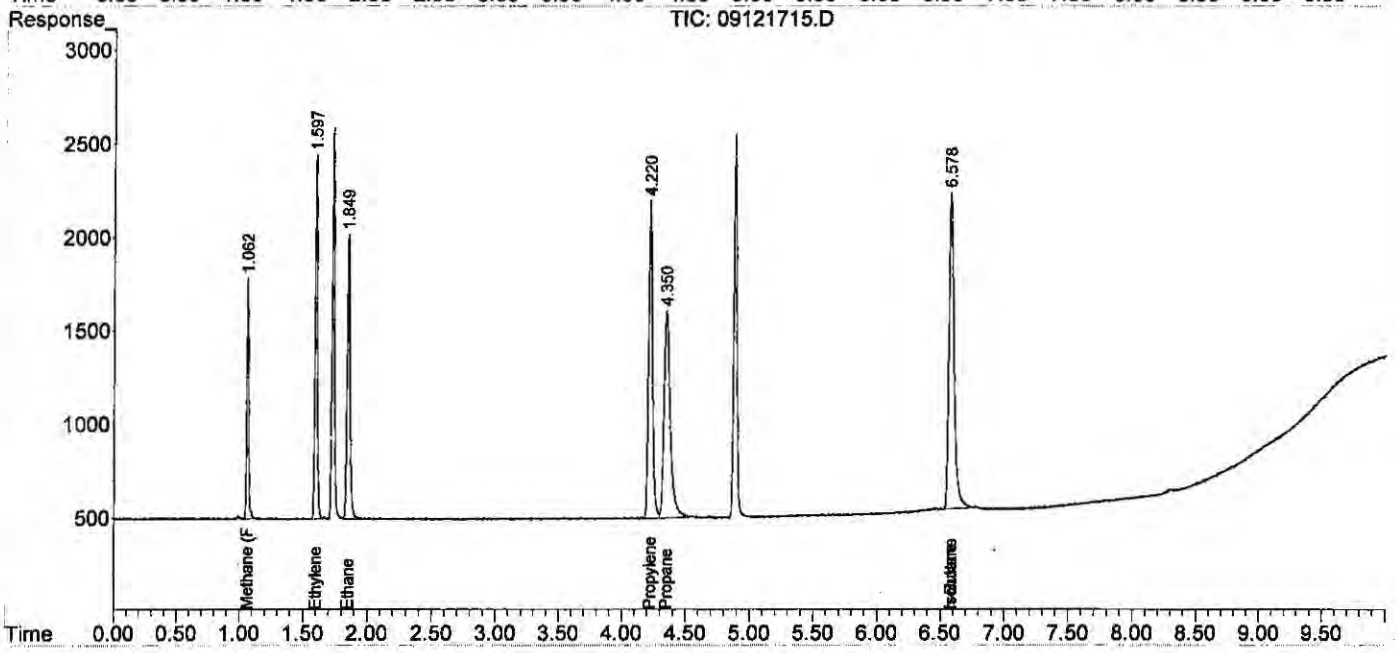
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2018_08\30\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	30-Aug-18, 09:43:29	08301801.D	std s32-07231801		WH	RSKBOTH.M	pass
2	30-Aug-18, 09:57:13	08301802.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	30-Aug-18, 10:14:18	08301803.D	mcs 0.1ml		WH	RSKBOTH.M	pass
4	30-Aug-18, 10:28:32	08301804.D	fid lcs		WH	RSKBOTH.M	pass
5	30-Aug-18, 11:24:46	08301805.D	fid lcsd		WH	RSKBOTH.M	pass
6	30-Aug-18, 11:39:10	08301806.D	P1804415-001 0.1ml		WH	RSKBOTH.M	
7	30-Aug-18, 12:00:05	08301807.D	P1804415-002 0.1ml		WH	RSKBOTH.M	
8	30-Aug-18, 12:13:59	08301808.D	P1804415-003 0.1ml		WH	RSKBOTH.M	
9	30-Aug-18, 12:34:44	08301809.D	P1804415-004 0.1ml		WH	RSKBOTH.M	
10	30-Aug-18, 12:51:25	08301810.D	P1804415-005 0.1ml		WH	RSKBOTH.M	
11	30-Aug-18, 13:33:13	08301811.D	P1804415-006 0.1ml		WH	RSKBOTH.M	
12	30-Aug-18, 14:21:05	08301812.D	P1804415-007 0.1ml		WH	RSKBOTH.M	
13	30-Aug-18, 14:46:11	08301813.D	K1808047-001 0.1		WH	RSKBOTH.M	
14	30-Aug-18, 15:07:45	08301814.D	K1808047-012 0.1		WH	RSKBOTH.M	
15	30-Aug-18, 15:25:15	08301815.D	std		WH	RSKBOTH.M	pass
16	30-Aug-18, 16:34:15	08301816.D	fid lcs s30-05241604		WH	RSKBOTH.M	pass
17	30-Aug-18, 16:51:21	08301817.D	fid lcsd s30-05241604		WH	RSKBOTH.M	pass
18	30-Aug-18, 17:11:23	08301818.D	std s32-07231801		WH	RSKBOTH.M	pass

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April 06, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18040038**

Laboratory Results for: **LHAAP-37 501032**

Dear Sharon,

ALS Environmental received 21 sample(s) on Mar 30, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Work Order: HS18040038

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18040038-01	35BWW20-180327	Groundwater		27-Mar-2018 10:05	30-Mar-2018 08:50	☐
HS18040038-02	LHSMW58-180327	Groundwater		27-Mar-2018 10:50	30-Mar-2018 08:50	☐
HS18040038-03	35BWW11-180327	Groundwater		27-Mar-2018 11:50	30-Mar-2018 08:50	☐
HS18040038-04	35BSW02-180327	Groundwater		27-Mar-2018 12:05	30-Mar-2018 08:50	☐
HS18040038-05	35BWW05-180327	Groundwater		27-Mar-2018 13:05	30-Mar-2018 08:50	☐
HS18040038-06	35BWW06-180327	Groundwater		27-Mar-2018 13:40	30-Mar-2018 08:50	☐
HS18040038-07	35BWW10-180327	Groundwater		27-Mar-2018 14:25	30-Mar-2018 08:50	☐
HS18040038-08	35BSW01-180327	Groundwater		27-Mar-2018 14:45	30-Mar-2018 08:50	☐
HS18040038-09	35BWW18-180327	Groundwater		27-Mar-2018 15:25	30-Mar-2018 08:50	☐
HS18040038-10	35BWW19-180327	Groundwater		27-Mar-2018 16:15	30-Mar-2018 08:50	☐
HS18040038-11	35BWW09-180327	Groundwater		27-Mar-2018 17:00	30-Mar-2018 08:50	☐
HS18040038-12	35BWW13-180328	Groundwater		28-Mar-2018 11:30	30-Mar-2018 08:50	☐
HS18040038-13	35BWW13-180328-FD	Groundwater		28-Mar-2018 11:30	30-Mar-2018 08:50	☐
HS18040038-14	35BWW24-180328	Groundwater		28-Mar-2018 12:20	30-Mar-2018 08:50	☐
HS18040038-15	35BWW25-180328	Groundwater		28-Mar-2018 13:15	30-Mar-2018 08:50	☐
HS18040038-16	35BWW25-180328-fd	Groundwater		28-Mar-2018 13:15	30-Mar-2018 08:50	☐
HS18040038-17	35BWW07-180329	Groundwater		29-Mar-2018 10:55	30-Mar-2018 08:50	☐
HS18040038-18	35BWW01-180329	Groundwater		29-Mar-2018 11:55	30-Mar-2018 08:50	☐
HS18040038-19	35BWW17-180329	Groundwater		29-Mar-2018 12:50	30-Mar-2018 08:50	☐
HS18040038-20	35BWW16-180329	Groundwater		29-Mar-2018 13:35	30-Mar-2018 08:50	☐
HS18040038-21	35BWW15-180329	Groundwater		29-Mar-2018 14:40	30-Mar-2018 08:50	☐

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Work Order: HS18040038

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 126926,126973

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp

Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP-37 501032

WorkOrder:HS18040038

Sample ID: 35BWW20-180327

Lab ID:HS18040038-01

Collection Date: 27-Mar-2018 10:05

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**					Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:21
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: LHSMW58-180327
Collection Date: 27-Mar-2018 10:50

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:23
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW11-180327
Collection Date: 27-Mar-2018 11:50

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:26
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BSW02-180327
Collection Date: 27-Mar-2018 12:05

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:28
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW05-180327
Collection Date: 27-Mar-2018 13:05

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**					Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:30
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW06-180327
Collection Date: 27-Mar-2018 13:40

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	**0.00128**	J	**0.000400**	**0.00100**	**0.00200**	**mg/L**	1	05-Apr-2018 16:49
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW10-180327
Collection Date: 27-Mar-2018 14:25

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:51
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BSW01-180327
Collection Date: 27-Mar-2018 14:45

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:54
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP-37 501032

WorkOrder:HS18040038

Sample ID: 35BWW18-180327

Lab ID:HS18040038-09

Collection Date: 27-Mar-2018 15:25

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:56
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP-37 501032

WorkOrder:HS18040038

Sample ID: 35BWW19-180327

Lab ID:HS18040038-10

Collection Date: 27-Mar-2018 16:15

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**					Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 16:58
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 16:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP-37 501032

WorkOrder:HS18040038

Sample ID: 35BWW09-180327

Lab ID:HS18040038-11

Collection Date: 27-Mar-2018 17:00

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**					Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:00
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp

Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.

ANALYTICAL REPORT

Project: LHAAP-37 501032

WorkOrder:HS18040038

Sample ID: 35BWW13-180328

Lab ID:HS18040038-12

Collection Date: 28-Mar-2018 11:30

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**					Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:11
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW13-180328-FD
Collection Date: 28-Mar-2018 11:30

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-13
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:14
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW24-180328
Collection Date: 28-Mar-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-14
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:16
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW25-180328
Collection Date: 28-Mar-2018 13:15

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-15
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:18
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW25-180328-fd
Collection Date: 28-Mar-2018 13:15

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-16
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**					Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:20
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW07-180329
Collection Date: 29-Mar-2018 10:55

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-17
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:22
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW01-180329
Collection Date: 29-Mar-2018 11:55

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-18
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:25
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW17-180329
Collection Date: 29-Mar-2018 12:50

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-19
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:27
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW16-180329
Collection Date: 29-Mar-2018 13:35

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-20
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 04-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 17:29
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 17:29

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW15-180329
Collection Date: 29-Mar-2018 14:40

ANALYTICAL REPORT
WorkOrder:HS18040038
Lab ID:HS18040038-21
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A	**Method:SW6020**					Prep:SW3010A / 03-Apr-2018		Analyst: JCJ
Antimony	0.00100	U	0.000400	0.00100	0.00200	mg/L	1	05-Apr-2018 14:51
Thallium	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	05-Apr-2018 14:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18040038

Batch ID: 126926 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18040038-21	1	10	10 (mL)	1

Batch ID: 126973 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18040038-01	1	10	10 (mL)	1
HS18040038-02	1	10	10 (mL)	1
HS18040038-03	1	10	10 (mL)	1
HS18040038-04	1	10	10 (mL)	1
HS18040038-05	1	10	10 (mL)	1
HS18040038-06	1	10	10 (mL)	1
HS18040038-07	1	10	10 (mL)	1
HS18040038-08	1	10	10 (mL)	1
HS18040038-09	1	10	10 (mL)	1
HS18040038-10	1	10	10 (mL)	1
HS18040038-11	1	10	10 (mL)	1
HS18040038-12	1	10	10 (mL)	1
HS18040038-13	1	10	10 (mL)	1
HS18040038-14	1	10	10 (mL)	1
HS18040038-15	1	10	10 (mL)	1
HS18040038-16	1	10	10 (mL)	1
HS18040038-17	1	10	10 (mL)	1
HS18040038-18	1	10	10 (mL)	1
HS18040038-19	1	10	10 (mL)	1
HS18040038-20	1	10	10 (mL)	1

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18040038

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 126926	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18040038-21	35BWW15-180329	29 Mar 2018 14:40		03 Apr 2018 12:26	05 Apr 2018 14:51	1
Batch ID 126973	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Groundwater		
HS18040038-01	35BWW20-180327	27 Mar 2018 10:05		04 Apr 2018 10:41	05 Apr 2018 16:21	1
HS18040038-02	LHSMW58-180327	27 Mar 2018 10:50		04 Apr 2018 10:41	05 Apr 2018 16:23	1
HS18040038-03	35BWW11-180327	27 Mar 2018 11:50		04 Apr 2018 10:41	05 Apr 2018 16:26	1
HS18040038-04	35BSW02-180327	27 Mar 2018 12:05		04 Apr 2018 10:41	05 Apr 2018 16:28	1
HS18040038-05	35BWW05-180327	27 Mar 2018 13:05		04 Apr 2018 10:41	05 Apr 2018 16:30	1
HS18040038-06	35BWW06-180327	27 Mar 2018 13:40		04 Apr 2018 10:41	05 Apr 2018 16:49	1
HS18040038-07	35BWW10-180327	27 Mar 2018 14:25		04 Apr 2018 10:41	05 Apr 2018 16:51	1
HS18040038-08	35BSW01-180327	27 Mar 2018 14:45		04 Apr 2018 10:41	05 Apr 2018 16:54	1
HS18040038-09	35BWW18-180327	27 Mar 2018 15:25		04 Apr 2018 10:41	05 Apr 2018 16:56	1
HS18040038-10	35BWW19-180327	27 Mar 2018 16:15		04 Apr 2018 10:41	05 Apr 2018 16:58	1
HS18040038-11	35BWW09-180327	27 Mar 2018 17:00		04 Apr 2018 10:41	05 Apr 2018 17:00	1
HS18040038-12	35BWW13-180328	28 Mar 2018 11:30		04 Apr 2018 10:41	05 Apr 2018 17:11	1
HS18040038-13	35BWW13-180328-FD	28 Mar 2018 11:30		04 Apr 2018 10:41	05 Apr 2018 17:14	1
HS18040038-14	35BWW24-180328	28 Mar 2018 12:20		04 Apr 2018 10:41	05 Apr 2018 17:16	1
HS18040038-15	35BWW25-180328	28 Mar 2018 13:15		04 Apr 2018 10:41	05 Apr 2018 17:18	1
HS18040038-16	35BWW25-180328-fd	28 Mar 2018 13:15		04 Apr 2018 10:41	05 Apr 2018 17:20	1
HS18040038-17	35BWW07-180329	29 Mar 2018 10:55		04 Apr 2018 10:41	05 Apr 2018 17:22	1
HS18040038-18	35BWW01-180329	29 Mar 2018 11:55		04 Apr 2018 10:41	05 Apr 2018 17:25	1
HS18040038-19	35BWW17-180329	29 Mar 2018 12:50		04 Apr 2018 10:41	05 Apr 2018 17:27	1
HS18040038-20	35BWW16-180329	29 Mar 2018 13:35		04 Apr 2018 10:41	05 Apr 2018 17:29	1

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18040038

QC BATCH REPORT

Batch ID: 126926 **Instrument: ICPMS04** **Method: SW6020**

MBLK Sample ID: **MBLK-126926** Units: **mg/L** Analysis Date: **05-Apr-2018 14:26**
Client ID: Run ID: **ICPMS04_313795** SeqNo: **4505888** PrepDate: **03-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.00100	0.00200								U
Thallium	0.00100	0.00200								U

LCS Sample ID: **LCS-126926** Units: **mg/L** Analysis Date: **05-Apr-2018 14:28**
Client ID: Run ID: **ICPMS04_313795** SeqNo: **4505889** PrepDate: **03-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05136	0.00200	0.05	0	103	80 - 120				
Thallium	0.04759	0.00200	0.05	0	95.2	80 - 120				

MS Sample ID: **HS18040038-21MS** Units: **mg/L** Analysis Date: **05-Apr-2018 14:55**
Client ID: **35BWW15-180329** Run ID: **ICPMS04_313795** SeqNo: **4505899** PrepDate: **03-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04944	0.00200	0.05	-0.000282	99.4	80 - 120				
Thallium	0.04523	0.00200	0.05	-0.000005	90.5	80 - 120				

MSD Sample ID: **HS18040038-21MSD** Units: **mg/L** Analysis Date: **05-Apr-2018 14:57**
Client ID: **35BWW15-180329** Run ID: **ICPMS04_313795** SeqNo: **4505900** PrepDate: **03-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05069	0.00200	0.05	-0.000282	102	80 - 120	0.04944	2.49	20	
Thallium	0.04622	0.00200	0.05	-0.000005	92.4	80 - 120	0.04523	2.16	20	

PDS Sample ID: **HS18040038-21PDS** Units: **mg/L** Analysis Date: **05-Apr-2018 14:59**
Client ID: **35BWW15-180329** Run ID: **ICPMS04_313795** SeqNo: **4505901** PrepDate: **03-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.09774	0.00200	0.1	-0.000282	98.0	75 - 125				
Thallium	0.08926	0.00200	0.1	-0.000005	89.3	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18040038

QC BATCH REPORT

Batch ID: 126926 **Instrument: ICPMS04** **Method: SW6020**

SD Sample ID: **HS18040038-21SD** Units: **mg/L** Analysis Date: **05-Apr-2018 14:53**
Client ID: **35BWW15-180329** Run ID: **ICPMS04_313795** SeqNo: **4505898** PrepDate: **03-Apr-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	0.00500	0.0100					0	0	10	U
Thallium	0.00500	0.0100					0	0	10	U

The following samples were analyzed in this batch: HS18040038-21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18040038

QC BATCH REPORT

Batch ID: 126973 **Instrument: ICPMS04** **Method: SW6020**

MBLK Sample ID: **MBLK-126973** Units: **mg/L** Analysis Date: **05-Apr-2018 16:17**
Client ID: Run ID: **ICPMS04_313795** SeqNo: **4506319** PrepDate: **04-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.00100	0.00200								U
Thallium	0.00100	0.00200								U

LCS Sample ID: **LCS-126973** Units: **mg/L** Analysis Date: **05-Apr-2018 16:19**
Client ID: Run ID: **ICPMS04_313795** SeqNo: **4506320** PrepDate: **04-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.05075	0.00200	0.05	0	101	80 - 120				
Thallium	0.04816	0.00200	0.05	0	96.3	80 - 120				

MS Sample ID: **HS18040038-05MS** Units: **mg/L** Analysis Date: **05-Apr-2018 16:43**
Client ID: **35BWW05-180327** Run ID: **ICPMS04_313795** SeqNo: **4506329** PrepDate: **04-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04906	0.00200	0.05	-0.00035	98.8	80 - 120				
Thallium	0.04571	0.00200	0.05	-0.000007	91.4	80 - 120				

MSD Sample ID: **HS18040038-05MSD** Units: **mg/L** Analysis Date: **05-Apr-2018 16:45**
Client ID: **35BWW05-180327** Run ID: **ICPMS04_313795** SeqNo: **4506330** PrepDate: **04-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.04984	0.00200	0.05	-0.00035	100	80 - 120	0.04906	1.58	20	
Thallium	0.04578	0.00200	0.05	-0.000007	91.6	80 - 120	0.04571	0.146	20	

PDS Sample ID: **HS18040038-05PDS** Units: **mg/L** Analysis Date: **05-Apr-2018 16:47**
Client ID: **35BWW05-180327** Run ID: **ICPMS04_313795** SeqNo: **4506331** PrepDate: **04-Apr-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Antimony	0.09222	0.00200	0.1	-0.00035	92.6	75 - 125				
Thallium	0.09282	0.00200	0.1	-0.000007	92.8	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18040038

QC BATCH REPORT

Batch ID: 126973 **Instrument: ICPMS04** **Method: SW6020**

SD Sample ID: **HS18040038-05SD** Units: **mg/L** Analysis Date: **05-Apr-2018 16:40**
Client ID: **35BWW05-180327** Run ID: **ICPMS04_313795** SeqNo: **4506328** PrepDate: **04-Apr-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Antimony	0.00500	0.0100					-0.00035	0	10	U
Thallium	0.00500	0.0100					-0.000007	0	10	U

The following samples were analyzed in this batch:

HS18040038-01	HS18040038-02	HS18040038-03	HS18040038-04
HS18040038-05	HS18040038-06	HS18040038-07	HS18040038-08
HS18040038-09	HS18040038-10	HS18040038-11	HS18040038-12
HS18040038-13	HS18040038-14	HS18040038-15	HS18040038-16
HS18040038-17	HS18040038-18	HS18040038-19	HS18040038-20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Apr-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: **HS18040038**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 06-Apr-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018

00919995

Date: 06-Apr-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18040038
Date/Time Received: **30-Mar-2018 08:50**
Received by: **PJM**

Checklist completed by: *Raegen Giga* eSignature — 2-Apr-2018 Date
Reviewed by: *RJ Modashia* eSignature — 2-Apr-2018 Date

Matrices: **WATER**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.2C/1.6C UC/C	IR 25	
Cooler(s)/Kit(s):	43234		
Date/Time sample(s) sent to storage:	03/30/2018 18:50 PRIOR TO SAMPLE LOGIN		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: 37-MAR2018-GW-ALSHT-01-032918 TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-37			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stanecliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FEDEX		

SAMPLE DETAILS — ANALYSIS REQUESTED

HS18040038

Aptim Environmental & Infrastucture, Inc.

LHAAP-37 501032

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: Antimony and Thallium in Water by 6020A
35BWW20-180327	35BWW20	25.45	25.78	FT	GW	3/27/2018	1005	1	1
LHSMW58-180327	LHSMW58	23.95	24	FT	GW	3/27/2018	1050	1	1
35BWW11-180327	35BWW11	23.16	23.16	FT	GW	3/27/2018	1150	1	1
35BSW02-180327	35BSW02	N/A	N/A	FT	SW	3/27/2018	1205	1	1
35BWW05-180327	35BWW05	23.35	23.45	FT	GW	3/27/2018	1305	1	1
35BWW05-180327-MS	35BWW05	23.35	23.45	FT	GW	3/27/2018	1305	1	1
35BWW05-180327-MSD	35BWW05	23.35	23.45	FT	GW	3/27/2018	1305	1	1
35BWW06-180327	35BWW06	24.8	24.9	FT	GW	3/27/2018	1340	1	1
35BWW10-180327	35BWW10	24.21	24.28	FT	GW	3/27/2018	1425	1	1
35BSW01-180327	35BSW01	N/A	N/A	FT	SW	3/27/2018	1445	1	1
35BWW18-180327	35BWW18	27.18	27.4	FT	GW	3/27/2018	1525	1	1
35BWW19-180327	35BWW19	26.99	27.3	FT	GW	3/27/2018	1615	1	1
35BWW09-180327	35BWW09	25.57	25.65	FT	GW	3/27/2018	1700	1	1
35BWW13-180328	35BWW13	24.25	24.37	FT	GW	3/28/2018	1130	1	1
35BWW13-180328-FD	35BWW13	24.25	24.37	FT	GW	3/28/2018	1130	1	1
35BWW24-180328	35BWW24	28.83	29.61	FT	GW	3/28/2018	1220	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	[signature]	3/29/1630	PM ALS	3-30-18 8:50

43234 UC 22C IR 15 CF -0.6

00919996

APTIM

COC ID: 37-MAR2018-GW-ALSHT-01-032918 **TURNAROUND TIME:** normal **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-37			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281 530.5656						
Project Manager	Praveen Srivastav							Shipping Company	FED EX		

SAMPLE DETAILS | **ANALYSIS REQUESTED**

HS18040038

Aptim Environmental & Infrastucture, Inc.

LHAAP-37 501032

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: Antimony and Thallium in Water by 6020A
35BWW25-180328	35BWW25	26.38	26.6	FT	GW	3/28/2018	1315	1	1
35BWW25-180328-FD	35BWW25	26.38	26.6	FT	GW	3/28/2018	1315	1	1
35BWW07-180329	35BWW07	26.52	28.3	FT	GW	3/29/2018	1055	1	1
35BWW01-180329	35BWW01	12.94	13.61	FT	GW	3/29/2018	1155	1	1
35BWW17-180329	35BWW17	21.38	21.45	FT	GW	3/29/2018	1250	1	1
35BWW16-180329	35BWW16	22.25	22.5	FT	GW	3/29/2018	1335	1	1
35BWW15-180329	35BWW15	22.43	22.6	FT	GW	3/29/2018	1440	1	1

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
	[signature]	3-29-18/1650	PM ALS	3-30-18 9:50

00919997

CUSTODY SEAL

DATE: 03-29-18

Signature: [signature]

LHAAP

CUSTODY SEAL

DATE: 03-29-18

Signature: [signature]

LHAAP

FedEx.

TRK# 0221 7376 9753 4225

FRI - 30 MAR 10:30A
PRIORITY OVERNIGHT

AB SGRA 43234

77099
TX-US
IAH



FID 162/05 29MAR18 GGGA 54GC1/87F5/0C8A

00919998

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Sharon Pennington
APTIM
2410 Cherahala Blvd
Knoxville, TN 37932
United States

Phone: 865-690-3211

Fax:

Identifier: 113PE **Date Rec:** 05/24/2018 **Report Date:** 05/30/2018

Client Project #: 501032 **Client Project Name:** Longhorn AAP - LHAAP-37

Purchase Order #: 204818

Analysis Requested: CENSUS, Miscellaneous

Reviewed By:



NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-37

MI Project Number: **113PE**
Date Received: 05/24/2018

Sample Information

Client Sample ID:		**35BWW04-180522**	**35BWW26-180522**	**35BWW14-180522**	**35BWW23-180522**	**35BWW08-180523**
Sample Date:		05/22/2018	05/22/2018	05/22/2018	05/22/2018	05/23/2018
Units:		cells/mL	cells/mL	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:		JS	JS	JS	JS	JS
Dechlorinating Bacteria						
Dehalococcoides	*DHC*	<1.20E+00	<5.00E-01	<5.00E-01	<5.00E-01	<5.00E-01

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-37

MI Project Number: **113PE**
Date Received: 05/24/2018

Sample Information

Client Sample ID:	**35BWW12-1805 23**
Sample Date:	05/23/2018
Units:	cells/mL
Analyst/Reviewer:	JS

Dechlorinating Bacteria

Dehalococcoides	*DHC*	<3.30E+00

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **5/24/2018**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	05/24/2018	05/30/2018	0 °C	104%	non-detect	non-detect

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 04, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18051121**

Laboratory Results for: **Longhorn Army Ammunition Plant / LHAAP-37**

Dear Sharon,

ALS Environmental received 12 sample(s) on May 23, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Work Order: HS18051121

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18051121-01	35BWW19-180521	Water		21-May-2018 08:35	23-May-2018 08:40	☐
HS18051121-02	35BWW18-180521	Water		21-May-2018 09:25	23-May-2018 08:40	☐
HS18051121-03	35BWW09-180521	Water		21-May-2018 10:15	23-May-2018 08:40	☐
HS18051121-04	35BWW11-180521	Water		21-May-2018 11:15	23-May-2018 08:40	☐
HS18051121-05	35BWW05-180521	Water		21-May-2018 13:05	23-May-2018 08:40	☐
HS18051121-06	35BWW06-180521	Water		21-May-2018 13:50	23-May-2018 08:40	☐
HS18051121-07	35BWW15-180521	Water		21-May-2018 14:40	23-May-2018 08:40	☐
HS18051121-08	35BWW04-180522	Water		22-May-2018 08:25	23-May-2018 08:40	☐
HS18051121-09	35BWW26-180522	Water		22-May-2018 10:00	23-May-2018 08:40	☐
HS18051121-10	35BWW14-180522	Water		22-May-2018 12:10	23-May-2018 08:40	☐
HS18051121-11	35BWW23-180522	Water		22-May-2018 13:15	23-May-2018 08:40	☐
HS18051121-12	37TB01-180522	Water	ALS-050418-37	22-May-2018 00:00	23-May-2018 08:40	☐

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant / LHAAP-37
Work Order:

Work Order Comments

• The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R316973

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R317203

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9060

Batch ID: R317158

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW19-180521 Lab ID:HS18051121-01
Collection Date: 21-May-2018 08:35 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:06
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:06
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:06
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 20:06
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 20:06
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 20:06
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 20:06
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 20:06
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:06
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW19-180521
Collection Date: 21-May-2018 08:35

ANALYTICAL REPORT
WorkOrder:HS18051121
Lab ID:HS18051121-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 20:06
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 20:06
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 20:06
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 20:06
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:06
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:06
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 20:06*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 20:06*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 20:06*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 20:06*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW18-180521 Lab ID:HS18051121-02
Collection Date: 21-May-2018 09:25 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:30
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:30
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:30
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 20:30
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 20:30
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 20:30
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 20:30
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 20:30
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:30
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW18-180521 Lab ID:HS18051121-02
Collection Date: 21-May-2018 09:25 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 20:30
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 20:30
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 20:30
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 20:30
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:30
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:30
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 20:30*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 20:30*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 20:30*
Surr: Toluene-d8	*110*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 20:30*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW09-180521 Lab ID:HS18051121-03
Collection Date: 21-May-2018 10:15 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 18:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 18:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 18:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 18:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 18:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 18:01
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 18:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 18:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 18:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW09-180521 Lab ID:HS18051121-03
Collection Date: 21-May-2018 10:15 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
cis-1,2-Dichloroethene	**0.96**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 18:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 18:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 18:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 18:01
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 18:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 18:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
Trichloroethene	**240**		**1.0**	**2.5**	**5.0**	**ug/L**	5	26-May-2018 18:28
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 18:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 18:01
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*5*	*26-May-2018 18:28*
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 18:01*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*5*	*26-May-2018 18:28*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 18:01*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 18:01*
Surr: Dibromofluoromethane	*102*			**0**	*77-123*	*%REC*	*5*	*26-May-2018 18:28*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 18:01*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*5*	*26-May-2018 18:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW11-180521 Lab ID:HS18051121-04
Collection Date: 21-May-2018 11:15 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:55
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:55
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:55
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 20:55
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 20:55
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 20:55
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 20:55
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 20:55
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 20:55
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW11-180521
Collection Date: 21-May-2018 11:15

