# LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

# ADMINISTRATIVE RECORD

**Volume 13**

**2020**

**Bate Stamp Numbers**
**00971050 – 00972650**

**Prepared for**

**Department of the Army**
**Longhorn Army Ammunition Plant**

**1976–2020**

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

VOLUME 13

2020

A. Title: Minutes – Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP), June 24, 2020
Author(s): Department of the Army
Recipient: All Parties
Date: July 15, 2020
Date Stamp: 00971050 – 00971066

B. Title: Minutes – Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting, Longhorn Army Ammunition Plant (LHAAP), January 16, 2020
Author(s): Department of the Army
Recipient: All Parties
Date: July 17, 2020
Date Stamp: 00971067 – 00971113

C. Title: Report – Draft Final Fifth Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area), Longhorn Army Ammunition Plant, Karnack, Texas, July 2020
Author(s): Department of the Army
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality
Date: July 23, 2020
Date Stamp: 00971114 – 00972424

D. Title: Report – Final 2019 Remedial Action Operation Report, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas, July 2020
Author(s): Department of the Army
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality
Date: July 24, 2020
Date Stamp: 00972425 – 00972650

| | |
|---|---|
| **Subject:** | **Final Monthly Managers' Meeting (MMM), Longhorn Army Ammunition Plant (LHAAP)** |
| **Location of Meeting:** | **Teleconference** |
| **Date of Meeting:** | **24 June 2020– 10:30 Central Daylight Time (CDT)** |

**Attendees:**

| | |
|---|---|
| Army BRAC: | Rose M. Zeiler (RMZ) |
| USEPA: | Kent Becher (KB)-USGS Liaison |
| AEC: | Andrew Maly (AM) |
| TCEQ: | April Palmie (AP) |
| USACE: | Aaron Williams (AW) |
| Bhate: | Kim Nemmers (KN) |
| APTIM: | Praveen Sivastav (PS) and Bill Foss (BF) |
| USFWS: | Paul Bruckwicki (PB) |

**Defense Environmental Restoration Program (DERP) Performance-Based Remediation (PBR) Update**

**Army –**RMZ said that an in-person Restoration Advisory Board (RAB) meeting is not likely due to spikes in COVID-19 cases. RMZ said that a remote meeting should be suggested to the RAB. AW mentioned sending the slides. AP stated that she agreed that providing the slides is a good idea. PS stated that internet access can be inconsistent and could cause issues along with feedback if attendees are not muted. BF suggested a media where the presenter is able to mute the other callers. Following further discussion, RMZ summarized that we will do a conference call and provide slides. KN said that she will reach out to the RAB Co-Chair.

**Groundwater Treatment Plant (GWTP) –**KN stated that the Granular Activated Carbon (GAC) vessel continues to be flushed until the water is clear. KN also discussed the trichloroethene (TCE) was being detected below the maximum contaminant level (MCL) of 5 micrograms per liter. KN then clarified that effluent continued to be discharged to the Harrison Bayou. KN discussed the TCEQ Compliance Evaluation Investigation letter and that updates on progress to address the comments would be provided. KN stated that the corrosion of the tanks would be addressed in late July or early August. KN stated that the media capture tank would be replaced with an in line strainer in July. AP mentioned that there was a separate TCEQ letter about waste to which KN concurred and stated that had been addressed also. AP requested a copy of the TCEQ letter for her information and also that she be included in the copy line of responses to TCEQ from other departments for LHAAP.

**June 2020 Groundwater Sampling –** KN stated that groundwater sampling was completed at LHAAP-18/24 and was ongoing at LHAAP-58. KN stated that LHAAP-50 will be sampled next, early in July followed by LHAAP-16.

**Additional Well Installation at LHAAP-46-** PS stated that the additional well at LHAAP-46 was installed and developed in the last week of May 2020. The monitoring well is scheduled for sampling in July. BF said the well did have water.

PS stated that well abandonment is now planned for the end of July 2020.

PS stated that the plan is to finish up the excavation at LHAAP-03 at the end of July/early August. Similarly, PS indicated that backfilling of the verified clean excavations at LHAAP-17 is planned for the end of July/early August.

KN asked everyone to refer to the Document and Issues Tracking Table dated 17 June 2020.

- **Task 1** (Project Management) – KN stated that minutes from the May 2020 MMM had been finalized and that the Restoration Advisory Board (RAB) is planned for 15 July 2020 as previously discussed. KN asked if everyone is still good with 15 July 2020 for the RAB to which no one had concerns.
- **Task 3** (LHAAP-03) – PS said that no documents are in process. Field work is still on hold awaiting drier weather in late July/early August.
- **Task 4** (LHAAP-04) – PS said that the validated data is included in this meeting package for Year 1, Quarter 2. BF indicated that perchlorate is below the Protective Concentration Level (PCL). Previously impacted wells are showing low oxidation reduction potentials (ORPs) for the most part. PS said that the Remedial Action Completion Report (RACR) is in internal review and should be provided in June or early July 2020.
- **Task 5** (LHAAP-12) – PS said that the Remedial Action Operation (RA-O) Report was submitted to Regulators on 18 June 2020.
- **Task 6** (LHAAP-16) – PS said the LHAAP-16 RACR is internal review similar to LHAAP-04 and may slip into July 2020 before submitting to the Regulators.
- **Task 7** (LHAAP-17) – PS explained that the backfilling of the clean excavations and creating a berm will occur when the site conditions are drier in late July/early August. PS discussed that the Discharge Criteria Tech Memo is not on the Document and Issue Tracking Table, but will be provided to the Regulators in July. The memo is currently in internal review.
- **Task 9** (LHAAP-37) – No documents are in progress for LHAAP-37, but the year 3 second semi-annual sampling event was performed in May 2020. The validated data is provided in this MMM. The Year 3 RA-O Report will be prepared now that the November 2019 and May 2020 data are available.
- **Task 10** (LHAAP-46) –BF stated that Year 5 Annual RA-O Report was submitted to Regulators on 10 June 2020. PS said that comments were received from AP, but no comments have been received to date from the USEPA. KB clarified that USEPA comments were still not received to which PS confirmed but emphasized that the report had only been submitted two weeks prior. PS stated that the Year 6 Annual RA-O Report is being prepared and will include the data from the new well to be sampled in July.
- **Task 11** (LHAAP-50) –PS stated that the RACR is in progress for submittal in late July 2020. BF stated that the Year 5 Annual RA-O Report received USEPA approval and one comment from the AP. Based upon the comment received by AP, the report was able to go final on 4 June 2020 and will be placed into the AR.
- **Task 12** (LHAAP-58) –KN stated that the final sampling event as part of the Year 6 RA-O Report was being completed currently. KN stated that the June 2020 validated data would be provided for the August 2020 MMM.
- **Task 13** (LHAAP-67) –PS stated that the Year 6 Report is in internal review for submittal in late July 2020.
- **Task 14** (LHAAP-001-R and –003-R) - KN stated that no documents were in process.
- **Task 16** (GWTP) **–**KN stated that the 1st Quarter 2020 report was submitted to Regulators on 9 June 2020 and only contained data from the GWTP. AP reminded everyone about prior discussions regarding using Level 2 versus Level 4 data packages. KN stated that she would bring this up with USEPA at the next MMM. KN asked AW if reducing the package type for the GWTP samples only was acceptable to which AW concurred.
- **Task 17** (LHAAP-18/24) – KN stated that the validated data from the LHAAP-18/24 sampling that was just completed in June 2020 would be available for the August 2020 MMM.

- **Task 18** (Surface Water) – KN stated that the next quarterly surface water sampling event would be completed between July and September 2020.
- **Task 19** (LUC Management Plan) – Not discussed.
- **Administrative Record (AR) –**PS stated that the AR for October through December 2019 is posted on the website. PS said that we will continue to upload as AR quarterly cutoff submittals become available.

**Update on other DERP Sites:**

- **LHAAP 18/24 and LHAAP-29** –AW stated that the Records of Decision (RODs) for the two sites needed to be placed into the AR.
- **LHAAP-47** – AW stated that the work plans will be put into the AR and that Addendum No. 2 Post Screening Investigation (PSI) is being conducted. AW stated that most of the monitoring wells are were sampled except for 47WW25. AW stated that the direct push technology (DPT) borings and associated samples were completed and that four wells were to be installed. However, four more wells were going to be installed and that discussion on where to place those wells would be required.
- **Five Year Review (FYR) -** AW stated that the FYR is going into the AR.

**Contract updates**:

- **LHAAP-18/24 and 29:** AW stated a proposal for the RD at LHAAP-18/24 and LHAAP-29 was received and will require negotiations. AW said that the award is likely to be in mid-July 2020.
- **LHAAP-17:** AW said request for proposal (RFP) package is with Contracting. AW stated that Contracting plans to provide a draft RFP package either today or tomorrow. AW indicated that the final solicitation should be provided to bidders in July 2020. A site visit will then be scheduled and AW has approval to do the travel.

**USFWS Update–** PB said that USFWS is still working from home. KN asked whether USFWS was requesting hard copies and Compact Discs (CDs) of all version of LHAAP documents. PB confirmed that he does want all versions of the documents.

**USGS –** KB asked if he can get on the electronic mail (e-mail) list for when documents are submitted to the USEPA. KN deferred to RM and AW. RMZ agreed to add KB to document transmittals via e-mail. Action item to provide KB with the emails on LHAAP-12 Annual RA-O Report, LHAAP-46 Annual RA-O Report, and the 1st Quarter 2020 GWTP Report which had recently been sent to the Regulators (completed by APTIM 6/24/20).

**Schedule Next Managers' Meeting**

The next MMM will be held on Wednesday 15 July 2020 at 10:30 am CDT via conference call.

Meeting concluded at approximately 11:17 am CDT.

**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 |
| DPT | Direct Push Technology |
| e-mail | Electronic Mail |
| GAC | Granular Activated Carbon |
| GWTP | Groundwater Treatment Plant |
| KB | Kent Becher |
| KN | Kim Nemmers |
| LHAAP | Longhorn Army Ammunition Plant |
| LUC | Land Use Control |
| MCL | Maximum contaminant level |
| MMM | Monthly Managers' Meeting |
| PB | Paul Bruckwicki |
| PBR | Performance-Based Remediation |
| PCL | Protective Concentration Level |
| PSI | Post-Screening Investigation |
| RAB | Restoration Advisory Board |
| RACR | Remedial Action Completion Report |
| RA-O | Remedial Action – Operation |
| RAWP | Remedial Action Work Plan |
| RD | Remedial Design |
| RFP | Request for Proposal |
| RMZ | Rose M. Zeiler |
| ROD | Record of Decision |
| TCE | Trichloroethene |
| TCEQ | Texas Commission on Environmental Quality |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |

**LHAAP Data Validated**
**June 2020 MMM Validated Data**

| | |
|---|---|
| **GWTP Effluent** | *Weekly Perchlorate Sampling – April 2020*<br>Perchlorate (6850) |
| **GWTP Effluent** | *Weekly, Bi-Weekly, and Monthly Sampling – April 2020*<br>Ammonia (350.3)<br>Ortho-Phosphate (365.3)<br>Total Organic Carbon (SM5310C)<br>VOC (8260C)<br>Metals (6020A)<br>Hexavalent Chromium (7196A)<br>1,4-Dioxane (8270D-SIM)<br>Anions (9056) |
| **GWTP Influent** | *Monthly Sampling – April 2020*<br>Metals (6020A)<br>Perchlorate (6850)<br>Hexavalent Chromium (7196A) |
| **LHAAP-04** | *May 2020 Remedial Performance Monitoring (Year 1, Quarter 2)*<br>Perchlorate (EPA 6850)<br>Alkalinity (SM2320B)<br>Nitrate, Nitrite, and Sulfate (SW9056A)<br>Total Organic Carbon (SM5310B)<br>Field Measurements (Dissolved Oxygen, Oxidation Reduction Potential, Ferrous Iron, and pH) |
| **LHAAP-35B(37)** | *May 2020 Remedial Action-Operation Monitoring (Year 3, Semiannual #2)*<br>Volatile Organic Compounds (8260C)<br>Dissolved Gases (RSK-175)<br>Nitrate, Chloride, and Sulfate (SW9056A)<br>Total Organic Carbon (SM5310B)<br>Field Measurements (Dissolved Oxygen, Oxidation Reduction Potential, Ferrous Iron, and pH) |

## GWTP Weekly/Effluent Perchlorate Sampling - April 2020

| Location ID: Sample Date: | Units | Daily Maximum Conc | INF pond (PCL) | LH18/24-SP650_040720_BIX 4/7/20 | LH18/24-SP650_040720_BIX 4/7/20 | LH18/24-SP650_041620_BIX 4/16/20 | LH18/24-SP650_042120_BIX 4/21/20 | LH18/24-SP650_042820_BIX 4/28/20 |
|---|---|---|---|---|---|---|---|---|
| **Location Description** | | | | **Collected from a spigot on the discharge of effluent TK-650.** | | | | |
| | | | | Weekly | Monthly EFF | Weekly | Weekly | Weekly |
| **Perchlorate (6850)** | | | | | | | | |
| Perchlorate | µg/L | 589 | 17 | < 0.0500 U | < 0.0500 U | < 0.0500 U | < 0.0500 U | < 0.0500 U |

µg/L - micrograms per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

BIX - before ion exchange

## GWTP Weekly Sampling - April 2020

| Location ID:<br>Sample Date: | Units | Daily Maximum Conc | LH18/24-SP650_040720<br>4/7/20 | LH18/24-SP650_041620<br>4/16/20 | LH18/24-SP650_042120<br>4/21/20 | LH18/24-SP650_042820<br>4/28/20 |
|---|---|---|---|---|---|---|
| **Location Description** | | | **GWTP–Collected from a spigot on the discharge of effluent TK-650. Sampled Weekly.** | | | |
| **Ammonia as N (350.3)** | | | | | | |
| Ammonia as N | mg/L | NV | **1.6** | **20.0** | **4.6** | **21** |
| **Ortho-Phosphate (365.3)** | | | | | | |
| Ortho-Phosphate | mg/L | NV | **0.125** | **1.11** | **0.792** | **1.96** |
| **Organic Carbon (SM5310C)** | | | | | | |
| Total Organic Carbon (TOC) | mg/L | NV | **2.72** | **3.12** | **2.41** | **2.18** |

mg/L - milligrams per liter

NV - No Value

**GWTP Bi-Weekly Sampling - April 2020**

| Location ID: / Sample Date: | Units | (Bayou) Daily Maximum Conc | (INF pond) MCL | LH18/24-SP650_041620 4/16/20 | LH18/24-SP650_042820 4/28/20 |
|---|---|---|---|---|---|
| **Location Description** | | | | **GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled Biweekly.** | |
| **Volatile Organic Compounds (8260C)** | | | | | |
| 1,1,1-Trichloroethane | µg/L | 7,230 | 200 | < 0.50 U | < 0.50 U |
| 1,1,2-Trichloroethane | µg/L | 216.9 | 5 | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | µg/L | 14,032 | NV | < 0.50 U | < 0.50 U |
| 1,1-Dichloroethene | µg/L | 253 | 7 | < 0.50 U | < 0.50 U |
| 1,2-Dichloroethane | µg/L | 181 | 5 | **0.73 J** | **1.1** |
| 1,2-Dichloropropane | µg/L | 5 | 5 | < 1.0 U | < 1.0 U |
| Acetone | µg/L | 2,395 | NV | < 1.0 U | < 1.0 U |
| Benzene | µg/L | 181 | 5 | < 0.50 U | < 0.50 U |
| Carbon tetrachloride | µg/L | 181 | 5 | < 1.0 U | < 1.0 U |
| Chlorobenzene | µg/L | 47,180 | 100 | < 1.0 U | < 1.0 U |
| Chloroform | µg/L | 3,615 | NV | < 0.50 U | < 0.50 U |
| cis-1,2-Dichloroethene | µg/L | NV | 70 | **21** | **28** |
| Ethylbenzene | µg/L | 57,025 | 700 | < 1.0 U | < 1.0 U |
| m,p-Xylene | µg/L | 83.6 | NV | < 1.0 U | < 1.0 U |
| Methylene chloride | µg/L | 1,699 | 5 | < 1.0 U | < 1.0 U |
| o-Xylene | µg/L | 83.6 | NV | < 1.0 U | < 1.0 U |
| Styrene | µg/L | 5,987 | 100 | < 1.0 U | < 1.0 U |
| Tetrachloroethene | µg/L | 180.7 | 5 | < 1.0 U | < 1.0 U |
| Toluene | µg/L | 4,189 | 10 | < 0.50 U | < 0.50 U |
| Trichloroethene | µg/L | 181 | 5 | **3.3** | **4.4** |
| Vinyl chloride | µg/L | 72 | 2 | < 0.50 U | < 0.50 U |
| **Anions (9056)** | | | | | |
| Chloride | mg/L | NV | NV | **295** | **294** |
| Sulfate | mg/L | NV | NV | **37.1** | **41.3** |

µg/L - micrograms per liter

mg/L - milligrams per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

NV - No Value

## GWTP Monthly Effluent Sampling - April 2020

| Location ID:<br>Sample Date: | Units | Daily Maximum Conc | (INF pond) MCL | LH18/24-SP650_040720<br>4/7/20 |
|---|---|---|---|---|
| **Location Description** | | | | **GWTP – Collected from a spigot on the discharge of effluent TK-650. Sampled monthly** |
| **Volatile Organic Compounds (8260C)** | | | | |
| 1,1,1-Trichloroethane | µg/L | 7,230 | 200 | < 0.50 U |
| 1,1,2-Trichloroethane | µg/L | 216.9 | 5 | < 1.0 U |
| 1,1-Dichloroethane | µg/L | 14,032 | NV | < 0.50 U |
| 1,1-Dichloroethene | µg/L | 253 | 7 | < 0.50 U |
| 1,2-Dichloroethane | µg/L | 181 | 5 | **1.0** |
| 1,2-Dichloropropane | µg/L | 5 | 5 | < 1.0 U |
| Acetone | µg/L | 2,395 | NV | < 1.0 U |
| Benzene | µg/L | 181 | 5 | < 0.50 U |
| Carbon tetrachloride | µg/L | 181 | 5 | < 1.0 U |
| Chlorobenzene | µg/L | 47,180 | 100 | < 1.0 U |
| Chloroform | µg/L | 3,615 | NV | < 0.50 U |
| cis-1,2-dichloroethene | µg/L | NV | 70 | **23** |
| Ethylbenzene | µg/L | 57,025 | 700 | < 1.0 U |
| m,p-Xylene | µg/L | 83.6 | NV | < 1.0 U |
| Methylene chloride | µg/L | 1,699 | 5 | < 1.0 U |
| o-Xylene | µg/L | 83.6 | NV | < 1.0 U |
| Styrene | µg/L | 5,987 | 100 | < 1.0 U |
| Tetrachloroethene | µg/L | 180.7 | 5 | < 1.0 U |
| Toluene | µg/L | 4,189 | 10 | < 0.50 U |
| Trichloroethene | µg/L | 181 | 5 | **4.4** |
| Vinyl chloride | µg/L | 72 | 2 | < 0.50 U |
| **Metals (6020A)** | | | | |
| Barium | mg/L | 2 | 2 | **0.0926** |
| Lead | mg/L | 0.0046 | 0.015 | < 0.00100 U |
| Selenium | mg/L | 0.012 | 0.05 | < 0.00250 U |
| Silver | mg/L | 0.003 | 0.1 | < 0.000500 U |
| **Hexavalent Chromium (7196A)** | | | | |
| Hexavalent Chromium | mg/L | 0.1244 | NV | < 0.0100 U |
| **Semi-Volatile Organic Compounds (8270D SIM)** | | | | |
| 1,4-Dioxane | µg/L | 134.2 | NV | **33** |

µg/L - micrograms per liter

mg/L - milligrams per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

NV - no value

## GWTP Monthly Influent Sampling - April 2020

| Location ID: / Sample Date: | Units | LH18/24-SP140_040720 / 4/7/20 |
|---|---|---|
| **Location Description** | | **GWTP – Collected from a spigot on the influent to TK-140. Sampled Monthly.** |
| **Metals (6020A)** | | |
| Selenium | mg/L | < 0.00250 U |
| Silver | mg/L | < 0.000500 U |
| **Hexavalent Chromium (7196A)** | | |
| Hexavalent Chromium | mg/L | < 0.0100 UJ |
| **Perchlorate (6850)** | | |
| Perchlorate | µg/L | **10,600** |

mg/L - milligrams per liter

µg/L - micrograms per liter

U- Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.