ANALYTICAL REPORT
WorkOrder:HS18051121
Lab ID:HS18051121-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 20:55
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 20:55
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 20:55
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 20:55
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 20:55
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 20:55
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 20:55
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 20:55*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 20:55*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 20:55*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 20:55*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW05-180521 Lab ID:HS18051121-05
Collection Date: 21-May-2018 13:05 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:19
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:19
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:19
1,3,5-Trimethylbenzene	**0.94**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 21:19
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 21:19
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 21:19
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 21:19
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 21:19
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 21:19
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:19
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW05-180521 Lab ID:HS18051121-05
Collection Date: 21-May-2018 13:05 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 21:19
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 21:19
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 21:19
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 21:19
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:19
n-Propylbenzene	**0.47**	J	**0.30**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 21:19
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
Tetrachloroethene	**2.0**		**0.30**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 21:19
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
Trichloroethene	**8.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 21:19
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:19
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:19
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 21:19*
Surr: 4-Bromofluorobenzene	*107*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 21:19*
Surr: Dibromofluoromethane	*105*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 21:19*
Surr: Toluene-d8	*110*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 21:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW06-180521 Lab ID:HS18051121-06
Collection Date: 21-May-2018 13:50 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:44
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:44
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:44
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 21:44
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 21:44
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 21:44
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 21:44
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 21:44
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 21:44
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW06-180521 Lab ID:HS18051121-06
Collection Date: 21-May-2018 13:50 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 21:44
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 21:44
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 21:44
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 21:44
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 21:44
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 21:44
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 21:44
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 21:44*
Surr: 4-Bromofluorobenzene	*105*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 21:44*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 21:44*
Surr: Toluene-d8	*109*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 21:44*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW15-180521 Lab ID:HS18051121-07
Collection Date: 21-May-2018 14:40 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:08
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.1**		**0.50**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:08
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
1,1-Dichloroethene	**3.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:08
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:08
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 22:08
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 22:08
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 22:08
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 22:08
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 22:08
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:08
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW15-180521 Lab ID:HS18051121-07
Collection Date: 21-May-2018 14:40 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 22:08
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 22:08
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 22:08
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 22:08
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:08
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Tetrachloroethene	**13**		**0.30**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:08
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
Trichloroethene	**13**		**0.20**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:08
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 22:08*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 22:08*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 22:08*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 22:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW04-180522 Lab ID:HS18051121-08
Collection Date: 22-May-2018 08:25 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:36
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 17:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 17:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 17:36
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 17:36
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 17:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW04-180522 Lab ID:HS18051121-08
Collection Date: 22-May-2018 08:25 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 17:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 17:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 17:36
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 17:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Tetrachloroethene	**5.3**		**0.30**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 17:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:36
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 17:36*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 17:36*
Surr: Dibromofluoromethane	*105*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 17:36*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 17:36*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**4.87**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-May-2018 20:34
Nitrogen, Nitrate (As N)	**0.0990**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-May-2018 20:34
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-May-2018 20:34
Sulfate	**36.5**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-May-2018 20:34
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**1.70**		**0.500**	**0.600**	**1.00**	**mg/L**	1	30-May-2018 21:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18051121
Sample ID:	35BWW04-180522	Lab ID:HS18051121-08
Collection Date:	22-May-2018 08:25	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2018 09:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW26-180522 Lab ID:HS18051121-09
Collection Date: 22-May-2018 10:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:33
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:33
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:33
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 22:33
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 22:33
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 22:33
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 22:33
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 22:33
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:33
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW26-180522 Lab ID:HS18051121-09
Collection Date: 22-May-2018 10:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 22:33
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 22:33
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 22:33
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 22:33
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:33
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:33
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:33
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 22:33*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 22:33*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 22:33*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 22:33*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**32.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-May-2018 21:17
Nitrogen, Nitrate (As N)	**0.0930**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-May-2018 21:17
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-May-2018 21:17
Sulfate	**31.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-May-2018 21:17
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**1.08**		**0.500**	**0.600**	**1.00**	**mg/L**	1	30-May-2018 22:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18051121
Sample ID:	35BWW26-180522	Lab ID:HS18051121-09
Collection Date:	22-May-2018 10:00	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2018 09:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW14-180522 Lab ID:HS18051121-10
Collection Date: 22-May-2018 12:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:57
1,1,2-Trichlor-1,2,2-trifluoroethane	**11**		**0.50**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
1,1-Dichloroethene	**5.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 22:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 22:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 22:57
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 22:57
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 22:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 22:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW14-180522 Lab ID:HS18051121-10
Collection Date: 22-May-2018 12:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
cis-1,2-Dichloroethene	**2.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 22:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 22:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 22:57
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 22:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 22:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Tetrachloroethene	**30**		**0.30**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:57
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
Trichloroethene	**23**		**0.20**	**0.50**	**1.0**	**ug/L**	1	26-May-2018 22:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 22:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 22:57
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 22:57*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 22:57*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 22:57*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 22:57*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**15.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-May-2018 21:32
Nitrogen, Nitrate (As N)	**0.349**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	23-May-2018 21:32
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-May-2018 21:32
Sulfate	**66.7**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-May-2018 21:32
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**1.03**		**0.500**	**0.600**	**1.00**	**mg/L**	1	30-May-2018 23:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18051121
Sample ID:	35BWW14-180522	Lab ID:HS18051121-10
Collection Date:	22-May-2018 12:10	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2018 09:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
Sample ID: 35BWW23-180522
Collection Date: 22-May-2018 13:15

ANALYTICAL REPORT
WorkOrder:HS18051121
Lab ID:HS18051121-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 23:22
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 23:22
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 23:22
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 23:22
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 23:22
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 23:22
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 23:22
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 23:22
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 23:22
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 35BWW23-180522 Lab ID:HS18051121-11
Collection Date: 22-May-2018 13:15 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 23:22
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 23:22
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 23:22
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 23:22
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 23:22
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 23:22
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 23:22
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 23:22*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 23:22*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 23:22*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 23:22*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**68.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	23-May-2018 21:47
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-May-2018 21:47
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	23-May-2018 21:47
Sulfate	**116**		**2.00**	**5.00**	**5.00**	**mg/L**	10	23-May-2018 22:01
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**1.19**		**0.500**	**0.600**	**1.00**	**mg/L**	1	30-May-2018 23:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client:	Aptim Environmental & Infrastucture, Inc.	**ANALYTICAL REPORT**
Project:	Longhorn Army Ammunition Plant / LHAAP-37	WorkOrder:HS18051121
Sample ID:	35BWW23-180522	Lab ID:HS18051121-11
Collection Date:	22-May-2018 13:15	Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2018 09:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 37TB01-180522 Lab ID:HS18051121-12
Collection Date: 22-May-2018 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:11
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:11
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:11
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	26-May-2018 17:11
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 17:11
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	26-May-2018 17:11
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	26-May-2018 17:11
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	26-May-2018 17:11
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	26-May-2018 17:11
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant / LHAAP-37 WorkOrder:HS18051121
Sample ID: 37TB01-180522 Lab ID:HS18051121-12
Collection Date: 22-May-2018 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	26-May-2018 17:11
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	26-May-2018 17:11
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	26-May-2018 17:11
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	26-May-2018 17:11
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	26-May-2018 17:11
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	26-May-2018 17:11
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	26-May-2018 17:11
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*26-May-2018 17:11*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*26-May-2018 17:11*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*26-May-2018 17:11*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*26-May-2018 17:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R316973	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18051121-01	35BWW19-180521	21 May 2018 08:35			26 May 2018 20:06	1
HS18051121-02	35BWW18-180521	21 May 2018 09:25			26 May 2018 20:30	1
HS18051121-03	35BWW09-180521	21 May 2018 10:15			26 May 2018 18:28	5
HS18051121-03	35BWW09-180521	21 May 2018 10:15			26 May 2018 18:01	1
HS18051121-04	35BWW11-180521	21 May 2018 11:15			26 May 2018 20:55	1
HS18051121-05	35BWW05-180521	21 May 2018 13:05			26 May 2018 21:19	1
HS18051121-06	35BWW06-180521	21 May 2018 13:50			26 May 2018 21:44	1
HS18051121-07	35BWW15-180521	21 May 2018 14:40			26 May 2018 22:08	1
HS18051121-08	35BWW04-180522	22 May 2018 08:25			26 May 2018 17:36	1
HS18051121-09	35BWW26-180522	22 May 2018 10:00			26 May 2018 22:33	1
HS18051121-10	35BWW14-180522	22 May 2018 12:10			26 May 2018 22:57	1
HS18051121-11	35BWW23-180522	22 May 2018 13:15			26 May 2018 23:22	1
HS18051121-12	37TB01-180522	22 May 2018 00:00			26 May 2018 17:11	1
Batch ID R317158	**Test Name :** TOTAL ORGANIC CARBON BY SW9060A			**Matrix:** Water		
HS18051121-08	35BWW04-180522	22 May 2018 08:25			30 May 2018 21:56	1
HS18051121-09	35BWW26-180522	22 May 2018 10:00			30 May 2018 22:49	1
HS18051121-10	35BWW14-180522	22 May 2018 12:10			30 May 2018 23:07	1
HS18051121-11	35BWW23-180522	22 May 2018 13:15			30 May 2018 23:24	1
Batch ID R317203	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS18051121-08	35BWW04-180522	22 May 2018 08:25			23 May 2018 20:34	1
HS18051121-09	35BWW26-180522	22 May 2018 10:00			23 May 2018 21:17	1
HS18051121-10	35BWW14-180522	22 May 2018 12:10			23 May 2018 21:32	1
HS18051121-11	35BWW23-180522	22 May 2018 13:15			23 May 2018 22:01	10
HS18051121-11	35BWW23-180522	22 May 2018 13:15			23 May 2018 21:47	1
Batch ID R317281	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Water		
HS18051121-08	35BWW04-180522	22 May 2018 08:25			04 Jun 2018 09:24	1
HS18051121-09	35BWW26-180522	22 May 2018 10:00			04 Jun 2018 09:24	1
HS18051121-10	35BWW14-180522	22 May 2018 12:10			04 Jun 2018 09:24	1
HS18051121-11	35BWW23-180522	22 May 2018 13:15			04 Jun 2018 09:24	1

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180526** Units: **ug/L** Analysis Date: **26-May-2018 16:22**
Client ID: Run ID: **VOA2_316973** SeqNo: **4577700** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	0.50	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180526** Units: **ug/L** Analysis Date: **26-May-2018 16:22**
Client ID: Run ID: **VOA2_316973** SeqNo: **4577700** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*52.4*	*1.0*	*50*	*0*	*105*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.68*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*53.87*	*1.0*	*50*	*0*	*108*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180526** Units: **ug/L** Analysis Date: **26-May-2018 16:22**
Client ID: Run ID: **VOA2_316973** SeqNo: **4577700** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*54.24*	*1.0*	*50*	*0*	*108*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180526** Units: **ug/L** Analysis Date: **26-May-2018 15:33**
Client ID: Run ID: **VOA2_316973** SeqNo: **4577698** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.87	1.0	50	0	99.7	77 - 118				
1,1,1-Trichloroethane	50.67	1.0	50	0	101	70 - 130				
1,1,2,2-Tetrachloroethane	47.11	1.0	50	0	94.2	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	48.39	1.0	50	0	96.8	70 - 130				
1,1,2-Trichloroethane	50.74	1.0	50	0	101	77 - 113				
1,1-Dichloroethane	49.73	1.0	50	0	99.5	71 - 122				
1,1-Dichloroethene	52.8	1.0	50	0	106	70 - 130				
1,1-Dichloropropene	45.54	1.0	50	0	91.1	78 - 118				
1,2,3-Trichlorobenzene	49.58	1.0	50	0	99.2	70 - 130				
1,2,3-Trichloropropane	54.46	1.0	50	0	109	70 - 127				
1,2,4-Trichlorobenzene	50.15	1.0	50	0	100	77 - 126				
1,2,4-Trimethylbenzene	55.31	1.0	50	0	111	73 - 121				
1,2-Dibromo-3-chloropropane	55.87	1.0	50	0	112	70 - 130				
1,2-Dibromoethane	52.19	1.0	50	0	104	76 - 123				
1,2-Dichlorobenzene	46.95	1.0	50	0	93.9	77 - 113				
1,2-Dichloroethane	52.35	1.0	50	0	105	70 - 124				
1,2-Dichloropropane	48.75	1.0	50	0	97.5	72 - 119				
1,3,5-Trimethylbenzene	45.91	1.0	50	0	91.8	75 - 118				
1,3-Dichlorobenzene	46.12	1.0	50	0	92.2	78 - 118				
1,3-Dichloropropane	51.12	1.0	50	0	102	75 - 116				
1,4-Dichlorobenzene	45.36	1.0	50	0	90.7	79 - 113				
2,2-Dichloropropane	52.19	1.0	50	0	104	70 - 130				
2-Butanone	109.1	2.0	100	0	109	70 - 130				
2-Chlorotoluene	54.07	1.0	50	0	108	70 - 128				
2-Hexanone	110.2	2.0	100	0	110	70 - 130				
4-Chlorotoluene	55.12	1.0	50	0	110	74 - 126				
4-Isopropyltoluene	47.68	1.0	50	0	95.4	74 - 126				
4-Methyl-2-pentanone	102.7	2.0	100	0	103	70 - 130				
Acetone	113.8	2.0	100	0	114	70 - 130				
Benzene	50.1	1.0	50	0	100	74 - 120				
Bromobenzene	46.14	1.0	50	0	92.3	78 - 113				
Bromochloromethane	52.14	1.0	50	0	104	76 - 124				
Bromodichloromethane	51.47	1.0	50	0	103	74 - 122				
Bromoform	54.18	1.0	50	0	108	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180526** Units: **ug/L** Analysis Date: **26-May-2018 15:33**
Client ID: Run ID: **VOA2_316973** SeqNo: **4577698** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	48.09	1.0	50	0	96.2	70 - 130				
Carbon disulfide	100.6	2.0	100	0	101	70 - 130				
Carbon tetrachloride	47.81	1.0	50	0	95.6	71 - 125				
Chlorobenzene	48.31	1.0	50	0	96.6	76 - 113				
Chloroethane	56.86	1.0	50	0	114	70 - 130				
Chloroform	49.54	1.0	50	0	99.1	71 - 121				
Chloromethane	55.85	1.0	50	0	112	70 - 129				
cis-1,2-Dichloroethene	50.03	1.0	50	0	100	75 - 122				
cis-1,3-Dichloropropene	53.97	1.0	50	0	108	73 - 127				
Dibromochloromethane	51.96	1.0	50	0	104	77 - 122				
Dibromomethane	53.6	1.0	50	0	107	78 - 121				
Dichlorodifluoromethane	53.59	1.0	50	0	107	70 - 130				
Ethylbenzene	49.02	1.0	50	0	98.0	77 - 117				
Hexachlorobutadiene	48.96	1.0	50	0	97.9	70 - 130				
Isopropylbenzene	49.48	1.0	50	0	99.0	73 - 127				
m,p-Xylene	117.9	2.0	100	0	118	77 - 122				
Methylene chloride	46.89	2.0	50	0	93.8	70 - 127				
Naphthalene	52.31	1.0	50	0	105	70 - 130				
n-Butylbenzene	49.77	1.0	50	0	99.5	72 - 130				
n-Propylbenzene	46.78	1.0	50	0	93.6	73 - 124				
o-Xylene	49.47	1.0	50	0	98.9	75 - 119				
sec-Butylbenzene	47.71	1.0	50	0	95.4	73 - 128				
Styrene	50.69	1.0	50	0	101	72 - 126				
tert-Butylbenzene	46.59	1.0	50	0	93.2	73 - 124				
Tetrachloroethene	48.43	1.0	50	0	96.9	76 - 119				
Toluene	47.62	1.0	50	0	95.2	77 - 118				
trans-1,2-Dichloroethene	52.99	1.0	50	0	106	72 - 127				
trans-1,3-Dichloropropene	55.92	1.0	50	0	112	77 - 119				
Trichloroethene	51.89	1.0	50	0	104	77 - 121				
Trichlorofluoromethane	55.34	1.0	50	0	111	70 - 130				
Vinyl chloride	52.45	1.0	50	0	105	70 - 130				
Surr: 1,2-Dichloroethane-d4	*53.1*	*1.0*	*50*	*0*	*106*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*53.69*	*1.0*	*50*	*0*	*107*	*82 - 115*				
Surr: Dibromofluoromethane	*50.33*	*1.0*	*50*	*0*	*101*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180526** Units: **ug/L** Analysis Date: **26-May-2018 15:33**
Client ID: Run ID: **VOA2_316973** SeqNo: **4577698** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.92*	*1.0*	*50*	*0*	*104*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051121-08MS** Units: **ug/L** Analysis Date: **26-May-2018 18:52**
Client ID: **35BWW04-180522** Run ID: **VOA2_316973** SeqNo: **4577706** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.66	1.0	50	0	97.3	70 - 120				
1,1,1-Trichloroethane	50.72	1.0	50	0	101	70 - 130				
1,1,2,2-Tetrachloroethane	43.42	1.0	50	0	86.8	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	48.87	1.0	50	0	97.7	70 - 130				
1,1,2-Trichloroethane	48.47	1.0	50	0	96.9	70 - 117				
1,1-Dichloroethane	48.58	1.0	50	0	97.2	70 - 127				
1,1-Dichloroethene	51.82	1.0	50	0	104	70 - 130				
1,1-Dichloropropene	46.49	1.0	50	0	93.0	70 - 129				
1,2,3-Trichlorobenzene	43.43	1.0	50	0	86.9	70 - 130				
1,2,3-Trichloropropane	53.68	1.0	50	0	107	70 - 130				
1,2,4-Trichlorobenzene	44.22	1.0	50	0	88.4	70 - 125				
1,2,4-Trimethylbenzene	51.57	1.0	50	0	103	70 - 125				
1,2-Dibromo-3-chloropropane	51.04	1.0	50	0	102	70 - 130				
1,2-Dibromoethane	48.85	1.0	50	0	97.7	70 - 124				
1,2-Dichlorobenzene	44.45	1.0	50	0	88.9	70 - 115				
1,2-Dichloroethane	49.94	1.0	50	0	99.9	70 - 127				
1,2-Dichloropropane	47.3	1.0	50	0	94.6	70 - 122				
1,3,5-Trimethylbenzene	43.74	1.0	50	0	87.5	70 - 126				
1,3-Dichlorobenzene	43.17	1.0	50	0	86.3	70 - 119				
1,3-Dichloropropane	48.09	1.0	50	0	96.2	70 - 121				
1,4-Dichlorobenzene	42.64	1.0	50	0	85.3	70 - 114				
2,2-Dichloropropane	47.07	1.0	50	0	94.1	70 - 130				
2-Butanone	100.3	2.0	100	0	100	70 - 130				
2-Chlorotoluene	51.04	1.0	50	0	102	70 - 130				
2-Hexanone	100.1	2.0	100	0	100	70 - 130				
4-Chlorotoluene	51.75	1.0	50	0	104	70 - 130				
4-Isopropyltoluene	44.43	1.0	50	0	88.9	70 - 130				
4-Methyl-2-pentanone	96.24	2.0	100	0	96.2	70 - 130				
Acetone	106.2	2.0	100	0	106	70 - 130				
Benzene	48.01	1.0	50	0	96.0	70 - 127				
Bromobenzene	43.56	1.0	50	0	87.1	70 - 115				
Bromochloromethane	49.33	1.0	50	0	98.7	70 - 127				
Bromodichloromethane	48.71	1.0	50	0	97.4	70 - 124				
Bromoform	50.25	1.0	50	0	101	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051121-08MS** Units: **ug/L** Analysis Date: **26-May-2018 18:52**
Client ID: **35BWW04-180522** Run ID: **VOA2_316973** SeqNo: **4577706** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	44.9	1.0	50	0	89.8	70 - 130				
Carbon disulfide	97.7	2.0	100	0	97.7	70 - 130				
Carbon tetrachloride	48.05	1.0	50	0	96.1	70 - 130				
Chlorobenzene	46.38	1.0	50	0	92.8	70 - 114				
Chloroethane	55.62	1.0	50	0	111	70 - 130				
Chloroform	47.05	1.0	50	0	94.1	70 - 125				
Chloromethane	46.1	1.0	50	0	92.2	70 - 130				
cis-1,2-Dichloroethene	48.85	1.0	50	0	97.7	70 - 128				
cis-1,3-Dichloropropene	50.27	1.0	50	0	101	70 - 125				
Dibromochloromethane	49	1.0	50	0	98.0	70 - 124				
Dibromomethane	49.78	1.0	50	0	99.6	70 - 124				
Dichlorodifluoromethane	36.55	1.0	50	0	73.1	70 - 130				
Ethylbenzene	47.05	1.0	50	0	94.1	70 - 124				
Hexachlorobutadiene	40.04	1.0	50	0	80.1	70 - 130				
Isopropylbenzene	48.45	1.0	50	0	96.9	70 - 130				
m,p-Xylene	114	2.0	100	0	114	70 - 130				
Methylene chloride	44.49	2.0	50	0	89.0	70 - 128				
Naphthalene	46.53	1.0	50	0	93.1	70 - 130				
n-Butylbenzene	45.26	1.0	50	0	90.5	70 - 130				
n-Propylbenzene	44.9	1.0	50	0	89.8	70 - 130				
o-Xylene	47.71	1.0	50	0	95.4	70 - 124				
sec-Butylbenzene	45.31	1.0	50	0	90.6	70 - 130				
Styrene	47.51	1.0	50	0	95.0	70 - 130				
tert-Butylbenzene	44.11	1.0	50	0	88.2	70 - 130				
Tetrachloroethene	53.1	1.0	50	5.255	95.7	70 - 130				
Toluene	46.2	1.0	50	0	92.4	70 - 123				
trans-1,2-Dichloroethene	52.7	1.0	50	0	105	70 - 130				
trans-1,3-Dichloropropene	50.97	1.0	50	0	102	70 - 121				
Trichloroethene	52.12	1.0	50	0	104	70 - 129				
Trichlorofluoromethane	54.24	1.0	50	0	108	70 - 130				
Vinyl chloride	49.99	1.0	50	0	100.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.97*	*1.0*	*50*	*0*	*106*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*53.92*	*1.0*	*50*	*0*	*108*	*81 - 113*				
Surr: Dibromofluoromethane	*49.72*	*1.0*	*50*	*0*	*99.4*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18051121-08MS** Units: **ug/L** Analysis Date: **26-May-2018 18:52**
Client ID: **35BWW04-180522** Run ID: **VOA2_316973** SeqNo: **4577706** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.33*	*1.0*	*50*	*0*	*107*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051121-08MSD** Units: **ug/L** Analysis Date: **26-May-2018 19:17**
Client ID: **35BWW04-180522** Run ID: **VOA2_316973** SeqNo: **4577707** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.64	1.0	50	0	95.3	70 - 120	48.66	2.12	20	
1,1,1-Trichloroethane	51.33	1.0	50	0	103	70 - 130	50.72	1.21	20	
1,1,2,2-Tetrachloroethane	43.64	1.0	50	0	87.3	70 - 123	43.42	0.521	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	47.59	1.0	50	0	95.2	70 - 130	48.87	2.65	20	
1,1,2-Trichloroethane	47.85	1.0	50	0	95.7	70 - 117	48.47	1.3	20	
1,1-Dichloroethane	49.48	1.0	50	0	99.0	70 - 127	48.58	1.82	20	
1,1-Dichloroethene	50.49	1.0	50	0	101	70 - 130	51.82	2.59	20	
1,1-Dichloropropene	44.97	1.0	50	0	89.9	70 - 129	46.49	3.33	20	
1,2,3-Trichlorobenzene	44.86	1.0	50	0	89.7	70 - 130	43.43	3.25	20	
1,2,3-Trichloropropane	54.38	1.0	50	0	109	70 - 130	53.68	1.3	20	
1,2,4-Trichlorobenzene	45.62	1.0	50	0	91.2	70 - 125	44.22	3.12	20	
1,2,4-Trimethylbenzene	51.54	1.0	50	0	103	70 - 125	51.57	0.0503	20	
1,2-Dibromo-3-chloropropane	52.65	1.0	50	0	105	70 - 130	51.04	3.1	20	
1,2-Dibromoethane	48.67	1.0	50	0	97.3	70 - 124	48.85	0.381	20	
1,2-Dichlorobenzene	44.49	1.0	50	0	89.0	70 - 115	44.45	0.0819	20	
1,2-Dichloroethane	50.28	1.0	50	0	101	70 - 127	49.94	0.675	20	
1,2-Dichloropropane	46.45	1.0	50	0	92.9	70 - 122	47.3	1.81	20	
1,3,5-Trimethylbenzene	43.55	1.0	50	0	87.1	70 - 126	43.74	0.439	20	
1,3-Dichlorobenzene	43.52	1.0	50	0	87.0	70 - 119	43.17	0.812	20	
1,3-Dichloropropane	48.1	1.0	50	0	96.2	70 - 121	48.09	0.0241	20	
1,4-Dichlorobenzene	42.66	1.0	50	0	85.3	70 - 114	42.64	0.0376	20	
2,2-Dichloropropane	48.47	1.0	50	0	96.9	70 - 130	47.07	2.94	20	
2-Butanone	101.4	2.0	100	0	101	70 - 130	100.3	1.1	20	
2-Chlorotoluene	51.86	1.0	50	0	104	70 - 130	51.04	1.6	20	
2-Hexanone	100.8	2.0	100	0	101	70 - 130	100.1	0.672	20	
4-Chlorotoluene	52.19	1.0	50	0	104	70 - 130	51.75	0.836	20	
4-Isopropyltoluene	44.62	1.0	50	0	89.2	70 - 130	44.43	0.441	20	
4-Methyl-2-pentanone	96.84	2.0	100	0	96.8	70 - 130	96.24	0.62	20	
Acetone	104.9	2.0	100	0	105	70 - 130	106.2	1.19	20	
Benzene	47.37	1.0	50	0	94.7	70 - 127	48.01	1.34	20	
Bromobenzene	43.62	1.0	50	0	87.2	70 - 115	43.56	0.131	20	
Bromochloromethane	49.57	1.0	50	0	99.1	70 - 127	49.33	0.501	20	
Bromodichloromethane	48.15	1.0	50	0	96.3	70 - 124	48.71	1.17	20	
Bromoform	50.08	1.0	50	0	100	70 - 129	50.25	0.336	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051121-08MSD** Units: **ug/L** Analysis Date: **26-May-2018 19:17**
Client ID: **35BWW04-180522** Run ID: **VOA2_316973** SeqNo: **4577707** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	44.84	1.0	50	0	89.7	70 - 130	44.9	0.118	20	
Carbon disulfide	99.67	2.0	100	0	99.7	70 - 130	97.7	2	20	
Carbon tetrachloride	45.31	1.0	50	0	90.6	70 - 130	48.05	5.87	20	
Chlorobenzene	46.31	1.0	50	0	92.6	70 - 114	46.38	0.144	20	
Chloroethane	54.77	1.0	50	0	110	70 - 130	55.62	1.54	20	
Chloroform	48.5	1.0	50	0	97.0	70 - 125	47.05	3.02	20	
Chloromethane	47.2	1.0	50	0	94.4	70 - 130	46.1	2.34	20	
cis-1,2-Dichloroethene	49.46	1.0	50	0	98.9	70 - 128	48.85	1.23	20	
cis-1,3-Dichloropropene	50.27	1.0	50	0	101	70 - 125	50.27	0.00618	20	
Dibromochloromethane	49.44	1.0	50	0	98.9	70 - 124	49	0.906	20	
Dibromomethane	50.1	1.0	50	0	100	70 - 124	49.78	0.645	20	
Dichlorodifluoromethane	37.31	1.0	50	0	74.6	70 - 130	36.55	2.05	20	
Ethylbenzene	47.92	1.0	50	0	95.8	70 - 124	47.05	1.83	20	
Hexachlorobutadiene	40.69	1.0	50	0	81.4	70 - 130	40.04	1.61	20	
Isopropylbenzene	48.8	1.0	50	0	97.6	70 - 130	48.45	0.72	20	
m,p-Xylene	114.2	2.0	100	0	114	70 - 130	114	0.143	20	
Methylene chloride	45.8	2.0	50	0	91.6	70 - 128	44.49	2.9	20	
Naphthalene	48.23	1.0	50	0	96.5	70 - 130	46.53	3.58	20	
n-Butylbenzene	46	1.0	50	0	92.0	70 - 130	45.26	1.62	20	
n-Propylbenzene	44.85	1.0	50	0	89.7	70 - 130	44.9	0.106	20	
o-Xylene	47.69	1.0	50	0	95.4	70 - 124	47.71	0.0551	20	
sec-Butylbenzene	44.8	1.0	50	0	89.6	70 - 130	45.31	1.13	20	
Styrene	47.76	1.0	50	0	95.5	70 - 130	47.51	0.524	20	
tert-Butylbenzene	44.46	1.0	50	0	88.9	70 - 130	44.11	0.784	20	
Tetrachloroethene	53.43	1.0	50	5.255	96.4	70 - 130	53.1	0.612	20	
Toluene	46.54	1.0	50	0	93.1	70 - 123	46.2	0.738	20	
trans-1,2-Dichloroethene	52.93	1.0	50	0	106	70 - 130	52.7	0.43	20	
trans-1,3-Dichloropropene	50.83	1.0	50	0	102	70 - 121	50.97	0.267	20	
Trichloroethene	51.11	1.0	50	0	102	70 - 129	52.12	1.96	20	
Trichlorofluoromethane	55.04	1.0	50	0	110	70 - 130	54.24	1.45	20	
Vinyl chloride	50.23	1.0	50	0	100	70 - 130	49.99	0.478	20	
Surr: 1,2-Dichloroethane-d4	*55.39*	*1.0*	*50*	*0*	*111*	*70 - 126*	*52.97*	*4.48*	*20*	
Surr: 4-Bromofluorobenzene	*53.74*	*1.0*	*50*	*0*	*107*	*81 - 113*	*53.92*	*0.344*	*20*	
Surr: Dibromofluoromethane	*51.96*	*1.0*	*50*	*0*	*104*	*77 - 123*	*49.72*	*4.41*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R316973 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051121-08MSD** Units: **ug/L** Analysis Date: **26-May-2018 19:17**
Client ID: **35BWW04-180522** Run ID: **VOA2_316973** SeqNo: **4577707** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.7*	*1.0*	*50*	*0*	*105*	*82 - 127*	*53.33*	*1.19*	*20*	

The following samples were analyzed in this batch:

HS18051121-01	HS18051121-02	HS18051121-03	HS18051121-04
HS18051121-05	HS18051121-06	HS18051121-07	HS18051121-08
HS18051121-09	HS18051121-10	HS18051121-11	HS18051121-12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R317158 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **WBLKW1-180530** Units: **mg/L** Analysis Date: **30-May-2018 21:25**
Client ID: Run ID: **TOC_02_317158** SeqNo: **4581837** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW1-180530** Units: **mg/L** Analysis Date: **30-May-2018 21:41**
Client ID: Run ID: **TOC_02_317158** SeqNo: **4581838** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.577	1.00	10	0	95.8	80 - 120				

MS Sample ID: **HS18051121-08MS** Units: **mg/L** Analysis Date: **30-May-2018 22:14**
Client ID: **35BWW04-180522** Run ID: **TOC_02_317158** SeqNo: **4581840** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.89	1.00	10	1.703	112	80 - 120				

MSD Sample ID: **HS18051121-08MSD** Units: **mg/L** Analysis Date: **30-May-2018 22:32**
Client ID: **35BWW04-180522** Run ID: **TOC_02_317158** SeqNo: **4581841** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.32	1.00	10	1.703	106	80 - 120	12.89	4.52	20	

The following samples were analyzed in this batch: HS18051121-08 HS18051121-09 HS18051121-10 HS18051121-11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R317203 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-052318** Units: **mg/L** Analysis Date: **23-May-2018 19:50**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582591** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-052318** Units: **mg/L** Analysis Date: **23-May-2018 20:05**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582592** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.27	0.500	20	0	101	80 - 120				
Nitrogen, Nitrate (As N)	3.998	0.100	4	0	100.0	80 - 120				
Nitrogen, Nitrite (As N)	4.321	0.100	4	0	108	80 - 120				
Sulfate	20.37	0.500	20	0	102	80 - 120				

LCSD Sample ID: **WLCSDW1-052318** Units: **mg/L** Analysis Date: **23-May-2018 20:19**
Client ID: Run ID: **ICS2100_317203** SeqNo: **4582593** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.53	0.500	20	0	103	80 - 120	20.27	1.29	20	
Nitrogen, Nitrate (As N)	3.995	0.100	4	0	99.9	80 - 120	3.998	0.0751	20	
Nitrogen, Nitrite (As N)	4.34	0.100	4	0	108	80 - 120	4.321	0.439	20	
Sulfate	20.54	0.500	20	0	103	80 - 120	20.37	0.826	20	

MS Sample ID: **HS18051121-08MS** Units: **mg/L** Analysis Date: **23-May-2018 20:48**
Client ID: **35BWW04-180522** Run ID: **ICS2100_317203** SeqNo: **4582595** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	14.9	0.500	10	4.869	100	80 - 120				
Nitrogen, Nitrate (As N)	2.025	0.100	2	0.099	96.3	80 - 120				
Nitrogen, Nitrite (As N)	2.142	0.100	2	0	107	80 - 120				
Sulfate	46.13	0.500	10	36.48	96.6	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: HS18051121

QC BATCH REPORT

Batch ID: R317203 **Instrument: ICS2100** **Method: SW9056**

MSD Sample ID: **HS18051121-08MSD** Units: **mg/L** Analysis Date: **23-May-2018 21:03**
Client ID: **35BWW04-180522** Run ID: **ICS2100_317203** SeqNo: **4582596** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	15.35	0.500	10	4.869	105	80 - 120	14.9	2.98	20	
Nitrogen, Nitrate (As N)	2.126	0.100	2	0.099	101	80 - 120	2.025	4.87	20	
Nitrogen, Nitrite (As N)	2.219	0.100	2	0	111	80 - 120	2.142	3.53	20	
Sulfate	47.4	0.500	10	36.48	109	80 - 120	46.13	2.72	20	

The following samples were analyzed in this batch: HS18051121-08 HS18051121-09 HS18051121-10 HS18051121-11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 04-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant / LHAAP-37
WorkOrder: **HS18051121**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 04-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 04-Jun-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18051121
Date/Time Received: **23-May-2018 08:40**
Received by: **JRM**

Checklist completed by: *Pablo Marinez* eSignature — 23-May-2018 Date
Reviewed by: *RJ Modashia* eSignature — 23-May-2018 Date

Matrices: **WATER**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.7C/1.3C UC/C	IR # 30	
Cooler(s)/Kit(s):	25769		
Date/Time sample(s) sent to storage:	5/23/2018 12:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☑	N/A ☐
pH adjusted?	Yes ☑	No ☐	N/A ☐
pH adjusted by:	Nilesh D. Ranchod		

Login Notes: pH >2 preserved with 0.5mL H2SO4 on 5/23/18 @ 10:50 by NR
Lot # 300107019-11
Sx # 35BWW23-180522

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

HS18051121

APTIM

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant / LHAAP-37

COC ID: 37-MAY2018-GW-ALSHT-1805

TURNAROUND TIME: normal

PROJECT/CLIENT INFO

Facility Name	Longhorn AAP
Project Number	501032
	LHAAP-37
Address	1203-B East Grand Avenue
	PMB 202
City	Marshall
State	TX
Postal Code	75670
Country	USA
Phone Number	713.243.7264
Project Manager	Praveen Srivastav

LABORATORY

Lab Name	ALS Laboratories
Lab Contact	RJ Modashia
Email	RJ.Modashia@alsglobal.com
Address	10450 Stancliff Rd., Suite 210
City	Houston
State	TX
Postal Code	77099
Country	USA
Phone Number	281.575.2279 or 281.530.5656

Email Report To	Sharon.Pennington@CBIFederalServices.com
Mail Reports To	Sharon Pennington
Address	2410 Cherahala Blvd.
City	Knoxville
State	TN
Postal Code	37932
Country	USA
Shipping Company	

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	~~TOC in Water by E415.1~~	~~Sulfide in Water by E300.1~~	NITRATE NITRITE		
35BWW19-180521	LHAAP 37	26.70	26.95		WG	5/21/18	0835	3		X									
35BWW18-180521	LHAAP 37	27.00	27.24		WG	5/21/18	0925	3		X									
35BWW09-180521	LHAAP 37	25.50	25.75		WG	5/21/18	1015	3		X									
35BWW11-180521	LHAAP 37	22.67	22.85		WG	5/21/18	1115	3		X									
35BWW05-180521	LHAAP 37	23.20	23.41		WG	5/21/18	1305	3		X									
35BWW06-180521	LHAAP 37	24.02	24.22		WG	5/21/18	1350	3		X									
35BWW15-180521	LHAAP 37	23.65	23.81		WG	5/21/18	1440	3		X									
35BWW04-180522	LHAAP 37	22.55	22.73		WG	5/22/18	0825	13		X	X	X	X	X			X		
35BWW04-180522-MS	LHAAP 37	22.55	22.73		WG	5/22/18	0825	13		X	X	X	X	X			X		
35BWW04-180522-MSD	LHAAP 37	22.55	22.73		WG	5/22/18	0825	13		X	X	X	X	X			X		
35BWW26-180522	LHAAP 37	26.97	27.19		WG	5/22/18	1000	13		X	X	X	X	X			X		
35BWW14-180522	LHAAP 37	22.20	22.38		WG	5/22/18	1210	13		X	X	X	X	X			X		
35BWW23-180522	LHAAP 37	27.63	27.86		WG	5/22/18	1315	13		X	X	X	X	X			X		
TRIP BLANK						5/22/18		2		X									

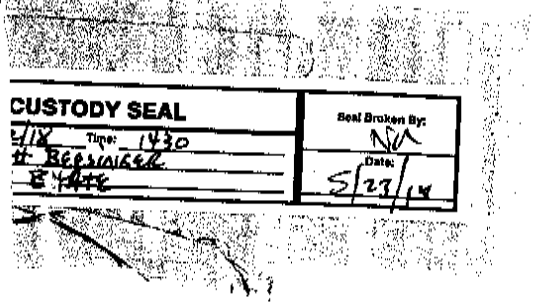
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS
Anions should include chloride, nitrate, nitrite, and sulfate.

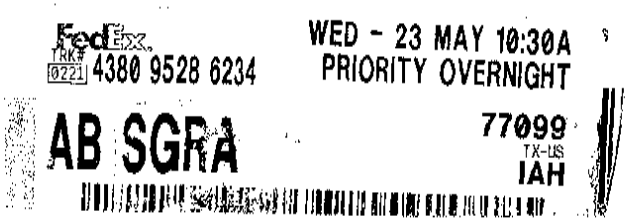
RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Scott Bessinger / BHATE	5/22/18 1430	JM / ALS Hau	5/23/18 08:40

Cooler - 25769 1430
Temp 1.7 CF-0.4

00920053


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
Date:
Name:
Company:


CUSTODY SEAL
Time: 1430
Seal Broken By:
Date:
5/23/14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TRK# 0221 4380 9528 6234
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PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH

00920054

LABORATORY REPORT

June 1, 2018

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS18051121

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on May 24, 2018. For your reference, these analyses have been assigned our service request number P1802643.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 5:32 pm, Jun 01, 2018

For Kate Kaneko
Project Manager

Client: ALS Laboratory Group Service Request No: P1802643
Project: HS18051121

CASE NARRATIVE

The samples were received intact under chain of custody on May 24, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

Four of the samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The recovery of the matrix spike duplicate and the relative percent difference were outside of DOD control limits due to matrix interference. However all quality control parameters were within limits for the laboratory control sample and its duplicate. The data has been flagged accordingly.

Methane, Ethene and Ethane Analysis

The other four samples were analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-17-8
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA016272017-8
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS18051121

Service Request: P1802643

Date Received: 5/24/2018
Time Received: 09:10

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases	RSK 175 - CO2
35BWW04-180521	P1802643-001	Water	5/22/2018	08:25	X	
35BWW04-180521	P1802643-002	Water	5/22/2018	08:25		X
35BWW26-180521	P1802643-003	Water	5/22/2018	10:00	X	
35BWW26-180521	P1802643-004	Water	5/22/2018	10:00		X
35BWW14-180521	P1802643-005	Water	5/22/2018	12:10	X	
35BWW14-180521	P1802643-006	Water	5/22/2018	12:10		X
35BWW23-180521	P1802643-007	Water	5/22/2018	13:15	X	
35BWW23-180521	P1802643-008	Water	5/22/2018	13:15		X

00920059

P1802643

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9154

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18051121
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18051121-08**	**35BWW04-180521**	**Water**	**22 May 2018 08:25**
	MEE + CO2. DOD IV. Equis EDD			01 Jun 2018
2.	**HS18051121-09**	**35BWW26-180521**	**Water**	**22 May 2018 10:00**
	MEE + CO2. DOD IV. Equis EDD			01 Jun 2018
3.	**HS18051121-10**	**35BWW14-180521**	**Water**	**22 May 2018 12:10**
	MEE + CO2. DOD IV. Equis EDD			01 Jun 2018
4.	**HS18051121-11**	**35BWW23-180521**	**Water**	**22 May 2018 13:15**
	MEE + CO2. DOD IV. Equis EDD			01 Jun 2018

Comments: Please analyze for the analysis listed above. Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Please Run MS/MSD on sample - HS18051121-08
Extra Volume supplied

Relinquished By: _____ Date/Time: 5/23/18 18:00.

Received By: _____ Date/Time: 5-24-18 0910

Cooler ID(s): _____ Temperature(s): _____ 1° not ice

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802643

Project: HS18051121

Sample(s) received on: 5/24/18 Date opened: 5/24/18 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 1° C **Wet Ice**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802643-001.01	40ml VOA HCL				A	
P1802643-001.02	40ml VOA HCL		1		A	MR 05/30/18
P1802643-001.03	40ml VOA HCL		1		A	MR 05/30/18
P1802643-001.04	40ml VOA HCL				A	MR 05/30/18
P1802643-001.05	40ml VOA HCL		1		A	
P1802643-001.06	40ml VOA HCL				A	
P1802643-001.07	40ml VOA HCL				A	
P1802643-001.08	40ml VOA HCL				A	
P1802643-001.09	40ml VOA HCL				A	
P1802643-002.01	40mL VOA NP				A	
P1802643-002.02	40mL VOA NP		6		A	MR 05/30/18
P1802643-002.03	40mL VOA NP		6		A	MR 05/30/18
P1802643-002.04	40mL VOA NP		6		A	MR 05/30/18
P1802643-002.05	40mL VOA NP				A	
P1802643-002.06	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802643

Project: HS18051121

Sample(s) received on: 5/24/18 Date opened: 5/24/18 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802643-002.07	40mL VOA NP				A	
P1802643-002.08	40mL VOA NP				A	
P1802643-002.09	40mL VOA NP				A	
P1802643-003.01	40ml VOA HCL		1		A	MR 05/29/18
P1802643-003.02	40ml VOA HCL				A	
P1802643-003.03	40ml VOA HCL				A	
P1802643-004.01	40mL VOA NP		6		A	MR 05/29/18
P1802643-004.02	40mL VOA NP				A	
P1802643-004.03	40mL VOA NP				A	
P1802643-005.01	40ml VOA HCL		1		A	MR 05/29/18
P1802643-005.02	40ml VOA HCL				A	
P1802643-005.03	40ml VOA HCL				A	
P1802643-006.01	40mL VOA NP		6		A	MR 05/29/18
P1802643-006.02	40mL VOA NP				A	
P1802643-006.03	40mL VOA NP				A	
P1802643-007.01	40ml VOA HCL		1		A	MR 05/29/18
P1802643-007.02	40ml VOA HCL				A	
P1802643-007.03	40ml VOA HCL				A	
P1802643-008.01	40mL VOA NP		6		A	MR 05/29/18
P1802643-008.02	40mL VOA NP				A	
P1802643-008.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS18051121** ALS Project ID: P1802643

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 5/22/18
Date Received: 5/24/18
Date Analyzed: 5/29 - 5/30/18

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW04-180521	P1802643-002	0.050	**770,000**	2,000	1,700	740	**B**
35BWW26-180521	P1802643-004	0.050	**490,000**	2,000	1,700	740	**B**
35BWW14-180521	P1802643-006	0.050	**480,000**	2,000	1,700	740	**B**
35BWW23-180521	P1802643-008	0.050	**480,000**	2,000	1,700	740	**B**
Method Control Sample	P180529-MB	0.10	**380**	1,000	860	370	**J**
Method Control Sample	P180530-MB	0.10	**720**	1,000	860	370	**J**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1802643
Client Project ID: **HS18051121** ALS Sample ID: P180529-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/29/18
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	18,500	19,200	**81**	**84**	80-122	4	15	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1802643
Client Project ID: **HS18051121** ALS Sample ID: P180530-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/30/18
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,900	19,000	**87**	**83**	80-122	5	15	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW04-180521**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P1802643-002MS
P1802643-002DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/22/18
Date Received: 5/24/18
Date Analyzed: 5/30/18
Volume(s) Analyzed: 0.050 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	774,000	816,000	853,000	**92**	**172**	80-122	61	30	**L**

L = Laboratory control sample recovery outside the specified limits, results may be biased high.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW04-180521**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P1802643-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/22/18
Date Received: 5/24/18
Date Analyzed: 5/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW26-180521**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P1802643-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/22/18
Date Received: 5/24/18
Date Analyzed: 5/29/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW14-180521**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P1802643-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/22/18
Date Received: 5/24/18
Date Analyzed: 5/29/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW23-180521**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P1802643-007

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/22/18
Date Received: 5/24/18
Date Analyzed: 5/29/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P180529-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/29/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.57**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P180530-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 05/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1802643
Client Project ID: **HS18051121** ALS Sample ID: P180529-LCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/29/18
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.30	2.04	**92**	**82**	73-125	11	12	
74-85-1	Ethene	4.37	4.50	4.73	**103**	**108**	72-133	5	7	
74-84-0	Ethane	4.69	4.65	4.90	**99**	**104**	74-131	5	6	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW04-180521**
Client Project ID: **HS18051121**

ALS Project ID: P1802643
ALS Sample ID: P1802643-001MS
P1802643-001DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/22/18
Date Received: 5/24/18
Date Analyzed: 5/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	0.253	1.89	2.09	**65**	**73**	73-125	12	30	
74-85-1	Ethene	4.40	ND	2.99	2.88	**68**	**65**	72-133	5	30	
74-84-0	Ethane	4.72	ND	3.06	3.09	**65**	**65**	74-131	0	30	

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June 05, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18051186**

Laboratory Results for: **LHAAP-37 501032**

Dear Sharon,

ALS Environmental received 7 sample(s) on May 24, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: DAYNA.FISHER
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Work Order: HS18051186

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18051186-01	35BWW08-180523	Groundwater		23-May-2018 08:15	24-May-2018 08:40	☐
HS18051186-02	35BWW25-180523	Groundwater		23-May-2018 10:25	24-May-2018 08:40	☐
HS18051186-03	35BWW25-180523FD	Groundwater		23-May-2018 10:25	24-May-2018 08:40	☐
HS18051186-04	35BWW07-180523	Groundwater		23-May-2018 11:20	24-May-2018 08:40	☐
HS18051186-05	35BWW12-180523	Groundwater		23-May-2018 13:05	24-May-2018 08:40	☐
HS18051186-06	35BWW12-180523FD	Groundwater		23-May-2018 13:05	24-May-2018 08:40	☐
HS18051186-07	37TB03-180523	Water		23-May-2018 00:00	24-May-2018 08:40	☐

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-37 501032
Work Order:

Work Order Comments

- The analysis for Methane, Ethene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R317196

Sample ID: HS18051192-01

- MS and MSD were for an unrelated sample

WetChemistry by Method SW9060

Batch ID: R317158

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R316938

Sample ID: 35BWW08-180523 (HS18051186-01MS/MSD)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Sulfate)

Sample ID: 35BWW08-180523 (HS18051186-01MSD)

- The matrix spike duplicate recovery was outside of the control limits. However, the matrix spike recovery and the RPD between the MS and MSD was in control. (Chloride)

Sample ID: CCB

- All reported samples bracketed by this CCB are 10 times greater than the Sulfate content in this CCB.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW08-180523
Collection Date: 23-May-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:11
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:11
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:11
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	31-May-2018 15:11
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 15:11
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	31-May-2018 15:11
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	31-May-2018 15:11
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	31-May-2018 15:11
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:11
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW08-180523
Collection Date: 23-May-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	31-May-2018 15:11
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 15:11
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	31-May-2018 15:11
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 15:11
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:11
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:11
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:11
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*31-May-2018 15:11*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*31-May-2018 15:11*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*31-May-2018 15:11*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*31-May-2018 15:11*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**12.2**		**0.200**	**0.500**	**0.500**	**mg/L**	1	24-May-2018 21:24
Nitrogen, Nitrate (As N)	**0.265**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	24-May-2018 21:24
Nitrogen, Nitrite (As N)	**0.0400**	J	**0.0300**	**0.100**	**0.100**	**mg/L**	1	24-May-2018 21:24
Sulfate	**51.0**		**0.200**	**0.500**	**0.500**	**mg/L**	1	24-May-2018 21:24
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.812**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	31-May-2018 00:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW08-180523
Collection Date: 23-May-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Jun-2018 09:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW25-180523
Collection Date: 23-May-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:36
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	31-May-2018 15:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 15:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	31-May-2018 15:36
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	31-May-2018 15:36
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	31-May-2018 15:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 15:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW25-180523
Collection Date: 23-May-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	31-May-2018 15:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 15:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	31-May-2018 15:36
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 15:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 15:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
Trichloroethene	**5.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	31-May-2018 15:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 15:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 15:36
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*31-May-2018 15:36*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*31-May-2018 15:36*
Surr: Dibromofluoromethane	*102*			**0**	*77-123*	*%REC*	*1*	*31-May-2018 15:36*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*31-May-2018 15:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW25-180523FD
Collection Date: 23-May-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	31-May-2018 16:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 16:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	31-May-2018 16:01
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	31-May-2018 16:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	31-May-2018 16:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW25-180523FD
Collection Date: 23-May-2018 10:25

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	31-May-2018 16:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 16:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	31-May-2018 16:01
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 16:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
Trichloroethene	**5.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	31-May-2018 16:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:01
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*70-126*	*%REC*	*1*	*31-May-2018 16:01*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*31-May-2018 16:01*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*31-May-2018 16:01*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*31-May-2018 16:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW07-180523
Collection Date: 23-May-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:26
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:26
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:26
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	31-May-2018 16:26
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 16:26
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	31-May-2018 16:26
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	31-May-2018 16:26
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	31-May-2018 16:26
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:26
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW07-180523
Collection Date: 23-May-2018 11:20

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	31-May-2018 16:26
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 16:26
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	31-May-2018 16:26
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 16:26
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:26
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:26
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:26
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*31-May-2018 16:26*
Surr: 4-Bromofluorobenzene	*99.9*			**0**	*81-113*	*%REC*	*1*	*31-May-2018 16:26*
Surr: Dibromofluoromethane	*103*			**0**	*77-123*	*%REC*	*1*	*31-May-2018 16:26*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*31-May-2018 16:26*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-180523
Collection Date: 23-May-2018 13:05

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:51
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:51
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:51
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	31-May-2018 16:51
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 16:51
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	31-May-2018 16:51
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	31-May-2018 16:51
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	31-May-2018 16:51
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 16:51
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-180523
Collection Date: 23-May-2018 13:05

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	31-May-2018 16:51
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 16:51
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	31-May-2018 16:51
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 16:51
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 16:51
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Tetrachloroethene	**6.2**		**0.30**	**0.50**	**1.0**	**ug/L**	1	31-May-2018 16:51
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 16:51
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 16:51
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*70-126*	*%REC*	*1*	*31-May-2018 16:51*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*31-May-2018 16:51*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*31-May-2018 16:51*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*31-May-2018 16:51*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**9.08**		**0.200**	**0.500**	**0.500**	**mg/L**	1	24-May-2018 22:22
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	24-May-2018 22:22
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	24-May-2018 22:22
Sulfate	**48.7**		**0.200**	**0.500**	**0.500**	**mg/L**	1	24-May-2018 22:22
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.985**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	31-May-2018 00:34

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-180523
Collection Date: 23-May-2018 13:05

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Jun-2018 09:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-180523FD
Collection Date: 23-May-2018 13:05

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 17:16
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 17:16
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 17:16
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	31-May-2018 17:16
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 17:16
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	31-May-2018 17:16
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	31-May-2018 17:16
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	31-May-2018 17:16
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	31-May-2018 17:16
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-180523FD
Collection Date: 23-May-2018 13:05

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	31-May-2018 17:16
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	31-May-2018 17:16
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	31-May-2018 17:16
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	31-May-2018 17:16
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	31-May-2018 17:16
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Tetrachloroethene	**7.0**		**0.30**	**0.50**	**1.0**	**ug/L**	1	31-May-2018 17:16
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	31-May-2018 17:16
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	31-May-2018 17:16
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*31-May-2018 17:16*
Surr: 4-Bromofluorobenzene	*103*			**0**	*81-113*	*%REC*	*1*	*31-May-2018 17:16*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*31-May-2018 17:16*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*31-May-2018 17:16*
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**9.68**		**0.200**	**0.500**	**0.500**	**mg/L**	1	24-May-2018 22:51
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	24-May-2018 22:51
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	24-May-2018 22:51
Sulfate	**58.6**		**0.200**	**0.500**	**0.500**	**mg/L**	1	24-May-2018 22:51
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**0.969**	J	**0.500**	**0.600**	**1.00**	**mg/L**	1	31-May-2018 00:51

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
Sample ID: 35BWW12-180523FD
Collection Date: 23-May-2018 13:05

ANALYTICAL REPORT
WorkOrder:HS18051186
Lab ID:HS18051186-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	05-Jun-2018 09:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R316938	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS18051186-01	35BWW08-180523	23 May 2018 08:15			24 May 2018 21:24	1
HS18051186-05	35BWW12-180523	23 May 2018 13:05			24 May 2018 22:22	1
HS18051186-06	35BWW12-180523FD	23 May 2018 13:05			24 May 2018 22:51	1
Batch ID R317158	**Test Name :** TOTAL ORGANIC CARBON BY SW9060A			**Matrix:** Groundwater		
HS18051186-01	35BWW08-180523	23 May 2018 08:15			31 May 2018 00:16	1
HS18051186-05	35BWW12-180523	23 May 2018 13:05			31 May 2018 00:34	1
HS18051186-06	35BWW12-180523FD	23 May 2018 13:05			31 May 2018 00:51	1
Batch ID R317196	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS18051186-01	35BWW08-180523	23 May 2018 08:15			31 May 2018 15:11	1
HS18051186-02	35BWW25-180523	23 May 2018 10:25			31 May 2018 15:36	1
HS18051186-03	35BWW25-180523FD	23 May 2018 10:25			31 May 2018 16:01	1
HS18051186-04	35BWW07-180523	23 May 2018 11:20			31 May 2018 16:26	1
HS18051186-05	35BWW12-180523	23 May 2018 13:05			31 May 2018 16:51	1
HS18051186-06	35BWW12-180523FD	23 May 2018 13:05			31 May 2018 17:16	1
Batch ID R317375	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Groundwater		
HS18051186-01	35BWW08-180523	23 May 2018 08:15			05 Jun 2018 09:28	1
HS18051186-05	35BWW12-180523	23 May 2018 13:05			05 Jun 2018 09:28	1
HS18051186-06	35BWW12-180523FD	23 May 2018 13:05			05 Jun 2018 09:28	1