UJ - estimated non-detect due to quality control discrepancies

# LHAAP-04 Remedial Performance Monitoring
## Year 1, Quarter 2
## May 2020

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Location Code | 04WW01 | | 04WW02 | | 04WW04 | | 04WW05 | | 04WW06 | | 04WW07 | | 04WW08 | |
| | | Sample ID | 04WW01-200504 | | 04WW02-200504 | | 04WW04-200504 | | 04WW05-200505 | | 04WW06-200504 | | 04WW07-200505 | | 04WW08-200504 | |
| | | Sample Date | 5/4/2020 | | 5/4/2020 | | 5/4/2020 | | 5/5/2020 | | 5/4/2020 | | 5/5/2020 | | 5/4/2020 | |
| | | Location Description: | Shallow Zone, Downgradient of Plume | | Shallow Zone, Upgradient of Plume | | Shallow Zone, Within Plume Area | | Shallow Zone, Within Plume Area | | Shallow Zone, Cross-Gradient to Plume Area | | Shallow Zone, Downgradient of Plume Area | | Intermediate Zone, Slightly Upgradient of Plume Area | |
| Analyte | Units | PCL | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| Field Measurements | | | | | | | | | | | | | | | | |
| Dissolved oxygen | mg/L | NV | 0.04 | | 0.04 | | 1.5 | | 0.22 | | 0.08 | | 2.12 | | 0.26 | |
| Ferrous Iron | mg/L | NV | NM | | NM | | NM | | 2.55 | | NM | | 0.97 | | NM | |
| Oxidation-Reduction Potential | mV | NV | -135 | | 76 | | -111 | | -90 | | 106 | | -314 | | -160 | |
| pH | Std. Units | NV | 6.47 | | 6.38 | | 6.54 | | 6.44 | | 6.94 | | 6.99 | | 7.37 | |
| General Chemistry (SM2320B/SM5310B/SW9056A) | | | | | | | | | | | | | | | | |
| Alkalinity | mg/L | NV | NA | | NA | | NA | | 448 | | NA | | 865 | | NA | |
| Nitrate | mg/L | NV | NA | | NA | | NA | | < 0.1 | U | NA | | 0.0318 | J | NA | |
| Nitrite | mg/L | NV | NA | | NA | | NA | | < 0.1 | U | NA | | < 0.1 | U | NA | |
| Sulfate | mg/L | NV | NA | | NA | | NA | | 61.5 | | NA | | 1.78 | | NA | |
| Total organic carbon | mg/L | NV | NA | | NA | | NA | | 2.64 | | NA | | 25 | | NA | |
| Perchlorate (EPA 6850) | | | | | | | | | | | | | | | | |
| Perchlorate | µg/L | 17 | < 0.05 | U | < 0.05 | U | < 0.05 | U | < 0.05 | U | < 0.05 | U | 3.51 | | 9.29 | |
| Notes: | | | | | | | | | | | | | | | | |

Blue Highlighting Indicates concentrations above the PCL

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.

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

ID - identification

mV - millivolts

Std. Units - standard pH units

mg/L - milligrams per liter

ug/L - micrograms per liter

NV - No value, PCL values are only shown for constituents of concern

Val Qual - validation qualfier

NM - not measured

NA - not analyzed

**LHAAP-04 Remedial Performance Monitoring**
**Year 1, Quarter 2**
**May 2020**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Location Code | 04WW09 | | 04WW10 | | | | 04WW11 | | LHSMW01 | | LHSMW02 | | | |
| | | Sample ID | 04WW09-200505 | | 04WW10-200505 | | 04WW10-200505-FD | | 04WW11-200504 | | LHSMW01-200504 | | LHSMW02-200504 | | LHSMW02-200504-FD | |
| | | Sample Date | 5/5/2020 | | 5/5/2020 | | 5/5/2020 | | 5/4/2020 | | 5/4/2020 | | 5/4/2020 | | 5/4/2020 | |
| | | Location Description: | Shallow Zone, Within Treatment Area | | Shallow Zone, Within Treatment Area | | | | Shallow Zone, Downgradient of Plume | | Shallow Zone, Cross-Gradient to Plume Area | | Shallow Zone, Downgradient to Plume Area | | Shallow Zone, Downgradient to Plume Area | |
| Analyte | Units | PCL | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| Field Measurements | | | | | | | | | | | | | | | | |
| Dissolved oxygen | mg/L | NV | 0.04 | | 2.72 | | 2.72 | | 0.14 | | 0.05 | | 0.56 | | 0.56 | |
| Ferrous Iron | mg/L | NV | 3.3 | | 1.08 | | 1.08 | | NM | | NM | | NM | | NM | |
| Oxidation-Reduction Potential | mV | NV | -16 | | -286 | | -286 | | 136 | | 96 | | 170 | | 170 | |
| pH | Std. Units | NV | 4.98 | | 6.85 | | 6.85 | | 7.23 | | 6.57 | | 5.97 | | 5.97 | |
| General Chemistry (SM2320B/SM5310B/SW9056A) | | | | | | | | | | | | | | | | |
| Alkalinity | mg/L | NV | 328 | | 690 | | 696 | | NA | | NA | | NA | | NA | |
| Nitrate | mg/L | NV | 0.0732 | J | < 0.1 | U | < 0.1 | U | NA | | NA | | NA | | NA | |
| Nitrite | mg/L | NV | 1.77 | | < 0.1 | U | < 0.1 | U | NA | | NA | | NA | | NA | |
| Sulfate | mg/L | NV | 2 | | 924 | | 918 | | NA | | NA | | NA | | NA | |
| Total organic carbon | mg/L | NV | 334 | | 4.37 | | 4.52 | | NA | | NA | | NA | | NA | |
| Perchlorate (EPA 6850) | | | | | | | | | | | | | | | | |
| Perchlorate | µg/L | 17 | 11.1 | | < 0.05 | U | < 0.05 | U | < 0.05 | U | < 0.05 | U | < 0.05 | U | < 0.05 | U |

Notes:

Blue Highlighting Indicates concentrations above the PCL

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.

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

ID - identification

mV - millivolts

Std. Units - standard pH units

mg/L - milligrams per liter

ug/L - micrograms per liter

NV - No value, PCL values are only shown for constituents of concern

Val Qual - validation qualfier

NM - not measured

NA - not analyzed

**LHAAP-35B(37) Remedial Action-Operation Monitoring**
**Year 3, Semiannual Event #2**
**May 2020**

| | | | Location Code | 35BSW01 | | 35BSW02 | | 35BWW01 | | | | 35BWW04 | | 35BWW05 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample ID | 35BSW01-200511 | | 35BSW02-200511 | | 35BWW01-200506 | | 35BWW01-200506-FD | | 35BWW04-200506 | | 35BWW05-200506 | |
| | | | Sample Date | 5/11/2020 | | 5/11/2020 | | 5/6/2020 | | 5/6/2020 | | 5/6/2020 | | 5/6/2020 | |
| | | | Location Description: | Surface Water Location, Upgradient | | Surface Water Location, Downgradient | | Shallow zone, unimpacted, within site boundary | | Shallow zone, unimpacted, within site boundary | | Shallow zone, impacted, within site boundary | | Shallow zone, impacted, within site boundary | |
| Analyte | Units | MCL | | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| Field Measurements | | | | | | | | | | | | | | | |
| Dissolved oxygen | mg/L | NV | | NM | | NM | | 1.5 | | 1.5 | | 3.1 | | 0.04 | |
| Ferrous Iron | mg/L | NV | | NM | | NM | | NM | | NM | | 0.68 | | NM | |
| Oxidation-Reduction Potential | mV | NV | | NM | | NM | | 238 | | 238 | | 147 | | 79 | |
| pH | Std. Units | NV | | NM | | NM | | 5.10 | | 5.10 | | 6.38 | | 6.10 | |
| Dissolved Gases (RSK175) | | | | | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | | NA | | NA | | NA | | NA | | 46000 | | NA | |
| Ethane | µg/L | NV | | NA | | NA | | NA | | NA | | < 0.47 | U | NA | |
| Ethylene | µg/L | NV | | NA | | NA | | NA | | NA | | < 0.55 | U | NA | |
| Methane | µg/L | NV | | NA | | NA | | NA | | NA | | < 1 | U | NA | |
| General Chemistry (9056A/SM5310C) | | | | | | | | | | | | | | | |
| Chloride | mg/L | NV | | NA | | NA | | NA | | NA | | 4.52 | | NA | |
| Nitrate | mg/L | NV | | NA | | NA | | NA | | NA | | 0.132 | | NA | |
| Sulfate | mg/L | NV | | NA | | NA | | NA | | NA | | 26.6 | | NA | |
| Total organic carbon | mg/L | NV | | NA | | NA | | NA | | NA | | 1.96 | | NA | |
| Volatile Organic Compounds (8260C) | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | µg/L | 7 | | < 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 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U |
| Tetrachloroethene | µg/L | 5 | | < 1 | U | < 1 | U | < 1 | U | < 1 | U | 6.4 | | 2.4 | |
| Trichloroethene | µg/L | 5 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | 0.71 | J | 7.3 | |
| Vinyl chloride | µg/L | 2 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U |

Notes:

Blue Highlighting Indicates concentrations above the MCL

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

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, shown for contaminants of concern

Val Qual - validation qualifier

mg/L - milligrams per liter

ug/L - micrograms per liter

Std. Units - standard pH units

mV - millivolts

ID - identification

NV - MCL value not established and/or analyte is not a contaminant of concern

NA - not analyzed

NM - not measured

FD - field duplicate

**LHAAP-35B(37) Remedial Action-Operation Monitoring**
**Year 3, Semiannual Event #2**
**May 2020**

| | | | Location Code | | 35BWW07 | | 35BWW08 | | 35BWW09 | | 35BWW10 | | 35BWW11 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample ID | | 35BWW07-200511 | | 35BWW08-200506 | | 35BWW09-200511 | | 35BWW10-200506 | | 35BWW11-200506 | |
| | | | Sample Date | | 5/11/2020 | | 5/6/2020 | | 5/11/2020 | | 5/6/2020 | | 5/6/2020 | |
| | | | Location Description: | | Shallow zone, unimpacted downgradient | | Shallow zone, unimpacted, within site boundary | | Shallow zone, impacted outside site boundary | | Shallow, impacted, within site boundary | | Shallow zone, unimpacted, within site boundary | |
| Analyte | Units | MCL | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| Field Measurements | | | | | | | | | | | | | | |
| Dissolved oxygen | mg/L | NV | 0.59 | | 4.66 | | 0.4 | | 1.51 | | 0.08 | | | |
| Ferrous Iron | mg/L | NV | NM | | 0.81 | | NM | | NM | | NM | | | |
| Oxidation-Reduction Potential | mV | NV | 158 | | 102 | | 151 | | 101 | | 120 | | | |
| pH | Std. Units | NV | 6.91 | | 7.15 | | 7.65 | | 6.73 | | 6.17 | | | |
| Dissolved Gases (RSK175) | | | | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | NA | | 11000 | | NA | | NA | | NA | | | |
| Ethane | µg/L | NV | NA | | < 0.47 | U | NA | | NA | | NA | | | |
| Ethylene | µg/L | NV | NA | | < 0.55 | U | NA | | NA | | NA | | | |
| Methane | µg/L | NV | NA | | < 1 | U | NA | | NA | | NA | | | |
| General Chemistry (9056A/SM5310C) | | | | | | | | | | | | | | |
| Chloride | mg/L | NV | NA | | 2.38 | | NA | | NA | | NA | | | |
| Nitrate | mg/L | NV | NA | | 0.137 | | NA | | NA | | NA | | | |
| Sulfate | mg/L | NV | NA | | 15.9 | | NA | | NA | | NA | | | |
| Total organic carbon | mg/L | NV | NA | | 1.14 | J | NA | | NA | | NA | | | |
| Volatile Organic Compounds (8260C) | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | µg/L | 7 | < 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 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U |
| Tetrachloroethene | µg/L | 5 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U |
| Trichloroethene | µg/L | 5 | < 0.5 | U | < 0.5 | U | 42 | | 0.64 | J | < 0.5 | U | | |
| Vinyl chloride | µg/L | 2 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | | |

Notes:

Blue Highlighting Indicates concentrations above the MCL

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

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, shown for contaminants of concern

Val Qual - validation qualifier

mg/L - milligrams per liter

ug/L - micrograms per liter

Std. Units - standard pH units

mV - millivolts

ID - identification

NV - MCL value not established and/or analyte is not a contaminant of concern

NA - not analyzed

NM - not measured

FD - field duplicate

**LHAAP-35B(37) Remedial Action-Operation Monitoring**
**Year 3, Semiannual Event #2**
**May 2020**

| | | | Location Code | 35BWW12 | | | | 35BWW13 | | 35BWW14 | | 35BWW15 | | 35BWW16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample ID | 35BWW12-200506 | | 35BWW12-200506-FD | | 35BWW13-200507 | | 35BWW14-200507 | | 35BWW15-200507 | | 35BWW16-200507 | |
| | | | Sample Date | 5/6/2020 | | 5/6/2020 | | 5/7/2020 | | 5/7/2020 | | 5/7/2020 | | 5/7/2020 | |
| | | | Location Description: | Shallow zone, impacted, within site boundary | | Shallow zone, impacted, within site boundary | | Shallow zone, unimpacted, crossgradient | | Shallow zone, impacted, within site boundary | | Shallow zone, impacted, within site boundary | | Shallow zone, impacted, outside site boundary | |
| Analyte | Units | MCL | | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| Field Measurements | | | | | | | | | | | | | | | |
| Dissolved oxygen | mg/L | NV | | 0.04 | | 0.04 | | 0.08 | | 0.23 | | 0.07 | | 0.03 | |
| Ferrous Iron | mg/L | NV | | 0.94 | | 0.94 | | NM | | 0.29 | | NM | | NM | |
| Oxidation-Reduction Potential | mV | NV | | 142 | | 142 | | 315 | | 157 | | 168 | | 198 | |
| pH | Std. Units | NV | | 6.19 | | 6.19 | | 4.59 | | 6.58 | | 6.36 | | 5.59 | |
| Dissolved Gases (RSK175) | | | | | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | | 94000 | | 88000 | | NA | | 29000 | | NA | | NA | |
| Ethane | µg/L | NV | | < 0.47 | U | < 0.47 | U | NA | | < 0.47 | U | NA | | NA | |
| Ethylene | µg/L | NV | | < 0.55 | U | < 0.55 | U | NA | | < 0.55 | U | NA | | NA | |
| Methane | µg/L | NV | | 0.93 | J | 0.81 | J | NA | | < 1 | U | NA | | NA | |
| General Chemistry (9056A/SM5310C) | | | | | | | | | | | | | | | |
| Chloride | mg/L | NV | | 7.21 | | 7.23 | | NA | | 18 | | NA | | NA | |
| Nitrate | mg/L | NV | | < 0.1 | U | < 0.1 | U | NA | | 0.394 | | NA | | NA | |
| Sulfate | mg/L | NV | | 41.2 | | 39.4 | | NA | | 73.7 | | NA | | NA | |
| Total organic carbon | mg/L | NV | | 1.4 | | 1.25 | | NA | | 0.83 | J- | NA | | NA | |
| Volatile Organic Compounds (8260C) | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | µg/L | 7 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | 3.6 | | 0.87 | J | 0.61 | J |
| cis-1,2-Dichloroethene | µg/L | 70 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | 1.2 | | < 0.5 | U | < 0.5 | U |
| Tetrachloroethene | µg/L | 5 | | 8.5 | | 8.5 | | < 1 | U | 40 | | 13 | | 9.9 | |
| Trichloroethene | µg/L | 5 | | 0.61 | J | 0.72 | J | < 0.5 | U | 14 | | 7.7 | | 3.3 | |
| Vinyl chloride | µg/L | 2 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U |

Notes:

Blue Highlighting Indicates concentrations above the MCL

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

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, shown for contaminants of concern

Val Qual - validation qualifier

mg/L - milligrams per liter

ug/L - micrograms per liter

Std. Units - standard pH units

mV - millivolts

ID - identification

NV - MCL value not established and/or analyte is not a contaminant of concern

NA - not analyzed

NM - not measured

FD - field duplicate

**LHAAP-35B(37) Remedial Action-Operation Monitoring**
**Year 3, Semiannual Event #2**
**May 2020**

| | | | Location Code | 35BWW17 | | 35BWW18 | | 35BWW19 | | 35BWW20 | | 35BWW20 | | 35BWW23 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample ID | 35BWW17-200507 | | 35BWW18-200511 | | 35BWW19-200511 | | 35BWW20-200511 | | 35BWW20-200511-FD | | 35BWW23-200507 | |
| | | | Sample Date | 5/7/2020 | | 5/11/2020 | | 5/11/2020 | | 5/11/2020 | | 5/11/2020 | | 5/7/2020 | |
| | | | Location Description: | Shallow zone, impacted, within 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 zone, unimpacted, outside site boundary | |
| Analyte | Units | MCL | | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| Field Measurements | | | | | | | | | | | | | | | |
| Dissolved oxygen | mg/L | NV | | 0.07 | | 0.37 | | 1.19 | | 3.26 | | 3.26 | | 1.83 | |
| Ferrous Iron | mg/L | NV | | NM | | NM | | NM | | NM | | NM | | 0.55 | |
| Oxidation-Reduction Potential | mV | NV | | 269 | | 177 | | 183 | | 190 | | 190 | | 191 | |
| pH | Std. Units | NV | | 4.98 | | 6.60 | | 6.62 | | 6.37 | | 6.37 | | 6.39 | |
| Dissolved Gases (RSK175) | | | | | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | | NA | | NA | | NA | | NA | | NA | | 42000 | |
| Ethane | µg/L | NV | | NA | | NA | | NA | | NA | | NA | | < 0.47 | U |
| Ethylene | µg/L | NV | | NA | | NA | | NA | | NA | | NA | | < 0.55 | U |
| Methane | µg/L | NV | | NA | | NA | | NA | | NA | | NA | | < 1 | U |
| General Chemistry (9056A/SM5310C) | | | | | | | | | | | | NA | | | |
| Chloride | mg/L | NV | | NA | | NA | | NA | | NA | | NA | | 21.1 | |
| Nitrate | mg/L | NV | | NA | | NA | | NA | | NA | | NA | | < 0.1 | U |
| Sulfate | mg/L | NV | | NA | | NA | | NA | | NA | | NA | | 83.8 | |
| Total organic carbon | mg/L | NV | | NA | | NA | | NA | | NA | | NA | | 0.52 | |
| Volatile Organic Compounds (8260C) | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | µg/L | 7 | | < 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 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U |
| Tetrachloroethene | µg/L | 5 | | < 1 | U | < 1 | U | < 1 | U | 12 | | 12 | | < 1 | U |
| Trichloroethene | µg/L | 5 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | 2.9 | | 2.9 | | < 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 |

Notes:

Blue Highlighting Indicates concentrations above the MCL

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

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, shown for contaminants of concern

Val Qual - validation qualifier

mg/L - milligrams per liter

ug/L - micrograms per liter

Std. Units - standard pH units

mV - millivolts

ID - identification

NV - MCL value not established and/or analyte is not a contaminant of concern

NA - not analyzed

NM - not measured

FD - field duplicate

**LHAAP-35B(37) Remedial Action-Operation Monitoring**
**Year 3, Semiannual Event #2**
**May 2020**

| | | | Location Code | 35BWW24 | | 35BWW25 | | 35BWW26 | | LHSMW58 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample ID | 35BWW24-200507 | | 35BWW25-200507 | | 35BWW26-200506 | | LHSMW58-200511 | |
| | | | Sample Date | 5/7/2020 | | 5/7/2020 | | 5/6/2020 | | 5/11/2020 | |
| | | | Location Description: | Shallow zone, unimpacted, outside site boundary | | Shallow zone, impacted, outside site boundary | | Shallow zone, unimpacted, within site boundary | | Shallow zone, impacted, within site boundary | |
| Analyte | Units | MCL | | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| Field Measurements | | | | | | | | | | | |
| Dissolved oxygen | mg/L | NV | | 3.37 | | 2.55 | | 0.35 | | 3.02 | |
| Ferrous Iron | mg/L | NV | | NM | | NM | | 0.67 | | NM | |
| Oxidation-Reduction Potential | mV | NV | | 182 | | 173 | | 180 | | 207 | |
| pH | Std. Units | NV | | 6.45 | | 6.53 | | 5.83 | | 6.22 | |
| Dissolved Gases (RSK175) | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | | NA | | NA | | 87000 | | NA | |
| Ethane | µg/L | NV | | NA | | NA | | < 0.47 | U | NA | |
| Ethylene | µg/L | NV | | NA | | NA | | < 0.55 | U | NA | |
| Methane | µg/L | NV | | NA | | NA | | < 1 | U | NA | |
| General Chemistry (9056A/SM5310C) | | | | | | | | | | | |
| Chloride | mg/L | NV | | NA | | NA | | 31 | | NA | |
| Nitrate | mg/L | NV | | NA | | NA | | 0.133 | | NA | |
| Sulfate | mg/L | NV | | NA | | NA | | 25.3 | | NA | |
| Total organic carbon | mg/L | NV | | NA | | NA | | 2.14 | J | NA | |
| Volatile Organic Compounds (8260C) | | | | | | | | | | | |
| 1,1-Dichloroethene | µg/L | 7 | | 0.54 | J | < 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 |
| Tetrachloroethene | µg/L | 5 | | < 1 | U | < 1 | U | < 1 | U | 14 | |
| Trichloroethene | µg/L | 5 | | 2.3 | | 13 | | < 0.5 | U | 0.88 | J |
| Vinyl chloride | µg/L | 2 | | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U |

Notes:

Blue Highlighting Indicates concentrations above the MCL

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

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, shown for contaminants of concern

Val Qual - validation qualifier

mg/L - milligrams per liter

ug/L - micrograms per liter

Std. Units - standard pH units

mV - millivolts

ID - identification

NV - MCL value not established and/or analyte is not a contaminant of concern

NA - not analyzed

NM - not measured

FD - field duplicate

**Longhorn Army Ammunition Plant**
**Restoration Advisory Board**
**1st Quarter 2020 Meeting**

**Subject: Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting**
**Longhorn Army Ammunition Plant (LHAAP)**
**Location of Meeting: Karnack Community Center, Karnack, Texas**
**Date of Meeting: January 16, 2020, 6:00 PM Central Standard Time (CST)**

**Meeting Participants:**

| | |
|---|---|
| Army BRAC: | Rose M. Zeiler |
| USACE: | Aaron Williams and Scottie Fiehler |
| USAEC: | Andrew Maly |
| Bhate: | Kim Nemmers, Scott Beesinger, and Sally Smith |
| APTIM: | Bill Foss |
| USEPA Region 6: | Janetta Coats, Bill Rhotenberry, and Kent Becher-USGS Liaison |
| TCEQ: | April Palmie |
| USFWS: | Paul Bruckwicki |
| RAB: | Present: Judy VanDeventer, Deon Hall, John Fortune, Charles Dixon, Richard LeTourneau, Tom Walker, Nigel R. Shivers, and Sharron McAvoy<br>Absent: Terry Britt; John Pollard, Jr. |
| Public: | Laura-Ashley Overdyke (Executive Director of the Caddo Lake Institute [CLI]); George Rice (CLI); Joell Beesinger; Jack Richards, Sr; James Pratt |

An agenda for the RAB meeting, a color copy of the Bhate Environmental Associates, Inc. (Bhate) slide presentation, and handouts (see list at end of meeting minutes) were provided for meeting attendees.