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180531** Units: **ug/L** Analysis Date: **31-May-2018 11:49**
Client ID: Run ID: **VOA2_317196** SeqNo: **4582469** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	0.50	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180531** Units: **ug/L** Analysis Date: **31-May-2018 11:49**
Client ID: Run ID: **VOA2_317196** SeqNo: **4582469** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.81*	*1.0*	*50*	*0*	*99.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*51.34*	*1.0*	*50*	*0*	*103*	*82 - 115*				
Surr: Dibromofluoromethane	*51.07*	*1.0*	*50*	*0*	*102*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180531** Units: **ug/L** Analysis Date: **31-May-2018 11:49**
Client ID: Run ID: **VOA2_317196** SeqNo: **4582469** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.25*	*1.0*	*50*	*0*	*106*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180531** Units: **ug/L** Analysis Date: **31-May-2018 10:59**
Client ID: Run ID: **VOA2_317196** SeqNo: **4582467** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.54	1.0	50	0	97.1	77 - 118				
1,1,1-Trichloroethane	47.35	1.0	50	0	94.7	70 - 130				
1,1,2,2-Tetrachloroethane	45.93	1.0	50	0	91.9	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	44.17	1.0	50	0	88.3	70 - 130				
1,1,2-Trichloroethane	49.3	1.0	50	0	98.6	77 - 113				
1,1-Dichloroethane	46.33	1.0	50	0	92.7	71 - 122				
1,1-Dichloroethene	48.79	1.0	50	0	97.6	70 - 130				
1,1-Dichloropropene	42.67	1.0	50	0	85.3	78 - 118				
1,2,3-Trichlorobenzene	47.63	1.0	50	0	95.3	70 - 130				
1,2,3-Trichloropropane	52.44	1.0	50	0	105	70 - 127				
1,2,4-Trichlorobenzene	47.36	1.0	50	0	94.7	77 - 126				
1,2,4-Trimethylbenzene	51.45	1.0	50	0	103	73 - 121				
1,2-Dibromo-3-chloropropane	55.08	1.0	50	0	110	70 - 130				
1,2-Dibromoethane	51.53	1.0	50	0	103	76 - 123				
1,2-Dichlorobenzene	46.44	1.0	50	0	92.9	77 - 113				
1,2-Dichloroethane	51.05	1.0	50	0	102	70 - 124				
1,2-Dichloropropane	47.71	1.0	50	0	95.4	72 - 119				
1,3,5-Trimethylbenzene	42.62	1.0	50	0	85.2	75 - 118				
1,3-Dichlorobenzene	45.12	1.0	50	0	90.2	78 - 118				
1,3-Dichloropropane	49.44	1.0	50	0	98.9	75 - 116				
1,4-Dichlorobenzene	44.01	1.0	50	0	88.0	79 - 113				
2,2-Dichloropropane	47.89	1.0	50	0	95.8	70 - 130				
2-Butanone	115.9	2.0	100	0	116	70 - 130				
2-Chlorotoluene	50.55	1.0	50	0	101	70 - 128				
2-Hexanone	115.4	2.0	100	0	115	70 - 130				
4-Chlorotoluene	51.73	1.0	50	0	103	74 - 126				
4-Isopropyltoluene	43.96	1.0	50	0	87.9	74 - 126				
4-Methyl-2-pentanone	110.2	2.0	100	0	110	70 - 130				
Acetone	119.2	2.0	100	0	119	70 - 130				
Benzene	46.9	1.0	50	0	93.8	74 - 120				
Bromobenzene	45.14	1.0	50	0	90.3	78 - 113				
Bromochloromethane	51.67	1.0	50	0	103	76 - 124				
Bromodichloromethane	49.62	1.0	50	0	99.2	74 - 122				
Bromoform	53.29	1.0	50	0	107	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180531** Units: **ug/L** Analysis Date: **31-May-2018 10:59**
Client ID: Run ID: **VOA2_317196** SeqNo: **4582467** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	42.07	1.0	50	0	84.1	70 - 130				
Carbon disulfide	92.17	2.0	100	0	92.2	70 - 130				
Carbon tetrachloride	44.52	1.0	50	0	89.0	71 - 125				
Chlorobenzene	46.55	1.0	50	0	93.1	76 - 113				
Chloroethane	54.05	1.0	50	0	108	70 - 130				
Chloroform	46.81	1.0	50	0	93.6	71 - 121				
Chloromethane	56.11	1.0	50	0	112	70 - 129				
cis-1,2-Dichloroethene	48.18	1.0	50	0	96.4	75 - 122				
cis-1,3-Dichloropropene	52.47	1.0	50	0	105	73 - 127				
Dibromochloromethane	50.79	1.0	50	0	102	77 - 122				
Dibromomethane	53.46	1.0	50	0	107	78 - 121				
Dichlorodifluoromethane	42.11	1.0	50	0	84.2	70 - 130				
Ethylbenzene	44.91	1.0	50	0	89.8	77 - 117				
Hexachlorobutadiene	45.4	1.0	50	0	90.8	70 - 130				
Isopropylbenzene	46.56	1.0	50	0	93.1	73 - 127				
m,p-Xylene	111.3	2.0	100	0	111	77 - 122				
Methylene chloride	44.18	2.0	50	0	88.4	70 - 127				
Naphthalene	51.26	1.0	50	0	103	70 - 130				
n-Butylbenzene	45.43	1.0	50	0	90.9	72 - 130				
n-Propylbenzene	43.06	1.0	50	0	86.1	73 - 124				
o-Xylene	46.97	1.0	50	0	93.9	75 - 119				
sec-Butylbenzene	44.04	1.0	50	0	88.1	73 - 128				
Styrene	49.04	1.0	50	0	98.1	72 - 126				
tert-Butylbenzene	42.94	1.0	50	0	85.9	73 - 124				
Tetrachloroethene	45.9	1.0	50	0	91.8	76 - 119				
Toluene	44.86	1.0	50	0	89.7	77 - 118				
trans-1,2-Dichloroethene	49.12	1.0	50	0	98.2	72 - 127				
trans-1,3-Dichloropropene	54.68	1.0	50	0	109	77 - 119				
Trichloroethene	52.18	1.0	50	0	104	77 - 121				
Trichlorofluoromethane	51.17	1.0	50	0	102	70 - 130				
Vinyl chloride	47.65	1.0	50	0	95.3	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.05*	*1.0*	*50*	*0*	*104*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*53.67*	*1.0*	*50*	*0*	*107*	*82 - 115*				
Surr: Dibromofluoromethane	*49.42*	*1.0*	*50*	*0*	*98.8*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180531** Units: **ug/L** Analysis Date: **31-May-2018 10:59**
Client ID: Run ID: **VOA2_317196** SeqNo: **4582467** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.19*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051192-01MS** Units: **ug/L** Analysis Date: **31-May-2018 17:41**
Client ID: Run ID: **VOA2_317196** SeqNo: **4583068** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.55	1.0	50	0	95.1	70 - 120				
1,1,1-Trichloroethane	50.42	1.0	50	0	101	70 - 130				
1,1,2,2-Tetrachloroethane	44.79	1.0	50	0	89.6	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	49.28	1.0	50	0	98.6	70 - 130				
1,1,2-Trichloroethane	47.48	1.0	50	0	95.0	70 - 117				
1,1-Dichloroethane	46.79	1.0	50	0	93.6	70 - 127				
1,1-Dichloroethene	52.59	1.0	50	0	105	70 - 130				
1,1-Dichloropropene	46.25	1.0	50	0	92.5	70 - 129				
1,2,3-Trichlorobenzene	48.18	1.0	50	0	96.4	70 - 130				
1,2,3-Trichloropropane	51.98	1.0	50	0	104	70 - 130				
1,2,4-Trichlorobenzene	47.97	1.0	50	0	95.9	70 - 125				
1,2,4-Trimethylbenzene	52.88	1.0	50	0	106	70 - 125				
1,2-Dibromo-3-chloropropane	56.8	1.0	50	0	114	70 - 130				
1,2-Dibromoethane	48.78	1.0	50	0	97.6	70 - 124				
1,2-Dichlorobenzene	46	1.0	50	0	92.0	70 - 115				
1,2-Dichloroethane	48.97	1.0	50	0	97.9	70 - 127				
1,2-Dichloropropane	45.88	1.0	50	0	91.8	70 - 122				
1,3,5-Trimethylbenzene	44.79	1.0	50	0	89.6	70 - 126				
1,3-Dichlorobenzene	44.63	1.0	50	0	89.3	70 - 119				
1,3-Dichloropropane	47.43	1.0	50	0	94.9	70 - 121				
1,4-Dichlorobenzene	43.79	1.0	50	0	87.6	70 - 114				
2,2-Dichloropropane	50.89	1.0	50	0	102	70 - 130				
2-Butanone	114.2	2.0	100	0	114	70 - 130				
2-Chlorotoluene	51.73	1.0	50	0	103	70 - 130				
2-Hexanone	114.7	2.0	100	0	115	70 - 130				
4-Chlorotoluene	52	1.0	50	0	104	70 - 130				
4-Isopropyltoluene	47.5	1.0	50	0	95.0	70 - 130				
4-Methyl-2-pentanone	108.2	2.0	100	0	108	70 - 130				
Acetone	114.9	2.0	100	0	115	70 - 130				
Benzene	47.13	1.0	50	0	94.3	70 - 127				
Bromobenzene	43.97	1.0	50	0	87.9	70 - 115				
Bromochloromethane	49.08	1.0	50	0	98.2	70 - 127				
Bromodichloromethane	47.67	1.0	50	0	95.3	70 - 124				
Bromoform	52.15	1.0	50	0	104	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051192-01MS** Units: **ug/L** Analysis Date: **31-May-2018 17:41**
Client ID: Run ID: **VOA2_317196** SeqNo: **4583068** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	42.05	1.0	50	0	84.1	70 - 130				
Carbon disulfide	95.42	2.0	100	0	95.4	70 - 130				
Carbon tetrachloride	48.24	1.0	50	0	96.5	70 - 130				
Chlorobenzene	46.4	1.0	50	0	92.8	70 - 114				
Chloroethane	45.32	1.0	50	0	90.6	70 - 130				
Chloroform	45.93	1.0	50	0	91.9	70 - 125				
Chloromethane	51.37	1.0	50	0	103	70 - 130				
cis-1,2-Dichloroethene	47.38	1.0	50	0	94.8	70 - 128				
cis-1,3-Dichloropropene	50.36	1.0	50	0	101	70 - 125				
Dibromochloromethane	49.17	1.0	50	0	98.3	70 - 124				
Dibromomethane	50.21	1.0	50	0	100	70 - 124				
Dichlorodifluoromethane	37.97	1.0	50	0	75.9	70 - 130				
Ethylbenzene	46.92	1.0	50	0	93.8	70 - 124				
Hexachlorobutadiene	51.08	1.0	50	0	102	70 - 130				
Isopropylbenzene	50.03	1.0	50	0	100	70 - 130				
m,p-Xylene	114.9	2.0	100	0	115	70 - 130				
Methylene chloride	43.81	2.0	50	0	87.6	70 - 128				
Naphthalene	50.75	1.0	50	0	101	70 - 130				
n-Butylbenzene	50.07	1.0	50	0	100	70 - 130				
n-Propylbenzene	45.83	1.0	50	0	91.7	70 - 130				
o-Xylene	48.16	1.0	50	0	96.3	70 - 124				
sec-Butylbenzene	47.75	1.0	50	0	95.5	70 - 130				
Styrene	7.274	1.0	50	0	14.5	70 - 130				S
tert-Butylbenzene	46.32	1.0	50	0	92.6	70 - 130				
Tetrachloroethene	49.86	1.0	50	0	99.7	70 - 130				
Toluene	46.14	1.0	50	0	92.3	70 - 123				
trans-1,2-Dichloroethene	50.41	1.0	50	0	101	70 - 130				
trans-1,3-Dichloropropene	51.23	1.0	50	0	102	70 - 121				
Trichloroethene	51.98	1.0	50	0	104	70 - 129				
Trichlorofluoromethane	46.12	1.0	50	0	92.2	70 - 130				
Vinyl chloride	50.4	1.0	50	0	101	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.66*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.71*	*1.0*	*50*	*0*	*105*	*81 - 113*				
Surr: Dibromofluoromethane	*48.94*	*1.0*	*50*	*0*	*97.9*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051192-01MS** Units: **ug/L** Analysis Date: **31-May-2018 17:41**
Client ID: Run ID: **VOA2_317196** SeqNo: **4583068** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.46*	*1.0*	*50*	*0*	*103*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051192-01MSD** Units: **ug/L** Analysis Date: **31-May-2018 18:06**
Client ID: Run ID: **VOA2_317196** SeqNo: **4583069** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.53	1.0	50	0	97.1	70 - 120	47.55	2.05	20	
1,1,1-Trichloroethane	50.19	1.0	50	0	100	70 - 130	50.42	0.441	20	
1,1,2,2-Tetrachloroethane	45.34	1.0	50	0	90.7	70 - 123	44.79	1.23	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	51	1.0	50	0	102	70 - 130	49.28	3.43	20	
1,1,2-Trichloroethane	47.79	1.0	50	0	95.6	70 - 117	47.48	0.645	20	
1,1-Dichloroethane	47.3	1.0	50	0	94.6	70 - 127	46.79	1.08	20	
1,1-Dichloroethene	49.71	1.0	50	0	99.4	70 - 130	52.59	5.63	20	
1,1-Dichloropropene	45.62	1.0	50	0	91.2	70 - 129	46.25	1.38	20	
1,2,3-Trichlorobenzene	49.4	1.0	50	0	98.8	70 - 130	48.18	2.51	20	
1,2,3-Trichloropropane	51.93	1.0	50	0	104	70 - 130	51.98	0.105	20	
1,2,4-Trichlorobenzene	49.51	1.0	50	0	99.0	70 - 125	47.97	3.16	20	
1,2,4-Trimethylbenzene	52.96	1.0	50	0	106	70 - 125	52.88	0.154	20	
1,2-Dibromo-3-chloropropane	58.64	1.0	50	0	117	70 - 130	56.8	3.2	20	
1,2-Dibromoethane	50.29	1.0	50	0	101	70 - 124	48.78	3.04	20	
1,2-Dichlorobenzene	46.32	1.0	50	0	92.6	70 - 115	46	0.694	20	
1,2-Dichloroethane	49.68	1.0	50	0	99.4	70 - 127	48.97	1.44	20	
1,2-Dichloropropane	46.39	1.0	50	0	92.8	70 - 122	45.88	1.1	20	
1,3,5-Trimethylbenzene	44.59	1.0	50	0	89.2	70 - 126	44.79	0.45	20	
1,3-Dichlorobenzene	44.95	1.0	50	0	89.9	70 - 119	44.63	0.705	20	
1,3-Dichloropropane	47.56	1.0	50	0	95.1	70 - 121	47.43	0.286	20	
1,4-Dichlorobenzene	44.56	1.0	50	0	89.1	70 - 114	43.79	1.75	20	
2,2-Dichloropropane	50.59	1.0	50	0	101	70 - 130	50.89	0.589	20	
2-Butanone	112.1	2.0	100	0	112	70 - 130	114.2	1.85	20	
2-Chlorotoluene	51.65	1.0	50	0	103	70 - 130	51.73	0.155	20	
2-Hexanone	118.3	2.0	100	0	118	70 - 130	114.7	3.09	20	
4-Chlorotoluene	53.12	1.0	50	0	106	70 - 130	52	2.12	20	
4-Isopropyltoluene	47.86	1.0	50	0	95.7	70 - 130	47.5	0.751	20	
4-Methyl-2-pentanone	109.4	2.0	100	0	109	70 - 130	108.2	1.11	20	
Acetone	118	2.0	100	0	118	70 - 130	114.9	2.68	20	
Benzene	47.09	1.0	50	0	94.2	70 - 127	47.13	0.0864	20	
Bromobenzene	44.9	1.0	50	0	89.8	70 - 115	43.97	2.08	20	
Bromochloromethane	48.94	1.0	50	0	97.9	70 - 127	49.08	0.282	20	
Bromodichloromethane	48.04	1.0	50	0	96.1	70 - 124	47.67	0.771	20	
Bromoform	52.96	1.0	50	0	106	70 - 129	52.15	1.54	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051192-01MSD** Units: **ug/L** Analysis Date: **31-May-2018 18:06**
Client ID: Run ID: **VOA2_317196** SeqNo: **4583069** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	33.41	1.0	50	0	66.8	70 - 130	42.05	22.9	20	SR
Carbon disulfide	95.5	2.0	100	0	95.5	70 - 130	95.42	0.0793	20	
Carbon tetrachloride	48.4	1.0	50	0	96.8	70 - 130	48.24	0.345	20	
Chlorobenzene	47.2	1.0	50	0	94.4	70 - 114	46.4	1.7	20	
Chloroethane	39.65	1.0	50	0	79.3	70 - 130	45.32	13.3	20	
Chloroform	46.62	1.0	50	0	93.2	70 - 125	45.93	1.49	20	
Chloromethane	50.25	1.0	50	0	100	70 - 130	51.37	2.21	20	
cis-1,2-Dichloroethene	47.45	1.0	50	0	94.9	70 - 128	47.38	0.142	20	
cis-1,3-Dichloropropene	50.3	1.0	50	0	101	70 - 125	50.36	0.119	20	
Dibromochloromethane	49.78	1.0	50	0	99.6	70 - 124	49.17	1.23	20	
Dibromomethane	50.76	1.0	50	0	102	70 - 124	50.21	1.08	20	
Dichlorodifluoromethane	38.74	1.0	50	0	77.5	70 - 130	37.97	2.01	20	
Ethylbenzene	47.5	1.0	50	0	95.0	70 - 124	46.92	1.21	20	
Hexachlorobutadiene	51.19	1.0	50	0	102	70 - 130	51.08	0.217	20	
Isopropylbenzene	49.86	1.0	50	0	99.7	70 - 130	50.03	0.335	20	
m,p-Xylene	115.8	2.0	100	0	116	70 - 130	114.9	0.819	20	
Methylene chloride	42.72	2.0	50	0	85.4	70 - 128	43.81	2.51	20	
Naphthalene	51.95	1.0	50	0	104	70 - 130	50.75	2.34	20	
n-Butylbenzene	50.18	1.0	50	0	100	70 - 130	50.07	0.214	20	
n-Propylbenzene	46.03	1.0	50	0	92.1	70 - 130	45.83	0.446	20	
o-Xylene	47.95	1.0	50	0	95.9	70 - 124	48.16	0.444	20	
sec-Butylbenzene	47.87	1.0	50	0	95.7	70 - 130	47.75	0.26	20	
Styrene	3.421	1.0	50	0	6.84	70 - 130	7.274	72	20	SR
tert-Butylbenzene	46.73	1.0	50	0	93.5	70 - 130	46.32	0.885	20	
Tetrachloroethene	50.2	1.0	50	0	100	70 - 130	49.86	0.665	20	
Toluene	46.33	1.0	50	0	92.7	70 - 123	46.14	0.41	20	
trans-1,2-Dichloroethene	51.35	1.0	50	0	103	70 - 130	50.41	1.85	20	
trans-1,3-Dichloropropene	51.18	1.0	50	0	102	70 - 121	51.23	0.0985	20	
Trichloroethene	51.61	1.0	50	0	103	70 - 129	51.98	0.709	20	
Trichlorofluoromethane	43.91	1.0	50	0	87.8	70 - 130	46.12	4.91	20	
Vinyl chloride	48.85	1.0	50	0	97.7	70 - 130	50.4	3.12	20	
Surr: 1,2-Dichloroethane-d4	*52.15*	*1.0*	*50*	*0*	*104*	*70 - 126*	*51.66*	*0.93*	*20*	
Surr: 4-Bromofluorobenzene	*53.81*	*1.0*	*50*	*0*	*108*	*81 - 113*	*52.71*	*2.07*	*20*	
Surr: Dibromofluoromethane	*49.16*	*1.0*	*50*	*0*	*98.3*	*77 - 123*	*48.94*	*0.452*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317196 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051192-01MSD** Units: **ug/L** Analysis Date: **31-May-2018 18:06**
Client ID: Run ID: **VOA2_317196** SeqNo: **4583069** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52*	*1.0*	*50*	*0*	*104*	*82 - 127*	*51.46*	*1.03*	*20*	

The following samples were analyzed in this batch: HS18051186-01 HS18051186-02 HS18051186-03 HS18051186-04 HS18051186-05 HS18051186-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R316938 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-052418** Units: **mg/L** Analysis Date: **24-May-2018 17:27**
Client ID: Run ID: **ICS2100_316938** SeqNo: **4577090** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.500	0.500								U

LCS Sample ID: **WLCSW1-052418** Units: **mg/L** Analysis Date: **24-May-2018 17:41**
Client ID: Run ID: **ICS2100_316938** SeqNo: **4577091** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.11	0.500	20	0	101	80 - 120				
Nitrogen, Nitrate (As N)	3.95	0.100	4	0	98.8	80 - 120				
Nitrogen, Nitrite (As N)	4.304	0.100	4	0	108	80 - 120				
Sulfate	20.15	0.500	20	0	101	80 - 120				

LCSD Sample ID: **WLCSDW1-052418** Units: **mg/L** Analysis Date: **24-May-2018 17:56**
Client ID: Run ID: **ICS2100_316938** SeqNo: **4577092** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.58	0.500	20	0	103	80 - 120	20.11	2.3	20	
Nitrogen, Nitrate (As N)	4.012	0.100	4	0	100	80 - 120	3.95	1.56	20	
Nitrogen, Nitrite (As N)	4.341	0.100	4	0	109	80 - 120	4.304	0.856	20	
Sulfate	20.6	0.500	20	0	103	80 - 120	20.15	2.21	20	

MS Sample ID: **HS18051186-01MS** Units: **mg/L** Analysis Date: **24-May-2018 21:39**
Client ID: **35BWW08-180523** Run ID: **ICS2100_316938** SeqNo: **4577096** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.93	0.500	10	12.23	87.0	80 - 120				
Nitrogen, Nitrate (As N)	2.197	0.100	2	0.265	96.6	80 - 120				
Nitrogen, Nitrite (As N)	2.189	0.100	2	0.04	107	80 - 120				
Sulfate	56.33	0.500	10	51.02	53.1	80 - 120				SO

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R316938 **Instrument: ICS2100** **Method: SW9056**

MSD Sample ID: **HS18051186-01MSD** Units: **mg/L** Analysis Date: **24-May-2018 21:53**
Client ID: **35BWW08-180523** Run ID: **ICS2100_316938** SeqNo: **4577097** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.89	0.500	10	12.23	66.7	80 - 120	20.93	10.2	20	S
Nitrogen, Nitrate (As N)	2.009	0.100	2	0.265	87.2	80 - 120	2.197	8.94	20	
Nitrogen, Nitrite (As N)	1.977	0.100	2	0.04	96.8	80 - 120	2.189	10.2	20	
Sulfate	51.11	0.500	10	51.02	0.950	80 - 120	56.33	9.7	20	SO

The following samples were analyzed in this batch: HS18051186-01 HS18051186-05 HS18051186-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: HS18051186

QC BATCH REPORT

Batch ID: R317158 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **WBLKW1-180530** Units: **mg/L** Analysis Date: **30-May-2018 21:25**
Client ID: Run ID: **TOC_02_317158** SeqNo: **4581837** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW1-180530** Units: **mg/L** Analysis Date: **30-May-2018 21:41**
Client ID: Run ID: **TOC_02_317158** SeqNo: **4581838** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.577	1.00	10	0	95.8	80 - 120				

MS Sample ID: **HS18051121-08MS** Units: **mg/L** Analysis Date: **30-May-2018 22:14**
Client ID: Run ID: **TOC_02_317158** SeqNo: **4581840** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.89	1.00	10	1.703	112	80 - 120				

MSD Sample ID: **HS18051121-08MSD** Units: **mg/L** Analysis Date: **30-May-2018 22:32**
Client ID: Run ID: **TOC_02_317158** SeqNo: **4581841** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.32	1.00	10	1.703	106	80 - 120	12.89	4.52	20	

The following samples were analyzed in this batch: HS18051186-01 HS18051186-05 HS18051186-06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 05-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-37 501032
WorkOrder: **HS18051186**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 05-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

00920110

Date: 05-Jun-18

Sample Receipt Checklist

Client Name: CBI-Houston
Date/Time Received: **24-May-2018 08:40**
Work Order: HS18051186
Received by: **JRM**

Checklist completed by: *Raegen Giga* eSignature — 24-May-2018 Date
Reviewed by: *RJ Modashia* eSignature — 24-May-2018 Date

Matrices: **soil**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.3c/1.9c uc/c	IR 30	
Cooler(s)/Kit(s):	24765		
Date/Time sample(s) sent to storage:	05/24/2018 10:45		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: 37-MAY2018-GW-ALSHT-1805 TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-37			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	[illegible]	[illegible]	Nitrate Nitrite		
35BWW08-180523	LHAAP37	24.43	24.63		WG	5/23/18	0815	13		X	X	X	X	X			X		
35BWW25-180523	LHAAP 37	26.32	26.50		WG	5/23/18	1025	3		X									
35BWW25-180523-FD	LHAAP37	26.32	26.50		WG	5/23/18	1025	3		X									
35BWW07-180523	LHAAP37	26.11	26.33		WG	5/23/18	1120	3		X									
35BWW12-180523	LHAAP37	21.34	21.55		WG	5/23/18	1305	13		X	X	X	X	X			X		
35BWW12-180523-FD	LHAAP37	21.34	21.55		WG	5/23/18	1305	13		X	X	X	X	X			X		
TRIP BLANK						5/23/18													

HS18051186

Aptim Environmental & Infrastucture, Inc.

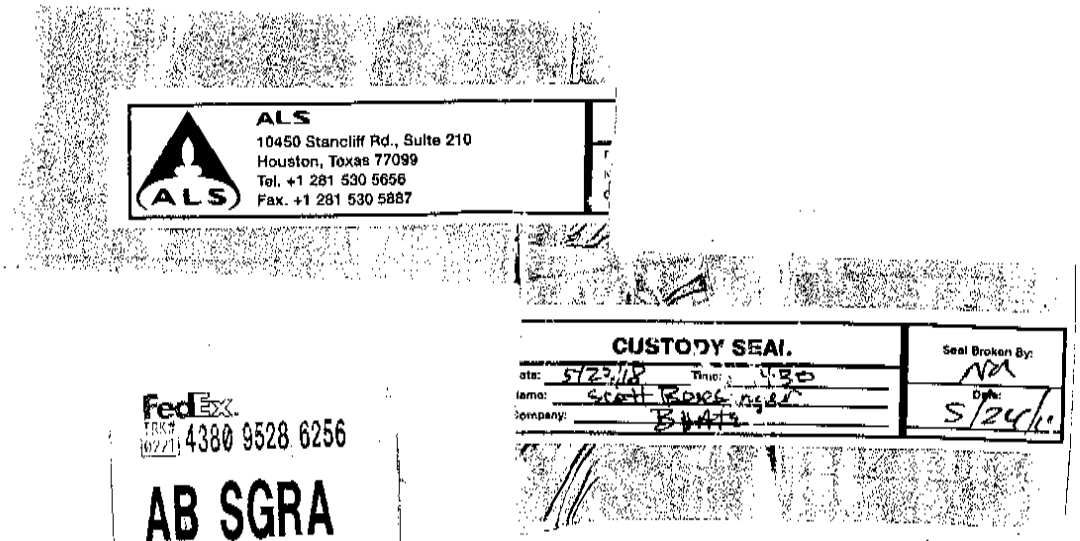
LHAAP-37 501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	[signature] / BHATE	5/23/18 1430	JM	5/24/18 08:40

Cooler - 24765 1430

Temp 2.3 CF-0.4

00920111



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL.

Date: 5/23/18 Time: 4:30
Name: Scott Borgenger
Company: BHATS

Seal Broken By: NA
Date: 5/24/18

FedEx.
TRK# 0221 4380 9528 6256

AB SGRA

FID 102785 23MAY18 GGGA 54602/7027

00920112

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LABORATORY REPORT

June 4, 2018

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS18051186

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on May 25, 2018. For your reference, these analyses have been assigned our service request number P1802679.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 5:56 pm, Jun 04, 2018

For Kate Kaneko
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS18051186

Service Request No: P1802679

CASE NARRATIVE

The samples were received intact under chain of custody on May 25, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

Three samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

Methane, Ethene and Ethane Analysis

The other three samples were analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-17-8
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA016272017-8
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS18051186

Service Request: P1802679

Date Received: 5/25/2018
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases	RSK 175 - CO2
35BWW08-180523	P1802679-001	Water	5/23/2018	08:15	X	
35BWW08-180523	P1802679-002	Water	5/23/2018	08:15		X
35BWW12-180523	P1802679-003	Water	5/23/2018	13:05	X	
35BWW12-180523	P1802679-004	Water	5/23/2018	13:05		X
35BWW12-180523FD	P1802679-005	Water	5/23/2018	13:05	X	
35BWW12-180523FD	P1802679-006	Water	5/23/2018	13:05		X

10450 Stancliff Rd, Ste 210
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T: +1 281 530 5656
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www.alsglobal.com

P1802679

Subcontract Chain of Custody

COC ID: 9162

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18051186
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18051186-01**	**35BWW08-180523**	**Groundwater**	**23 May 2018 08:15**
	MEE + CO2, DOD IV, Equis EDD			04 Jun 2018
2.	**HS18051186-05**	**35BWW12-180523**	**Groundwater**	**23 May 2018 13:05**
	MEE + CO2, DOD IV, Equis EDD			04 Jun 2018
3.	**HS18051186-06**	**35BWW12-180523FD**	**Groundwater**	**23 May 2018 13:05**
	MEE + CO2, DOD IV, Equis EDD			04 Jun 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 5/24/18 1800.

Received By: _____ Date/Time: 5-25-18 0930

Cooler ID(s): _____ Temperature(s): _____ 2°

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802679

Project: HS18051186

Sample(s) received on: 5/25/18 Date opened: 5/25/18 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802679-001.01	40ml VOA HCL		1		A	MR 05/30/18
P1802679-001.02	40ml VOA HCL				A	
P1802679-001.03	40ml VOA HCL				A	
P1802679-002.01	40mL VOA NP		6		A	MR 05/30/18
P1802679-002.02	40mL VOA NP				A	
P1802679-002.03	40mL VOA NP				A	
P1802679-003.01	40ml VOA HCL		1		A	MR 05/30/18
P1802679-003.02	40ml VOA HCL				A	
P1802679-003.03	40ml VOA HCL				A	
P1802679-004.01	40mL VOA NP		6		A	MR 05/30/18
P1802679-004.02	40mL VOA NP				A	
P1802679-004.03	40mL VOA NP				A	
P1802679-005.01	40ml VOA HCL		1		A	MR 05/30/18
P1802679-005.02	40ml VOA HCL				A	
P1802679-005.03	40ml VOA HCL				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802679

Project: HS18051186

Sample(s) received on: 5/25/18 Date opened: 5/25/18 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802679-006.01	40mL VOA NP		6		A	MR 05/30/18
P1802679-006.02	40mL VOA NP				A	
P1802679-006.03	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS18051186** ALS Project ID: P1802679

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 5/23/18
Date Received: 5/25/18
Date Analyzed: 5/30/18

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result µg/L**	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
35BWW08-180523	P1802679-002	0.10	**580,000**	1,000	860	370	**B**
35BWW12-180523	P1802679-004	0.10	**700,000**	1,000	860	370	**B**
35BWW12-180523FD	P1802679-006	0.10	**570,000**	1,000	860	370	**B**
Method Control Sample	P180530-MB	0.10	**720**	1,000	860	370	**J**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
B = Analyte detected in both the sample and associated method blank.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1802679
Client Project ID: **HS18051186** ALS Sample ID: P180530-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/30/18
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,900	19,000	**87**	**83**	80-122	5	15	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW08-180523**
Client Project ID: **HS18051186**

ALS Project ID: P1802679
ALS Sample ID: P1802679-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/23/18
Date Received: 5/25/18
Date Analyzed: 5/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-180523**
Client Project ID: **HS18051186**

ALS Project ID: P1802679
ALS Sample ID: P1802679-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/23/18
Date Received: 5/25/18
Date Analyzed: 5/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.83**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **35BWW12-180523FD**
Client Project ID: **HS18051186**

ALS Project ID: P1802679
ALS Sample ID: P1802679-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/23/18
Date Received: 5/25/18
Date Analyzed: 5/30/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.80**	1.3	1.0	0.51	**J**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample** ALS Project ID: P1802679
Client Project ID: **HS18051186** ALS Sample ID: P180530-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/30/18
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1802679
Client Project ID: **HS18051186** ALS Sample ID: P180530-LCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/30/18
Matrix: Water Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.51	2.25	**100**	**90**	73-125	11	12	
74-85-1	Ethene	4.37	4.45	4.66	**102**	**107**	72-133	5	7	
74-84-0	Ethane	4.69	4.72	4.79	**101**	**102**	74-131	1	6	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

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Houston, TX 77099
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June 06, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18051266**

Laboratory Results for: **Longhorn Army Ammunition Plant -37**

Dear Sharon,

ALS Environmental received 10 sample(s) on May 25, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Work Order: HS18051266

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18051266-01	35BWW10-180524	Groundwater		24-May-2018 08:20	25-May-2018 08:40	☐
HS18051266-02	35BWW20-180524	Groundwater		24-May-2018 09:05	25-May-2018 08:40	☐
HS18051266-03	LHSMW58-180524	Groundwater		24-May-2018 10:00	25-May-2018 08:40	☐
HS18051266-04	35BWW01-180524	Groundwater		24-May-2018 10:50	25-May-2018 08:40	☐
HS18051266-05	35BWW01-180524-FD	Groundwater		24-May-2018 10:50	25-May-2018 08:40	☐
HS18051266-06	35BWW13-180524	Groundwater		24-May-2018 11:40	25-May-2018 08:40	☐
HS18051266-07	35BWW17-180524	Groundwater		24-May-2018 12:40	25-May-2018 08:40	☐
HS18051266-08	35BWW16-180524	Groundwater		24-May-2018 13:30	25-May-2018 08:40	☐
HS18051266-09	35BWW24-180524	Groundwater		24-May-2018 14:20	25-May-2018 08:40	☐
HS18051266-10	37TB04-180524	Water	ALS-050418-34	24-May-2018 00:00	25-May-2018 08:40	☐

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Work Order: HS18051266

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R317397

Sample ID: CCV

- 1,2-Dibromo-3-chloropropane and trans-1,3-Dichloropropene exceeded %D limits on CCV. Samples are ND for these compounds.

Sample ID: HS18051313-07MS

- MS and MSD are for an unrelated sample.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW10-180524
Collection Date: 24-May-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,1,2-Trichlor-1,2,2-trifluoroethane	**3.3**		**0.50**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 13:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 13:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 13:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 13:58
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 13:58
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 13:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW10-180524
Collection Date: 24-May-2018 08:20

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 13:58
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 13:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Tetrachloroethene	**30**		**0.30**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 13:58
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Trichloroethene	**36**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 13:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:58
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 13:58*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 13:58*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 13:58*
Surr: Toluene-d8	*109*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 13:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW20-180524
Collection Date: 24-May-2018 09:05

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,1,2-Trichlor-1,2,2-trifluoroethane	**3.3**		**0.50**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 14:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 14:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 14:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 14:23
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 14:23
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 14:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW20-180524
Collection Date: 24-May-2018 09:05

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 14:23
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 14:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Tetrachloroethene	**29**		**0.30**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 14:23
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Trichloroethene	**6.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 14:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:23
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 14:23*
Surr: 4-Bromofluorobenzene	*103*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 14:23*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 14:23*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 14:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: LHSMW58-180524
Collection Date: 24-May-2018 10:00

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 14:48
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 14:48
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 14:48
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 14:48
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 14:48
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: LHSMW58-180524
Collection Date: 24-May-2018 10:00

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 14:48
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 14:48
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 14:48
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Tetrachloroethene	**12**		**0.30**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 14:48
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Trichloroethene	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 14:48
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 14:48
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 14:48*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 14:48*
Surr: Dibromofluoromethane	*105*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 14:48*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 14:48*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW01-180524
Collection Date: 24-May-2018 10:50

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 15:13
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 15:13
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 15:13
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 15:13
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 15:13
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW01-180524
Collection Date: 24-May-2018 10:50

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 15:13
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 15:13
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:13
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:13
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 15:13*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 15:13*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 15:13*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 15:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW01-180524-FD
Collection Date: 24-May-2018 10:50

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 15:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 15:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 15:39
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 15:39
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 15:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW01-180524-FD
Collection Date: 24-May-2018 10:50

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 15:39
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 15:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 15:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 15:39
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 15:39*
Surr: 4-Bromofluorobenzene	*103*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 15:39*
Surr: Dibromofluoromethane	*105*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 15:39*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 15:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW13-180524
Collection Date: 24-May-2018 11:40

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 16:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 16:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 16:05
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 16:05
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 16:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW13-180524
Collection Date: 24-May-2018 11:40

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 16:05
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 16:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:05
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 16:05*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 16:05*
Surr: Dibromofluoromethane	*105*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 16:05*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 16:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW17-180524
Collection Date: 24-May-2018 12:40

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 16:31
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 16:31
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 16:31
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 16:31
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 16:31
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW17-180524
Collection Date: 24-May-2018 12:40

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 16:31
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 16:31
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:31
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:31
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 16:31*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 16:31*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 16:31*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 16:31*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW16-180524
Collection Date: 24-May-2018 13:30

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,1,2-Trichlor-1,2,2-trifluoroethane	**7.9**		**0.50**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 16:57
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 16:57
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 16:57
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 16:57
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 16:57
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 16:57
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW16-180524
Collection Date: 24-May-2018 13:30

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-08
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 16:57
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 16:57
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 16:57
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Tetrachloroethene	**7.8**		**0.30**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 16:57
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Trichloroethene	**4.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 16:57
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 16:57
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 16:57*
Surr: 4-Bromofluorobenzene	*107*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 16:57*
Surr: Dibromofluoromethane	*101*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 16:57*
Surr: Toluene-d8	*109*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 16:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW24-180524
Collection Date: 24-May-2018 14:20

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,1,2-Trichlor-1,2,2-trifluoroethane	**2.8**		**0.50**	**0.50**	**1.0**	**ug/L**	1	05-Jun-2018 17:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 17:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 17:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 17:23
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 17:23
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 17:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 35BWW24-180524
Collection Date: 24-May-2018 14:20

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-09
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 17:23
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 17:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 17:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 17:23
Surr: 1,2-Dichloroethane-d4	*111*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 17:23*
Surr: 4-Bromofluorobenzene	*106*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 17:23*
Surr: Dibromofluoromethane	*103*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 17:23*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 17:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 37TB04-180524
Collection Date: 24-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	05-Jun-2018 13:33
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 13:33
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Jun-2018 13:33
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Jun-2018 13:33
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Jun-2018 13:33
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
Sample ID: 37TB04-180524
Collection Date: 24-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18051266
Lab ID:HS18051266-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Jun-2018 13:33
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	05-Jun-2018 13:33
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Jun-2018 13:33
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Jun-2018 13:33
Surr: 1,2-Dichloroethane-d4	*104*			**0**	*70-126*	*%REC*	*1*	*05-Jun-2018 13:33*
Surr: 4-Bromofluorobenzene	*102*			**0**	*81-113*	*%REC*	*1*	*05-Jun-2018 13:33*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*05-Jun-2018 13:33*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*05-Jun-2018 13:33*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R317397	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18051266-10	37TB04-180524	24 May 2018 00:00			05 Jun 2018 13:33	1
Batch ID R317397	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS18051266-01	35BWW10-180524	24 May 2018 08:20			05 Jun 2018 13:58	1
HS18051266-02	35BWW20-180524	24 May 2018 09:05			05 Jun 2018 14:23	1
HS18051266-03	LHSMW58-180524	24 May 2018 10:00			05 Jun 2018 14:48	1
HS18051266-04	35BWW01-180524	24 May 2018 10:50			05 Jun 2018 15:13	1
HS18051266-05	35BWW01-180524-FD	24 May 2018 10:50			05 Jun 2018 15:39	1
HS18051266-06	35BWW13-180524	24 May 2018 11:40			05 Jun 2018 16:05	1
HS18051266-07	35BWW17-180524	24 May 2018 12:40			05 Jun 2018 16:31	1
HS18051266-08	35BWW16-180524	24 May 2018 13:30			05 Jun 2018 16:57	1
HS18051266-09	35BWW24-180524	24 May 2018 14:20			05 Jun 2018 17:23	1

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180605** Units: **ug/L** Analysis Date: **05-Jun-2018 11:24**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587317** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	0.50	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180605** Units: **ug/L** Analysis Date: **05-Jun-2018 11:24**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587317** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*51.29*	*1.0*	*50*	*0*	*103*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*41.64*	*1.0*	*50*	*0*	*83.3*	*82 - 115*				
Surr: Dibromofluoromethane	*52.04*	*1.0*	*50*	*0*	*104*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180605** Units: **ug/L** Analysis Date: **05-Jun-2018 11:24**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587317** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.4*	*1.0*	*50*	*0*	*105*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180605** Units: **ug/L** Analysis Date: **05-Jun-2018 10:35**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587315** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.31	1.0	50	0	101	77 - 118				
1,1,1-Trichloroethane	49.84	1.0	50	0	99.7	70 - 130				
1,1,2,2-Tetrachloroethane	48.58	1.0	50	0	97.2	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	45.99	1.0	50	0	92.0	70 - 130				
1,1,2-Trichloroethane	51.13	1.0	50	0	102	77 - 113				
1,1-Dichloroethane	48.43	1.0	50	0	96.9	71 - 122				
1,1-Dichloroethene	48.58	1.0	50	0	97.2	70 - 130				
1,1-Dichloropropene	44.34	1.0	50	0	88.7	78 - 118				
1,2,3-Trichlorobenzene	51.49	1.0	50	0	103	70 - 130				
1,2,3-Trichloropropane	53.47	1.0	50	0	107	70 - 127				
1,2,4-Trichlorobenzene	50.81	1.0	50	0	102	77 - 126				
1,2,4-Trimethylbenzene	52.74	1.0	50	0	105	73 - 121				
1,2-Dibromo-3-chloropropane	54.43	1.0	50	0	109	70 - 130				
1,2-Dibromoethane	53.62	1.0	50	0	107	76 - 123				
1,2-Dichlorobenzene	48.07	1.0	50	0	96.1	77 - 113				
1,2-Dichloroethane	52.99	1.0	50	0	106	70 - 124				
1,2-Dichloropropane	47.78	1.0	50	0	95.6	72 - 119				
1,3,5-Trimethylbenzene	44.01	1.0	50	0	88.0	75 - 118				
1,3-Dichlorobenzene	46.28	1.0	50	0	92.6	78 - 118				
1,3-Dichloropropane	51.59	1.0	50	0	103	75 - 116				
1,4-Dichlorobenzene	45.47	1.0	50	0	90.9	79 - 113				
2,2-Dichloropropane	50.98	1.0	50	0	102	70 - 130				
2-Butanone	122.3	2.0	100	0	122	70 - 130				
2-Chlorotoluene	51.87	1.0	50	0	104	70 - 128				
2-Hexanone	119.2	2.0	100	0	119	70 - 130				
4-Chlorotoluene	53.41	1.0	50	0	107	74 - 126				
4-Isopropyltoluene	45.58	1.0	50	0	91.2	74 - 126				
4-Methyl-2-pentanone	115.1	2.0	100	0	115	70 - 130				
Acetone	127.9	2.0	100	0	128	70 - 130				
Benzene	47.92	1.0	50	0	95.8	74 - 120				
Bromobenzene	46.28	1.0	50	0	92.6	78 - 113				
Bromochloromethane	52.11	1.0	50	0	104	76 - 124				
Bromodichloromethane	51.2	1.0	50	0	102	74 - 122				
Bromoform	57.26	1.0	50	0	115	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180605** Units: **ug/L** Analysis Date: **05-Jun-2018 10:35**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587315** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	35.02	1.0	50	0	70.0	70 - 130				
Carbon disulfide	93.26	2.0	100	0	93.3	70 - 130				
Carbon tetrachloride	45.93	1.0	50	0	91.9	71 - 125				
Chlorobenzene	47.2	1.0	50	0	94.4	76 - 113				
Chloroethane	37.44	1.0	50	0	74.9	70 - 130				
Chloroform	48.5	1.0	50	0	97.0	71 - 121				
Chloromethane	55.9	1.0	50	0	112	70 - 129				
cis-1,2-Dichloroethene	49.08	1.0	50	0	98.2	75 - 122				
cis-1,3-Dichloropropene	54.09	1.0	50	0	108	73 - 127				
Dibromochloromethane	52.79	1.0	50	0	106	77 - 122				
Dibromomethane	54.44	1.0	50	0	109	78 - 121				
Dichlorodifluoromethane	52.11	1.0	50	0	104	70 - 130				
Ethylbenzene	46.91	1.0	50	0	93.8	77 - 117				
Hexachlorobutadiene	48.68	1.0	50	0	97.4	70 - 130				
Isopropylbenzene	44.34	1.0	50	0	88.7	73 - 127				
m,p-Xylene	113.2	2.0	100	0	113	77 - 122				
Methylene chloride	44.88	2.0	50	0	89.8	70 - 127				
Naphthalene	55.72	1.0	50	0	111	70 - 130				
n-Butylbenzene	46.9	1.0	50	0	93.8	72 - 130				
n-Propylbenzene	44.11	1.0	50	0	88.2	73 - 124				
o-Xylene	48.62	1.0	50	0	97.2	75 - 119				
sec-Butylbenzene	45.54	1.0	50	0	91.1	73 - 128				
Styrene	49.92	1.0	50	0	99.8	72 - 126				
tert-Butylbenzene	44.67	1.0	50	0	89.3	73 - 124				
Tetrachloroethene	48.28	1.0	50	0	96.6	76 - 119				
Toluene	46.53	1.0	50	0	93.1	77 - 118				
trans-1,2-Dichloroethene	50.29	1.0	50	0	101	72 - 127				
trans-1,3-Dichloropropene	57.07	1.0	50	0	114	77 - 119				
Trichloroethene	51.65	1.0	50	0	103	77 - 121				
Trichlorofluoromethane	39.35	1.0	50	0	78.7	70 - 130				
Vinyl chloride	47.31	1.0	50	0	94.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*53.06*	*1.0*	*50*	*0*	*106*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*53.81*	*1.0*	*50*	*0*	*108*	*82 - 115*				
Surr: Dibromofluoromethane	*49.19*	*1.0*	*50*	*0*	*98.4*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180605** Units: **ug/L** Analysis Date: **05-Jun-2018 10:35**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587315** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.08*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051313-07MS** Units: **ug/L** Analysis Date: **05-Jun-2018 12:16**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587529** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	514.9	10	500	0	103	70 - 120				
1,1,1-Trichloroethane	550.3	10	500	0	110	70 - 130				
1,1,2,2-Tetrachloroethane	476.9	10	500	0	95.4	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	458.6	10	500	0	91.7	70 - 130				
1,1,2-Trichloroethane	514.3	10	500	0	103	70 - 117				
1,1-Dichloroethane	2045	10	500	1868	35.4	70 - 127				SE
1,1-Dichloroethene	441.3	10	500	0	88.3	70 - 130				
1,1-Dichloropropene	508.6	10	500	0	102	70 - 129				
1,2,3-Trichlorobenzene	427.4	10	500	0	85.5	70 - 130				
1,2,3-Trichloropropane	534.7	10	500	0	107	70 - 130				
1,2,4-Trichlorobenzene	496.7	10	500	13.38	96.7	70 - 125				
1,2,4-Trimethylbenzene	565.7	10	500	0	113	70 - 125				
1,2-Dibromo-3-chloropropane	629	10	500	0	126	70 - 130				
1,2-Dibromoethane	535.6	10	500	0	107	70 - 124				
1,2-Dichlorobenzene	485.8	10	500	0	97.2	70 - 115				
1,2-Dichloroethane	617.6	10	500	107.5	102	70 - 127				
1,2-Dichloropropane	501.8	10	500	0	100	70 - 122				
1,3,5-Trimethylbenzene	474	10	500	0	94.8	70 - 126				
1,3-Dichlorobenzene	481.9	10	500	0	96.4	70 - 119				
1,3-Dichloropropane	505.5	10	500	0	101	70 - 121				
1,4-Dichlorobenzene	470.9	10	500	0	94.2	70 - 114				
2,2-Dichloropropane	569	10	500	0	114	70 - 130				
2-Butanone	1207	20	1000	0	121	70 - 130				
2-Chlorotoluene	554.5	10	500	0	111	70 - 130				
2-Hexanone	1237	20	1000	0	124	70 - 130				
4-Chlorotoluene	554.8	10	500	0	111	70 - 130				
4-Isopropyltoluene	509.1	10	500	0	102	70 - 130				
4-Methyl-2-pentanone	1143	20	1000	0	114	70 - 130				
Acetone	1290	20	1000	0	129	70 - 130				
Benzene	536.4	10	500	46.3	98.0	70 - 127				
Bromobenzene	477.1	10	500	0	95.4	70 - 115				
Bromochloromethane	521.5	10	500	0	104	70 - 127				
Bromodichloromethane	519.8	10	500	0	104	70 - 124				
Bromoform	564.5	10	500	0	113	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051313-07MS** Units: **ug/L** Analysis Date: **05-Jun-2018 12:16**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587529** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	379.5	10	500	0	75.9	70 - 130				
Carbon disulfide	1032	20	1000	0	103	70 - 130				
Carbon tetrachloride	535.9	10	500	0	107	70 - 130				
Chlorobenzene	493.5	10	500	4.06	97.9	70 - 114				
Chloroethane	315.9	10	500	0	63.2	70 - 130				S
Chloroform	499.3	10	500	0	99.9	70 - 125				
Chloromethane	590	10	500	0	118	70 - 130				
cis-1,2-Dichloroethene	507.7	10	500	0	102	70 - 128				
cis-1,3-Dichloropropene	550.7	10	500	0	110	70 - 125				
Dibromochloromethane	527	10	500	0	105	70 - 124				
Dibromomethane	549.9	10	500	0	110	70 - 124				
Dichlorodifluoromethane	600.3	10	500	0	120	70 - 130				
Ethylbenzene	505.3	10	500	0	101	70 - 124				
Hexachlorobutadiene	488.4	10	500	0	97.7	70 - 130				
Isopropylbenzene	534	10	500	0	107	70 - 130				
m,p-Xylene	1232	20	1000	0	123	70 - 130				
Methylene chloride	449.1	20	500	0	89.8	70 - 128				
Naphthalene	463.3	10	500	0	92.7	70 - 130				
n-Butylbenzene	533	10	500	0	107	70 - 130				
n-Propylbenzene	491.1	10	500	0	98.2	70 - 130				
o-Xylene	512.9	10	500	0	103	70 - 124				
sec-Butylbenzene	512.9	10	500	0	103	70 - 130				
Styrene	516.7	10	500	0	103	70 - 130				
tert-Butylbenzene	501	10	500	0	100	70 - 130				
Tetrachloroethene	551.7	10	500	0	110	70 - 130				
Toluene	493.2	10	500	0	98.6	70 - 123				
trans-1,2-Dichloroethene	594.8	10	500	31.4	113	70 - 130				
trans-1,3-Dichloropropene	577.8	10	500	0	116	70 - 121				
Trichloroethene	558.4	10	500	0	112	70 - 129				
Trichlorofluoromethane	436.4	10	500	0	87.3	70 - 130				
Vinyl chloride	942	10	500	552.8	77.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*526*	*10*	*500*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*543.3*	*10*	*500*	*0*	*109*	*81 - 113*				
Surr: Dibromofluoromethane	*488.2*	*10*	*500*	*0*	*97.6*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18051313-07MS** Units: **ug/L** Analysis Date: **05-Jun-2018 12:16**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587529** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*512.4*	*10*	*500*	*0*	*102*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051313-07MSD** Units: **ug/L** Analysis Date: **05-Jun-2018 12:41**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587530** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	515.7	10	500	0	103	70 - 120	514.9	0.153	20	
1,1,1-Trichloroethane	536.2	10	500	0	107	70 - 130	550.3	2.59	20	
1,1,2,2-Tetrachloroethane	481.3	10	500	0	96.3	70 - 123	476.9	0.932	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	387	10	500	0	77.4	70 - 130	458.6	16.9	20	
1,1,2-Trichloroethane	507.3	10	500	0	101	70 - 117	514.3	1.36	20	
1,1-Dichloroethane	2014	10	500	1868	29.1	70 - 127	2045	1.54	20	SE
1,1-Dichloroethene	384.2	10	500	0	76.8	70 - 130	441.3	13.8	20	
1,1-Dichloropropene	488.9	10	500	0	97.8	70 - 129	508.6	3.96	20	
1,2,3-Trichlorobenzene	522	10	500	0	104	70 - 130	427.4	19.9	20	
1,2,3-Trichloropropane	527.5	10	500	0	105	70 - 130	534.7	1.36	20	
1,2,4-Trichlorobenzene	525.1	10	500	13.38	102	70 - 125	496.7	5.56	20	
1,2,4-Trimethylbenzene	563.5	10	500	0	113	70 - 125	565.7	0.395	20	
1,2-Dibromo-3-chloropropane	641	10	500	0	128	70 - 130	629	1.89	20	
1,2-Dibromoethane	534	10	500	0	107	70 - 124	535.6	0.3	20	
1,2-Dichlorobenzene	476.9	10	500	0	95.4	70 - 115	485.8	1.84	20	
1,2-Dichloroethane	608.3	10	500	107.5	100	70 - 127	617.6	1.52	20	
1,2-Dichloropropane	491.4	10	500	0	98.3	70 - 122	501.8	2.08	20	
1,3,5-Trimethylbenzene	469.7	10	500	0	93.9	70 - 126	474	0.894	20	
1,3-Dichlorobenzene	477.1	10	500	0	95.4	70 - 119	481.9	1.01	20	
1,3-Dichloropropane	512	10	500	0	102	70 - 121	505.5	1.27	20	
1,4-Dichlorobenzene	470.6	10	500	0	94.1	70 - 114	470.9	0.0666	20	
2,2-Dichloropropane	551.9	10	500	0	110	70 - 130	569	3.05	20	
2-Butanone	1224	20	1000	0	122	70 - 130	1207	1.38	20	
2-Chlorotoluene	555	10	500	0	111	70 - 130	554.5	0.0957	20	
2-Hexanone	1257	20	1000	0	126	70 - 130	1237	1.6	20	
4-Chlorotoluene	557.9	10	500	0	112	70 - 130	554.8	0.543	20	
4-Isopropyltoluene	505.2	10	500	0	101	70 - 130	509.1	0.774	20	
4-Methyl-2-pentanone	1150	20	1000	0	115	70 - 130	1143	0.649	20	
Acetone	1146	20	1000	0	115	70 - 130	1290	11.8	20	
Benzene	526.6	10	500	46.3	96.1	70 - 127	536.4	1.84	20	
Bromobenzene	472.2	10	500	0	94.4	70 - 115	477.1	1.04	20	
Bromochloromethane	524.4	10	500	0	105	70 - 127	521.5	0.56	20	
Bromodichloromethane	510.2	10	500	0	102	70 - 124	519.8	1.86	20	
Bromoform	561	10	500	0	112	70 - 129	564.5	0.626	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051313-07MSD** Units: **ug/L** Analysis Date: **05-Jun-2018 12:41**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587530** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	438.1	10	500	0	87.6	70 - 130	379.5	14.3	20	
Carbon disulfide	947.1	20	1000	0	94.7	70 - 130	1032	8.62	20	
Carbon tetrachloride	505	10	500	0	101	70 - 130	535.9	5.95	20	
Chlorobenzene	492	10	500	4.06	97.6	70 - 114	493.5	0.31	20	
Chloroethane	480.3	10	500	0	96.1	70 - 130	315.9	41.3	20	R
Chloroform	491.3	10	500	0	98.3	70 - 125	499.3	1.63	20	
Chloromethane	578.3	10	500	0	116	70 - 130	590	1.99	20	
cis-1,2-Dichloroethene	503.5	10	500	0	101	70 - 128	507.7	0.834	20	
cis-1,3-Dichloropropene	539.7	10	500	0	108	70 - 125	550.7	2.02	20	
Dibromochloromethane	525.2	10	500	0	105	70 - 124	527	0.335	20	
Dibromomethane	539.3	10	500	0	108	70 - 124	549.9	1.93	20	
Dichlorodifluoromethane	587.6	10	500	0	118	70 - 130	600.3	2.13	20	
Ethylbenzene	497.8	10	500	0	99.6	70 - 124	505.3	1.51	20	
Hexachlorobutadiene	554.7	10	500	0	111	70 - 130	488.4	12.7	20	
Isopropylbenzene	523.3	10	500	0	105	70 - 130	534	2.03	20	
m,p-Xylene	1229	20	1000	0	123	70 - 130	1232	0.266	20	
Methylene chloride	452.2	20	500	0	90.4	70 - 128	449.1	0.688	20	
Naphthalene	557	10	500	0	111	70 - 130	463.3	18.4	20	
n-Butylbenzene	526.9	10	500	0	105	70 - 130	533	1.15	20	
n-Propylbenzene	486.3	10	500	0	97.3	70 - 130	491.1	0.982	20	
o-Xylene	510.8	10	500	0	102	70 - 124	512.9	0.413	20	
sec-Butylbenzene	510	10	500	0	102	70 - 130	512.9	0.571	20	
Styrene	512.7	10	500	0	103	70 - 130	516.7	0.792	20	
tert-Butylbenzene	492	10	500	0	98.4	70 - 130	501	1.83	20	
Tetrachloroethene	542.5	10	500	0	109	70 - 130	551.7	1.67	20	
Toluene	485	10	500	0	97.0	70 - 123	493.2	1.68	20	
trans-1,2-Dichloroethene	577.7	10	500	31.4	109	70 - 130	594.8	2.92	20	
trans-1,3-Dichloropropene	562.8	10	500	0	113	70 - 121	577.8	2.63	20	
Trichloroethene	547.7	10	500	0	110	70 - 129	558.4	1.94	20	
Trichlorofluoromethane	396.8	10	500	0	79.4	70 - 130	436.4	9.51	20	
Vinyl chloride	917.1	10	500	552.8	72.9	70 - 130	942	2.67	20	
Surr: 1,2-Dichloroethane-d4	*535*	*10*	*500*	*0*	*107*	*70 - 126*	*526*	*1.7*	*20*	
Surr: 4-Bromofluorobenzene	*547.7*	*10*	*500*	*0*	*110*	*81 - 113*	*543.3*	*0.815*	*20*	
Surr: Dibromofluoromethane	*488.3*	*10*	*500*	*0*	*97.7*	*77 - 123*	*488.2*	*0.0221*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: HS18051266

QC BATCH REPORT

Batch ID: R317397 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18051313-07MSD** Units: **ug/L** Analysis Date: **05-Jun-2018 12:41**
Client ID: Run ID: **VOA2_317397** SeqNo: **4587530** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*515*	*10*	*500*	*0*	*103*	*82 - 127*	*512.4*	*0.505*	*20*	

The following samples were analyzed in this batch:

HS18051266-01	HS18051266-02	HS18051266-03	HS18051266-04
HS18051266-05	HS18051266-06	HS18051266-07	HS18051266-08
HS18051266-09	HS18051266-10		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 06-Jun-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -37
WorkOrder: **HS18051266**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 06-Jun-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 06-Jun-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18051266
Date/Time Received: **25-May-2018 08:40**
Received by: **RPG**

Checklist completed by: *Paresh M. Giga* eSignature — 25-May-2018 Date
Reviewed by: *RJ Modashia* eSignature — 25-May-2018 Date

Matrices: **Groundwater/Water**
Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.3c/0.8c U/c	IR11	
Cooler(s)/Kit(s):	43703		
Date/Time sample(s) sent to storage:	5/25/18 12:45		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of _____

COC ID: 37-MAY2018-GW-ALSHT-1805____ TURNAROUND TIME: normal RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-37			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1			
35BWW10-180524	LHAAP37	24.17	24.38		WG	5/24/18	0820	3		X									
35BWW20-180524	LHAAP37	25.40	25.65		WG	5/24/18	0905	3		X									
[redacted]LHSMW58-180524	LHAAP37	23.87	24.05		WG	5/24/18	1000	3		X									
35BWW01-180524	LHAAP37	12.28	12.55		WG	5/24/18	1050	3		X									
35BWW01-1805-24-FD	LHAAP37	12.28	12.55		WG	5/24/18	1050	3		X									
35BWW13-180524	LHAAP37	24.00	24.25		WG	5/24/18	1140	3		X									
35BWW17-180524	LHAAP37	21.42	21.66		WG	5/24/18	1240	3		X									
35BWW16-180524	LHAAP37	22.28	22.48		WG	5/24/18	1330	3		X									
35BWW24-180524	LHAAP37	28.65	28.85		WG	5/24/18	1420	3		X									
TRIP BLANK						5/24/18		2		X									

HS18051266

Aptim Environmental & Infrastucture. Inc.