**Welcome and Introduction**

Ms. Judy VanDeventer, the RAB Co-Chair, called the meeting to order at 6:00 pm. Ms. VanDeventer asked new RAB attendees to stand up. Mr. Jack Richards is a first time attendee and he lives by the lake. Mr. James Pratt said he worked at LHAAP early on in the remediation process and has been away for a while but he wanted to stop in and see how things are going. Mr. Scottie Fiehler said that he is with United States Army Corps of Engineers (USACE) and that he had been to a RAB meeting years ago and is Aaron William's supervisor. Mr. Andrew Maly said that he is with the United States Army Environmental Command (USAEC) and has been to the RAB many times for the USAEC, but was attending this meeting because Ms. Amanda Sherman, who had been assigned the project for USAEC, was being promoted. Ms. Rose M. Zeiler introduced Mr. Bill Rhotenberry with the United States Environmental Protection Agency (USEPA) as the person who is replacing Mr. Rich Mayer, who retired in December 2019. Ms. Sally Smith, the Bhate Safety Director, then gave out Bhate's 2019 Safety Excellence award to Mr. Scott Beesinger, Site Manager for LHAAP.

Ms. Zeiler explained the purpose of the RAB is to promote community awareness and obtain constructive community review and comments on environmental restoration activities. Ms. Zeiler stated the importance of informing the community and that there is a website (www.longhornaap.com) where information is available such as activities and links for the sites.

Ms. Zeiler explained that the final LHAAP documents are placed into the AR quarterly, but critical documents will be available on the website by site once finalized for public access going forward. Ms. Janetta Coats asked if the Army is still sending documents to the information repository at the Marshall library. Ms. Zeiler confirmed that finalized documents are sent to the library but that the library only wants compact discs (CDs). Ms. Zeiler asked that she be notified if a Technical Assistance Grant (TAG) or RAB member needs a copy of a document.

Ms. Zeiler announced that Ms. Carol Fortune had resigned from the RAB and asked that names of persons interested in joining the RAB be passed along. Ms. VanDeventer said she had spoken with Mr. Terry Britt and that he still wanted to be on the RAB but that he was having trouble getting to the meeting due to personal issues.

Ms. Zeiler asked if there were any questions or concerns about the October 2019 RAB meeting minutes. Mr. John Fortune made a motion to accept the October 2019 meeting minutes. Ms. Sharron McAvoy seconded the motion.

**Defense Environmental Restoration**

*Overview of Sites*

Ms. Kim Nemmers discussed the field work completed since the previous RAB Meeting. Ms. Nemmers said that the remedial action for the soil excavation at LHAAP-03 was on hold due to rainfall events and that one side wall required additional excavation and then the site would be backfilled. Ms. Nemmers explained that remedial action operation (RA-O) sampling was completed at two sites (LHAAP-58 and LHAAP-18/24) in December and that RA-O sampling is completed to evaluate remedies that are in place. Ms. Nemmers said that in-situ bioremediation (ISB) injections were completed at LHAAP-04 and LHAAP-16 and that Mr. Bill Foss would discuss further on the next slides.

*LHAAP-04*

Mr. Foss provided an update on the injection at LHAAP-04. Mr. Foss explained that injections were completed at 25 locations at the site, which started in October and finished in November 2019. Mr. Foss said that a total of 37,100 gallons of emulsified vegetable oil (EVO), nutrients, and water solution were injected into the locations at LHAAP-04. Mr. Foss said that the injections were shallow (from 6 to 20 feet below ground surface [bgs]) and some daylighting occurred. Mr. Foss explained that the injection pressure and flow was lowered, which stopped the daylighting. Mr. Foss explained that daylighting is when the injectate comes back up to the surface. Mr. Foss explained that this was often observed around tree roots at LHAAP-04.

Mr. Foss stated that the first round of design effectiveness monitoring was completed. Mr. Foss explained that this monitoring was to evaluate total organic carbon (TOC) in the aquifer around the wells in the treatment area (distribution of the injectate). Mr. Foss explained that the first round of performance monitoring would be completed in February 2020 to evaluate the effect of the injectate from the contaminants. Mr. Richards asked if the grey buildings shown on the map were still present. Mr. Foss said that with the exception of the building to the south, which is the fire station, buildings are not present except for the foundations. Mr. Pratt asked about

the statement in the slides that says injected solution reached several of the most contaminated wells during injection, confirming radius of influence. Mr. Foss said that the solution actually rose up and popped off well caps on a couple of the monitoring wells, which was verification and required slowing of flow. Mr. Foss said that milky white material was also observed in many of the wells, which also confirmed distribution. Mr. Nigel Shivers asked if this site is where the power plant was located. Mr. Foss confirmed that the site is just on the south side of where the power plant was located.

*LHAAP-16*

Mr. Foss then discussed LHAAP-16 and explained that this is the site where installation of monitoring wells took place across the creek, which was completed last summer. Mr. Foss said that the injections started in September 2019 and were completed a few days before Christmas. Mr. Foss said that a little over 84,000 gallons of EVO, nutrients, and bio-augmentation culture (added bacteria) were injected at LHAAP-16. Mr. Foss explained that the injections included bio-augmentation to help degrade the contaminants in the groundwater. Mr. Foss said that this material was placed into 78 direct push injection locations as well as 22 injection wells across the site. Mr. Foss mentioned that a couple of areas had injections with recirculation by pumping to make sure there was distribution of the injectate. Mr. Foss stated that there were no real issues with daylighting because the injections were deeper. Mr. Foss said that the bayou was monitored throughout the injection event. Mr. Foss said that the first round of samples to evaluate design effectiveness had been completed except for Landfill Biobarrier #2 and that the results were being evaluated. If necessary, Mr. Foss said another round of sampling would be completed to evaluate the distribution of the injectate. Mr. Foss said that the first quarterly performance sampling event to evaluate the effect of the injection on the contamination will be in March 2020.

*LHAAP-67*

Mr. Foss explained that two new monitoring wells were installed, per the Five Year Review (FYR) to define the edge of the plume. Mr. Foss said that these two new wells were sampled in the latest sampling round completed in October 2019 and no contamination was detected. Mr. Foss concluded that this sampling met the intent of the FYR comment and that the plume was fully delineated.

*Documents in Process*

Ms. Nemmers reiterated what Ms. Zeiler had said about the documents being placed into the AR when final and that critical documents will be placed on the website under the site link. Ms. Nemmers discussed that the Response Action Completion Report (RACR) was being prepared for LHAAP-04 to document the injections completed and evaluate the distribution as Mr. Foss had discussed. Ms. Nemmers explained that the other reports listed are for performance monitoring (RA-O) over the course of the year for those sites. Also, the quarterly groundwater treatment plant (GWTP) reports document the field work and activities and that is in process. Ms. Nemmers explained that the quarterly GWTP reports often include the groundwater data from LHAAP-18/24 because this is the water that is extracted and treated at the GWTP.

*LHAAP-50*

Mr. Foss explained that LHAAP-50 has plumes of perchlorate and trichloroethylene (TCE) and the remedy in place is monitored natural attenuation (MNA). Mr. Foss stated that the MNA evaluations indicated that the remedy was not effective, so the Contingency Remedy from the ROD is being implemented. Mr. Foss said that an Explanation of Significant Difference (ESD) was then prepared to implement the contingency remedy to kick-start degradation. Ms. Zeiler explained that the ROD had the contingency remedy of ISB included to ensure there was an approved remedy if MNA did not work so that a whole new ROD was not required. However, the ROD did require an ESD be written once the contingency remedy was determined to be needed. Mr. Foss pointed out the proposed injection locations on Slide 17. Mr. Foss said that the targeted wells were 50WW12, 50WW13, and 50WW14 as the source for the broader plume. Mr. Foss said the injectate will be the same as discussed for the other sites using ISB. Mr. Foss explained that the goal is to knock down levels in that area for MNA to continue on and take over from there.

*Look Ahead*

Ms. Nemmers then discussed the 3-month look ahead for LHAAP field work. Ms. Nemmers explained that LHAAP-03 required some additional excavation and then backfilling to be completed once weather allowed. Ms. Nemmers said that LHAAP-17 had the same issue where it required backfilling, weather allowing. Ms. Nemmers said that performance monitoring was required at LHAAP-04 and LHAAP-16, as previously presented by Mr. Foss. RA-O sampling was required at LHAAP-46 and LHAAP-58, where remedies were already in place. Ms. Nemmers said that the remedy implementation for LHAAP-50 is planned to be completed prior to the next RAB meeting.

Ms. Nemmers discussed the document look-ahead. Ms. Nemmers explained that finalization of documents follows a process whereby the Army review and the Regulators review the documents, which takes time.

*Groundwater Treatment Plant*

Ms. Nemmers stated that the outflow presented is a little lower than shown in previous months, which is primarily due to little water being discharged from the INF Pond. Ms. Nemmers also said that some lines were repaired at LHAAP-18/24. Ms. Nemmers said that the graph shows discharge to Harrison Bayou. Ms. Nemmers said that with the storm over the weekend that the GWTP is still down for remaining repairs. Ms. Nemmers reported no major issues at the GWTP.

*Surface Water Sampling*

Ms. Nemmers said that a quarterly sample was collected in October 2019 and that there were no exceedances from that sample. Ms. Nemmers said that the exceedance shown on the chart provided is from July 2019 and that the sample location was resampled and did not have an exceedance. Ms. Nemmers directed the public to the handouts for the actual data from these sampling events. Mr. George Rice asked about the reason for the spike of perchlorate detected in surface water in the one sample. Ms. Nemmers said that groundwater data near the surface water was evaluated and that no source for the spike was found. Ms. Nemmers said that the location where the spike occurred was resampled on July 30, 2019, and while perchlorate was detected that the detection was well below the screening criteria. Ms. Zeiler said that the Army

asked Bhate to see if there was an extraction well or interceptor trench (ICT) down that could have resulted in the exceedance and that no reason for the spike was identified. Mr. Rice confirmed that the location was resampled and Ms. Nemmers pointed out the note at the bottom of the graph with the details of the resampling.

*LHAAP-18/24, LHAAP-29, and LHAAP-47*

Mr. Aaron Williams said that he was presenting the three sites currently contracted to HDR, Inc. (LHAAP-18/24, LHAAP-29, and LHAAP-47) that required a ROD. Mr. Williams said that the final ROD for LHAAP-18/24 was close because the ROD had been signed by the Army and it was sent to the Regulators for their signature and concurrence. Mr. Williams said that a notice will be placed in the paper once it is signed letting the public know that the ROD is in the Marshall Library as well as on the website. For LHAAP-29, the ROD is signed and available for public review at the Marshall Library.

Mr. Williams said that the presence of dry wells and aging data at LHAAP-47 required that additional data be collected prior to finalization of the ROD and that additional investigation had been completed. Mr. Williams explained that during the additional sampling there was a detection of TCE of 120,000 micrograms per liter (µg/L) near one of the buildings and stated that the remedy previously selected would not be effective for TCE at that concentration. Mr. Williams said that the Army is in the process of defining the area and will then have to go back to the Feasibility Study to evaluate new remedies that would effectively treat this area. Ms. Zeiler said that the Army had taken a step back in the process from the ROD phase. Mr. Williams discussed the field work completed as outlined on the slide. Mr. Williams showed the area of concern at LHAAP-47 by Building 46A. Mr. Williams explained that clean soil results were collected to the north but not defined to the south, east, and west for groundwater protection. Mr. Williams said that the same is true for groundwater which is not fully defined to the north. Mr. Williams explained that the contamination has to be defined for remedy selection so additional investigation is going to be completed.

Mr. Williams gave an update on the FYR regarding additional well installations to define plumes at two sites as well as implement the contingency remedy at LHAAP-50, which Mr. Foss had previously covered. Mr. Williams pointed out the LHAAP-12 well location, which has been installed, intended to define the plume. Mr. Williams explained that the Army is awaiting validated laboratory results from groundwater samples collected in December 2019. Mr. Williams said that the new well at LHAAP-50 and the two new wells at LHAAP-67 didn't contain detectable contaminants of concern. Ms. Zeiler pointed out that the plume for LHAAP-50 is smaller than originally thought based upon the additional well installed.

**RAB Questions**

Prior to wrapping up the meeting, Ms. Zeiler welcomed questions. Mr. Fortune asked for information on injecting EVO. Mr. Foss explained that there is a trailer system that is mobilized to the site that has a manifold that allows for injection into multiple injection points or wells with a tank for mixing and a pressure gauge, valve, and flow meter on each line to control flow of the materials. Mr. Foss explained that the trailer has a generator and variable speed pump. Mr. Foss

said that there is usually a design flow or pressure that is not to be exceeded. Each injection point is set up and then the injections start. Ms. Zeiler pointed out that the injections require a long time to complete.

Mr. Deon Hall asked if there are metals, like mercury, that exceed at the sites. Ms. Zeiler said there are a few sites that have arsenic but that no sites have mercury. Mr. Foss mentioned the soil removal of metals at LHAAP-03. Ms. Zeiler pointed out that the LHAAP-03 site had been a paint shop previously, which is why metals were present. Ms. April Palmie stated that the effluent from the GWTP is monitored for metals. Ms. Laura-Ashley Overdyke asked if that means that the water going to the bayou is tested for metals. Ms. Palmie said that certain metals are present within LHAAP-18/24 but are sporadic. So the effluent is tested to ensure that Texas Commission on Environmental Quality (TCEQ) limits are met even though the metals present are not site wide. Mr. Hall asked if arsenic was the main concern to which Ms. Zeiler confirmed and stated that arsenic is often naturally occurring at levels that exceed screening levels.

Ms. Overdyke asked for confirmation that the bayou is being visually inspected for the white milky material. Mr. Foss confirmed and then explained that dissolved oxygen (DO) readings are also collected after a rain event. Mr. Foss explained that the material injected causes DO to deplete so this allowed further evaluation of the bayou beyond just visual. Ms. Zeiler pointed out that part of the remedy at LHAAP-16 included a barrier which was very close to the bayou. Ms. Palmie explained that DO is a good thing to use for field screenings because it can be tested in the field real time to see if there are any issues. Ms. Overdyke asked if the removal of DO is required for the bacteria used to reduce the chlorinated compounds. Mr. Foss said that the injection solutions are low DO for this reason and that the remedial process should reduce the DO even further. Mr. Foss said that low oxygen in surface water is also a bad thing for the environment, particularly the fish. Mr. Foss said that all of the DO readings measured during and after the injections in the bayou were above 5 mg/L.

Mr. Richard LeTourneau confirmed that samples are not tested onsite. Mr. Zeiler said that all samples requiring laboratory testing are sent offsite.

**Next RAB Meeting Schedule and Closing Remarks**

Ms. Zeiler then discussed the next meeting with the RAB members. It was decided that the next RAB Meeting will be held on **Wednesday, April 15, 2020,** with the **meeting starting at 6:00 pm CDT** at the Karnack Community Center.

**Adjourn**

Mr. Hall made the motion to adjourn and Mr. LeTourneau seconded the motion. The meeting adjourned at 6:45 pm CDT.

**January 2020 Meeting Attachments and Handouts:**

- Color Copy of Bhate Presentation Slides
- GWTP – Processed Groundwater Volumes Handout
- Surface Water Sampling Handout

# Longhorn Army Ammunition Plant Quarterly Restoration Advisory Board Meeting

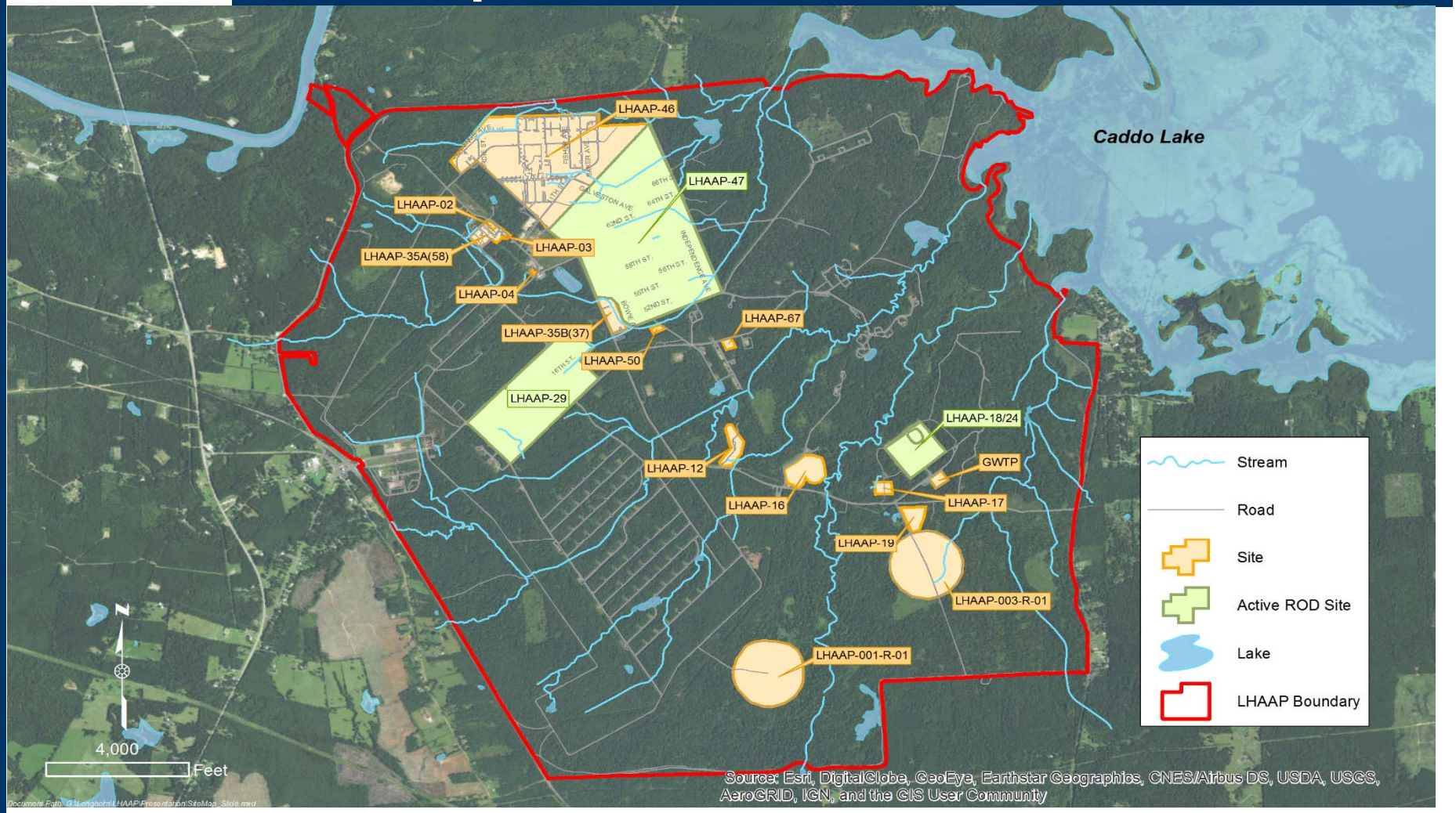
**Karnack Community Center**
**January 16, 2020**
**6:00 PM CST**

APTIM

bhate

# Restoration Advisory Board Meeting

## Site Map



# Restoration Advisory Board Meeting

## Abbreviations and Acronyms

| | |
|---|---|
| µg/L | Micrograms per liter |
| COC | Chemical of Concern |
| DERP | Defense Environmental Restoration Program |
| DPT | Direct Push Technology |
| GPW | Goose Prairie Creek Water Sample |
| GW-Ind | Industrial Groundwater |
| GWTP | Groundwater Treatment Plant |
| HBW | Harrison Bayou Water Sample |
| ISB | In-situ bioremediation |
| LHAAP | Longhorn Army Ammunition Plant |
| MSC | Medium-Specific Concentration |
| PCL | Protective Concentration Level |
| PSI | Pre-Screening Investigation |
| RAB | Restoration Advisory Board |
| RA(O) | Remedial Action Operation |
| RAWP | Remedial Action Work Plan |
| ROD | Record of Decision |
| RRR | Risk Reduction Rule |
| TCE | Trichloroethylene |
| TRRP | Texas Risk Reduction Program |

# Restoration Advisory Board Meeting

## Agenda

06:00 Welcome and Introduction

06:05 Open Items {RMZ}

- Purpose of the Restoration Advisory Board (RAB) Meeting
- Ongoing Outreach/Website
- RAB Administrative Issues
  - o Membership Update
  - o Minutes (October 2019 RAB Meeting)

06:15 Defense Environmental Restoration Program (DERP) Update {Bhate}

- Documents and Field Work Completed since last RAB
  - o Remedial Action at LHAAP-04
  - o Remedial Action at LHAAP-16
  - o Remedial Action Operation [RA(O)] Sampling at LHAAP- 67
- Three Month Look ahead
- Groundwater Treatment Plant (GWTP) Update