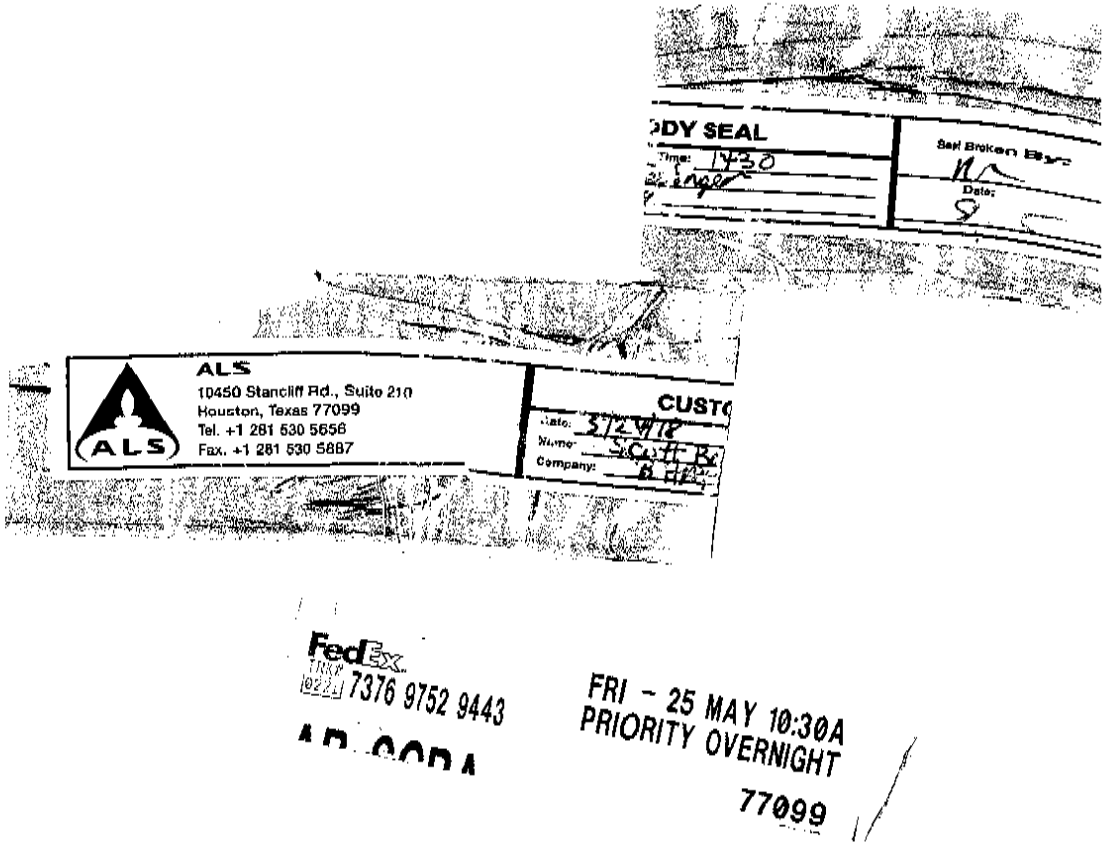
Longhorn Army Ammunition Plant -37

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Sweet Bosyes / BHATE	5/24/18 1430	RG. [signature]	5/25/18 08:45

43703

VOC: 1.3°
#11
<LF - 0.5°

00920166


DY SEAL
Time: 1430
Seal Broken By:
Date:
ALS
10450 Stancliff Rd., Suite 210
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Subject:	**Final Minutes, Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP)**
Location of Meeting:	**Via Conference Call-In 267-930-4000 with code 041-819-550**
Date of Meeting:	**14 March 2019– 10:00 AM Central Standard Time (CDT)**

Attendees:

Army BRAC:	Rose Zeiler (RMZ)
EPA:	Rich Mayer (RM) and Dorelle Harrison
TCEQ:	April Palmie (AP)
USFWS:	Paul Bruckwicki (PB)
USACE:	Aaron Williams (AW)
AEC:	Andrew Maly (AM)
Bhate:	Kim Nemmers (KN) and Mark Stapleton
APTIM:	Bill Foss (BF)

Action Items

Bhate/APTIM

Monitored Natural Attenuation (MNA) Parameters Technical Memorandum: BF asked whether the MNA parameters list presented in the technical memorandum could apply to other sites such as LHAAP-16 and LHAAP-17. AP asked how the monitoring would be proposed. BF stated that the monitoring would be proposed as a part of the final monitoring scheme document for a site. AP explained that there is a difference in the sites beyond the five for which the technical memorandum is approved because the five sites are already in remedial action–operations (RA-O), whereas other sites are just now having a final remedy put into place. BF stated that the request can be made on a case-by-case basis. AP stated that the approval of the technical memorandum is just for the five sites and that the Remedial Design (RD)/Remedial Action Work Plan (RAWP) should be used until another, overriding decision is agreed upon. RM stated that he generally agrees with AP and that it is reasonable to assume that this protocol can be used at other sites in the future. RM stated that he would talk with Terry Burton about this further. RM recalled that Mr. Burton recommended initial sampling have certain parameters, but that the MNA parameters could be reduced after sufficient data was obtained.

Defense Environmental Restoration Program (DERP) Performance Based Remediation (PBR) Update

KN discussed that the generator continues to power the groundwater treatment plant (GWTP) but that this power does not extend to the trailer. KN stated that the next MMM, which will be held at LHAAP, may need to be moved to a different location if the main generator is not replaced. Later discussions determined that the meeting will be held at the Karnack Community Center if power is not restored to the trailer and the trailer is too cold to hold the meeting. KN then clarified that the power is also not extending to the extraction wells at LHAAP-16. AP asked when the extraction wells at LHAAP-16 last ran, because the final remedy is based upon implementation into an aquifer that has hydraulic control. KN explained that the extraction wells were down during the repairs to the fluidized bed reactor (FBR) in July 2018, when the power was out due to a power pole being down in November 2018 and now due the main transformer being down since about December 26, 2018. RM stated that he recalled that the potentiometric map showed direction in flow changes when the extraction wells were down in July 2018. AP expressed concerns that the extraction wells being down may have resulted in the baseline data not being representative of the aquifer conditions when the final remedy is implemented. KN stated that she recalled resampling for baseline at LHAAP-16 if too much time passed. BF stated that he agreed and that the baseline groundwater

sampling was completed in October 2018. AP stated that the October 2018 baseline sampling exceeded a reasonable time period to make sense to consider the data as baseline. RMZ clarified that new baseline groundwater samples should be collected after the system is running for a period of time. AP concurred with RMZ. KN asked for BF to re-evaluate the sampling plan for LHAAP-16 based upon the discussions. AP asked the status of installation of the last two monitoring wells to which BF stated that APTIM is awaiting the rain to stop and the area to dry.

KN stated that extraction well pumps are being repaired, which should be completed by Monday (March 18, 2019). KN stated that the quarterly sampling of the LHAAP-58 includes just the western plume and is planned to be completed after the extraction well pumps are repaired. KN stated that this will take about 1.5 days and hoped that the data would be available to discuss at the next MMM.

KN asked everyone to refer to the Document and Issues Tracking Table dated March 14, 2019.

- **Task 1** (Project Management) -
  - KN stated that the March 2019 MMM Minutes were final and just need to be placed into the AR.
  - KN stated that the next Restoration Advisory Board (RAB) Meeting will be April 25, 2019 at 5:00 pm CDT, which is an hour earlier than usual.
- **Task 3** (LHAAP-03) – BF stated that RD/RAWP for LHAAP-03 is currently being prepared and will include the soil sampling. BF explained that the RD/RAWP will be submitted shortly to the Army and is expected to be released to the Regulators for review in late April. RMZ noted that we are ahead of schedule, which has the RD/RAWP being submitted to the regulators by June 28, 2019. BF stated that the hope is to complete the excavation work at LHAAP-03 when the equipment is at LHAAP for other site work.
- **Task 4** (LHAAP-04 Technical Memorandum for Plume Delineation) – BF stated that comments on the draft RD/RAWP for LHAAP-04 were received from the EPA on March 5, 2019 and TCEQ on March 12, 2019. RMZ noted to PB and AP that there was a comment by the EPA regarding the land use control (LUC) boundary of LHAAP-04. RMZ stated that the Army needs to work with USFWS to make the change in accordance with the language in the transfer document. RMZ stated that the extent of the LUC boundary needs to be moved out due to the plume boundary expansion. PB stated that USFWS will do whatever is easiest. BF stated that the RTCs indicate that the change will occur during the RACR. RMZ explained that Army and USFWS would co-sign the LUC recordation and that PB or some other authorized USFWS representative would need to accompany her to the bank to have signatures notarized once the changes are determined. AP asked for the RD/RAWP to explain the process in the text.
- **Task 5** (LHAAP-12 Annual RA-O Report) – The 2018 RA-O Report is in process for submittal by the end of March to the Army and then the Regulators at the end of April 2019.
- **Task 6** (LHAAP-16) – BF stated that no documents are in progress. BF stated that coordination regarding baseline sampling will be completed. RM asked if PB knows what the plan is for access to the site. BF stated that APTIM is planning to use mats at that time and avoid gravel, but are still hopeful that nothing will be required if the area is able to dry up.
- **Task 7** (LHAAP-17) - BF stated that Draft Final RD/RAWP incorporating comments from TCEQ and EPA was submitted on March 7, 2019.
- **Task 9** (LHAAP-37) – BF stated that Draft Final Year 1 RAO Report incorporating RTCs should be submitted to EPA and TCEQ next week (week of 18 March 2019).

- **Task 10** (LHAAP-46) Year 4 RA-O Report – BF stated that Draft Final with RTCs to EPA and TCEQ should be submitted next week (week of March 18, 2019).
- **Task 11** (LHAAP-50) – BF stated that the Explanation of Significant Difference (ESD) for a contingency remedy of in situ bioremediation is currently under Army legal review. BF stated that the RD/RAWP is in preparation and is due to Army in early April 2019.
- **Task 12** (LHAAP-58) – KN stated that the western plume will be sampled at LHAAP-58 the week of 18 March 2019. KN stated that the results for monitoring well MW-20 will be evaluated since it is the one monitoring well not showing the same level of degradation as the rest of the plume. KN stated that the data from the event will be captured in the Annual RA-O Report.
- **Task 13** (LHAAP-67) – BF stated that the Year 4 RA-O Report has been approved and is finalized. BF stated that 2nd semi-annual Year 5 sampling will be completed in May 2019.
- **Task 14** (LHAAP-001-R and –003-R) - KN stated that AP had provided comments on the Site LHAAP-001-R-01 and the LHAAP-003-R-01 Long Term Monitoring Report but no response was received yet from the EPA. RM stated that he had reviewed and would respond.
- **Task 16** (GWTP) **–** KN stated that the 4th Quarter GWTP Report is currently under internal quality control (QC) reviews and had not yet been submitted to the Army for review.
- **Task 17** (LHAAP-18/24) – KN stated that LHAAP-18/24 will be sampled next in June 2019. KN stated that the December 2018 results from LHAAP-18/24 are provided in the validated data provided for this MMM. KN stated that the results were within historical levels and the detections were similar to those during wetter times of the year, which is typically June/July rather than December.
- **Task 18** (Surface Water) - KN stated that surface water samples were collected in January 2019 and that the next sampling is likely to occur in April 2019 if the rainfall continues.
- **Administrative Record (AR) –** BF stated that the update through August 31, 2018 was completed and was in the processes of being set out. The next AR index will include September –November 2018 and is currently being printed. BF stated that the AR through November 2018 will go out in April 2019.

Update on other DERP Sites

- **LHAAP 18/24** – AW explained that the Final Proposed Plan (PP) for LHAAP-18/24 was issued on 25 February 2019. AW stated the public notice and comment period will run from April 2nd through May 2nd, 2019. AW stated that the presentation for the public meeting should be provided early next week to Regulators for comment. RMZ asked if the PP was sent to Laura-Ashley Overdyke and George Rice electronically via email. AW said that HDR was waiting for the public comment review period. RMZ stated that it should be sent out sooner. AW stated that the LHAAP-18/24 Record of Decision (ROD) is due September 6, 2019 and is currently being reviewed by the Army.
- **LHAAP-29** – The PP is final and needs to be placed into the AR. LHAAP-29 ROD is going through BRAC legal review. It will also undergo an Army in-process review during which signature authority will be determined.
- **LHAAP-47** – AW stated that the Post-Screening Investigation (PSI) Report comments from TCEQ and EPA were received. AW stated that surface water sampling was completed at the end of last week. AW stated the document is currently being revised per those comments with goal of responding the week of March 18, 2019.

- **Five- Year Review (FYR)** – AW stated that the FYR is under regulatory review. AP asked about Site 12 discussion that discusses sanitary fill area but the site is typically called sanitary landfill or Site 12. RMZ stated that AP should include this as a comment.

Schedule Next Managers' Meeting
The next MMM will be held on April 25, 2019 at 1:00 pm CDT at the Karnack Community Center.

ACRONYM LIST

AM	Andrew Maly
AP	April Palmie
APTIM	APTIM Federal Services, LLC
AR	Administrative Record
AW	Aaron Williams
BF	Bill Foss
Bhate	Bhate Environmental Associates, Inc.
BRAC	Base Realignment and Closure
CD	Compact Disc
CDT	Central Daylight Time
DERP	Defense Environmental Restoration Program
DH	Dorelle Harrison
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five Year Review
GWTP	Ground Water Treatment Plant
KN	Kim Nemmers
LHAAP	Longhorn Army Ammunition Plant
LUC	Land Use Control
MMM	Monthly Managers' Meeting
MNA	Monitored Natural Attenuations
PBR	Performance-Based Remediation
PP	Proposed Plan
PS	Praveen Srivastav
PSI	Post-Screening Investigation
RAB	Restoration Advisory Board
RA-O	remedial action – operation
RAWP	Remedial Action Work Plan
RD	Remedial Design
ROD	Record of Decision
RM	Rich Mayer
RMZ	Rose M. Zeiler
TCEQ	Texas Commission on Environmental Quality
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

LHAAP Data Validated
December 2018

LHAAP-18/24

Sampling – December 2018
Perchlorate (6850)
Metals (6020A)
VOCs (8260C)
1,4- Dioxane (8270D SIM)

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	AWD1_121818 12/18/18	AWD3_121718 12/17/18	AWD4_121918 12/19/18	AWD4_121918-a 12/19/18	18CPTMW01SW_122118 12/21/18	18CPTMW03SW_122018 12/20/18	18CPTMW04_121818 12/18/18	18CPTMW04SW_121818 12/18/18	18CPTMW06_122018 12/20/18	18CPTMW06_122018_a 12/20/18	18CPTMW07_122818 12/28/18	18CPTMW08SW_121818 12/18/18	18CPTMW08DW_121818 12/18/18
Lab Package			HS18121123	HS18121123	HS18121264	HS18121264	HS18121324	HS18121267	HS18121123	HS18121123	HS18121267	HS18121267	HS18121558	HS18121117	HS18121117
Perchlorate (6850)															
Perchlorate	µg/L	17*	**1.2 J**	**6.9**	**1,300**	**1,300**	< 2.0 U	< 2.0 U	**220**	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**22,000**	**3,300**
Volatile Organic Compounds (8260C)															
1,1,1,2-Tetrachloroethane	µg/L	110	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,1,1-Trichloroethane	µg/L	200	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,1,2,2-Tetrachloroethane	µg/L	14	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,1,2-Trichloroethane	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,1-Dichloroethane	µg/L	10,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**5.8**	NA
1,1-Dichloroethene	µg/L	7	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.3**	NA
1,1-Dichloropropene	µg/L	2.9	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2,3-Trichlorobenzene	µg/L	310	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2,3-Trichloropropane	µg/L	0.041	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2,4-Trichlorobenzene	µg/L	70	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2,4-Trimethylbenzene	µg/L	5,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2-Dibromo-3-chloropropane	µg/L	0.2	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2-Dibromoethane	µg/L	0.05	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2-Dichlorobenzene	µg/L	600	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2-Dichloroethane	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	**3.2**	**5.6**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,2-Dichloropropane	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,3,5-Trimethylbenzene	µg/L	5,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,3-Dichlorobenzene	µg/L	3,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**0.8 J**	NA
1,3-Dichloropropane	µg/L	29	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
1,4-Dichlorobenzene	µg/L	75	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
2,2-Dichloropropane	µg/L	42	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 UJ	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
2-Butanone	µg/L	61,000	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA
2-Chlorotoluene	µg/L	2,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
2-Hexanone	µg/L	6,100	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA
4-Chlorotoluene	µg/L	2,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
4-Isopropyltoluene	µg/L	10,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
4-Methyl-2-pentanone	µg/L	8,200	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA
Acetone	µg/L	92,000	NA	< 2.0 U	< 2.0 U	< 2.0 U	< 20 U	< 2.0 U	< 10 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**4.2**	NA
Benzene	µg/L	5	NA	< 0.5 U	< 0.5 U	< 0.5 U	**7.7 J**	**2.1**	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Bromobenzene	µg/L	2,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Bromochloromethane	µg/L	4,100	NA	< 0.5 UJ	< 0.5 U	< 0.5 U	< 5.0 UJ	< 0.5 U	< 2.5 UJ	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	NA
Bromodichloromethane	µg/L	4.6	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Bromoform	µg/L	36	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Bromomethane	µg/L	140	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Carbon disulfide	µg/L	10,000	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA
Carbon tetrachloride	µg/L	5	NA	**5.7**	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Chlorobenzene	µg/L	100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Chloroethane	µg/L	41,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Chloroform	µg/L	1,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	**3.3**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**0.65 J**	NA
Chloromethane	µg/L	220	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
cis-1,2-Dichloroethene	µg/L	70	NA	**1.8**	**1.0**	**0.98 J**	**54**	**8.1**	**110**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**19**	NA
cis-1,3-Dichloropropene	µg/L	5.3	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Dibromochloromethane	µg/L	34	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Dibromomethane	µg/L	380	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Dichlorodifluoromethane	µg/L	20,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Ethylbenzene	µg/L	700	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Hexachlorobutadiene	µg/L	20	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 10 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Isopropylbenzene	µg/L	10,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
m,p-Xylene	µg/L	10,000**	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA
Methylene chloride	µg/L	5	NA	< 1.0 U	< 1.0 U	< 1.0 U	**1,600**	< 1.0 U	< 2.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA
Naphthalene	µg/L	2,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
n-Butylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA

LHAAP-18/24 Sampling Event - December 2018

Location ID: Sample Date:	Units	MCL/MSC/PCL	AWD1_121818 12/18/18	AWD3_121718 12/17/18	AWD4_121918 12/19/18	AWD4_121918-a 12/19/18	18CPTMW01SW_122118 12/21/18	18CPTMW03SW_122018 12/20/18	18CPTMW04_121818 12/18/18	18CPTMW04SW_121818 12/18/18	18CPTMW06_122018 12/20/18	18CPTMW06_122018_a 12/20/18	18CPTMW07_122818 12/28/18	18CPTMW08SW_121818 12/18/18	18CPTMW08DW_121818 12/18/18
n-Propylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
o-Xylene	µg/L	10,000**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
sec-Butylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Styrene	µg/L	100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
tert-Butylbenzene	µg/L	4,100	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Tetrachloroethene	µg/L	5	NA	**1.3**	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Toluene	µg/L	1,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
trans-1,2-Dichloroethene	µg/L	100	NA	< 0.5 U	< 0.5 U	< 0.5 U	**21**	**2.3**	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
trans-1,3-Dichloropropene	µg/L	29	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Trichloroethene	µg/L	5	NA	**160**	**2.9**	**2.7**	**76**	**46**	**2,500**	**1.0 J**	**1.5**	**1.5**	**0.55 J**	**77**	NA
Trichlorofluoromethane	µg/L	31,000	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA
Vinyl chloride	µg/L	2	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	**7.3**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**8.6**	NA
Metals (6020A)															
Aluminum	mg/L	100	**1.39**	**0.247**	**0.848**	**0.699**	**0.0199**	**0.0254**	NA	**0.0834**	NA	NA	NA	NA	NA
Antimony	mg/L	0.006	**0.00150 J**	< 0.00100 U	**0.000424 J**	**0.000404 J**	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Arsenic	mg/L	0.01	**0.0155**	< 0.00100 U	**0.000671 J**	**0.000556 J**	**0.0140**	**0.00218**	NA	**0.00429**	NA	NA	NA	NA	NA
Barium	mg/L	2	**0.406**	**0.0240**	**0.295**	**0.302**	**1.14**	**0.548**	NA	**0.977**	NA	NA	NA	NA	NA
Beryllium	mg/L	0.004	**0.000576 J**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Cadmium	mg/L	0.005	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Calcium	mg/L	NV	**3.69**	**0.645**	**24.8**	**25.1**	**38.3**	**72.5**	NA	**34.8**	NA	NA	NA	NA	NA
Chromium	mg/L	0.1	**0.0127**	**0.0533**	**1.27**	**1.11**	**0.00440**	**0.00654**	NA	**0.00781**	NA	NA	NA	NA	NA
Cobalt	mg/L	6.1	**0.0119**	**0.000380 J**	**0.0235**	**0.0239**	**0.000680 J**	**0.00120 J**	NA	**0.0146**	NA	NA	NA	NA	NA
Copper	mg/L	1.3	**0.00329**	< 0.00100 U	**0.0120**	**0.0119**	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Iron	mg/L	NV	**9.78**	**0.459**	**10.2**	**9.75**	**68.8**	**3.66**	NA	**19.9**	NA	NA	NA	NA	NA
Lead	mg/L	0.015	**0.00368**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Magnesium	mg/L	NV	**4.43**	**0.411**	**9.90**	**9.87**	**26.2**	**17.3**	NA	**20.0**	NA	NA	NA	NA	NA
Manganese	mg/L	1.1*	**0.346**	**0.00633**	**0.199**	**0.197**	**0.714**	**0.189**	NA	**0.750**	NA	NA	NA	NA	NA
Nickel	mg/L	0.49*	**0.0227**	**0.00771**	**1.41**	**1.43**	**0.00141 J**	**0.00609**	NA	**0.00974**	NA	NA	NA	NA	NA
Potassium	mg/L	NV	**3.51**	**0.482**	**0.553**	**0.506**	**7.64**	**175**	NA	**44.7**	NA	NA	NA	NA	NA
Selenium	mg/L	0.05	**0.00380**	**0.00467**	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Silver	mg/L	0.51	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Sodium	mg/L	NV	**107**	**29.4**	**51.6**	**51.6**	**108**	**285**	NA	**118**	NA	NA	NA	NA	NA
Thallium	mg/L	0.002	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Vanadium	mg/L	0.72	**0.0124**	**0.00209 J**	**0.00309 J**	**0.00272 J**	< 0.00100 U	< 0.00100 U	NA	< 0.00100 U	NA	NA	NA	NA	NA
Zinc	mg/L	31	**0.0244**	**0.00582**	**0.00604**	**0.00549**	**0.00458**	**0.00646**	NA	**0.0382**	NA	NA	NA	NA	NA
Mercury	mg/L	0.002	< 0.000100 U	< 0.000100 U	**0.000109 J**	**0.000115 J**	< 0.000100 U	< 0.000100 U	NA	< 0.000100 U	NA	NA	NA	NA	NA
1,4-Dioxane (8270D SIM)															
1,4-Dioxane	µg/L	9.1	NA	NA	NA	NA	NA	**0.17 J**	NA	NA	NA	NA	NA	NA	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level

a - duplicate sample

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	18CPTMW10SW_121818 12/18/18	18CPTMW10DW_121818 12/18/18	18CPTMW12SW_121718 12/17/18	18CPTMW12DW_121718 12/17/18	18CPTMW14_010719 1/7/19	18CPTMW14_010719-a 1/7/19	18CPTMW15_121918 12/19/18	18CPTMW16_010719 1/7/19	18CPTMW18_122118 12/21/18	18CPTMW19_121918 12/19/18	18CPTMW19_121918_a 12/19/18	18CPTMW22R_122018 12/20/18	18CPTMW22SW_122018 12/20/18
Lab Package			**HS18121117**	**HS18121117**	**HS18121117**	**HS18121117**	**HS19010248**	**HS19010248**	**HS18121264**	**HS19010248**	**HS18121325**	**HS18121264**	**HS18121264**	**HS18121264**	**HS18121264**
Perchlorate (6850)															
Perchlorate	µg/L	17*	< 2.0 U	**3.4 J**	**1.1 J**	< 2.0 U	**1,200**	**1,200**	**270**	< 2.0 U	< 2.0 U	< 2.0 U	**1.1 J**	< 2.0 U	**1,900**
Volatile Organic Compounds (8260C)															
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**8.3**	**8.3**	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Acetone	µg/L	92,000	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**4.1 J**	**8.6 J**	< 2.0 U	NA	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**3.9**
Benzene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**0.66 J**	**0.61 J**	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromochloromethane	µg/L	4,100	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	µg/L	140	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 1.0 U	**1.1 J**	< 1.0 U	**1.1 J**	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	µg/L	41,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**15**	**15**	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**4.9**	**5.0**	**0.63 J**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Ethylbenzene	µg/L	700	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	18CPTMW10SW_121818 12/18/18	18CPTMW10DW_121818 12/18/18	18CPTMW12SW_121718 12/17/18	18CPTMW12DW_121718 12/17/18	18CPTMW14_010719 1/7/19	18CPTMW14_010719-a 1/7/19	18CPTMW15_121918 12/19/18	18CPTMW16_010719 1/7/19	18CPTMW18_122118 12/21/18	18CPTMW19_121918 12/19/18	18CPTMW19_121918_a 12/19/18	18CPTMW22R_122018 12/20/18	18CPTMW22SW_122018 12/20/18
n-Propylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.6**	**1.6**	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	**0.72 J**	**4.2**	**1.7 J**	< 0.5 U	**1,100**	**1,100**	**3.1**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.5**
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.2**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Metals (6020A)															
Aluminum	mg/L	100	NA	**0.0856**	**0.0248 J**	0.0142 UB	**1.68**	**1.50**	NA	NA	**0.0360**	NA	NA	**3.60**	**0.134**
Antimony	mg/L	0.006	NA	**0.000508 J**	< 0.00100 U	**0.00172 J**	**0.000493 J**	**0.000527 J**	NA	NA	< 0.00100 U	NA	NA	< 0.00100 U	< 0.00100 U
Arsenic	mg/L	0.01	NA	**0.00248**	**0.00123 J**	**0.00398**	**0.00266**	**0.00260**	NA	NA	**0.00210**	NA	NA	**0.000864 J**	**0.00132 J**
Barium	mg/L	2	NA	**0.100**	**0.784**	**0.136**	**2.61**	**2.45**	NA	NA	**0.712**	NA	NA	**0.0543**	**0.330**
Beryllium	mg/L	0.004	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00050 U	< 0.00050 U	NA	NA	< 0.00100 U	NA	NA	**0.000331 J**	< 0.00100 U
Cadmium	mg/L	0.005	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00050 U	< 0.00050 U	NA	NA	< 0.00100 U	NA	NA	< 0.00100 U	< 0.00100 U
Calcium	mg/L	NV	NA	**8.91**	**65.4**	**7.55**	**390**	**381**	NA	NA	**341**	NA	NA	**0.876**	**154**
Chromium	mg/L	0.1	NA	**0.00702**	**0.0113**	**0.00978**	**0.0292**	**0.0290**	NA	NA	**0.00937**	NA	NA	**0.00352 J**	**0.0321**
Cobalt	mg/L	6.1	NA	**0.000219 J**	**0.00315 J**	< 0.00100 U	**0.00196 J**	**0.00189 J**	NA	NA	**0.0174**	NA	NA	**0.00479 J**	< 0.00100 U
Copper	mg/L	1.3	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00193 J**	**0.00194 J**	NA	NA	< 0.00100 U	NA	NA	**0.00195 J**	< 0.00100 U
Iron	mg/L	NV	NA	**2.47**	**1.74**	**1.74**	**0.857**	**0.857**	NA	NA	**1.21**	NA	NA	**3.21**	**0.272**
Lead	mg/L	0.015	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	NA	**0.00157 J**	< 0.00100 U
Magnesium	mg/L	NV	NA	**5.39**	**42.1**	**5.77**	**56.0**	**55.7**	NA	NA	**213**	NA	NA	**0.807**	**9.92**
Manganese	mg/L	1.1*	NA	**0.0365**	**0.601**	**0.0423**	**0.0921**	**0.0918**	NA	NA	**2.50**	NA	NA	**0.0361**	**0.207**
Nickel	mg/L	0.49*	NA	**0.00120 J**	**0.00890**	< 0.00100 U	**0.00304**	**0.00292**	NA	NA	**0.0154**	NA	NA	**0.00284**	**0.000944 J**
Potassium	mg/L	NV	NA	**119**	**49.2**	**93.4**	**19.8**	**19.5**	NA	NA	**4.98**	NA	NA	**0.448**	**218**
Selenium	mg/L	0.05	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00250 U	< 0.00250 U	NA	NA	< 0.00100 U	NA	NA	< 0.00100 U	< 0.00100 U
Silver	mg/L	0.51	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00050 U	< 0.00050 U	NA	NA	< 0.00100 U	NA	NA	< 0.00100 U	< 0.00100 U
Sodium	mg/L	NV	NA	**210**	**249**	**207**	**479**	**464**	NA	NA	**803**	NA	NA	**21.0**	**339**
Thallium	mg/L	0.002	NA	NA	**0.000707 J**	**0.000542 J**	< 0.00100 U	< 0.00100 U	NA	NA	**0.000985 J**	NA	NA	< 0.00100 U	< 0.00100 U
Vanadium	mg/L	0.72	NA	**0.000947 J**	< 0.00100 U	< 0.00100 U	**0.00482 J**	**0.00468 J**	NA	NA	**0.00118 J**	NA	NA	**0.00570**	**0.00116 J**
Zinc	mg/L	31	NA	**0.00307 J**	**0.0137**	**0.00291**	**0.00536**	**0.00513**	NA	NA	**0.0163**	NA	NA	**0.00982**	**0.00584**
Mercury	mg/L	0.002	NA	< 0.000100 U	< 0.000100 U	< 0.000100 U	0.0000320 UB	0.0000340 UB	NA	NA	< 0.000100 U	NA	NA	< 0.000100 U	< 0.000100 U
1,4-Dioxane (8270D SIM)															
1,4-Dioxane	µg/L	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.012 J**	**0.3 J**

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential

a - duplicate sample

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	18CPTMW23_121918 12/19/18	18CPTMW24_122718 12/27/18	18WW02_122718 12/27/18	18WW06_122718 12/27/18	18WW06_122718_a 12/27/18	18WW08_121918 12/19/18	18WW10_122618 12/26/18	18WW17_122618 12/26/18	18WW22_122121 12/21/18	18WW22_122118_a 12/21/18	18WW24_122618 12/26/18	CO3_122118 12/21/18	CO4_122118 12/21/18	CO8_122118 12/21/18
Lab Package			HS18121264	HS18121523	HS18121523	HS18121523	HS18121523	HS18121264	HS18121520	HS18121520	HS18121325	HS18121325	HS18121520	HS18121325	HS18121325	HS18121324
Perchlorate (6850)																
Perchlorate	µg/L	17*	**4,200**	**13**	< 2.0 U	< 2.0 U	< 2.0 U	**45**	< 2.0 U	**73,000**	**4.5**	**5**	< 2.0 U	**15 J**	< 2.0 U	< 2.0 U
Volatile Organic Compounds (8260C)																
1,1,1,2-Tetrachloroethane	µg/L	110	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloroethene	µg/L	7	**9.5**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloroethane	µg/L	5	**320**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,3-Dichloropropane	µg/L	29	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ
2-Butanone	µg/L	61,000	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Acetone	µg/L	92,000	< 10 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Benzene	µg/L	5	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromochloromethane	µg/L	4,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ
Bromodichloromethane	µg/L	4.6	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromomethane	µg/L	140	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 5.0 U	< 1.0 U	< 1.0 U	**1.1 J**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chlorobenzene	µg/L	100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroethane	µg/L	41,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloroform	µg/L	1,000	**4.7 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	**240**	**29**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.1**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromomethane	µg/L	380	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Ethylbenzene	µg/L	700	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 2.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	18CPTMW23_121918 12/19/18	18CPTMW24_122718 12/27/18	18WW02_12218 12/27/18	18WW06_122718 12/27/18	18WW06_122718_a 12/27/18	18WW08_12198 12/19/18	18WW10_12268 12/26/18	18WW17_12268 12/26/18	18WW22_12218 12/21/18	18WW22_12218_a 12/21/18	18WW24_122618 12/26/18	CO3_122118 12/21/18	CO4_122118 12/21/18	CO8_122118 12/21/18
n-Propylbenzene	µg/L	4,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Styrene	µg/L	100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Toluene	µg/L	1,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	**2.7 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	**5,000**	**18**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**56**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**2.2**
Trichlorofluoromethane	µg/L	31,000	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Vinyl chloride	µg/L	2	**6.8**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Metals (6020A)																
Aluminum	mg/L	100	NA	**0.0428**	**0.499**	NA	NA	NA	NA	0.00895 UB	**0.233**	**0.238**	**0.0967**	NA	NA	**0.0247**
Antimony	mg/L	0.006	NA	**0.000426 J**	< 0.00100 U	NA	NA	NA	NA	< 0.00100 U	**0.000442 J**	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U
Arsenic	mg/L	0.01	NA	**0.0116**	**0.000962 J**	NA	NA	NA	NA	**0.000912 J**	**0.00114 J**	**0.00114 J**	**0.000779 J**	NA	NA	**0.000435 J**
Barium	mg/L	2	NA	**9.17**	**0.0530**	NA	NA	NA	NA	**3.78**	**0.225**	**0.240**	**0.0460**	NA	NA	**1.05**
Beryllium	mg/L	0.004	NA	< 0.00200 U	< 0.00100 U	NA	NA	NA	NA	< 0.00200 U	< 0.00100 U	< 0.00100 U	**0.000882 J**	NA	NA	< 0.00100 U
Cadmium	mg/L	0.005	NA	**0.000431 J**	< 0.00100 U	NA	NA	NA	NA	**0.000426 J**	< 0.00100 U	< 0.00100 U	< 0.00200 U	NA	NA	< 0.00100 U
Calcium	mg/L	NV	NA	**447**	**8.80**	NA	NA	NA	NA	**376**	**54.8**	**54.3**	**65.4**	NA	NA	**78.8**
Chromium	mg/L	0.1	NA	**0.00233 J**	**0.00726**	NA	NA	NA	NA	**0.0165**	**0.0201**	**0.0208**	**0.000522 J**	NA	NA	< 0.00100 U
Cobalt	mg/L	6.1	NA	**0.00579**	**0.000306 J**	NA	NA	NA	NA	**0.000704 J**	**0.000238 J**	**0.000221 J**	**0.00365 J**	NA	NA	**0.00371 J**
Copper	mg/L	1.3	NA	**0.00133 J**	**0.00755**	NA	NA	NA	NA	**0.00460**	< 0.00100 U	< 0.00100 U	**0.00106 J**	NA	NA	< 0.00100 U
Iron	mg/L	NV	NA	**11.9**	**2.51**	NA	NA	NA	NA	**0.259**	**0.112 J**	**0.0644 J**	**0.200**	NA	NA	**0.617**
Lead	mg/L	0.015	NA	< 0.00100 U	**0.00130 J**	NA	NA	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U
Magnesium	mg/L	NV	NA	**245**	**1.69**	NA	NA	NA	NA	**236**	**5.82**	**5.81**	**56.5**	NA	NA	**32.2**
Manganese	mg/L	1.1*	NA	**0.635**	**0.106**	NA	NA	NA	NA	**0.0448**	0.00371 UB	0.00399 UB	**0.498**	NA	NA	**0.425**
Nickel	mg/L	0.49*	NA	**0.00770**	**0.00420**	NA	NA	NA	NA	**0.0516**	< 0.00100 U	< 0.00100 U	**0.0456**	NA	NA	**0.00173 J**
Potassium	mg/L	NV	NA	**5.88**	**2.04**	NA	NA	NA	NA	**1.83**	**3.74**	**3.75**	**0.653**	NA	NA	**0.567**
Selenium	mg/L	0.05	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	NA	**0.00383**	**0.00156 J**	**0.00144 J**	< 0.00100 U	NA	NA	< 0.00100 U
Silver	mg/L	0.51	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U
Sodium	mg/L	NV	NA	**990**	**22.3**	NA	NA	NA	NA	**1,100**	**26.8**	**26.3**	**874**	NA	NA	**134**
Thallium	mg/L	0.002	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	NA	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U
Vanadium	mg/L	0.72	NA	**0.00307 J**	**0.00499 J**	NA	NA	NA	NA	**0.00315 J**	**0.00804**	**0.00810**	**0.00116 J**	NA	NA	**0.00229 J**
Zinc	mg/L	31	NA	**0.00646**	**0.00483**	NA	NA	NA	NA	**0.0273**	0.00250 U	0.00250 U	**0.0332**	NA	NA	**0.00563**
Mercury	mg/L	0.002	NA	< 0.000100 U	< 0.000100 U	NA	NA	NA	NA	**0.0000330 J**	< 0.000100 U	< 0.000100 U	< 0.000100 U	NA	NA	< 0.000100 U
1,4-Dioxane (8270D SIM)																
1,4-Dioxane	µg/L	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential

a - duplicate sample

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	CO9_122118 12/21/18	MW2_122018 12/20/18	MW3_122818 12/28/18	MW5_121818 12/18/18	MW7_121718 12/17/18	MW8_010719 1/7/19	MW9_121818 12/18/18	MW10_121918 12/19/18	MW14_122018 12/20/18
Lab Package			**HS18121324**	**HS18121267**	**HS18121558**	**HS18121117**	**HS18121117**	**HS19010248**	**HS18121117**	**HS18121264**	**HS18121267**
Perchlorate (6850)											
Perchlorate	µg/L	17*	< 2.0 U	< 2.0 U	**12,000**	**27,000**	**14,000**	**6,700**	**570**	< 2.0 U	**76,000**
Volatile Organic Compounds (8260C)											
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	**60**	**6.4**	**4.9**	< 2.5 U	< 0.5 U	**0.44 J**	< 0.5 U	**29**
1,1-Dichloroethene	µg/L	7	< 0.5 U	**690**	< 0.5 U	< 0.5 U	**11**	**0.5 J**	< 0.5 U	< 0.5 U	**110**
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	**18**	**7.1**	< 0.5 U	< 0.5 U	**71**
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	< 25 U	< 0.5 U	**0.71 J**	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
2,2-Dichloropropane	µg/L	42	< 0.5 UJ	< 25 UJ	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 UJ
2-Butanone	µg/L	61,000	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
2-Hexanone	µg/L	6,100	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	< 50 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U
Acetone	µg/L	92,000	< 2.0 U	< 100 U	< 2.0 U	< 2.0 U	< 10 U	< 2.0 U	< 2.0 U	< 2.0 U	< 20 U
Benzene	µg/L	5	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	**3.6 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromobenzene	µg/L	2,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromochloromethane	µg/L	4,100	< 0.5 UJ	< 25 UJ	< 0.5 U	< 0.5 UJ	< 2.5 UJ	< 0.5 U	< 0.5 UJ	< 0.5 U	< 5.0 UJ
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromoform	µg/L	36	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Bromomethane	µg/L	140	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Carbon disulfide	µg/L	10,000	< 1.0 U	< 25 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	**12**	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Chlorobenzene	µg/L	100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Chloroethane	µg/L	41,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Chloroform	µg/L	1,000	< 0.5 U	**82**	**2.0**	< 0.5 U	**16**	**0.85 J**	**2.5**	< 0.5 U	< 5.0 U
Chloromethane	µg/L	220	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	**65,000**	**97**	**16**	**16**	**18**	**53**	< 0.5 U	**3,000**
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Dibromomethane	µg/L	380	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Ethylbenzene	µg/L	700	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	< 50 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 10 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	< 25 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U
Methylene chloride	µg/L	5	< 1.0 U	**170,000**	< 1.0 U	< 1.0 U	< 2.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U
Naphthalene	µg/L	2,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	CO9_122118 12/21/18	MW2_122018 12/20/18	MW3_122818 12/28/18	MW5_121818 12/18/18	MW7_121718 12/17/18	MW8_010719 1/7/19	MW9_121818 12/18/18	MW10_121918 12/19/18	MW14_122018 12/20/18
n-Propylbenzene	µg/L	4,100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
o-Xylene	µg/L	10,000**	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Styrene	µg/L	100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Tetrachloroethene	µg/L	5	< 0.5 U	**71**	**1.7**	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Toluene	µg/L	1,000	< 0.5 U	**33 J**	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	**110**	**4.6**	< 0.5 U	< 2.5 U	< 0.5 U	**0.63 J**	< 0.5 U	**21**
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Trichloroethene	µg/L	5	< 0.5 U	**2,300**	**600**	**62**	**2,000**	**480**	**1,400**	< 0.5 U	**9,000**
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 25 U	< 0.5 U	< 0.5 U	< 2.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U
Vinyl chloride	µg/L	2	< 0.5 U	**86**	**36**	**6.1**	**5.6**	< 0.5 U	**1.2**	< 0.5 U	**14**
Metals (6020A)											
Aluminum	mg/L	100	**0.0423**	**0.0399**	0.00670 UB	0.0126 UB	NA	NA	0.0277	NA	0.0212 UB
Antimony	mg/L	0.006	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.000727 J**	NA	NA	0.000690 J	NA	< 0.00100 U
Arsenic	mg/L	0.01	**0.000711 J**	**0.0119**	**0.000445 J**	**0.000413 J**	NA	NA	< 0.00100 U	NA	**0.00460**
Barium	mg/L	2	**0.170**	**2.97**	**0.484**	**1.02**	NA	NA	**0.170**	NA	**0.484**
Beryllium	mg/L	0.004	< 0.00100 U	**0.000605 J**	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U
Cadmium	mg/L	0.005	< 0.00100 U	< 0.00100 U	**0.000236 J**	**0.000879 J**	NA	NA	< 0.00100 U	NA	**0.00101 J**
Calcium	mg/L	NV	**70.8**	**84.3**	**30.5**	**26.3**	NA	NA	**20.5**	NA	**125**
Chromium	mg/L	0.1	**0.00101 J**	**0.012**	< 0.00100 U	**0.0929**	NA	NA	**0.0575**	NA	**0.0616**
Cobalt	mg/L	6.1	**0.000257 J**	**0.0861**	**0.00789**	**0.00396 J**	NA	NA	**0.00172 J**	NA	**0.0388**
Copper	mg/L	1.3	< 0.00100 U	< 0.00100 U	< 0.00100 U	**0.00192 J**	NA	NA	< 0.00100 U	NA	**0.00666**
Iron	mg/L	NV	**0.0364 J**	**24.6**	**0.421**	**0.465**	NA	NA	**0.369**	NA	**109**
Lead	mg/L	0.015	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U
Magnesium	mg/L	NV	**5.53**	**58.7**	**17.4**	**26.9**	NA	NA	**6.46**	NA	**49.5**
Manganese	mg/L	1.1*	**0.0247**	**5.23**	**2.03**	**0.118**	NA	NA	**0.0747**	NA	**3.78**
Nickel	mg/L	0.49*	**0.00142 J**	**0.0538**	**0.00506**	**0.086**	NA	NA	**0.0549**	NA	**0.329**
Potassium	mg/L	NV	**0.419**	**3.27**	**1.68**	**2.35**	NA	NA	**0.430**	NA	**15.9**
Selenium	mg/L	0.05	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U
Silver	mg/L	0.51	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U
Sodium	mg/L	NV	**18.2**	**268**	**240**	**133**	NA	NA	**22.5**	NA	**350**
Thallium	mg/L	0.002	< 0.00100 U	< 0.00100 U	< 0.00100 U	< 0.00100 U	NA	NA	< 0.00100 U	NA	< 0.00100 U
Vanadium	mg/L	0.72	**0.00273 J**	**0.000698 J**	**0.00130 J**	**0.00181 J**	NA	NA	**0.00113 J**	NA	< 0.00100 U
Zinc	mg/L	31	< 0.00250 U	**0.0595**	**0.00661**	**0.0275**	NA	NA	**0.0287**	NA	**0.789**
Mercury	mg/L	0.002	< 0.000100 U	< 0.000100 U	**0.0000300 J**	< 0.000100 U	NA	NA	< 0.000100 U	NA	< 0.000100 U
1,4-Dioxane (8270D SIM)											
1,4-Dioxane	µg/L	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential

a - duplicate sample

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	MW16_122618 12/26/18	MW17_122618 12/26/18	MW18_122618 12/26/18	MW19_122618 12/26/18	MW20_122018 12/20/18	MW21_122818 12/28/18	MW22_122018 12/20/18	MW23_122618 12/26/18	109_122718 12/27/18	120_122018 12/20/18	125_122718 12/27/18	126_122618 12/26/18
Lab Package			HS18121520	HS18121520	HS18121520	HS18121520	HS18121264	HS18121558	HS18121267	HS18121520	HS18121523	HS18121267	HS18121523	HS18121520
Perchlorate (6850)														
Perchlorate	µg/L	17*	**90**	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	**23,000**	**84**	**52,000 J**	**3,200**	**47,000**	**8,000**	< 2.0 U
Volatile Organic Compounds (8260C)														
1,1,1,2-Tetrachloroethane	µg/L	110	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	**14**	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	**1.8**	NA	< 0.5 U	< 0.5 U	< 0.5 U	**4.4 J**	< 0.5 U	< 2.5 U	**0.84 J**	< 10 U	< 2.5 U	< 0.5 U
1,1-Dichloroethene	µg/L	7	**11**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	**31**	< 2.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	**210**	< 2.5 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,2,3-Trichloropropane	µg/L	0.041	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,2,4-Trichlorobenzene	µg/L	70	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,2-Dichloroethane	µg/L	5	**65**	NA	< 0.5 U	< 0.5 U	< 0.5 U	**47**	**8.1**	**110 J**	< 0.5 U	**52**	< 2.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
2,2-Dichloropropane	µg/L	42	< 0.5 UJ	NA	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 UJ
2-Butanone	µg/L	61,000	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 20 U	< 5.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 20 U	< 5.0 U	< 1.0 U
4-Chlorotoluene	µg/L	2,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 20 U	< 5.0 U	< 1.0 U
Acetone	µg/L	92,000	< 2.0 U	NA	< 2.0 U	< 2.0 U	< 2.0 U	< 20 U	< 2.0 U	< 10 U	< 2.0 U	< 40 U	< 10 U	< 2.0 U
Benzene	µg/L	5	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	**4.8**	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Bromochloromethane	µg/L	4,100	< 0.5 UJ	NA	< 0.5 UJ	< 0.5 UJ	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 UJ
Bromodichloromethane	µg/L	4.6	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Bromoform	µg/L	36	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Bromomethane	µg/L	140	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 20 U	< 5.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	**5.3 J**	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Chlorobenzene	µg/L	100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Chloroethane	µg/L	41,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Chloroform	µg/L	1,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	**18**	**5.7**	**12 J**	**1.4**	**54**	< 2.5 U	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	**31**	NA	< 0.5 U	**4.9**	< 0.5 U	**490**	**7.1**	**24 J**	**130**	**2,300**	**3.3 J**	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Ethylbenzene	µg/L	700	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 10 U	< 0.5 U	< 5.0 U	< 0.5 U	< 20 U	< 5.0 U	< 0.5 U
Isopropylbenzene	µg/L	10,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
m,p-Xylene	µg/L	10,000**	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 5.0 U	< 1.0 U	< 20 U	< 5.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 1.0 U	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 1.0 U	< 2.5 U	< 1.0 U	< 10 U	< 2.5 U	< 1.0 U
Naphthalene	µg/L	2,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
n-Butylbenzene	µg/L	4,100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U

LHAAP-18/24 Sampling Event - December 2018

Location ID: / Sample Date:	Units	MCL/MSC/PCL	MW16_122618 12/26/18	MW17_122618 12/26/18	MW18_122618 12/26/18	MW19_122618 12/26/18	MW20_122018 12/20/18	MW21_122818 12/28/18	MW22_122018 12/20/18	MW23_122618 12/26/18	109_122718 12/27/18	120_122018 12/20/18	125_122718 12/27/18	126_122618 12/26/18
n-Propylbenzene	µg/L	4,100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
o-Xylene	µg/L	10,000**	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
sec-Butylbenzene	µg/L	4,100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Styrene	µg/L	100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Tetrachloroethene	µg/L	5	**0.71 J**	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	**0.98 J**	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Toluene	µg/L	1,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	**0.76 J**	NA	< 0.5 U	< 0.5 U	< 0.5 U	**9.4 J**	< 0.5 U	**5.0 J**	**1.4**	**20 J**	< 2.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Trichloroethene	µg/L	5	**780**	NA	**5.7**	**2.5**	< 0.5 U	**9,800**	**680**	**4,800**	**420**	**22,000**	**11**	< 0.5 U
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 2.5 U	< 0.5 U	< 10 U	< 2.5 U	< 0.5 U
Vinyl chloride	µg/L	2	**1.7**	NA	< 0.5 U	< 0.5 U	< 0.5 U	**42**	**2.2**	< 2.5 U	< 0.5 U	**78**	< 2.5 U	< 0.5 U
Metals (6020A)														
Aluminum	mg/L	100	NA	NA	NA	**0.194**	NA	**0.0276**	0.0126 UB	NA	NA	NA	**4.2**	**0.0257**
Antimony	mg/L	0.006	NA	NA	NA	< 0.00100 U	NA	**0.000449 J**	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U
Arsenic	mg/L	0.01	NA	NA	NA	**0.00792**	NA	**0.00116 J**	**0.00102 J**	NA	NA	NA	**0.00382**	**0.00401**
Barium	mg/L	2	NA	NA	NA	**0.606**	NA	**7.53**	**1.29**	NA	NA	NA	**0.17**	**11.1**
Beryllium	mg/L	0.004	NA	NA	NA	< 0.00200 U	NA	**0.000305 J**	< 0.00100 U	NA	NA	NA	**0.000305 J**	< 0.00100 U
Cadmium	mg/L	0.005	NA	NA	NA	**0.000613 J**	NA	**0.000669 J**	**0.000552 J**	NA	NA	NA	< 0.00100 U	**0.000497 J**
Calcium	mg/L	NV	NA	NA	NA	**92.1**	NA	**222**	**156**	NA	NA	NA	**3.32**	**360**
Chromium	mg/L	0.1	NA	NA	NA	**0.122**	NA	**0.552**	**0.0505**	NA	NA	NA	**0.00752**	< 0.00100 U
Cobalt	mg/L	6.1	NA	NA	NA	**0.0211**	NA	**0.0753**	**0.0134**	NA	NA	NA	**0.00233 J**	**0.0102**
Copper	mg/L	1.3	NA	NA	NA	**0.00402**	NA	**0.0700**	**0.00443**	NA	NA	NA	**0.00462**	**0.00102 J**
Iron	mg/L	NV	NA	NA	NA	**70.4**	NA	**5.25**	**1.04**	NA	NA	NA	**6.02**	**3.28**
Lead	mg/L	0.015	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	**0.00385**	< 0.00100 U
Magnesium	mg/L	NV	NA	NA	NA	**52.3**	NA	**167**	**57.8**	NA	NA	NA	**2.85**	**266**
Manganese	mg/L	1.1*	NA	NA	NA	**2.39**	NA	**2.13**	**0.356**	NA	NA	NA	**0.043**	**0.151**
Nickel	mg/L	0.49*	NA	NA	NA	**0.0774**	NA	**0.609**	**0.493**	NA	NA	NA	**0.00749**	**0.0163**
Potassium	mg/L	NV	**NA**	**NA**	NA	**4.58**	NA	**2.51**	**2.46**	NA	NA	NA	**1.24**	**3.59**
Selenium	mg/L	0.05	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U
Silver	mg/L	0.51	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U
Sodium	mg/L	NV	NA	NA	NA	**741**	NA	**603**	**436**	NA	NA	NA	**57.8**	**927**
Thallium	mg/L	0.002	NA	NA	NA	< 0.00100 U	NA	< 0.00100 U	< 0.00100 U	NA	NA	NA	< 0.00100 U	< 0.00100 U
Vanadium	mg/L	0.72	NA	NA	NA	**0.00112 J**	NA	**0.00284 J**	< 0.00100 U	NA	NA	NA	**0.00987**	**0.00309 J**
Zinc	mg/L	31	NA	NA	NA	**0.0128**	NA	**0.0265**	**0.00427**	NA	NA	NA	**0.0201**	**0.0366**
Mercury	mg/L	0.002	NA	NA	NA	< 0.000100 U	NA	**0.0000420 J**	< 0.000100 U	NA	NA	NA	**0.000077 J**	**0.0000440 J**
1,4-Dioxane (8270D SIM)														
1,4-Dioxane	µg/L	9.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Blue highlighting indicates concentrations above the MCL/MSC/PCL

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations/Protective Concentration Level

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: The analyte was positively identified, the quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

UB - considered a non-detect due to blank contamination

*Perchlorate, manganese, and nickel compared to the PCL

** Value is for total xylenes

PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential

a - duplicate sample

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

March 27, 2019

DAIM-ODB-LO

Mr. Rich Mayer
U.S. Environmental Protection Agency
Federal Facilities Section R6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Year 1 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01 Longhorn Army Ammunition Plant, Karnack Texas

Dear Mr. Mayer,

One hard copy and one compact disc (CD) of the above-referenced document is being transmitted to you for your records.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (1 hard copy and 1 CD)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)
A. Williams, USACE, Fort Worth, TX District (1 CD)
R. Smith, USACE, Fort Worth, TX District (Transmittal Letter)
A. Maly, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 CD)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

March 27, 2019

DAIM-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Year 1 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01 Longhorn Army Ammunition Plant, Karnack Texas

Dear Ms. Palmie,

One hard copy and one compact disc (CD) of the above-referenced document is being transmitted to you for your records.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
R. Mayer, USEPA Region 6, Dallas, TX (1 hard copy and 1 CD)
P. Bruckwicki, Caddo Lake NWR, TX (1 hard copy and 1 CD)
A. Williams, USACE, Fort Worth, TX District (1 CD)
R. Smith, USACE, Fort Worth, TX District (Transmittal Letter)
A. Maly, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 CD)

FINAL
YEAR 1 LONG-TERM MANAGEMENT REPORT FOR LHAAP-001-R-01 AND LHAAP-003-R-01 LONGHORN ARMY AMMUNITION PLANT

March 2019

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Performance Based Remediation (PBR)
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

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Appendices

Appendix A LTM Inspection and Maintenance Checklists and Land Use Control Compliance Certification Form
Appendix B Photograph Log

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ACRONYMS AND ABBREVIATIONS

§	Section
EODT	EOD Technology, Inc.
IRP	Installation Restoration Program
LHAAP	Longhorn Army Ammunition Plant
LTM	Long-Term Management
LUC	Land use control
MEC	Munitions and explosives of concern
MMRP	Military Munitions Response Program
MPPEH	Material potentially presenting explosive hazard
MRS	Munitions response site
RAO	Remedial action objective
ROD	Record of Decision
Shaw	Shaw Environmental & Infrastructure, Inc.
TAC	Texas Administrative Code
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WP	White phosphorus

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1 INTRODUCTION

This document presents the monitoring of land use controls (LUCs) associated with the remedy set forth in the Final Longhorn Army Ammunition Plant (LHAAP) Record of Decision (ROD) (Shaw Environmental & Infrastructure, Inc. [Shaw], August 2016) for Military Munitions Response Program (MMRP) sites LHAAP-001-R-01 (South Test Area/Bomb Test Area) and LHAAP-003-R-01 (Ground Signal Test Area). This Year 1 LUC Monitoring Report was prepared for the United States (U.S.) Army under the Worldwide Environmental Remediation Services Contract No. W9128F-13-D-0012 managed by the U.S. Army Corps of Engineers (USACE), Tulsa District.

1.1 Facility Background

The LHAAP is an inactive, government-owned, formerly contractor-operated and maintained industrial facility located in central-east Texas, in the northeastern corner of Harrison County. The facility occupies approximately 1,200 of its former 8,416 acres located between State Highway 43 in Karnack, Texas, and the southwestern shore of Caddo Lake, as shown on **Figure 1-1**. The LHAAP was listed as a National Priorities List site on August 9, 1990, due to threatened releases of hazardous substances, pollutants, or contaminants. The U.S. Environmental Protection Agency (USEPA), the Texas Water Commission (now the Texas Commission on Environmental Quality), and the U.S. Army signed a Federal Facility Agreement on December 30, 1991, to address the contamination at LHAAP.

1.2 Munitions Response Sites LHAAP-001-R-01 and LHAAP-003-R-01 Site Descriptions

Munitions response site (MRS) LHAAP-001-R-01 (South Test Area/Bomb Test Area) is co-located with Installation Restoration Program (IRP) site LHAAP-27 and is situated in the southern portion of LHAAP and covers an area of approximately 79 acres (**Figure 1-2**). Site LHAAP-001-R-01 was constructed in 1954 and used for testing photoflash bombs produced at the facility until approximately 1956. During the late 1950s, illuminating signal devices were also demilitarized within pits excavated in the vicinity of the test pad. During the 1960s, leaking production items may have been demilitarized by detonation. Leaking white phosphorus (WP) munitions were supposedly disposed of, although no primary source documentation concerning this effort has been located. A 1984, a LHAAP Contamination Survey indicated that the area had been relatively inactive since the early 1960s and no disposal or testing activities have been carried out in this area since this time. LHAAP-001-R-01 was identified as a munitions and explosives of concern (MEC) area based on the visual confirmation of MEC.

Site LHAAP-003-R-01 (Ground Signal Test Area), is co-located with IRP site LHAAP-54 and is situated in the southeastern portion of LHAAP and covers an area of approximately 80 acres (**Figure 1-3**). Site LHAAP-003-R-01 was used intermittently in April 1963 for aerial and on-ground

testing and destruction of a variety of devices, including pyrotechnic signal devices, red phosphorus smoke wedges, infrared flares, illuminating mortar shells and cartridges, button bombs, and various types of explosive simulators. The site was also used intermittently over a 20-year period for testing and burn-out of rocket motors. From late 1988 through 1991, the site was also used for the burn-out of Pershing missile rocket motors. Occasionally, leaking WP munitions were burned at the site as a demilitarization activity. LHAAP-003-R-01 was identified as a MEC area based on the reported presence of MEC.

1.3 Land Use Controls

Following the 2008 non-time critical removal action surface clearance activities, LUCs were prepared and constructed for both sites. LUCs were designed and constructed to promote ongoing protection of human safety against potential explosive hazards that may remain at the MMRP sites. The LUCs' performance objectives are to prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds; and to prohibit intrusive activities such as digging or any other activity which could result in explosive safety risks. The boundary of the LUCs encloses the site boundaries shown on **Figures 1-2 and 1-3**.

The LUC to prohibit residential land use will remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety. The LUC restricting land use to non-residential will remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety. A LUC to prohibit intrusive subsurface activities, including digging, will remain in place until it is demonstrated that the MEC no longer presents an explosive hazard. However, intrusive subsurface activities may occur provided that the Army and the USEPA approve such intrusive subsurface activities before they are commenced and provided that they are undertaken by qualified personnel who are trained in explosives safety measures.

The 2008 LUCs included:

- Restriction against intrusive activities, including digging. A legal description survey and plat of the LUC boundaries and locations of MEC warning signs prepared in accordance with 30 Texas Administrative Code (TAC) Section (§) 335.569, Appendix III, for recordation in the Harrison County Clerk's Office.
- Placement of MEC warning signage along the perimeter of LHAAP-001-R-01 and LHAAP-003-R-01 to serve as the physical demarcation of the controlled areas. The signs have visibility from one sign to the next, with a maximum spacing of 100 feet. The signs include warning of the potential presence of MEC, state the restriction against intrusive activities, and provide a contact number.

- Education program for future refuge visitors, staff, and volunteers. The program includes informational pamphlets and a safety video warning of the potential presence of MEC and presenting examples of MEC that were or may be found at the sites.

The Final ROD for LHAAP-001-R-01 and LHAAP-003-R-01 was issued in August 2016 and documents the final selected remedy for the sites (Shaw, August 2016). The ROD found that although the removal actions provided an effective solution for reducing risk of exposure by reducing the potential for any direct contact with MEC or material potentially presenting explosive hazard (MPPEH), there is the potential that some MEC remains. A summary of the LUC remedial action objective (RAO) and the selected remedy for LHAAP-001-R-01 and LHAAP-003-R-01, identified in the Final ROD, is presented in the following sections.

1.4 Land Use Control Remedial Action Objective

The LUC RAO developed for LHAAP-001-R-01 and LHAAP-003-R-01, as outlined in the ROD (Shaw, August 2016) is:

- Protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action.

1.5 Land Use Control Selected Remedy

The LUC selected remedy for MEC at LHAAP-001-R-01 and LHAAP-003-R-01 is comprised of the following elements:

- LUC to prohibit residential use
- LUC to restrict land use to non-residential
- LUC to restrict intrusive activities (e.g., digging)
- Signage to convey MEC warning
- Education Program

The Educational Program materials, including pamphlets and video, were delivered to the U. S. Fish and Wildlife Service (USFWS) in hard copy and electronic form as part of the Site Specific Final Report for the MEC Removal Action (EOD Technology, Inc. [EODT], September 2009). There is no recurring requirement associated with this LUC and it will not be discussed further in this document.

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2 LAND USE CONTROL MONITORING

The RAO for LHAAP-001-R-01 and LHAAP-003-R-01 is protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action. The duration for the LUCs specified in the MEC ROD for this purpose must remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety. Per the Final ROD, the LUCs' performance objectives are to:

- Prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Restrict land use to non-residential
- Prohibit intrusive activities such as digging or any other activity which could result in explosive safety risk.
- Maintain existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas.