06:45 Other DERP Update {RMZ}

- LHAAP-18/24, -29, and -47 Document Status
- LHAAP-47 Additional Pre-Screening Investigation (PSI) Data and Revised Schedule for the Record of Decision (ROD)
- Five Year Review Update – LHAAP-12, -50, and -67

06:55 Next RAB Meeting Schedule and Closing Remarks {RMZ}

# Restoration Advisory Board Meeting

## Purpose of the RAB Meeting

- Held every 3 months
- The mission of the Longhorn Army Ammunition Plant (LHAAP) RAB is to promote community awareness and obtain constructive community review and comments on environmental restoration activities at the former LHAAP

# Restoration Advisory Board Meeting

## The Army Wants You to be Informed

- The Army is committed to protecting human health and the environment; key to that commitment is engaging the community and increasing public participation in environmental restoration at LHAAP
- You are encouraged to:
  - Attend RAB Meetings and/or become a member of the RAB
  - Visit the Longhorn environmental website at www.longhornaap.com. The website is regularly updated to indicate the upcoming field events at each site including groundwater sampling, monitoring well installations, soil sampling, or remediation activities.
  - Make suggestions for improving communication – the Army welcomes and appreciates community feedback

# Restoration Advisory Board Meeting

## RAB Administrative Issues

- Membership Update
- Minutes (October 2019 RAB Meeting)

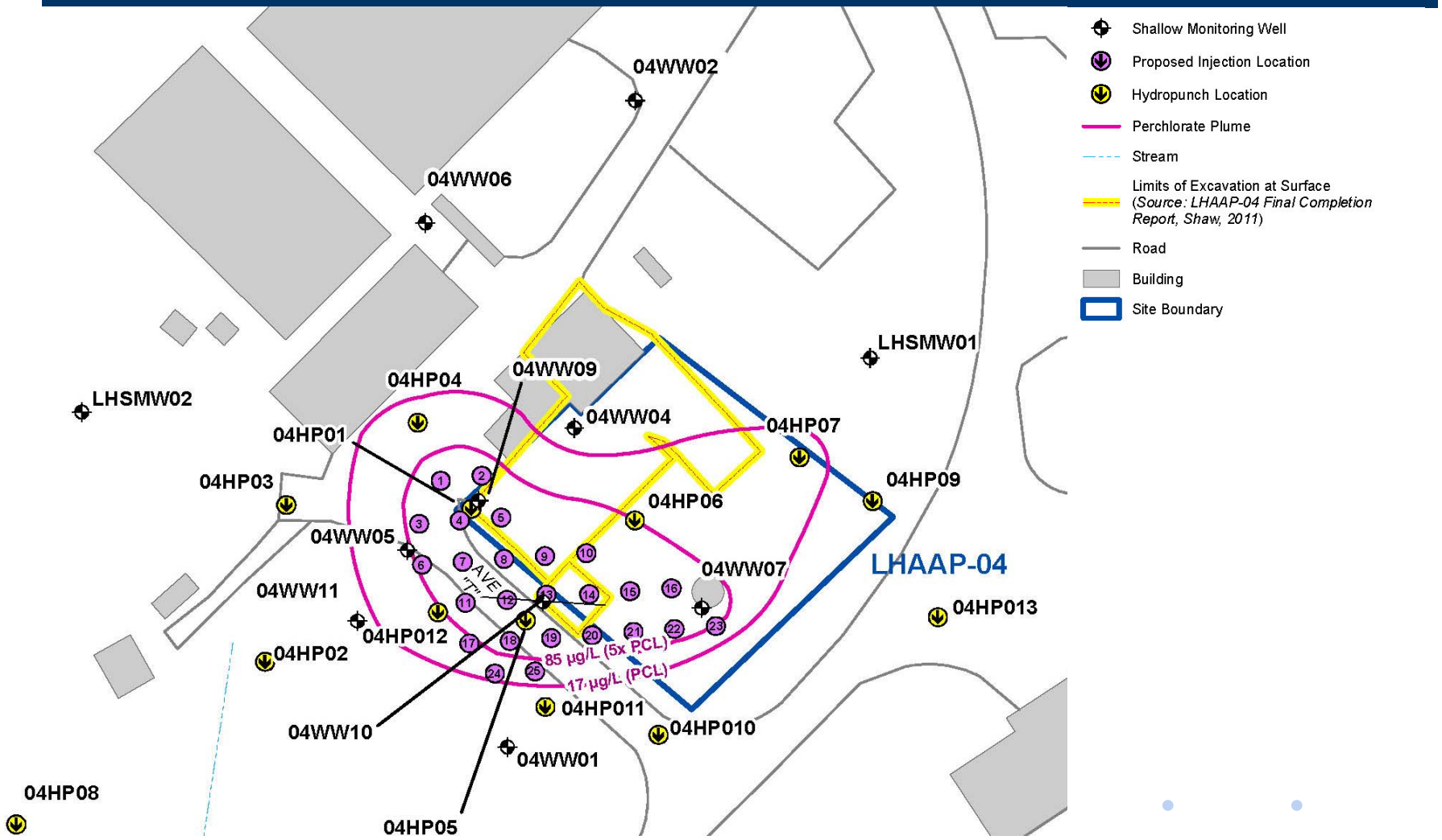
# Restoration Advisory Board Meeting

## Completed Field Work Since Last RAB Meeting

| Site | Activity |
|---|---|
| LHAAP-03 | Remedial Action (Soil Excavation) |
| LHAAP-04 | Remedial Action (In-situ bioremediation [ISB] Injections) |
| LHAAP-16 | Remedial Action (ISB Injections) |
| LHAAP-58 | RA(O) Sampling –December 2019 |
| LHAAP-18/24 | RA(O) Sampling – December 2019 |

# Restoration Advisory Board Meeting

## LHAAP-04 Remedial Action Update



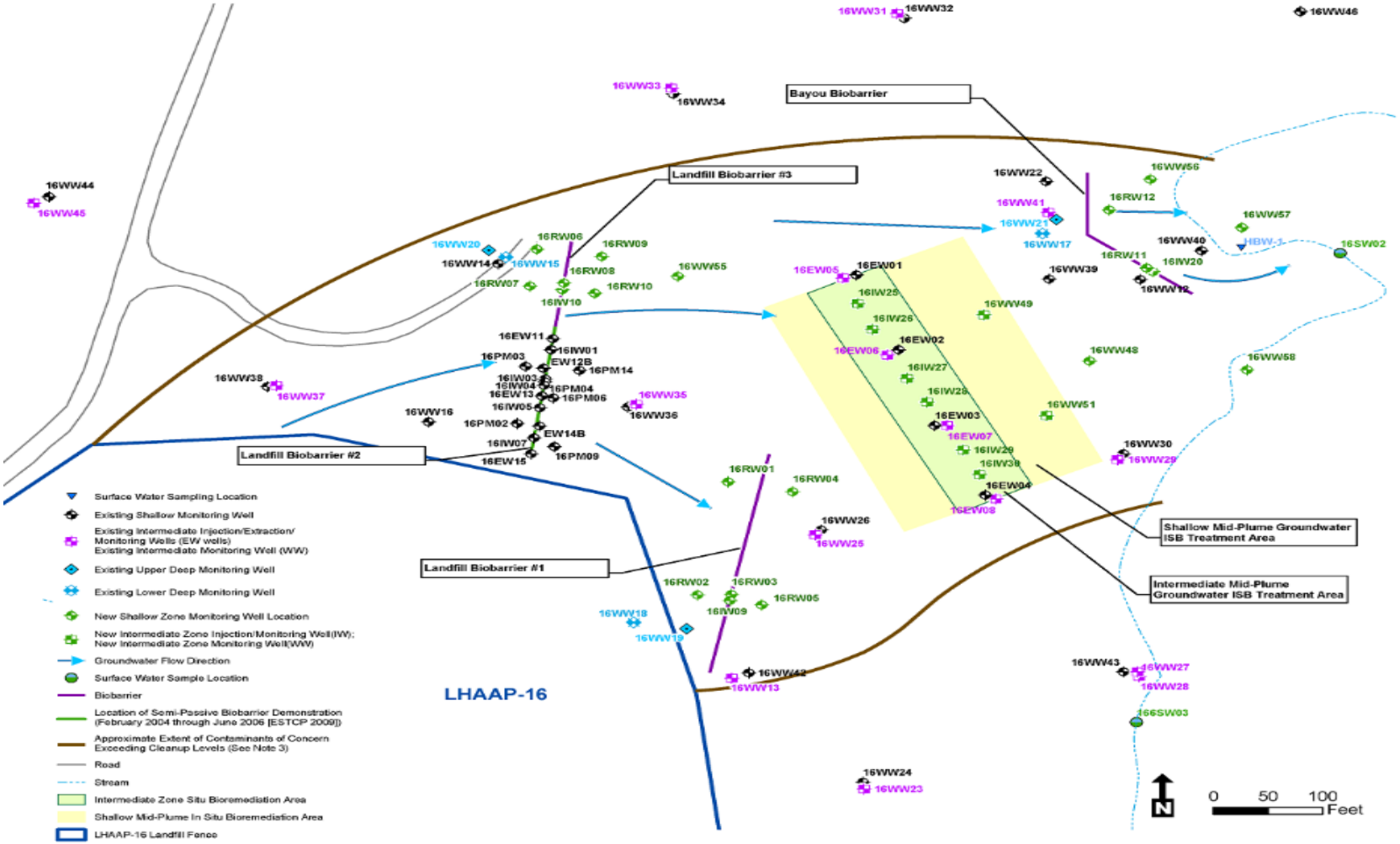
# Restoration Advisory Board Meeting

## LHAAP-04 Remedial Action Update

- ISB Injections performed in October and November 2019
- Injected 37,100 gallons of emulsified vegetable oil, nutrient, and water solution into 25 direct push injection locations
- Injection intervals ranged between 6 and 20 feet below ground surface
- Due to topography of site ditches and shallow injection depths “daylighting” of injected solution did occur requiring very slow injection rates
- Injected solution reached several of the most contaminated wells during injection, confirming radius of influence
- Performance total organic carbon sampling confirmed carbon source reached wells within the injection area

# Restoration Advisory Board Meeting

## LHAAP-16 Remedial Action Update



# Restoration Advisory Board Meeting

## LHAAP-16 Remedial Action Update

- ISB Injections performed from September – December 2019
- Injected ISB solution into direct push injection locations, newly installed injection wells, and existing wells in the Bayou Biobarrier; Landfill Biobarriers 1, 2, & 3; and the mid-plume area
- Injected 84,678 gallons of emulsified vegetable oil, nutrients, and bio-augmentation culture in 78 direct push injection locations and 22 injection wells
- Recirculated extracted groundwater in mid-plume intermediate zone and Landfill Biobarrier 2 to enhance distribution of amendments
- Minimal “daylighting” of injected solution occurred and observations and monitoring confirmed no impact to the Bayou

# Restoration Advisory Board Meeting

## LHAAP-16 Remedial Action Update

- First round of performance sampling has been completed for the Bayou Biobarrier, Landfill Biobarriers 1 and 3, and the mid-plume intermediate and shallow injection areas
- First round of performance sampling for Landfill Biobarrier 2 will be completed in January 2020.

# Restoration Advisory Board Meeting

## LHAAP-67 RA(O) Sampling

- Monitoring performed at 17 wells (15 sampled and 2 gauged for elevation only) in October 2018 and May 2019
- Results reported in the Year 5 RA(O) Report currently in preparation for submittal to the regulators
- Year 5 RA(O) Report recommends proceeding with annual monitoring beginning in October 2019 in accordance with the Response Action Completion Report
- October 2019 sampling event included the 2 newly installed wells (67WW17 and 67WW18) as a result of the Five Year Review Recommendation
- Chemicals of Concern (COCs) were not detected in either of the newly installed wells

# Restoration Advisory Board Meeting

## Documents in Process

| Site | Document |
|---|---|
| LHAAP-04 | Response Action Completion Report |
| LHAAP-37 | Annual RA(O) Report |
| LHAAP-46 | Annual RA(O) Report |
| LHAAP-67 | Annual RA(O) Report |
| GWTP | Quarterly Evaluation Report: Third Quarter (July – September 2019) |

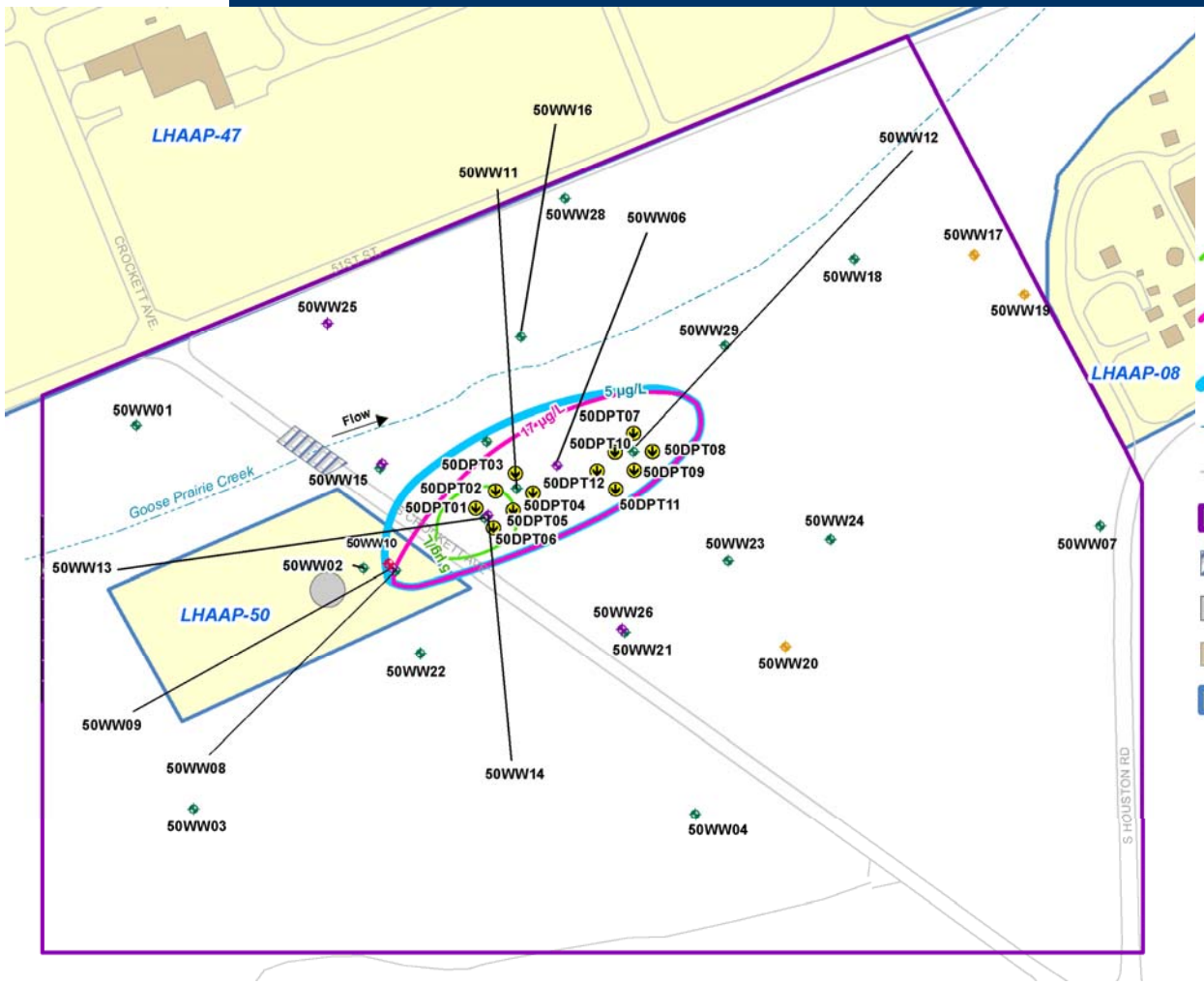
# Restoration Advisory Board Meeting

## 3 Month Look Ahead - Field Work by Bhate Team

| Site | Activity |
|---|---|
| LHAAP-03 | Complete excavation backfill |
| LHAAP-04 | Performance monitoring |
| LHAAP-16 | Performance monitoring |
| LHAAP-17 | Complete excavation backfill |
| LHAAP-46 | RA(O) Sampling – February 2020 |
| LHAAP-50 | Contingency Remedial Action Implementation |
| LHAAP-58 | RA(O) Sampling – March 2020 |

# Restoration Advisory Board Meeting

## LHAAP-50 Contingency Remedial Action



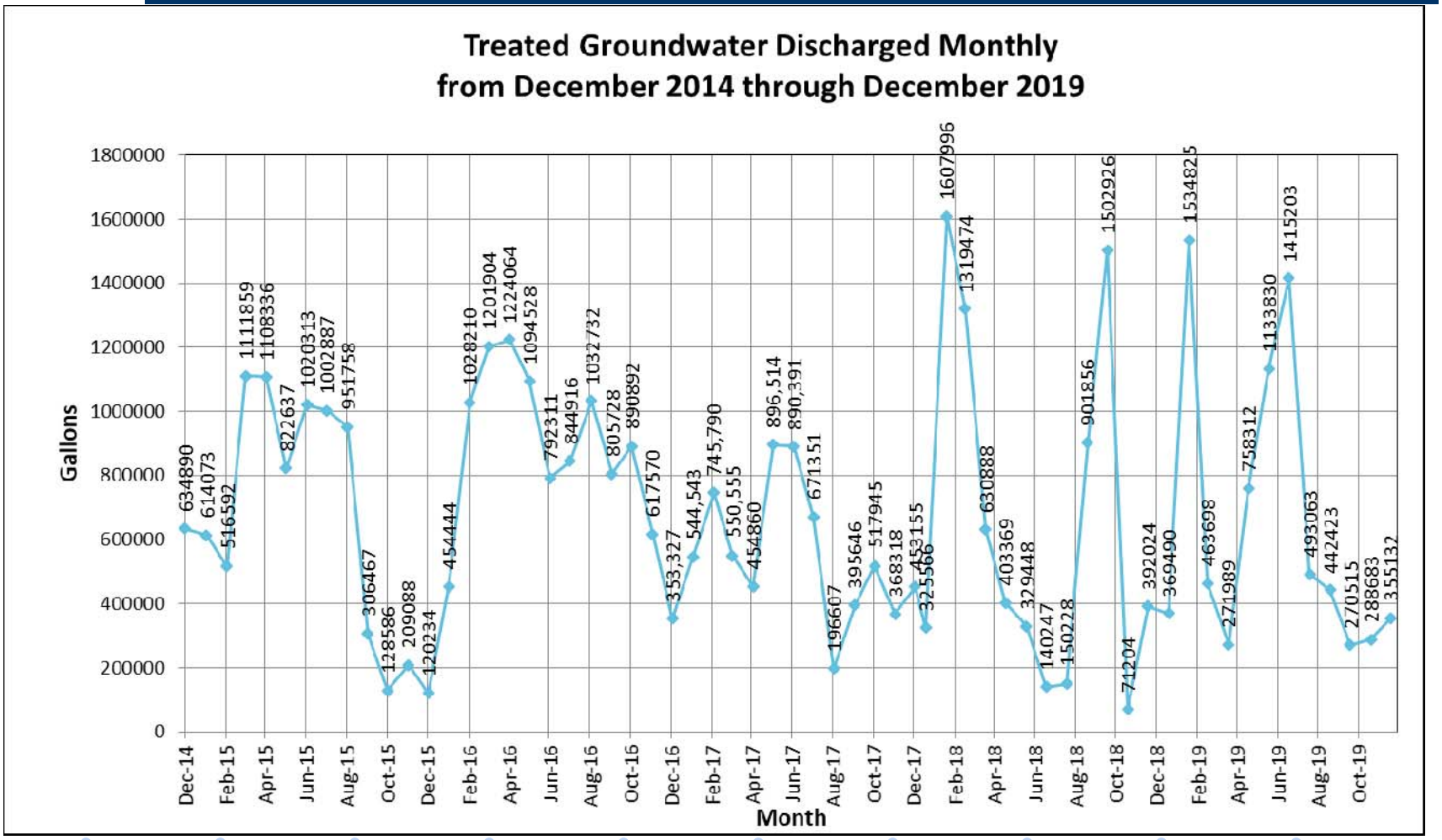
# Restoration Advisory Board Meeting

## 3 Month Look Ahead – Documents by Bhate Team

| Site | Document |
|---|---|
| LHAAP-04 | Response Action Completion Report to Regulators |
| LHAAP-37 | RA(O) Report to Regulators |
| LHAAP-46 | RA(O) Report to Regulators |
| LHAAP-67 | Finalize RA(O) Report |
| GWTP, LHAAP-16, and LHAAP-18/24 | Quarterly Evaluation Report: Third Quarter (July –September 2019)<br>Quarterly Evaluation Report: Fourth Quarter (October – December 2019) |