For portions of LHAAP-001-R-01 and LHAAP-003-R-01 subject to LUCs that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of LUCs, and coordinate with federal, state, and local governments and owners and occupants of properties subject to LUCs. The Army remains responsible for ensuring that the remedy remains protective of human health and safety. This section presents the maintenance of monitoring of the LUCs at both sites in accordance with the final LUC Remedial Design/Remedial Action Construction Report (U.S. Army, May 2018).

2.1 Maintenance of Existing MEC Warning Signs

MEC warning signs have been installed at the perimeter of LHAAP-001-R-01 and LHAAP-003-R-01 (64 signs at each site), that serve as a physical demarcation of the controlled areas. The signs have visibility from one sign to the next with a maximum spacing of 100 feet. The signs include warning of potential presence of MEC and state the restriction against intrusive activities. **Figures 1-2** and 1-3 present the location of the MEC warring signs. These signs are required to be visually inspected annually, or as needed, to ensure they remain intact, undamaged, and visible from one sign to the next. Maintenance is conducted, as needed, and may include the following activities:

- Mowing and brush clearing around MEC warning signs to ensure that they are visible from one sign location to the next sign location.
- Rehanging/affixing MEC warning signs or replacing MEC warning sign(s), if they become damaged or illegible.
- Repairing existing MEC warning sign posts, which may require the reestablishment of the concrete base or post replacement.

2.2 Monitoring Activities

The [Long-Term Management] LTM Inspection and Maintenance Checklists for both LHAAP-001-R-01 and LHAAP-003-R-01, completed in 2018, are provided in **Appendix A.** No repairs were required. The checklists are the same as including the LUC Remedial Design/Remedial Action Construction Report (U.S. Army, May 2018).

Appendix A also contains the annual certification from the remedial design to document that no LUC-restricted activities have been authorized and that LHAAP-001-R-01 and LHAAP-003-R-01 conditions and use are consistent with the LUCs. **Appendix B** contains a photograph log of the LUCs at each site.

3 CONCLUSIONS

The LUCs are being maintained and managed in accordance with the ROD and the LUC Remedial Design/Remedial Action Construction Report as follows:

- Neither site is being developed or used for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Land use is non-residential
- No digging or any other activity which could result in explosive safety risk was noted during the LUC inspections completed.
- Existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas are being maintained per the ROD.

Mowing and brush clearing around MEC warning signs was completed on October 29, 2018, to ensure that they are visible from one sign location to the next sign location. No repairs to signage was needed for either site during the LUC inspections.

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4 REFERENCES

EODT. September 2009. *Final Site-Specific Final Report for MEC Removal Action at the Former Longhorn Army Ammunition Plant LHAAP-001 (Site 27) and LHAAP-003-R (Site 54) Longhorn Army Ammunition Plant, Karnack, Texas*.

Shaw. August 2016. *Final Record of Decision LHAAP-001-R (South Test Area/Bomb Test Area) and LHAAP-003-R (Ground Signal Test Area) Longhorn Army Ammunition Plant, Karnack, Texas*.

U.S. Army. April 2004. *Memorandum of Agreement Between the Department of the Army and the Department of the Interior for the Interagency Transfer of Lands at the Longhorn Army Ammunition Plant for the Caddo Lake National Wildlife Refuge, Harrison County, Texas.*

U.S. Army. May 2018. *Final Land Use Control Remedial Design/Remedial Action Construction Report LHAAP-001-R-01 and LHAAP-003-R-01, Longhorn Army Ammunition Plant.*

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FIGURES

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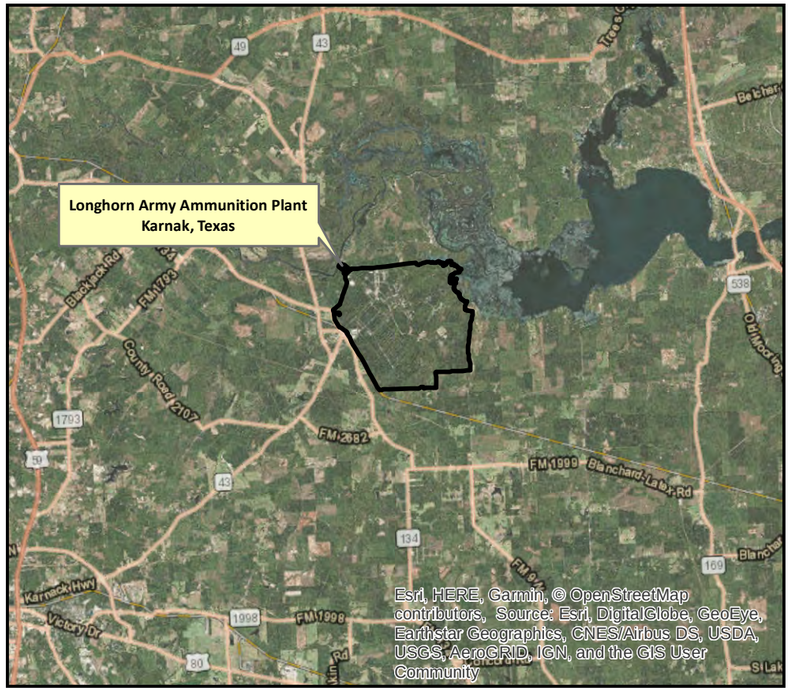
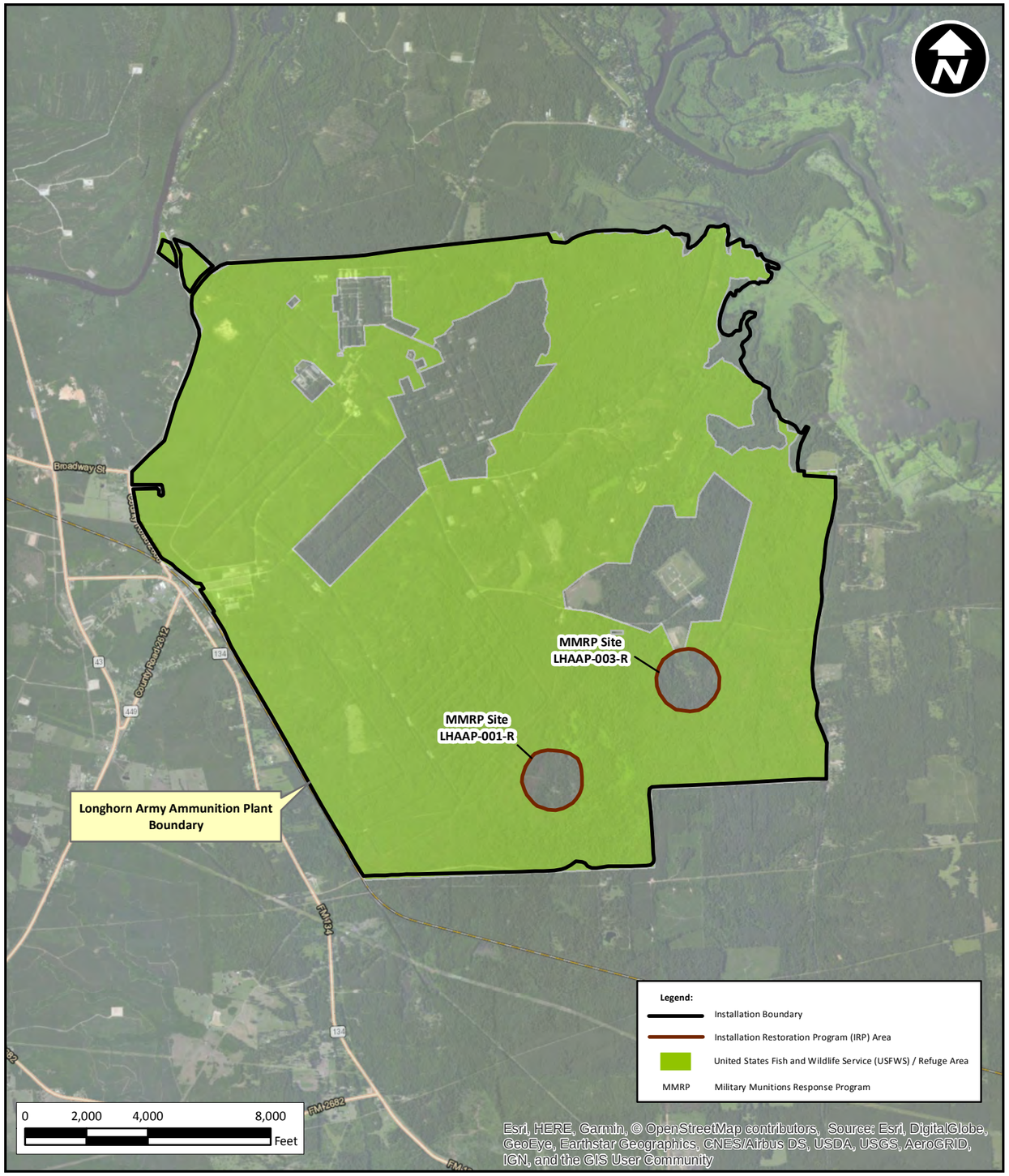
Figures

00920203







LHAAP Site Map

Figure 1-1

Year 1 Land Use Control Monitoring Report for
LHAAP-001-R-01 AND LHAAP-003-R-01
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 12/6/2018

SCALE: As Shown

PROJECT NO: NWO1312.0150.014.0001.04

bhate

Figure 1-2. LHAAP-001-R-01 Site Location Map with LUC Boundaries
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTHING	EASTING
SIGN 01	3613016.8	393564.7
SIGN 02	3612986.7	393560.5
SIGN 03	3612956.4	393563.9
SIGN 04	3612926.3	393568.9
SIGN 05	3612896.4	393574.2
SIGN 06	3612866.9	393581.7
SIGN 07	3612839.1	393594.1
SIGN 08	3612812.3	393608.5
SIGN 09	3612785.5	393622.9
SIGN 10	3612762.6	393643.0
SIGN 11	3612742.6	393666.0
SIGN 12	3612724.3	393690.2
SIGN 13	3612708.3	393716.2
SIGN 14	3612695.4	393743.8
SIGN 15	3612683.8	393771.9
SIGN 16	3612675.9	393801.4
SIGN 17	3612672.1	393831.6
SIGN 18	3612670.0	393862.0
SIGN 19	3612669.6	393883.3
SIGN 20	3612679.6	393912.1
SIGN 21	3612684.9	393942.1
SIGN 22	3612693.6	393971.2
SIGN 23	3612701.9	393987.0
SIGN 24	3612726.1	394005.4
SIGN 25	3612738.3	394033.3
SIGN 26	3612738.6	394049.3
SIGN 27	3612758.1	394072.6
SIGN 28	3612780.3	394093.6
SIGN 29	3612805.5	394110.5
SIGN 30	3612832.3	394124.9
SIGN 31	3612860.1	394137.3
SIGN 32	3612889.8	394143.8
SIGN 33	3612919.7	394149.8
SIGN 34	3612949.8	394154.5
SIGN 35	3612980.2	394156.4
SIGN 36	3613010.6	394154.7
SIGN 37	3613040.9	394152.8
SIGN 38	3613071.3	394151.2
SIGN 39	3613100.5	394142.6
SIGN 40	3613126.7	394127.2
SIGN 41	3613150.7	394108.5
SIGN 42	3613173.2	394088.0
SIGN 43	3613195.6	394069.6
SIGN 44	3613211.6	394044.1
SIGN 45	3613216.5	394024.9
SIGN 46	3613221.1	394007.6
SIGN 47	3613232.4	393979.3
SIGN 48	3613244.4	393951.4
SIGN 49	3613253.3	393922.2
SIGN 50	3613257.5	393892.0
SIGN 51	3613259.5	393861.7
SIGN 52	3613261.2	393831.2
SIGN 53	3613256.8	393801.1
SIGN 54	3613253.2	393770.8
SIGN 55	3613242.5	393742.2
SIGN 56	3613227.5	393715.8
SIGN 57	3613213.7	393688.6
SIGN 58	3613195.8	393664.0
SIGN 59	3613169.6	393648.3
SIGN 60	3613147.5	393627.4
SIGN 61	3613121.6	393611.4
SIGN 62	3613094.3	393597.9
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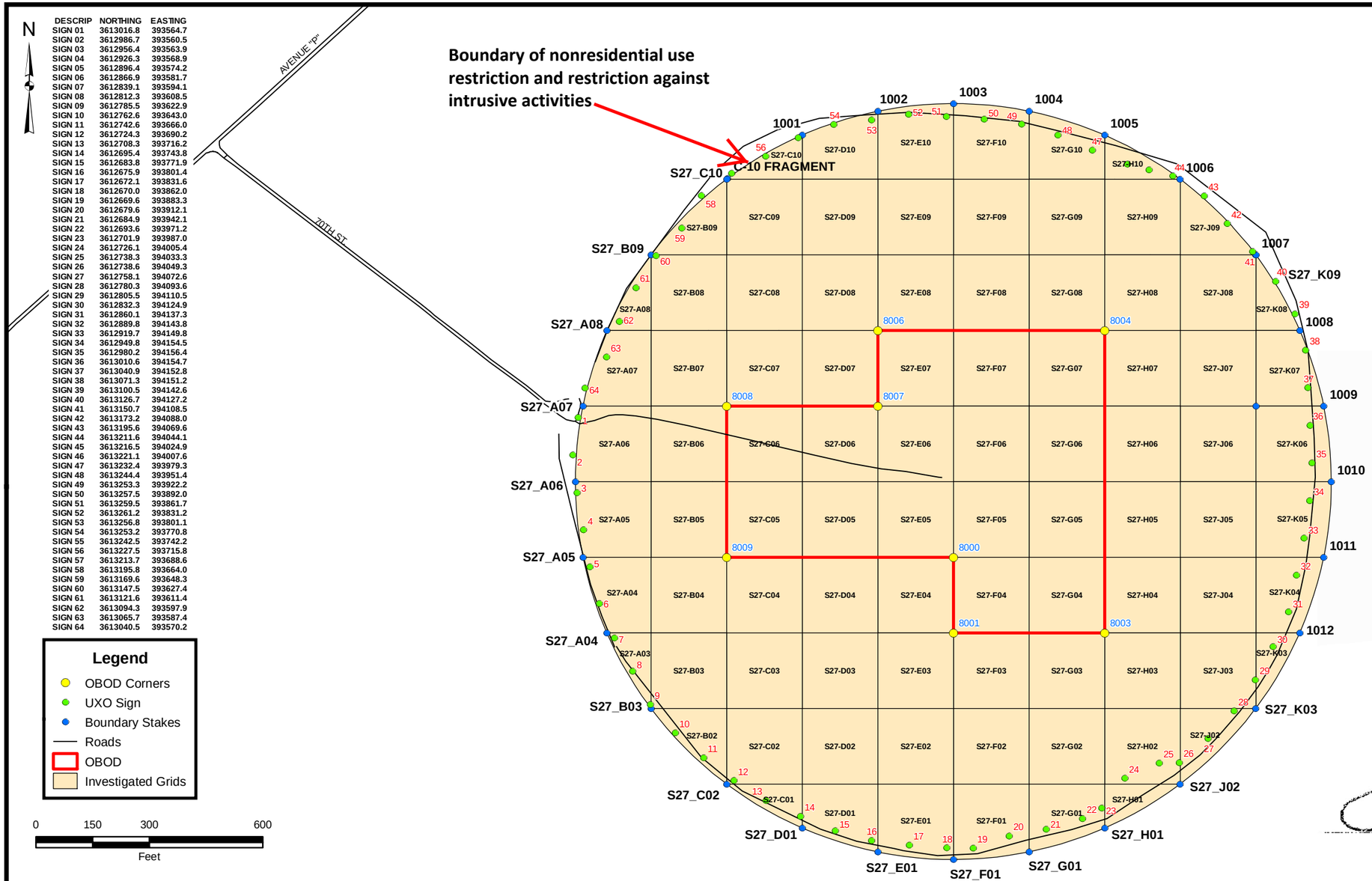


DESCRIP	NORTHING	EASTING
8000	3612904.2	393867.3
8001	3612843.2	393867.3
8003	3612843.2	393989.2
8004	3613087.0	393989.2
8006	3613087.1	393806.4
8007	3613026.1	393806.4
8008	3613026.1	393684.4
8009	3612904.2	393684.4

DESCRIP	NORTHING	EASTING
1001	393745.4	3613244.5
1002	393806.4	3613263.8
1003	393867.3	3613269.9
1004	393928.3	3613263.8
1005	393989.2	3613244.5
1006	394050.1	3613209.0
1007	394111.0	3613148.0
1008	394146.5	3613087.0
1009	394165.8	3613026.1
1010	394171.9	3612965.1
1011	394165.8	3612904.2
1012	394146.5	3612843.2
C-10 FRAGMENT	393685.2	3613209.4
S27_A04	393588.0	3612843.2
S27_A05	393568.7	3612904.2
S27_A06	393562.5	3612965.1
S27_A07	393568.6	3613026.1
S27_A08	393587.9	3613087.1
S27_B03	393623.5	3612782.3
S27_B09	393623.5	3613148.0
S27_C02	393684.6	3612721.3
S27_C10	393684.4	3613209.0
S27_D01	393745.4	3612685.9
S27_E01	393806.4	3612666.6
S27_F01	393867.3	3612660.5
S27_G01	393928.3	3612666.7
S27_H01	393989.3	3612686.0
S27_J02	394049.9	3612721.3
S27_K03	394110.9	3612782.3
S27_K07	394111.2	3613026.1
S27_K09	394111.2	3613147.9



I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 23, 2008.

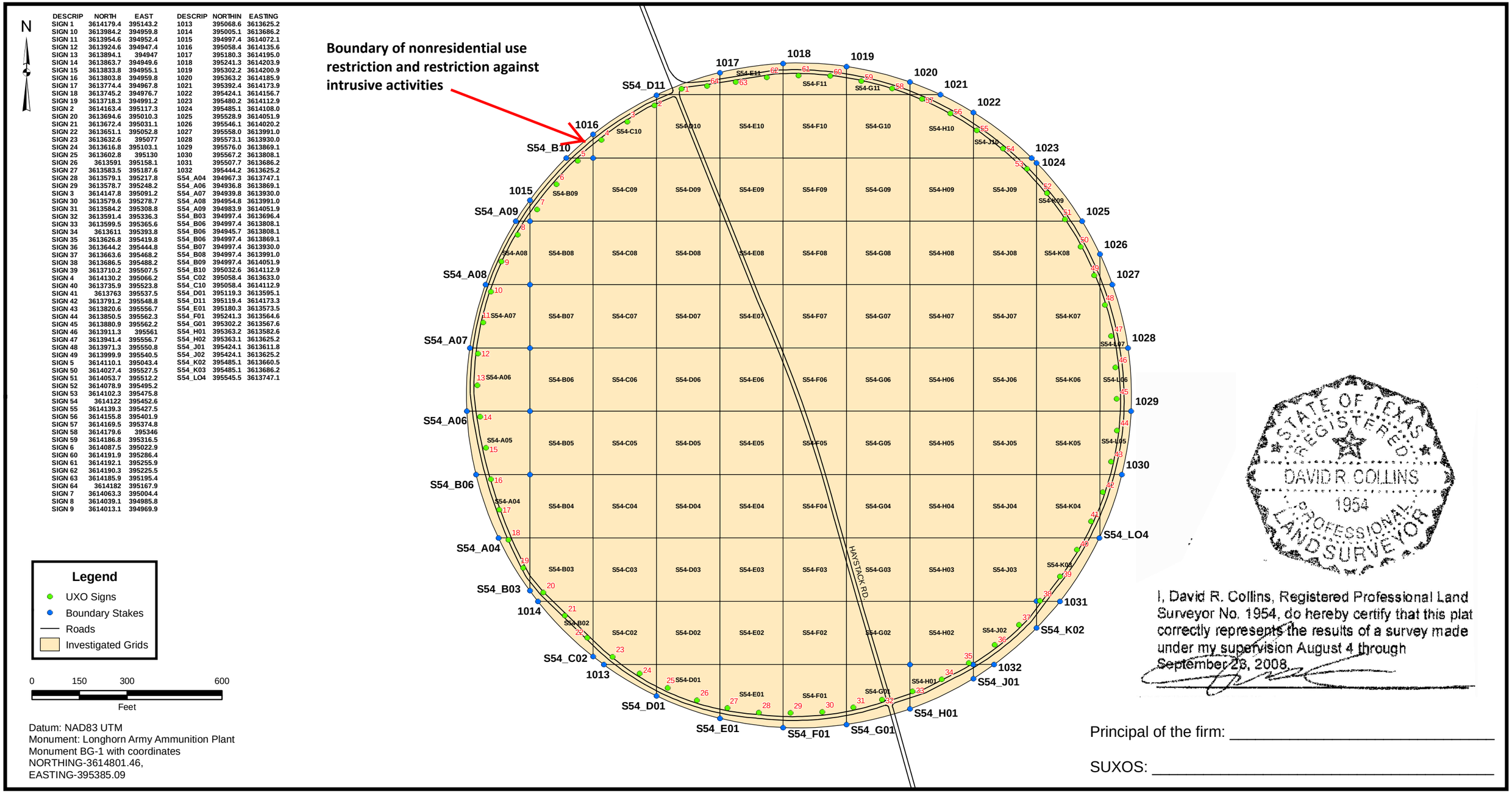
Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant Monument BG-1 with coordinates NORTHING-3614801.46, EASTING-395385.09

Principal of the firm: _____

SUXOS: _____

Figure 1-3. LHAAP-003-R-01 Site Location Map with LUC Boundaries
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTH	EAST	DESCRIP	NORTHIN	EASTING
SIGN 1	3614179.4	395143.2	1013	395068.6	3613625.2
SIGN 10	3613984.2	394959.8	1014	395005.1	3613686.2
SIGN 11	3613954.6	394952.4	1015	394997.4	3614072.1
SIGN 12	3613924.6	394947.4	1016	395058.4	3614135.6
SIGN 13	3613894.1	394947	1017	395180.3	3614195.0
SIGN 14	3613863.7	394949.6	1018	395241.3	3614203.9
SIGN 15	3613833.8	394955.1	1019	395302.2	3614200.9
SIGN 16	3613803.8	394959.8	1020	395363.2	3614185.9
SIGN 17	3613774.4	394967.8	1021	395392.4	3614173.9
SIGN 18	3613745.2	394976.7	1022	395424.1	3614156.7
SIGN 19	3613718.3	394991.2	1023	395480.2	3614112.9
SIGN 2	3614163.4	395117.3	1024	395485.1	3614108.0
SIGN 20	3613694.6	395010.3	1025	395528.9	3614051.9
SIGN 21	3613672.4	395031.1	1026	395546.1	3614020.2
SIGN 22	3613651.1	395052.8	1027	395558.0	3613991.0
SIGN 23	3613632.6	395077	1028	395573.1	3613930.0
SIGN 24	3613616.8	395103.1	1029	395576.0	3613869.1
SIGN 25	3613602.8	395130	1030	395567.2	3613808.1
SIGN 26	3613591	395158.1	1031	395507.7	3613686.2
SIGN 27	3613583.5	395187.6	1032	395444.2	3613625.2
SIGN 28	3613579.1	395217.8	S54_A04	394967.3	3613747.1
SIGN 29	3613578.7	395248.2	S54_A06	394936.8	3613869.1
SIGN 3	3614147.8	395091.2	S54_A07	394939.8	3613930.0
SIGN 30	3613579.6	395278.7	S54_A08	394954.8	3613991.0
SIGN 31	3613584.2	395308.8	S54_A09	394983.9	3614051.9
SIGN 32	3613591.4	395336.3	S54_B03	394997.4	3613696.4
SIGN 33	3613599.5	395365.6	S54_B06	394997.4	3613808.1
SIGN 34	3613611	395393.8	S54_B06	394945.7	3613808.1
SIGN 35	3613626.8	395419.8	S54_B06	394997.4	3613869.1
SIGN 36	3613644.2	395444.8	S54_B07	394997.4	3613930.0
SIGN 37	3613663.6	395468.2	S54_B08	394997.4	3613991.0
SIGN 38	3613686.5	395488.2	S54_B09	394997.4	3614051.9
SIGN 39	3613710.2	395507.5	S54_B10	395032.6	3614112.9
SIGN 4	3614130.2	395066.2	S54_C02	395058.4	3613633.0
SIGN 40	3613735.9	395523.8	S54_C10	395058.4	3614112.9
SIGN 41	3613763	395537.5	S54_D01	395119.3	3613595.1
SIGN 42	3613791.2	395548.8	S54_D11	395119.4	3614173.3
SIGN 43	3613820.6	395556.7	S54_E01	395180.3	3613573.5
SIGN 44	3613850.5	395562.3	S54_F01	395241.3	3613564.6
SIGN 45	3613880.9	395562.2	S54_G01	395302.2	3613567.6
SIGN 46	3613911.3	395561	S54_H01	395363.2	3613582.6
SIGN 47	3613941.4	395556.7	S54_H02	395363.1	3613625.2
SIGN 48	3613971.3	395550.8	S54_J01	395424.1	3613611.8
SIGN 49	3613999.9	395540.5	S54_J02	395424.1	3613625.2
SIGN 5	3614110.1	395043.4	S54_K02	395485.1	3613660.5
SIGN 50	3614027.4	395527.5	S54_K03	395485.1	3613686.2
SIGN 51	3614053.7	395512.2	S54_LO4	395545.5	3613747.1
SIGN 52	3614078.9	395495.2			
SIGN 53	3614102.3	395475.8			
SIGN 54	3614122	395452.6			
SIGN 55	3614139.3	395427.5			
SIGN 56	3614155.8	395401.9			
SIGN 57	3614169.5	395374.8			
SIGN 58	3614179.6	395346			
SIGN 59	3614186.8	395316.5			
SIGN 6	3614087.5	395022.9			
SIGN 60	3614191.9	395286.4			
SIGN 61	3614192.1	395255.9			
SIGN 62	3614190.3	395225.5			
SIGN 63	3614185.9	395195.4			
SIGN 64	3614182	395167.9			
SIGN 7	3614063.3	395004.4			
SIGN 8	3614039.1	394985.8			
SIGN 9	3614013.1	394969.9			



Legend

- UXO Signs
- Boundary Stakes
- Roads
- Investigated Grids

0 150 300 600

Feet

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant
Monument BG-1 with coordinates
NORTHING-3614801.46,
EASTING-395385.09

STATE OF TEXAS
REGISTERED
DAVID R. COLLINS
1954
PROFESSIONAL
LAND SURVEYOR

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 28, 2008.

Principal of the firm: _____

SUXOS: _____

APPENDIX A

LTM INSPECTION AND MAINTENANCE CHECKLISTS AND LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

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LTM Inspection and Maintenance Checklist

General Information	
Project Name	LTM Inspection and Maintenance, LHAAP-001-R and LHAAP-003-R MMRP, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	BHATE ENVIRONMENTAL
Inspector's Name	SCOTT BEESINGER
Inspector's Title	SENIOR TECHNICIAN
Inspector's Signature	Scott Beesinger
Inspector's Contact Number	(903) 930-6193
Inspection Date	12/5/18
Type of Inspection	☐ Quarterly ☐ Semiannual ☒ Annual ☐ Prior to forecast rain ☐ After rain event ☐ Other_____

	Description	Yes	No	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
A. Perimeter Signage						
A.1	Are there any damaged signs?		X			
A.2	Are there any missing signs?		X			
A.3	Are all signs legible?	X	~~X~~ SB			
A.4	Is perimeter boundary mowed?	X				

A.5	Are signs visible from one sign to the next sign?	X				
B. LUC Boundary						
B.1	Is the LUC Boundary identifiable?	X				
C. Dig and Intrusive Activities restriction						
C.1	Any observed digging activities or similar intrusive activities within the site boundaries?		X			

Note: Annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed onsite.

LTM Inspection and Maintenance Checklist

General Information	
Project Name	LTM Inspection and Maintenance, LHAAP-001-R and LHAAP-003-R MMRP, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	BHATE ENVIRONMENTAL
Inspector's Name	Scott Beesinger
Inspector's Title	Senior Technician
Inspector's Signature	Scott Beesinger
Inspector's Contact Number	(903) 930-6193
Inspection Date	12/5/18
Type of Inspection	☐ Quarterly ☐ Semiannual ☒ Annual ☐ Prior to forecast rain ☐ After rain event ☐ Other_____

	Description	Yes	No	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
A. Perimeter Signage						
A.1	Are there any damaged signs?		X			
A.2	Are there any missing signs?		X			
A.3	Are all signs legible?	X				
A.4	Is perimeter boundary mowed?	X				

A.5	Are signs visible from one sign to the next sign?	X				
B. LUC Boundary						
B.1	Is the LUC Boundary identifiable?	X				
C. Dig and Intrusive Activities restriction						
C.1	Any observed digging activities or similar intrusive activities within the site boundaries?		X			

Note: Annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed onsite.

LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

In accordance with the LUC Plan dated _____ for LHAAP-001-R and LHAAP-003-R, an inspection of the sites was conducted by BHATE ENVIRONMENTAL on 12/5/18.

A summary of land use control mechanisms is as follows:

- Land use restrictions - restrict land use to non-residential.
- Integrity of LUC signage by ensuring signs are present, legible and have visibility from one sign to the next.

A summary of compliance with land use and restriction covenants is as follows:

- The posted signs are properly maintained at LHAAP-001-R and LHAAP-003-R.
- No digging or intrusive activities have taken place within the boundaries identified for LHAAP-001-R and LHAAP-003-R.
- No land use other than non-residential.
- Pamphlets and safety awareness video are being used to educate visitors.

I, the undersigned, do document that the inspections were performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: 12/5/18

Name: Scott Bessinger

Signature: Scott Bessinger

Completed annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed on site.

APPENDIX B

PHOTOGRAPH LOG

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Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log December 2018



Photo 1: LHAAP-001-R-01 Signage in place
and readable



Photo 2: LHAAP-001-R-01 Pathway
around the site

Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log December 2018



Photo 3: LHAAP-003-R-01 Signage in place and readable



Photo 4: LHAAP-003-R-01 Pathway around the site