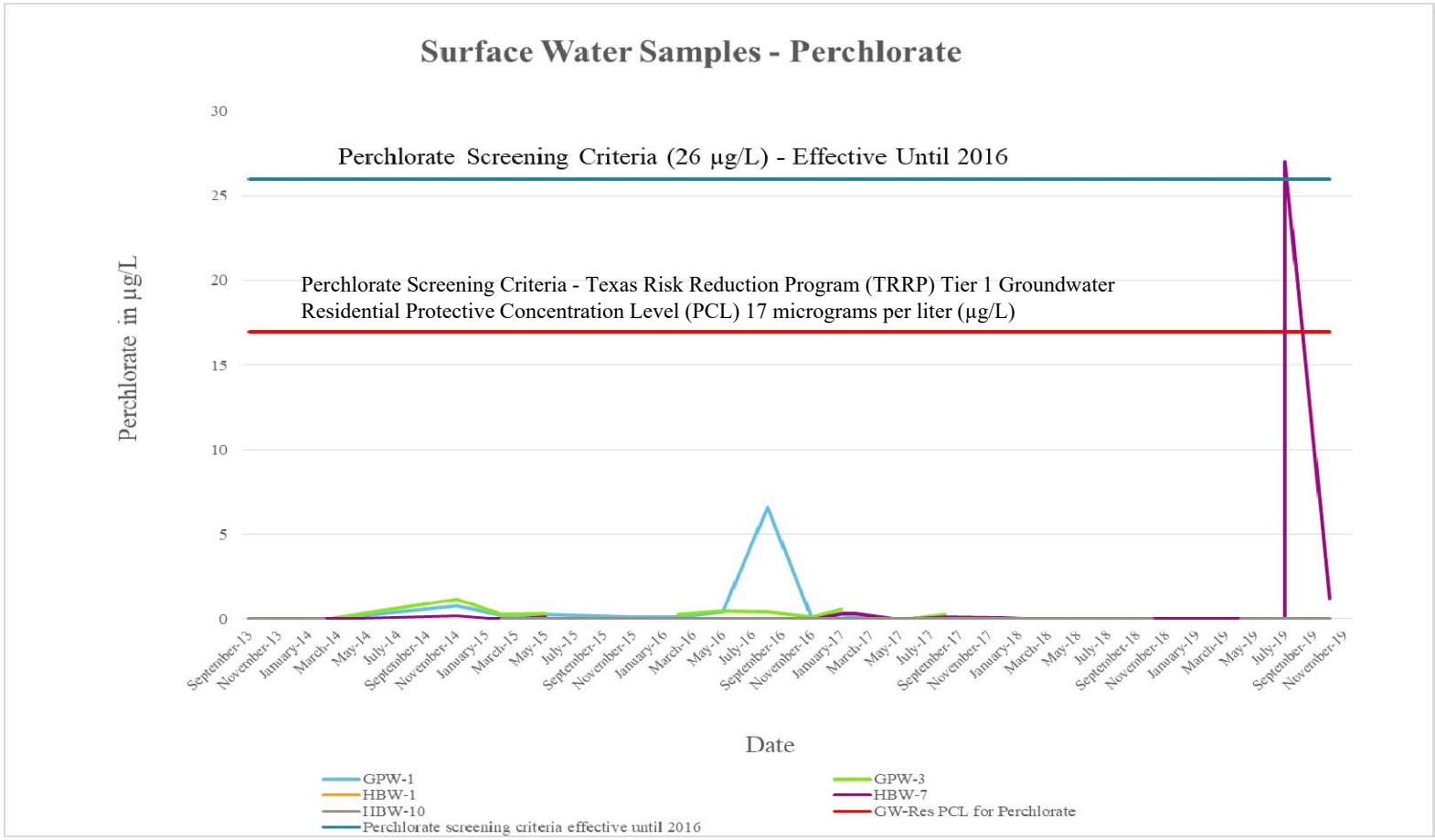
# Restoration Advisory Board Meeting

## GWTP Update



# Restoration Advisory Board Meeting

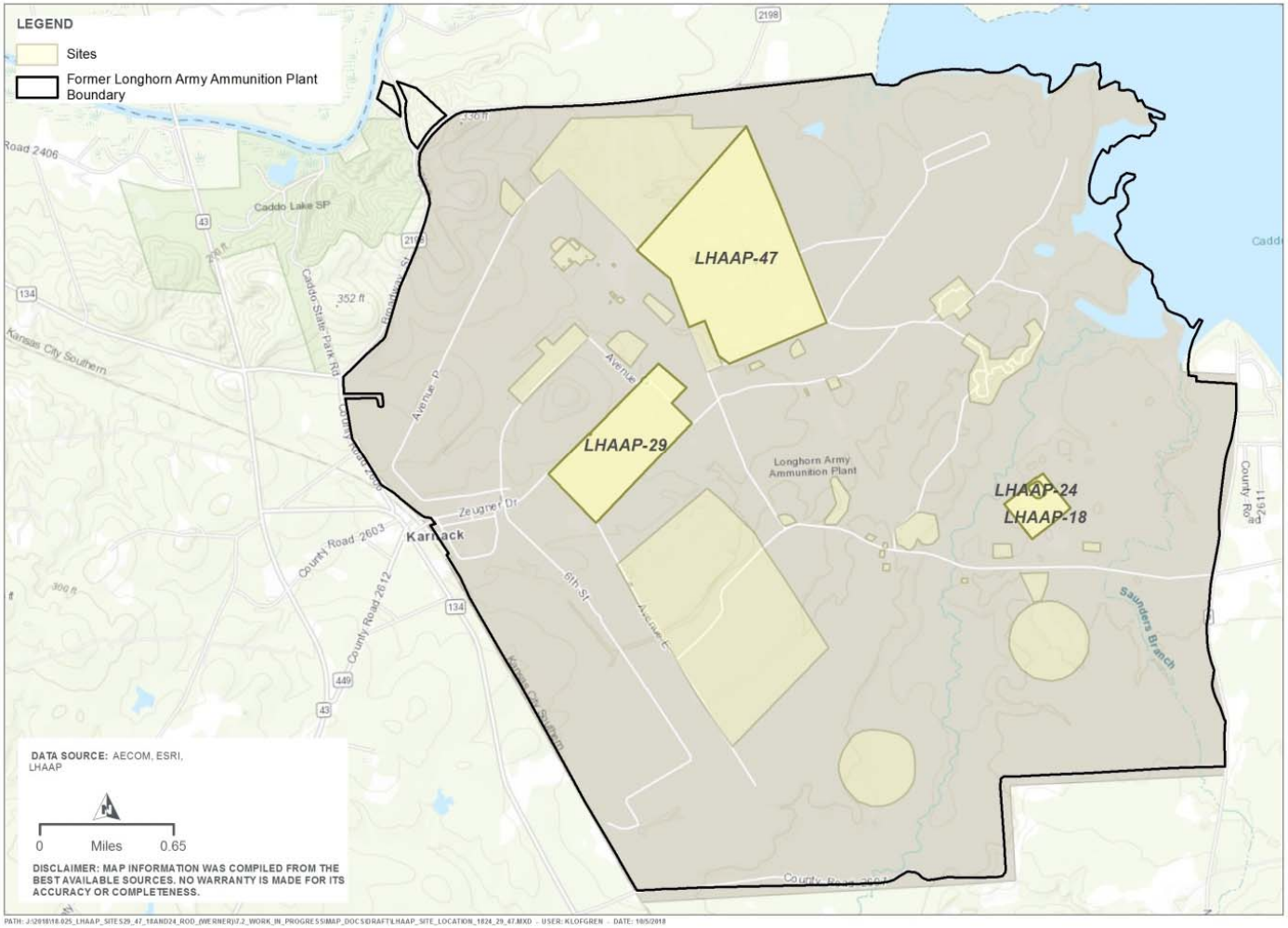
## Surface Water Sample Results




**Note: Surface water at HBW-7 had a detection of 27 µg/L from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later (30 July 2019) with a detection of 1.2 J µg/L.**

# Restoration Advisory Board Meeting

## LHAAP-18/24, 29, 47 Status Update



# Restoration Advisory Board Meeting

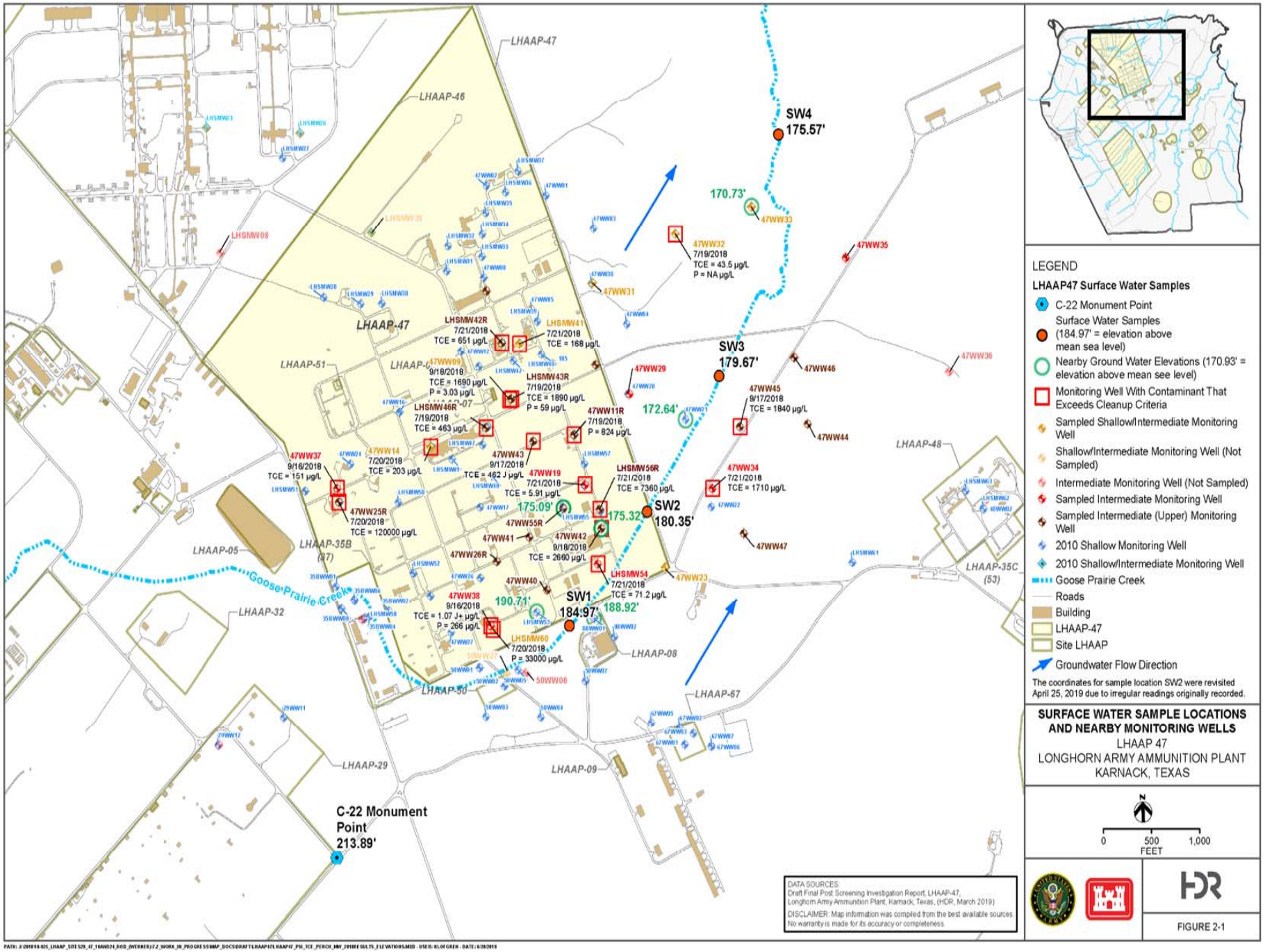
## LHAAP-18/24,29 and 47 Document Status

- LHAAP-18/24
  - Final ROD signed by Army and submitted to the Regulators January 9, 2020, for signature and concurrence.
- LHAAP-29
  - Final ROD signed September 19, 2019
  - The ROD is available for public review at the Marshall Public Library.
- LHAAP-47
  - Draft PSI Report Addendum No. 2 in Regulator review
  - Results confirm a trichloroethylene (TCE) source area exists that requires further defining for remedial action analysis/costing.

# Restoration Advisory Board Meeting

## LHAAP-47 Field Work Completed

- **Work Completed**
  - 11 Direct Push Technology (DPT) borings
  - 33 soil samples and 11 groundwater samples from DPT borings to identify source and extent
  - Groundwater samples from 3 existing wells for confirmation of results


LHAAP-47
LHAAP-46
LHAAP-51
LHAAP-48
LHAAP-05
LHAAP-35B
(37)
LHAAP-32
LHAAP-08
LHAAP-50
LHAAP-67
LHAAP-29
LHAAP-09
LHAAP-35C
(53)
Goose Prairie Creek
SW4
175.57'
170.73'
47WW33
47WW32
7/19/2018
TCE = 43.5 µg/L
P = NA µg/L
47WW35
SW3
179.67'
172.64'
47WW46
47WW45
9/17/2018
TCE = 1840 µg/L
47WW44
47WW34
7/21/2018
TCE = 1710 µg/L
47WW47
SW2
180.35'
175.32
175.09'
SW1
184.97'
188.92'
190.71'
C-22 Monument
Point
213.89'
LHSMW42R
7/21/2018
TCE = 651 µg/L
LHSMW41
7/21/2018
TCE = 168 µg/L
47WW09
9/18/2018
TCE = 1690 µg/L
P = 3.03 µg/L
LHSMW43R
7/19/2018
TCE = 1890 µg/L
P = 59 µg/L
LHSMW46R
7/19/2018
TCE = 463 µg/L
47WW11R
7/19/2018
P = 824 µg/L
47WW43
9/17/2018
TCE = 462 J µg/L
47WW19
7/21/2018
TCE = 5.91 µg/L
LHSMW56R
7/21/2018
TCE = 7360 µg/L
47WW37
9/16/2018
TCE = 151 µg/L
47WW14
7/20/2018
TCE = 203 µg/L
47WW25R
7/20/2018
TCE = 120000 µg/L
47WW55R
47WW41
47WW42
9/18/2018
TCE = 2660 µg/L
47WW26R
47WW40
LHSMW54
7/21/2018
TCE = 71.2 µg/L
47WW38
9/16/2018
TCE = 1.07 J+ µg/L
P = 266 µg/L
LHSMW60
7/20/2018
P = 33000 µg/L
50WW06
LHSMW08
LHSMW27
LHSMW28
LHSMW29
LHSMW30
LHSMW38
LHSMW39
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LHSMW42
LHSMW43
LHSMW46
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67WW06
67WW07
88WW01
88WW02
358WW01
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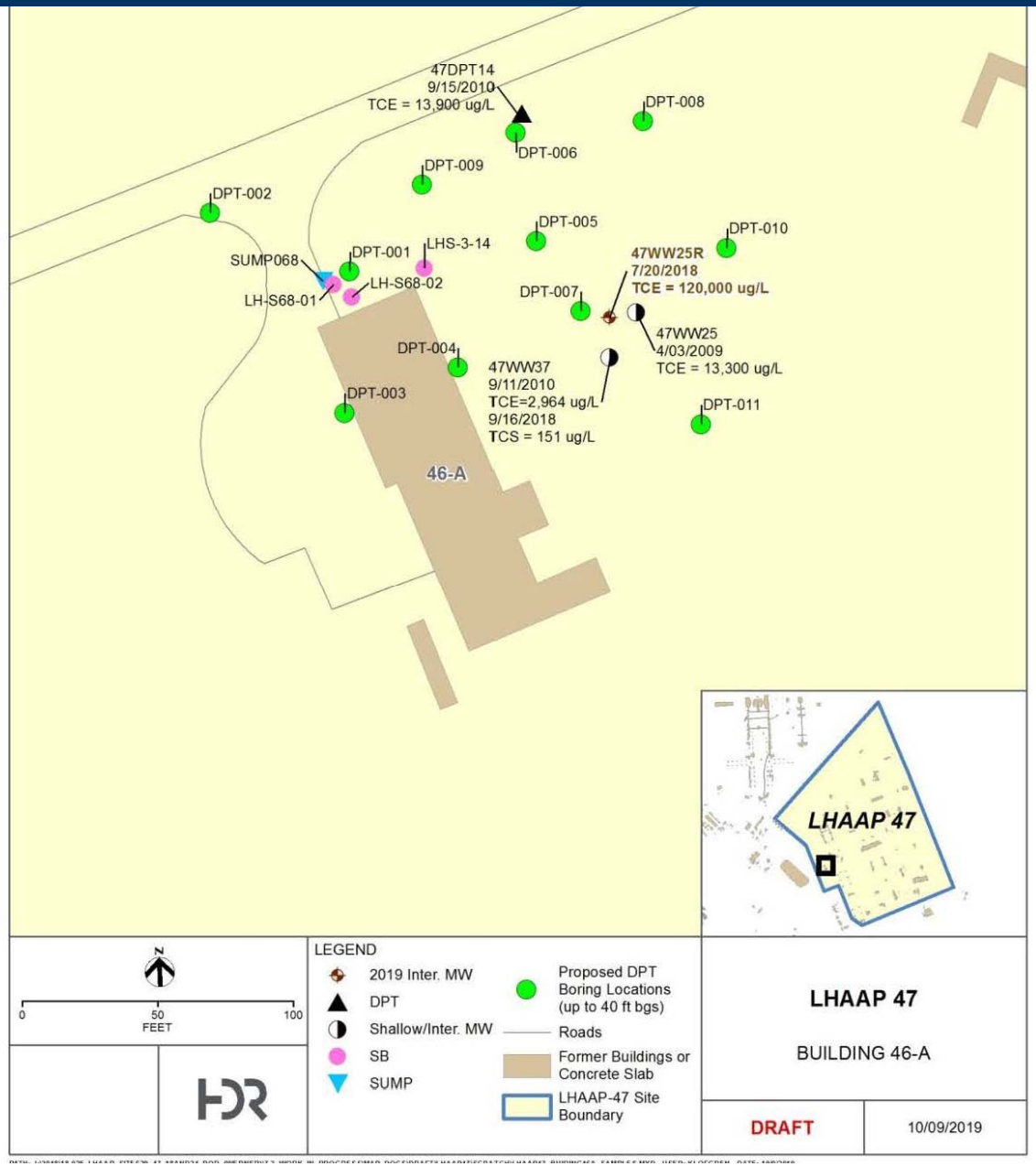
358WW06
358WW07
29WW11
29WW12
LEGEND
LHAAP47 Surface Water Samples
C-22 Monument Point
Surface Water Samples (184.97' = elevation above mean sea level)
Nearby Ground Water Elevations (170.93' = elevation above mean see level)
Monitoring Well With Contaminant That Exceeds Cleanup Criteria
Sampled Shallow/Intermediate Monitoring Well
Shallow/Intermediate Monitoring Well (Not Sampled)
Intermediate Monitoring Well (Not Sampled)
Sampled Intermediate Monitoring Well
Sampled Intermediate (Upper) Monitoring Well
2010 Shallow Monitoring Well
2010 Shallow/Intermediate Monitoring Well
Goose Prairie Creek
Roads
Building
LHAAP-47
Site LHAAP
Groundwater Flow Direction
The coordinates for sample location SW2 were revisited April 25, 2019 due to irregular readings originally recorded.
SURFACE WATER SAMPLE LOCATIONS AND NEARBY MONITORING WELLS
LHAAP 47
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
N
0
500
1,000
FEET
DATA SOURCES:
Draft Final Post Screening Investigation Report, LHAAP-47, Longhorn Army Ammunition Plant, Karnack, Texas, (HDR, March 2019)
DISCLAIMER: Map information was compiled from the best available sources. No warranty is made for its accuracy or completeness.
FIGURE 2-1

# LHAAP-47 Field Work Completed



# LHAAP-47 Field Work Results - Soil

| Chemical Name | Sample ID | DPT-001 | | |
|---|---|---|---|---|
| | Collection Date | 11/5/2019 | | |
| | Depth Interval (ft bgs) | 27-28 | 31-32 | 38-39 |
| 1,1-Dichloroethene | mg/kg | 0.00493 | ND | ND |
| cis-1,2-Dichloroethene | | 0.0738 | ND | ND |
| Acetone | | ND | 0.0195 J | ND |
| Trichloroethene | | **11.8** | 0.00162 J | ND |
| Vinyl Chloride | | 0.000985 J | ND | ND |

| Chemical Name | Sample ID | DPT-002 | | |
|---|---|---|---|---|
| | Collection Date | 11/4/2019 | | |
| | Depth Interval (ft bgs) | 26-27 | 32-33 | 40-41 |
| cis-1,2-Dichloroethene | mg/kg | 0.000561 J | 0.00164 J | ND |
| Trichloroethene | | 0.0165 | 0.0039 | ND |

| Chemical Name | Sample ID | DPT-003 | | |
|---|---|---|---|---|
| | Collection Date | 11/4/2019 | | |
| | Depth Interval (ft bgs) | 29-30 | 35-36 | 39-40 |
| 1,1-Dichloroethene | mg/kg | 0.00894 | ND | ND |
| cis-1,2-Dichloroethene | | 0.0315 | ND | ND |
| Carbon disulfide | | ND | ND | 0.000953 J |
| Acetone | | 0.0128 J | ND | 0.0115 J |
| Tetrachloroethene | | 0.00105 J | ND | ND |
| Trichloroethene | | **15.8** | ND | 0.00148 J |
| Vinyl Chloride | | 0.000581 J | ND | ND |

| Chemical Name | Sample ID | DPT-004 | | |
|---|---|---|---|---|
| | Collection Date | 11/6/2019 | | |
| | Depth Interval (ft bgs) | 28-29 | 30-31 | 32-33 |
| 1,1-Dichloroethene | mg/kg | 0.00264 | ND | ND |
| cis-1,2-Dichloroethene | | 0.0322 | 0.00211 J | ND |
| Acetone | | ND | ND | 0.00894 J |
| Trichloroethene | | **8.37** | 0.0187 | 0.000894 J |
| Vinyl Chloride | | 0.000633 J | ND | ND |

| Chemical Name | Sample ID | DPT-005 | | |
|---|---|---|---|---|
| | Collection Date | 11/5/2019 | | |
| | Depth Interval (ft bgs) | 24-25 | 27-28 | 31-32 |
| 1,1-Dichloroethene | mg/kg | 0.000799 J | 0.000622 J | ND |
| cis-1,2-Dichloroethene | | 0.0342 | 0.0487 | 0.00426 |
| Trichloroethene | | **1.62** | **0.957** | 0.271 |

| Chemical Name | Sample ID | DPT-006 | | |
|---|---|---|---|---|
| | Collection Date | 11/5/2019 | | |
| | Depth Interval (ft bgs) | 20-21 | 27-28 | 30-31 |
| cis-1,2-Dichloroethene | mg/kg | 0.00199 J | 0.0056 | ND |
| Trichloroethene | | 0.0684 | 0.191 | 0.00124 J |

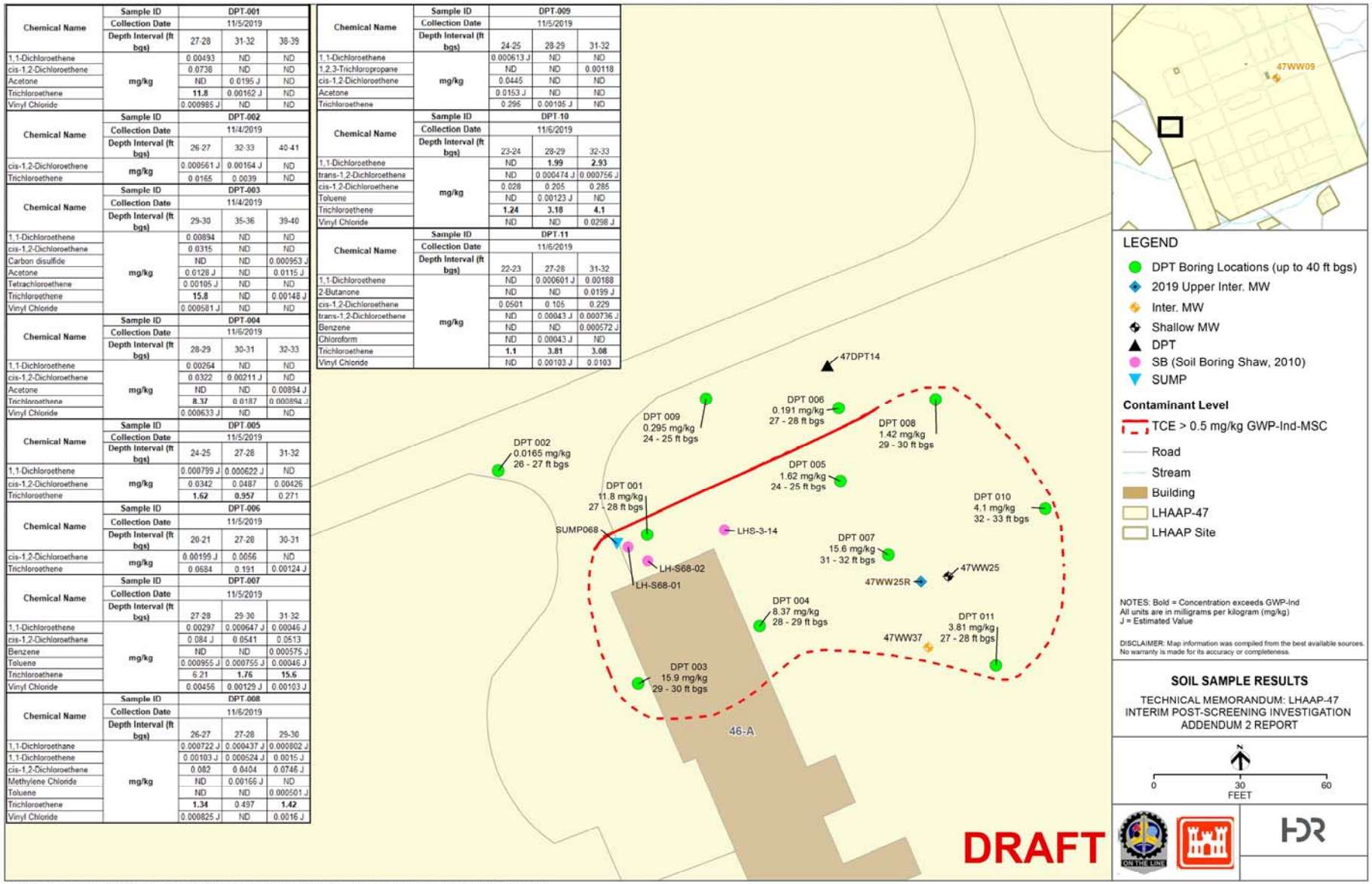
| Chemical Name | Sample ID | DPT-007 | | |
|---|---|---|---|---|
| | Collection Date | 11/5/2019 | | |
| | Depth Interval (ft bgs) | 27-28 | 29-30 | 31-32 |
| 1,1-Dichloroethene | mg/kg | 0.00297 | 0.000647 J | 0.00046 J |
| cis-1,2-Dichloroethene | | 0.084 J | 0.0541 | 0.0513 |
| Benzene | | ND | ND | 0.000575 J |
| Toluene | | 0.000955 J | 0.000755 J | 0.00046 J |
| Trichloroethene | | 6.21 | **1.76** | **15.6** |
| Vinyl Chloride | | 0.00456 | 0.00129 J | 0.00103 J |

| Chemical Name | Sample ID | DPT-008 | | |
|---|---|---|---|---|
| | Collection Date | 11/5/2019 | | |
| | Depth Interval (ft bgs) | 26-27 | 27-28 | 29-30 |
| 1,1-Dichloroethane | mg/kg | 0.000722 J | 0.000437 J | 0.000802 J |
| 1,1-Dichloroethene | | 0.00103 J | 0.000524 J | 0.0015 J |
| cis-1,2-Dichloroethene | | 0.082 | 0.0404 | 0.0746 J |
| Methylene Chloride | | ND | 0.00166 J | ND |
| Toluene | | ND | ND | 0.000501 J |
| Trichloroethene | | **1.34** | 0.497 | **1.42** |
| Vinyl Chloride | | 0.000825 J | ND | 0.0016 J |

| Chemical Name | Sample ID | DPT-009 | | |
|---|---|---|---|---|
| | Collection Date | 11/5/2019 | | |
| | Depth Interval (ft bgs) | 24-25 | 28-29 | 31-32 |
| 1,1-Dichloroethene | mg/kg | 0.000613 J | ND | ND |
| 1,2,3-Trichloropropane | | ND | ND | 0.00118 |
| cis-1,2-Dichloroethene | | 0.0445 | ND | ND |
| Acetone | | 0.0153 J | ND | ND |
| Trichloroethene | | 0.295 | 0.00105 J | ND |

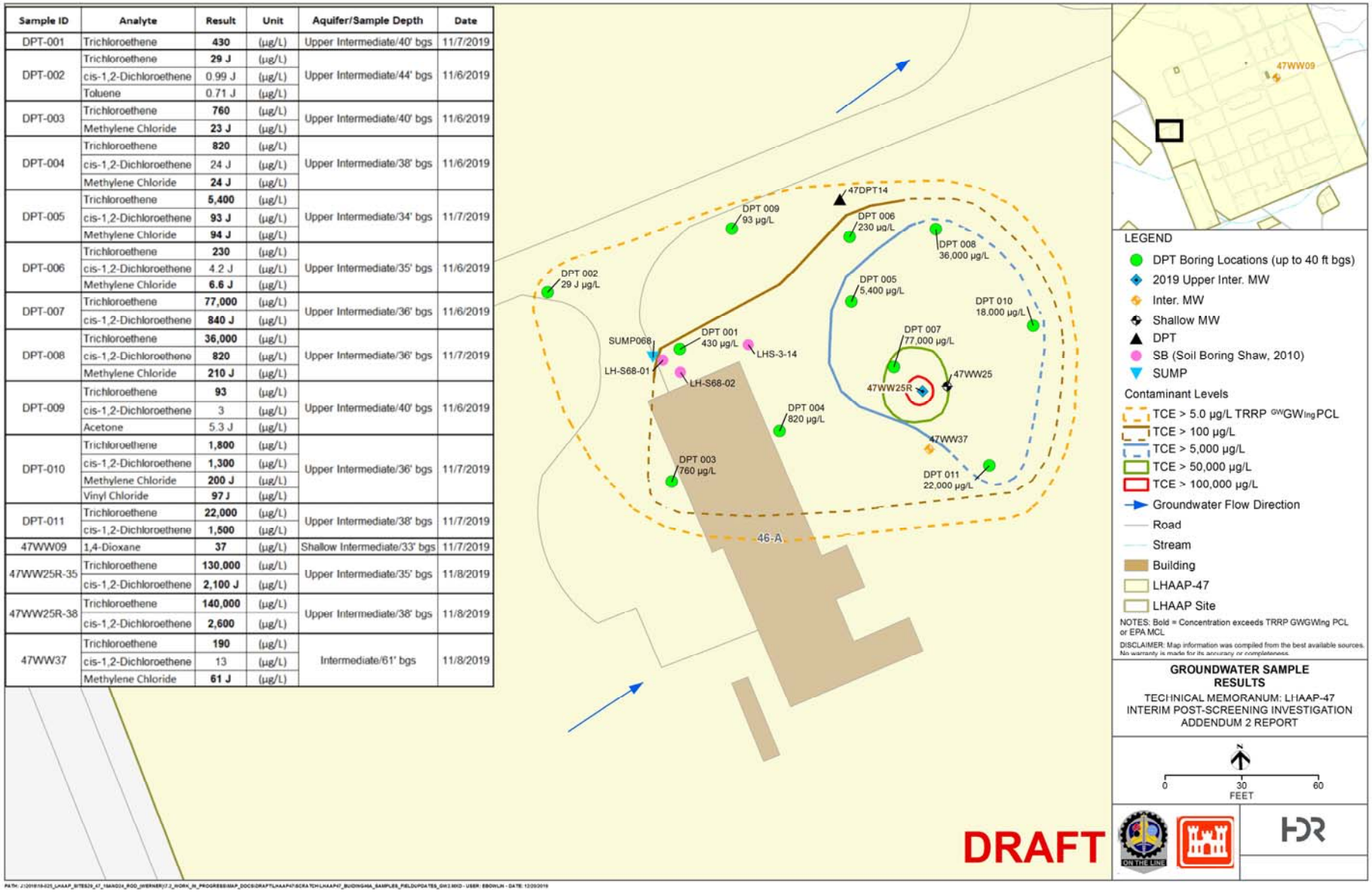
| Chemical Name | Sample ID | DPT-10 | | |
|---|---|---|---|---|
| | Collection Date | 11/6/2019 | | |
| | Depth Interval (ft bgs) | 23-24 | 28-29 | 32-33 |
| 1,1-Dichloroethene | mg/kg | ND | **1.99** | **2.93** |
| trans-1,2-Dichloroethene | | ND | 0.000474 J | 0.000756 J |
| cis-1,2-Dichloroethene | | 0.028 | 0.205 | 0.285 |
| Toluene | | ND | 0.00123 J | ND |
| Trichloroethene | | **1.24** | **3.18** | **4.1** |
| Vinyl Chloride | | ND | ND | 0.0298 J |

| Chemical Name | Sample ID | DPT-11 | | |
|---|---|---|---|---|
| | Collection Date | 11/6/2019 | | |
| | Depth Interval (ft bgs) | 22-23 | 27-28 | 31-32 |
| 1,1-Dichloroethene | mg/kg | ND | 0.000601 J | 0.00188 |
| 2-Butanone | | ND | ND | 0.0199 J |
| cis-1,2-Dichloroethene | | 0.0501 | 0.105 | 0.229 |
| trans-1,2-Dichloroethene | | ND | 0.00043 J | 0.000736 J |
| Benzene | | ND | ND | 0.000572 J |
| Chloroform | | ND | 0.00043 J | ND |
| Trichloroethene | | **1.1** | **3.81** | **3.08** |
| Vinyl Chloride | | ND | 0.00103 J | 0.0103 |



# LHAAP-47 Field Work Results - Groundwater

| Sample ID | Analyte | Result | Unit | Aquifer/Sample Depth | Date |
|---|---|---|---|---|---|
| DPT-001 | Trichloroethene | 430 | (µg/L) | Upper Intermediate/40' bgs | 11/7/2019 |
| DPT-002 | Trichloroethene | 29 J | (µg/L) | Upper Intermediate/44' bgs | 11/6/2019 |
| | cis-1,2-Dichloroethene | 0.99 J | (µg/L) | | |
| | Toluene | 0.71 J | (µg/L) | | |
| DPT-003 | Trichloroethene | 760 | (µg/L) | Upper Intermediate/40' bgs | 11/6/2019 |
| | Methylene Chloride | 23 J | (µg/L) | | |
| DPT-004 | Trichloroethene | 820 | (µg/L) | Upper Intermediate/38' bgs | 11/6/2019 |
| | cis-1,2-Dichloroethene | 24 J | (µg/L) | | |
| | Methylene Chloride | 24 J | (µg/L) | | |
| DPT-005 | Trichloroethene | 5,400 | (µg/L) | Upper Intermediate/34' bgs | 11/7/2019 |
| | cis-1,2-Dichloroethene | 93 J | (µg/L) | | |
| | Methylene Chloride | 94 J | (µg/L) | | |
| DPT-006 | Trichloroethene | 230 | (µg/L) | Upper Intermediate/35' bgs | 11/6/2019 |
| | cis-1,2-Dichloroethene | 4.2 J | (µg/L) | | |
| | Methylene Chloride | 6.6 J | (µg/L) | | |
| DPT-007 | Trichloroethene | 77,000 | (µg/L) | Upper Intermediate/36' bgs | 11/6/2019 |
| | cis-1,2-Dichloroethene | 840 J | (µg/L) | | |
| DPT-008 | Trichloroethene | 36,000 | (µg/L) | Upper Intermediate/36' bgs | 11/7/2019 |
| | cis-1,2-Dichloroethene | 820 | (µg/L) | | |
| | Methylene Chloride | 210 J | (µg/L) | | |
| DPT-009 | Trichloroethene | 93 | (µg/L) | Upper Intermediate/40' bgs | 11/6/2019 |
| | cis-1,2-Dichloroethene | 3 | (µg/L) | | |
| | Acetone | 5.3 J | (µg/L) | | |
| DPT-010 | Trichloroethene | 1,800 | (µg/L) | Upper Intermediate/36' bgs | 11/7/2019 |
| | cis-1,2-Dichloroethene | 1,300 | (µg/L) | | |
| | Methylene Chloride | 200 J | (µg/L) | | |
| | Vinyl Chloride | 97 J | (µg/L) | | |
| DPT-011 | Trichloroethene | 22,000 | (µg/L) | Upper Intermediate/38' bgs | 11/7/2019 |
| | cis-1,2-Dichloroethene | 1,500 | (µg/L) | | |
| 47WW09 | 1,4-Dioxane | 37 | (µg/L) | Shallow Intermediate/33' bgs | 11/7/2019 |
| 47WW25R-35 | Trichloroethene | 130,000 | (µg/L) | Upper Intermediate/35' bgs | 11/8/2019 |
| | cis-1,2-Dichloroethene | 2,100 J | (µg/L) | | |
| 47WW25R-38 | Trichloroethene | 140,000 | (µg/L) | Upper Intermediate/38' bgs | 11/8/2019 |
| | cis-1,2-Dichloroethene | 2,600 | (µg/L) | | |
| 47WW37 | Trichloroethene | 190 | (µg/L) | Intermediate/61' bgs | 11/8/2019 |
| | cis-1,2-Dichloroethene | 13 | (µg/L) | | |
| | Methylene Chloride | 61 J | (µg/L) | | |



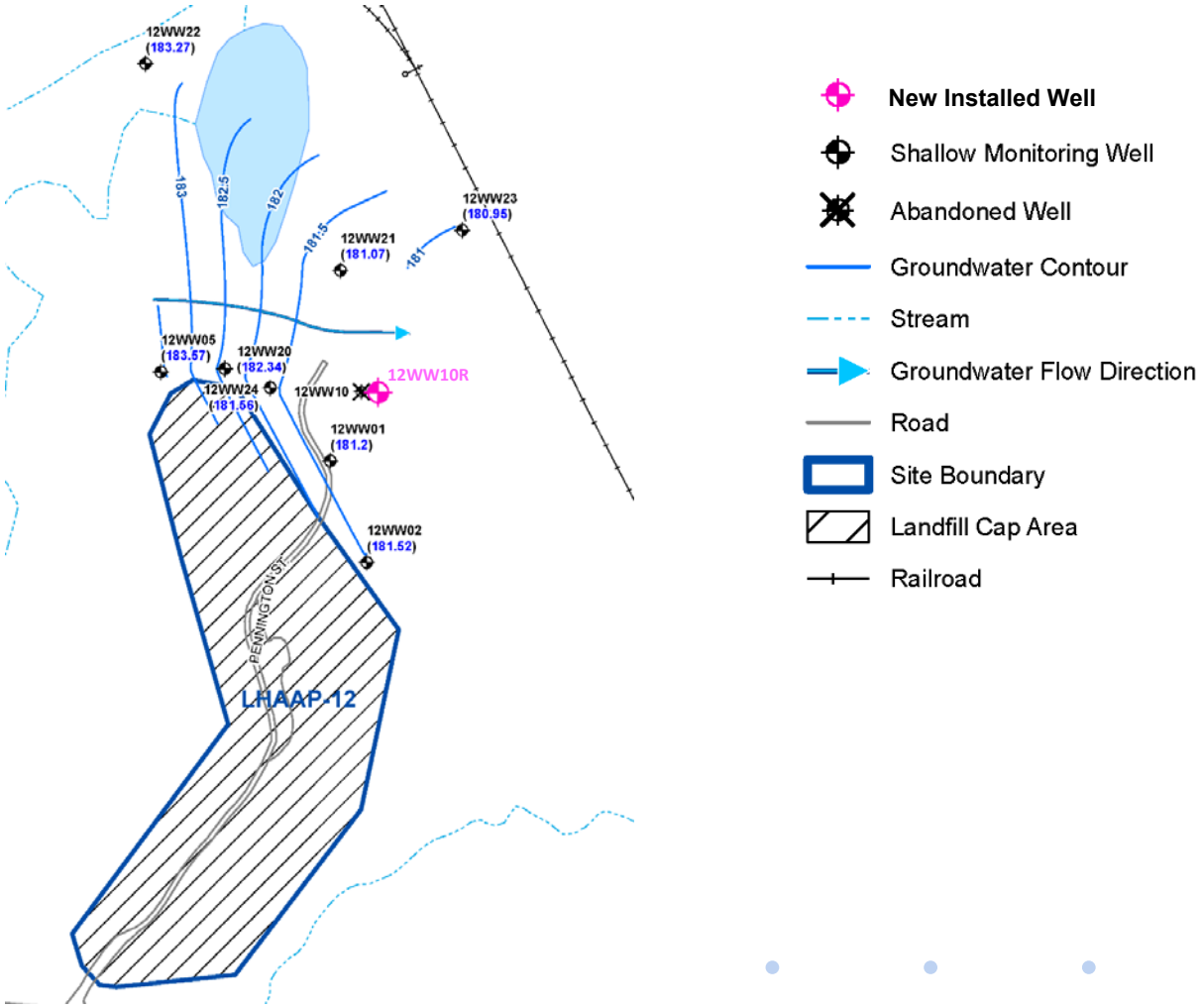
# Restoration Advisory Board Meeting

## Five Year Review Update

- The Five Year Review recommended new monitoring wells at LHAAP-12 (1) and LHAAP-67 (2) to refine the delineation of the groundwater plumes
- The Five Year Review recommended implementation of the contingency remedy at LHAAP-50
- A new well was installed at LHAAP-50 to refine the plume delineation and support the contingency remedy design
- Wells were installed at all three sites in late July and early August 2019

# Restoration Advisory Board Meeting

## LHAAP-12 New Well Location



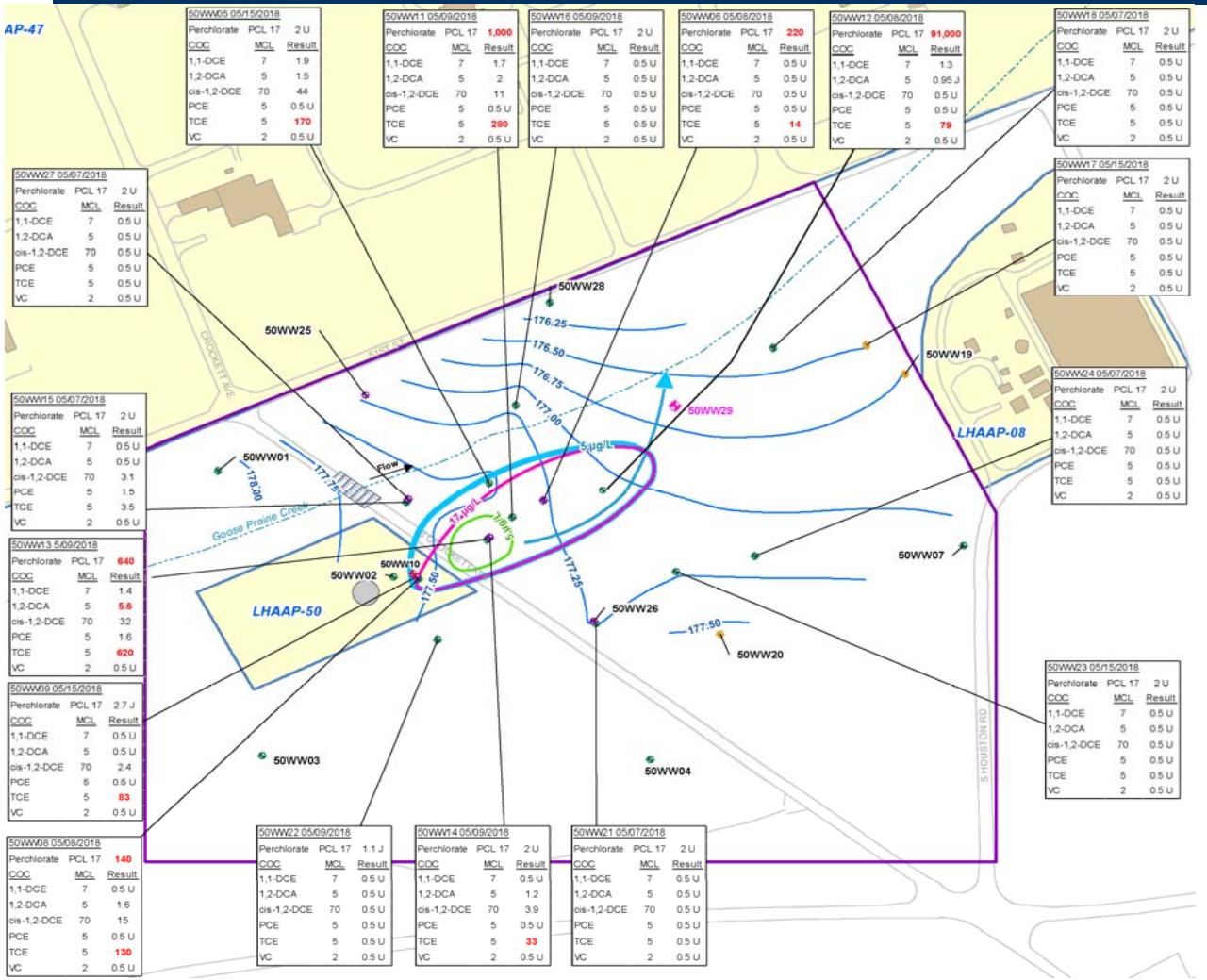
# Restoration Advisory Board Meeting

## Five Year Review New Well Installations

- LHAAP-12: A sample from the new well (12WW10R) was collected in December 2019; laboratory data has not yet been validated
- LHAAP-50: The new well (50WW29) did not contain detectable COCs in the November 2019 RA(O) sample
- LHAAP-67: Both new wells (67WW17 and 67WW18) did not contain detectable COCs in the October 2019 RA(O) samples

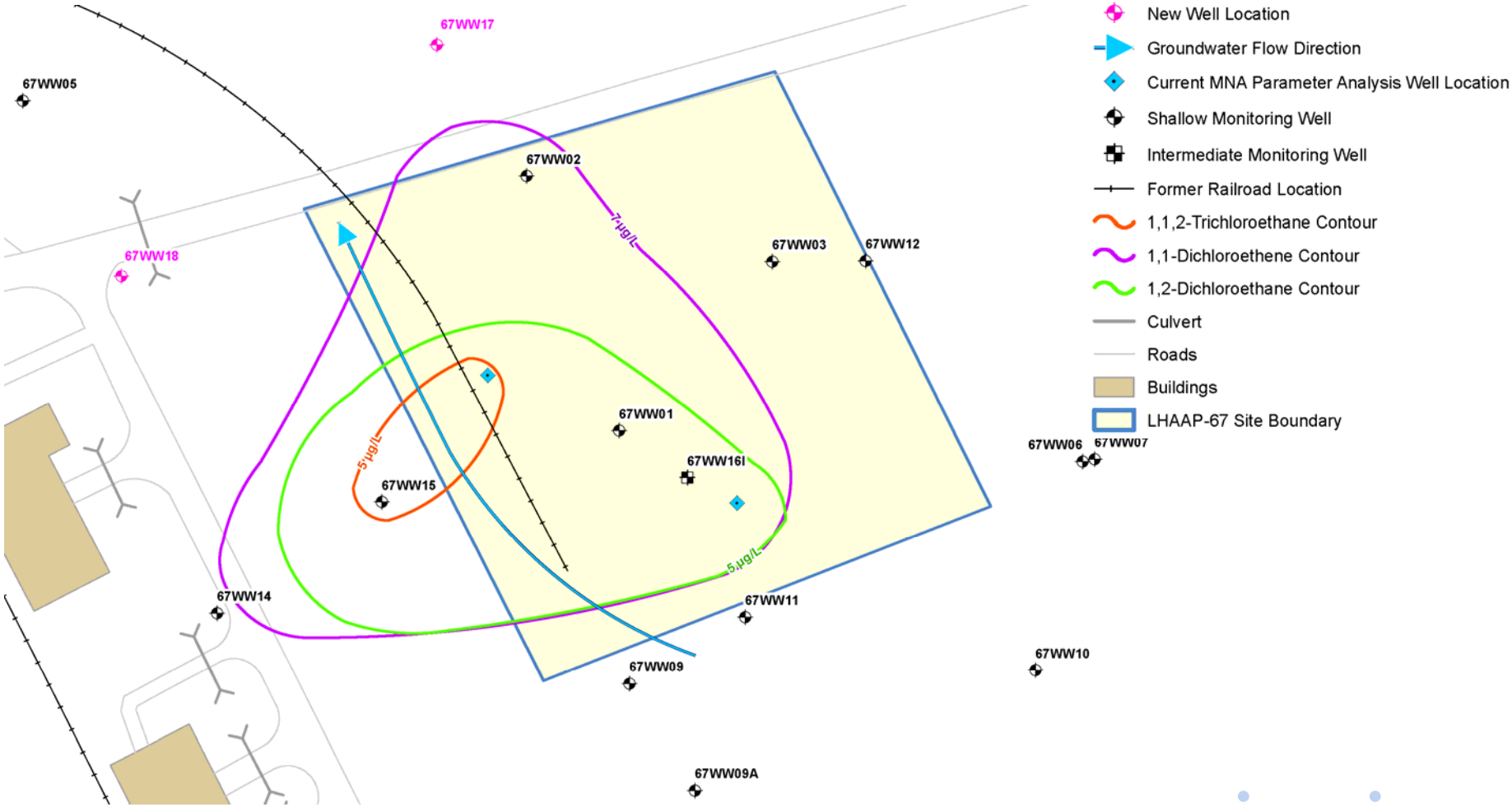
# Restoration Advisory Board Meeting

## LHAAP-50 New Well Location



# Restoration Advisory Board Meeting

## LHAAP-67 New Well Locations



# Restoration Advisory Board Meeting

## Next RAB Meeting Schedule & Closing Remarks

- Schedule April 2020 RAB Meeting
- Other Issues/Remarks
- Thank you for coming

# Groundwater Treatment Plant - Processed Groundwater Volumes

The amount of groundwater treated is determined by measuring the number of gallons of processed water discharged.

## Processed Water Discharged Data (in gallons)

| Oct-07 | Nov-07 | Dec-07 | Jan-08 | Feb-08 | Mar-08 | Apr-08 | May-08 | Jun-08 | Jul-08 | Aug-08 | Sep-08 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,041,491 | 848,356 | 804,822 | 792,148 | 665,883 | 818,872 | 791,306 | 568,812 | 776,904 | 748,377 | 690,052 | 617,199 |

| Oct-08 | Nov-08 | Dec-08 | Jan-09 | Feb-09 | Mar-09 | Apr-09 | May-09 | Jun-09 | Jul-09 | Aug-09 | Sep-09 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 655,059 | 619,274 | 726,118 | 552,299 | 598,144 | 433,800 | 488,807 | 526,958 | 387,644 | 0 | 414,853 | 735,716 |

| Oct-09 | Nov-09 | Dec-09 | Jan-10 | Feb-10 | Mar-10 | Apr-10 | May-10 | Jun-10 | Jul-10 | Aug-10 | Sep-10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 808,322 | 636,306 | 727,492 | 391,898 | 695,343 | 802,656 | 894,731 | 962,121 | 1,257,977 | 1,314,924 | 1,041,495 | 1,136,547 |

| Oct-10 | Nov-10 | Dec-10 | Jan-11 | Feb-11 | Mar-11 | Apr-11 | May-11 | Jun-11 | Jul-11 | Aug-11 | Sep-11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 956,567 | 705,805 | 849,712 | 811,679 | 668,281 | 1,090,348 | 817,325 | 900,338 | 916,552 | 784,369 | 652,524 | 733,456 |

| Oct-11 | Nov-11 | Dec-11 | Jan-12 | Feb-12 | Mar-12 | Apr-12 | May-12 | Jun-12 | Jul-12 | Aug-12 | Sep-12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 748,102 | 658,250 | 684,903 | 865,453 | 725,000* | 730,000* | 980,000* | 630,000* | 0 | 0 | 0 | 349,012 |

| Oct-12 | Nov-12 | Dec-12 | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 617,037 | 607,610 | 560,436 | 869,710 | 751,213 | 641,708 | 699,776 | 746,885 | 392,719 | 962,890 | 843,913 | 716,057 |

| Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 813,974 | 727,442 | 706,416 | 552,657 | 738,691 | 844,095 | 811,346 | 972,913 | 611,505 | 626,253 | 573,601 | 575,376 |

| Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 440,877 | 572,479 | 634,890 | 614,073 | 516,592 | 1,111,859 | 1,108,336 | 822,637 | 1,020,313 | 1,002,887 | 951,758 | 306,467 |

| Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 | Apr-16 | May-16 | Jun-16 | Jul-16 | Aug-16 | Sep-16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 128,586 | 209,088 | 120,234 | 454,444 | 1,028,210 | 1,201,904 | 1,224,064 | 1,094,528 | 792,311 | 844,916 | 1,032,732 | 805,728 |

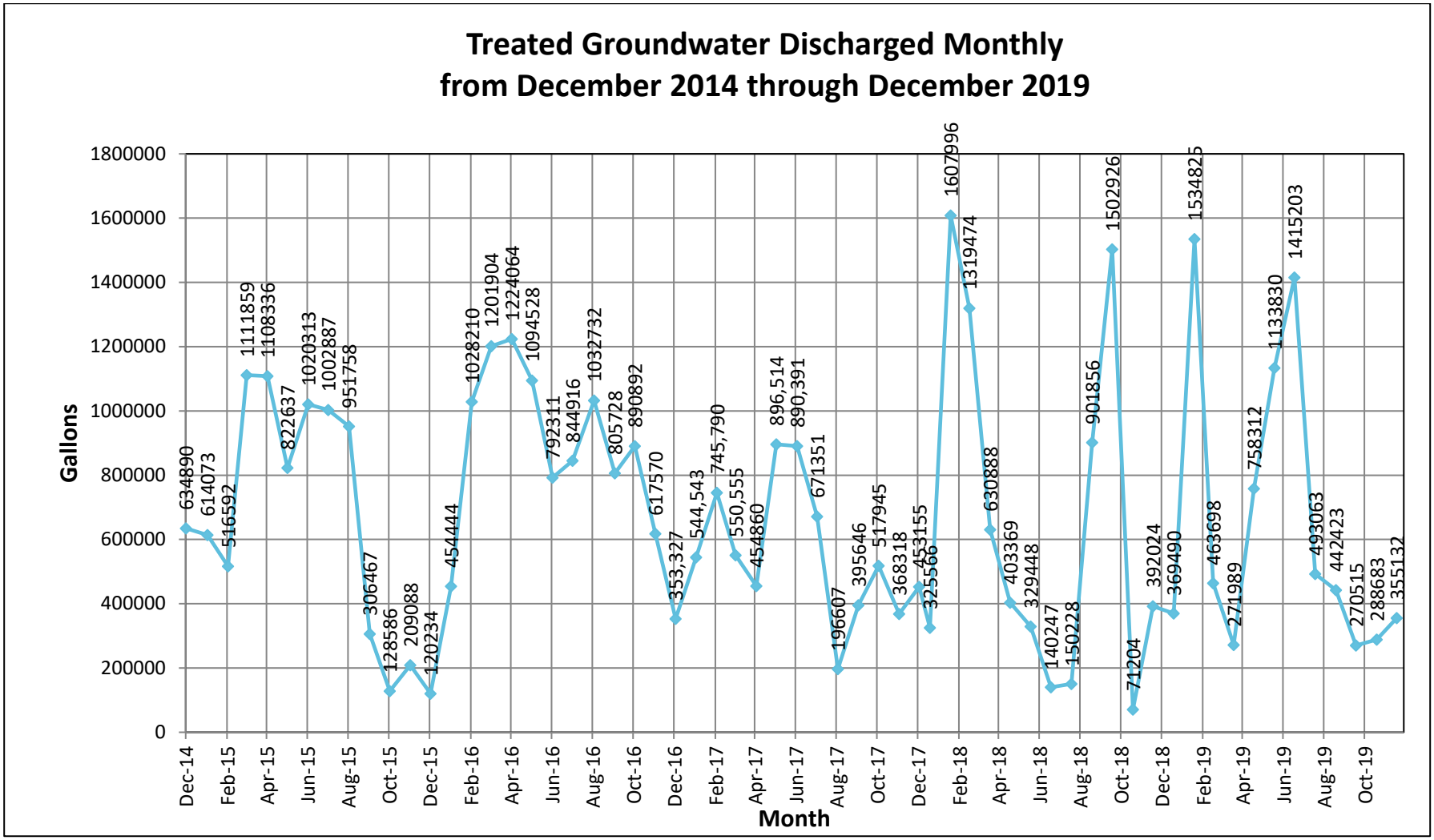
| Oct-16 | Nov-16 | Dec-16 | Jan-17 | Feb-17 | Mar-17 | Apr-17 | May-17 | Jun-17 | Jul-17 | Aug-17 | Sep-17 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 890,892 | 617,570 | 353,327 | 544,543 | 745,790 | 550,555 | 454,860 | 896,514 | 890,391 | 528,538 | 195,198 | 961,324 |

| Oct-17 | Nov-17 | Dec-17 | Jan-18 | Feb-18 | Mar-18 | Apr-18 | May-18 | Jun-18 | Jul - 18 | Aug-18 | Sep-18 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 517,945 | 368,318 | 453,155 | 325,566 | 1,607,996 | 1,319,474 | 630,888 | 403,369 | 329,448 | 140,247 | 150,228 | 901,856 |

| Oct-18 | Nov-18 | Dec-18 | Jan-19 | Feb-19 | Mar-19 | Apr-19 | May-19 | June-19 | Jul - 19 | Aug-19 | Sep-19 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,502,926 | 71,204 | 392,024 | 369,490 | 1,534,825 | 463,698 | 271,989 | 758,312 | 1,133,830 | 1,415,203 | 493,063 | 442,423 |

| Oct-19 | Nov-19 | Dec-19 |
|---|---|---|
| 270,515 | 288,683 | 355,132 |

*Indicates Estimate


Treated Groundwater Discharged Monthly
from December 2014 through December 2019
Gallons
Month
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
Dec-14
Feb-15
Apr-15
Jun-15
Aug-15
Oct-15
Dec-15
Feb-16
Apr-16
Jun-16
Aug-16
Oct-16
Dec-16
Feb-17
Apr-17
Jun-17
Aug-17
Oct-17
Dec-17
Feb-18
Apr-18
Jun-18
Aug-18
Oct-18
Dec-18
Feb-19
Apr-19
Jun-19
Aug-19
Oct-19
634890
614073
516592
1111859
1108336
822637
1020313
1002887
951758
306467
128586
209088
120234
454444
1028210
1201904
1224064
1094528
792311
844916
1032732
805728
890892
617570
353,327
544,543
745,790
550,555
454860
896,514
890,391
671351
196607
395646
517945
368318
453155
325566
1607996
1319474
630888
403369
329448
140247
150228
901856
1502926
71204
392024
369490
1534825
463698
271989
758312
1133830
1415203
493063
442423
270515
288683
355132

# Water Discharge Location and Volume (Gallons)

| Month | Total Combined to Harrison Bayou | LHAAP-18/24 Sprinklers | GWTP To INF Pond | INF Pond to Harrison Bayou | Contract Hauled Off-Site |
|---|---|---|---|---|---|
| Dec-16 | 0 | 236,688 | 0 | 0 | 0 |
| Jan-17 | 0 | 0 | 0 | 0 | 0 |
| Feb-17 | 0 | 0 | 0 | 0 | 14,355 |
| Mar-17 | 127,242 | 0 | 0 | 0 | 14,400 |
| Apr-17 | 113,038 | 0 | 236,821 | 0 | 0 |
| May-17 | 0 | 0 | 534,155 | 0 | 0 |
| Jun-17 | 958,404 | 0 | 294,550 | 490,574 | 0 |
| Jul-17 | 0 | 0 | 528,538 | 0 | 0 |
| Aug-17 | 0 | 0 | 195,197 | 0 | 0 |
| Sep-17 | 651,434 | 0 | 309,980 | 651,434 | 0 |
| Oct-17 | 0 | 0 | 517,945 | 0 | 0 |
| Nov-17 | 0 | 0 | 368,318 | 0 | 0 |
| Dec-17 | 560,350 | 0 | 453,155 | 560,350 | 0 |
| Jan-18 | 325,566 | 0 | 253,177 | 325,566 | 0 |
| Feb-18 | 1,607,996 | 0 | 62,017 | 1,430,634 | 0 |
| Mar-18 | 1,319,474 | 0 | 0 | 870,816 | 0 |
| Apr-18 | 630,888 | 0 | 0 | 630,888 | 0 |
| May-18 | 403,369 | 0 | 0 | 403,369 | 0 |
| Jun-18 | 193,669 | 0 | 135,779 | 0 | 0 |
| Jul -18 | 0 | 0 | 140,247 | 0 | 0 |
| Aug -18 | 49,409 | 0 | 100,819 | 0 | 0 |
| Sep-18 | 585,397 | 0 | 316,459 | 524,484 | 0 |
| Oct-18 | 1,409,106 | 0 | 93,820 | 1,016,285 | 0 |
| Nov-18 | 71,204 | 0 | 0 | 0 | 0 |
| Dec-18 | 392,024 | 0 | 0 | 0 | 0 |
| Jan-19 | 369,490 | 0 | 0 | 369,490 | 0 |
| Feb-19 | 1,534,825 | 0 | 0 | 1,326,485 | 0 |
| Mar-19 | 463,698 | 0 | 0 | 83,250 | 0 |
| Apr-19 | 271,989 | 0 | 0 | 0 | 0 |
| May-19 | 758,312 | 0 | 0 | 253,817 | 0 |
| Jun-19 | 1,133,830 | 0 | 0 | 847,918 | 0 |

| Month | Total Combined to Harrison Bayou | LHAAP-18/24 Sprinklers | GWTP To INF Pond | INF Pond to Harrison Bayou | Contract Hauled Off-Site |
|---|---|---|---|---|---|
| Jul -19 | 1,415,203 | 0 | 0 | 903,001 | 0 |
| Aug-19 | 374,629 | 0 | 118,434 | 0 | 0 |
| Sep-19 | 0 | 0 | 442,423 | 0 | 0 |
| Oct-19 | 0 | 0 | 270,515 | 0 | 0 |
| Nov-19 | 115,503 | 0 | 173,180 | 0 | 0 |
| Dec-19 | 318,248 | 0 | 36,884 | 0 | 0 |

# Harrison Bayou and Goose Prairie Creek – Perchlorate Data

Surface water samples are collected quarterly from each location in Harrison Bayou and Goose Prairie Creek, unless the sampling location is dry.

**Surface Water Sample Data (in micrograms per liter)**

| Quarter | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Creek Sample ID** | **Jul 1999** | **Sep 1999** | **Feb 2000** | **Apr 2000** | **Aug 2000** | **Dec 2000** | **Feb 2001** | **Apr 2001** | **July 2001** | **Oct 2001** | **Jan 2002** |
| GPW-1 | <1.0U | - | 4 | <4.0 U | <4.0 U | <4.0 U | - | 2.65 | <4.0 U | <4.0 U | <4.0 U |
| GPW-3 | <1.0U | <4.0 U | 17 | 8 | <4.0 U | <4.0 U | - | 2.28 | <4.0 U | <4.0 U | <4.0 U |
| HBW-1 | - | <80.0 U | 310 | 23 | - | - | <4.0 U | - | <4.0 U | <4.0 U | <4.0 U |
| HBW-7 | - | <8.0 U | 370 | 110 | - | - | <4.0 U | - | <4.0 U | <4.0 U | <4.0 U |
| HBW-10 | - | <8.0 U | 905 | 650 | <4.0 U | - | <4.0 U | - | <4.0 U | - | - |

| Quarter | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 3rd | 4th | 2nd | 3rd | 4th |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Creek Sample ID** | **June 2002** | **Sept 2002** | **Dec 2002** | **Feb 2003** | **June 2003** | **Aug 2003** | **July 2004** | **Dec 2006** | **May 2007** | **Aug 2007** | **Dec 2007** |
| GPW-1 | <4.0 U | <4.0 U | 18.3 | 18.6 | 59.9 | - | 2.25 | - | <1.0 U | <1.0 U | 10.7 |
| GPW-3 | <4.0 U | <4.0 U | 5.49 | 12.6 | 14.7 | - | 2.2 | - | <1.0 U | <1.0 U | 7.48 |
| HBW-1 | <4.0 U | <4.0 U | <4.0 U | - | <4.0 U | 99.3 | <0.2U | <1.0 U | <1.0 U | 122 | <1.0 U |
| HBW-7 | <4.0 U | <4.0 U | <4.0 U | - | <4.0 U | <4.0 U | <0.2U | <1.0 U | <1.0 U | 1.02 | <1.0 U |
| HBW-10 | <4.0 U | <4.0 U | <4.0 U | - | <4.0 U | - | <0.2U | <1.0 U | <1.0 U | <1.0 U | <1.0 U |

| Quarter | 1st | 2nd | 3rd | 4th | 2nd | 3rd | 3rd | 3rd | 4th | 1st | 2nd |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Creek Sample ID** | **Mar 2008** | **Jun 2008** | **Sep 2008** | **Dec 2008** | **May 2009** | **Jul 2009** | **Aug 2009** | **Sep 2009** | **Dec 2009** | **Mar 2010** | **Jun 2010** |
| GPW-1 | 27 | <0.5U | <0.5U | <0.22U | 16 | <4U | NS | <1.2U | 3.7 | 1.3J | <0.6U |
| GPW-3 | 21.9 | 9.42 | 1.1 | <0.22U | 8.9 | <4U | NS | <0.6U | 2.8 | 1.8J | <0.6U |
| HBW-1 | <0.5U | <0.5U | <0.5U | <0.22U | <0.55U | <4U | NS | <1.5U | <0.275U | 1.5U | <0.6U |
| HBW-7 | <0.5U | <0.5U | <0.5U | <0.22U | <0.55U | <4U | 24 | <1.2U | <0.275U | 1.5U | <0.6U |
| HBW-10 | <0.5U | <0.5U | <0.5U | <0.22U | <0.55U | <4U | NS | <1.5U | <0.275U | 1.2U | <0.6U |

| Quarter | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Creek Sample ID** | **Sep 2010** | **Dec 2010** | **Mar 2011** | **Jun 2011** | **Sep 2011** | **Dec 2011** | **Mar 2012** | **Jun 2012** | **Not Applicable** | **Jan & Feb 2013** | **Mar 2013** |
| GPW-1 | dry | <0.1U | 8.7 | dry | dry | 1.76 | 0.163J | dry | NS | 1.65 | 0.735 |
| GPW-3 | dry | 0.199J | 0.673 | dry | dry | 1.31 | 0.261 | dry | NS | 1.74 | 0.754 |
| HBW-1 | dry | <0.1U | <0.2U | dry | dry | <0.1U | 0.1U | dry | NS | <0.2U | <0.2U |
| HBW-7 | dry | <0.1U | <0.2U | dry | dry | 0.171J | 0.1U | dry | NS | <0.2U | <0.2U |
| HBW-10 | dry | <0.1U | <0.2U | dry | dry | <0.1U | 0.1U | dry | NS | <0.2U | <0.2U |

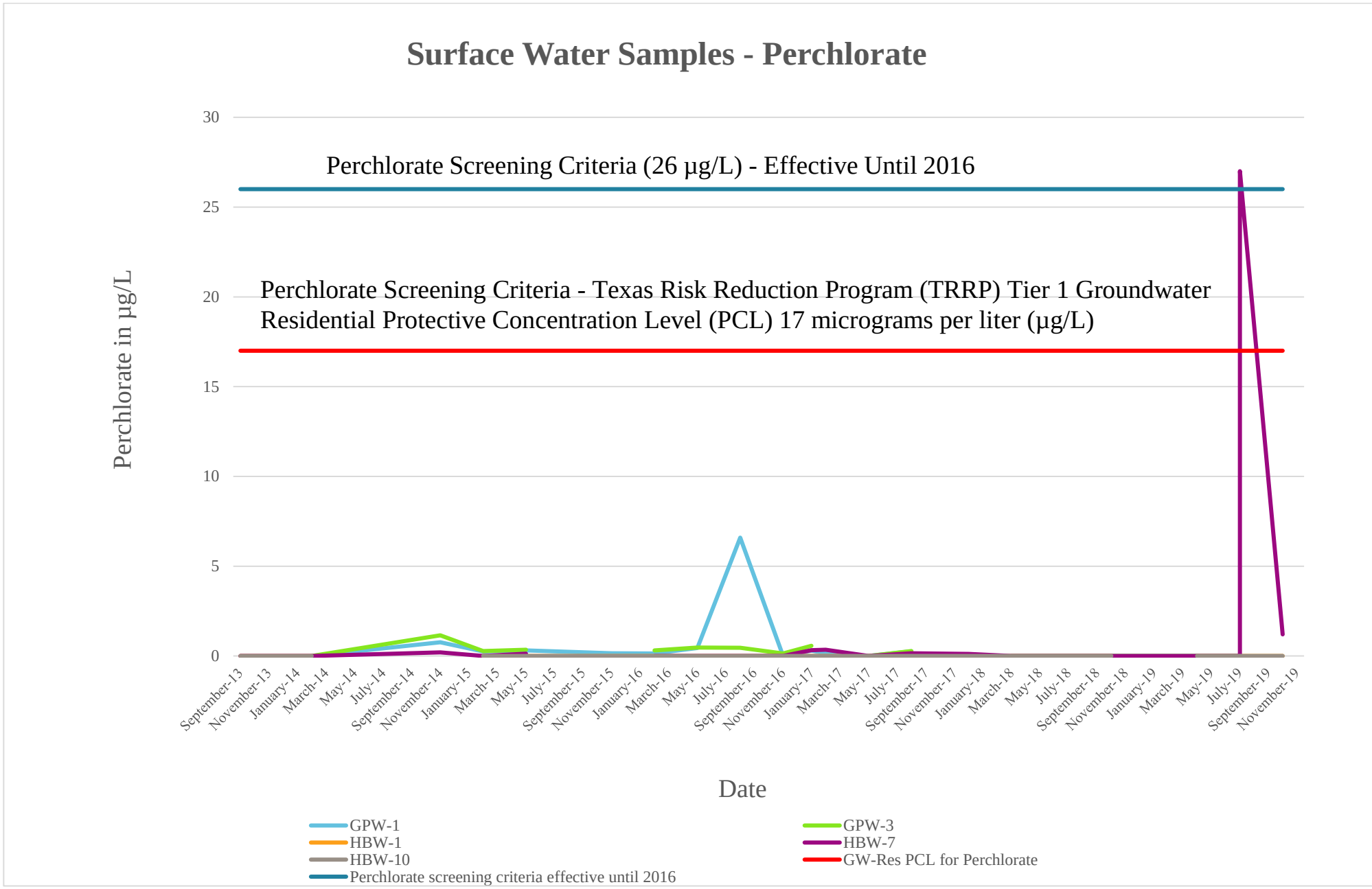
| Quarter | 2nd | 3rd | 4th | 1st | 2nd | 3nd | 4th | 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Creek Sample ID** | **Jun 2013** | **Sept 2013** | **Dec 2013** | **Feb 2014** | **May 2014** | **Aug 2014** | **Nov 2014** | **Feb 2015** | **May 2015** | **Aug 2015** | **Nov 2015** |
| GPW-1 | dry | <0.2 U | dry | 0.766 | dry | dry | 0.244 J | 0.311 J | 0.156J | dry | 0.142 J |
| GPW-3 | dry | <0.2 U | dry | 1.15 | dry | dry | 0.276 J | 0.344 J | dry | dry | 0.311 J |
| HBW-1 | <0.2U | <0.2 U | dry | <0.2 U | dry | dry | <0.2 U | <0.2 U | dry | dry | <0.2 U |
| HBW-7 | <0.2U | <0.2 U | dry | 0.201 J | dry | dry | <0.2 U | 0.124 J | dry | dry | <0.2 U |
| HBW-10 | <0.2U | <0.2 U | dry | <0.2 U | dry | dry | <0.2 U | <0.2 U | dry | dry | <0.2 U |

| Quarter | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Creek Sample ID** | **Feb 2016** | **May 2016** | **Aug 2016** | **Nov 2016** | **Feb 2017** | **May 2017** | **Aug 2017** | **Dec 2017** | **Mar 2018** | **June 2018** | **August 2018** |
| GPW-1 | 0.447 | 6.59 | <0.2 U | 0.301 J | <1 U | 0.263 | dry | <4.0 U | <4.0 U | dry | <2.0 U |
| GPW-3 | 0.474 | 0.457 | 0.141 | 0.563 | <1 U | 0.274 | dry | <4.0 U | <4.0 U | dry | <2.0 U |
| HBW-1 | <0.2 U | <0.2 U | <0.2 U | <0.2 U | <1 U | <0.2 U | <0.2 U | 1.1 J | <4.0 U | dry | <2.0 U |
| HBW-7 | <0.2 U | <0.2 U | <0.2 U | 0.318 J | <1 U | 0.155 | <0.2 U | <4.0 U | <4.0 U | dry | <2.0 U |
| HBW-10 | <0.2 U | <0.2 U | <0.2 U | <0.2 U | <1 U | <0.2 U | 0.111J | <4.0 U | <4.0 U | dry | <2.0 U |

NS – not sampled  U – non-detect  J – Estimated  Dry – no surface water

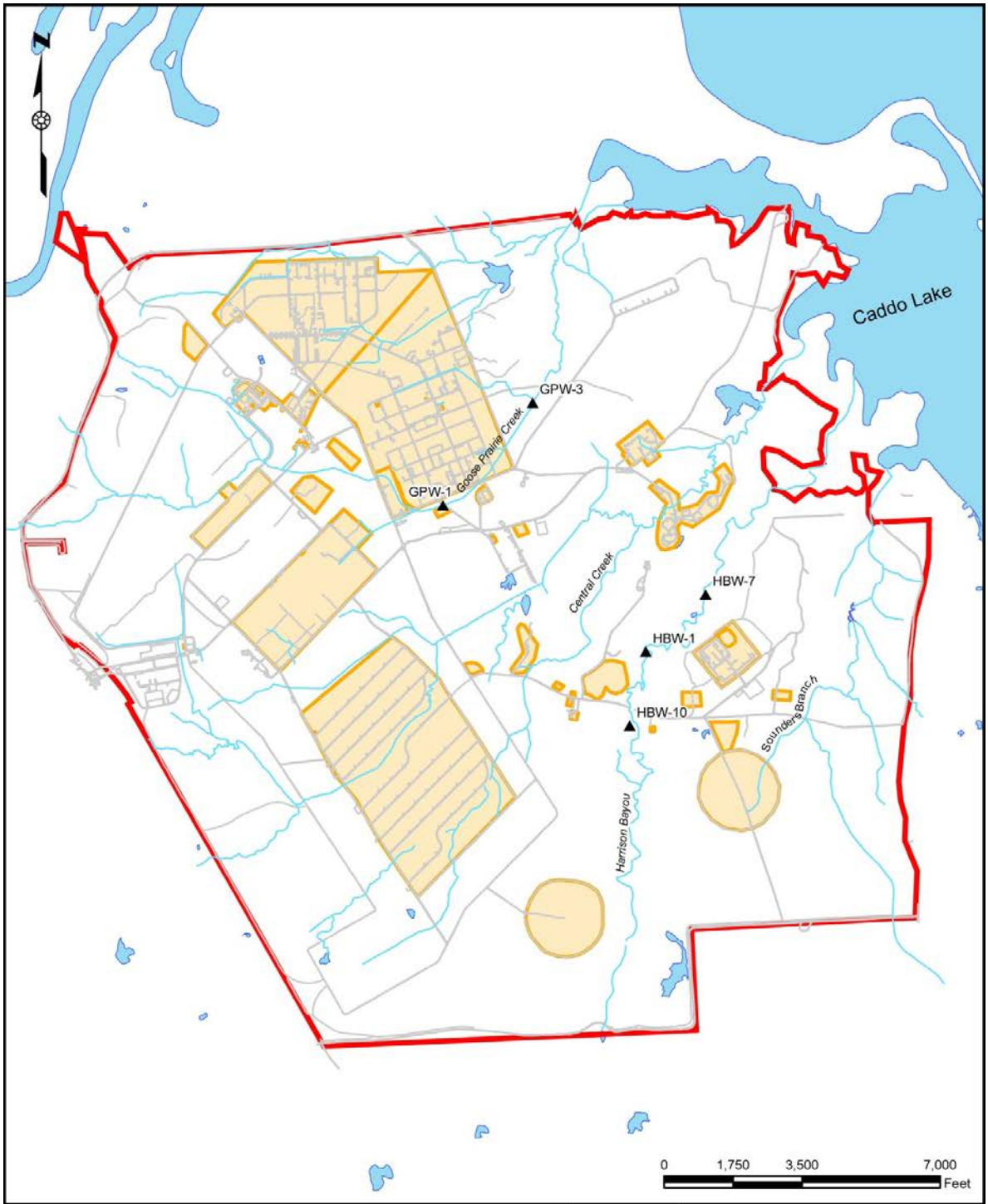
| Quarter | 4th | 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|---|
| **Creek Sample ID** | **Oct 2018** | **Jan 2019** | **April 2019** | **July 2019** | **Oct 2019** |
| GPW-1 | <2.0 U | <2.0 U | <2.0 U | <2.0 U | <2.0 U |
| GPW-3 | <2.0 U | <2.0 U | <2.0 U | <2.0 U | <2.0 U |
| HBW-1 | <2.0 U | <2.0 U | <2.0 U | <2.0 U | <2.0 U |
| HBW-7 | <2.0 U | <2.0 U | <2.0 U | 27 (initial)/ 1.2 J (resample) | 1.6 J |
| HBW-10 | <2.0 U | <2.0 U | <2.0 U | <2.0 U | <2.0 U |

NS – not sampled U – non-detect J – Estimated Dry – no surface water




**Note:** Surface water at HBW-7 had a detection of 27 µg/L from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later.

# Longhorn Army Ammuntion Plant Creek Sampling Locations




**Legend**

- ▲ Surface Water Sampling Location
- Stream
- Road
- Site
- Lake

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

SURFACE WATER SAMPLING LOCATION

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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

July 23, 2020

DAIN-ODB-LO

Mr. William Rhotenberry
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

**Re: Draft Final Fifth Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area), Longhorn Army Ammunition Plant, Karnack, Texas, July 2020**

Dear Mr. Rhotenberry,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your review: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on July 2, 2020, and Texas Commission on Environmental Quality's (TCEQ) comments received on June 16, 2020. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Responses to EPA and TCEQ 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 (electronic/online)
P. Bruckwicki, Caddo Lake NWR, TX (electronic/online)

R. Smith USACE, Tulsa District, OK (electronic/online)
A. Williams, USACE, Tulsa District, OK (electronic/online)
A. Maly USAEC, San Antonio, TX (electronic/online)
K. Nemmers, Bhate, Lakewood, CO (electronic/online)
P. Srivastav, APTIM, Houston, TX (electronic/online)

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

July 23, 2020

DAIN-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 Fifth Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area), Longhorn Army Ammunition Plant, Karnack, Texas, July 2020**

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your review: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the Draft version received on July 2, 2020, and Texas Commission on Environmental Quality's (TCEQ) comments received on June 16, 2020. In accordance with Federal Facility Agreement, this Draft Final will be considered Final after 30 days without further comment. Responses to EPA and TCEQ 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 (letter only):
W. Rhotenberry, USEPA Region 6, Dallas, TX
P. Bruckwicki, Caddo Lake NWR, TX

R. Smith, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
A. Maly, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

**Response to Comments on**
**Draft Fifth Annual Remedial Action Operation Report**
**LHAAP-46 (Plant 2 Area),**
**Longhorn Army Ammunition Plant, Karnack, Texas**

**Document Date: 10 June 2020**
**Comment Date: 2 July 2020**

**Reviewer:** Mr. William Rhotenberry, USEPA
**Respondent:** Dr. Rose Zeiler

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

| Comment No. | Section, Page ref. | USEPA Comment | C, D, E, or X[1] | Response | A or D[2] |
|---|---|---|---|---|---|
| 1. | Page 2-2, Section 2.2.1.2 | Agree that monitor well 46WW08 has anomalous groundwater level. Has the surveying been checked for accuracy at this well and/or could this be an area of localized confinement? | C | The ground surface and top of casing elevations for the well have been checked against well elevations listed in the Remedial Action Completion Report. However, the RACR provided boring logs and construction logs for the wells but did not include the survey data. The elevations provided generally match the available ground surface topographic contours, and a surveying error large enough to account for the anomaly is not considered likely. Localized confinement is one possible explanation, as is localized recharge from the shallow zone. There are no shallow zone wells near 46WW08 to allow comparison of elevations to determine the likely cause of the anomaly. | |
| 2. | Page 2-3, Section 2.2.1.4 | Text states a downward vertical gradient, indicating there is hydraulic separation between shallow and intermediate zones. If there is a downward gradient between the two water-bearing zones wouldn't that indicate connection. Next paragraph states the same thing. Please clarify. | C/D | The term "downward vertical gradient" is used to describe a downward change in head between the two formations vertically when measured at the same horizontal location (i.e., the potentiometric elevation is significantly higher in the shallow zone than in the intermediate zone). In August 2016, the last time both wells had water, the groundwater elevation in 46WW04 (shallow) was 190.35, while the elevation | |

| Comment No. | Section, Page ref. | USEPA Comment | C, D, E, or X[1] | Response | A or D[2] |
|---|---|---|---|---|---|
| | | | | in 46WW06 (intermediate) was 173.61. The 16.74 foot difference in groundwater elevation between the two units implies that there is a layer in between the two zones that has a low enough permeability to hold more water in the shallow zone without allowing it to drain into the intermediate zone and equalize the elevations. As stated later in the same paragraph, it is likely that the layer between the zones is a leaky aquitard in at least some areas of the site, implying that some connection does exist between the zones, but that it is slow enough to generate higher groundwater elevations in the shallow zone. The discussion in the second paragraph was describing the gradient between the intermediate and deep zones. The much lower difference between the groundwater elevations measured in 46WW02 and 46WW03 suggests that the layer between the intermediate and deep zones has a higher permeability than the layer between the shallow and intermediate zones. The text has been revised to clarify the distinction between the two scenarios. | |
| 3. | Table 2-3 | Suggest putting an NA or some other symbol in columns where there is no data. Reason for no data, could be dry, not sampled this period, or etc. | C | The acronym NA, for "not analyzed", was added to the table cells where no analytical result is shown and defined in the table notes. The acronym NM, for "not measured", was added to the table cells where no field measurement is shown due to the misplaced sample collection logs and a definition was added to the table notes. | |
| 4. | Table 2-4 | Suggest bolding concentrations at or above MCL. For instance, well 46WW02 has a result of 2 for VC which would be at the CL. | C/D | Concentrations above the MCL have been bolded. The vinyl chloride (VC) concentrations shown with a value of 2 µg/L from 2007 are flagged with a U qualifier, indicating that VC was not detected at or above the reporting limit of 2 µg/L. The method detection limit (MDL) for VC in the samples in question was 0.32 µg/L, and VC was not detected | |

| Comment No. | Section, Page ref. | USEPA Comment | C, D, E, or X[1] | Response | A or D[2] |
|---|---|---|---|---|---|
| | | | | above the MDL either. Therefore, the VC was not detected at or above the MCL. The definition of the U qualifier for Table 2-4 was revised to match the definition used on Table 2-3 for clarity and consistency and now includes that the analyte was not detected at or above the reporting limit shown. | |
| 5. | Page 4-1, second bullet | There was one well that had a VC concentration right at the MCL for VC of 2, so suggest mentioning it. | D | See response to Comment #4. There have not been any VC detections above the MCL since 2014. The text for the 2nd bullet has been revised to state: "TCE and cis-1,2-DCE are the only COCs detected in the groundwater at concentrations exceeding the MCLs in 2019." | |
| 6. | Page 5-1, USACE, 2010 reference | Please note typo here, LHAAP-43 needs to be changed to LHAAP-46. | C | Text has been revised to LHAAP-46. | |

**Response to Comments on**
**Draft Fifth Annual Remedial Action Operation Report**
**LHAAP-46 (Plant 2 Area),**
**Longhorn Army Ammunition Plant, Karnack, Texas**

**Document Date: 10 June 2020**
**Comment Date: 16 June 2020**

**Reviewer:** Ms. April Palmie, TCEQ
**Respondent:** Dr. Rose Zeiler

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

| Comment No. | Section, Page ref. | TCEQ Comment | C, D, E, or X[1] | Response | A or D[2] |
|---|---|---|---|---|---|
| 1. | General | I agree with the recommendations regarding the monitoring network and the installation of an additional monitoring well to delineate the northeastern extent of the plume in the shallow zone. | C | Noted and appreciated. | |
| 2. | Table 2-3 | 1,1-Dichloroethane isn't usually included on the summary table since it isn't a site COC (see 2018 report example). This COC does not have an MCL and the PCL is incorrect on the table. Suggest you remove VOCs that aren't site COCs.<br><br>Why weren't metals sampled? If not sampled because of the MNA sampling consistency memo, please add a note to the report. | C<br><br>C | Table 2-3 was revised as suggested by removing the volatile organic compounds that are not COCs in groundwater.<br><br>Phosphorus and manganese were removed from the monitoring program in accordance with the February 2019 MNA Monitoring Parameter Technical Memorandum. The Technical Memorandum has been added to the reference list and the following sentence was added as the final sentence in the 1st paragraph of Section 2.2:<br>"The MNA parameter list was revised in accordance with the Final Technical Memorandum – Monitored Natural Attenuation | |

| Comment No. | Section, Page ref. | TCEQ Comment | C, D, E, or X[1] | Response | A or D[2] |
|---|---|---|---|---|---|
| | | | | Parameters (Bhate 2019a). As a result, phosphorous, manganese, total iron, and dissolved iron (laboratory) were not analyzed for the sampling events covered by this report and will not be analyzed for in future events." | |
| 3. | Appendix C | Pages 112-113 are for the replacement well sampling on 9/3/2019 and should be behind the February and August 2019 notes. Pages 226-227 should be first (boring and redevelopment information). Thank you for the notes in this appendix. | C | The Appendix C pages have been re-ordered as suggested. | |

# *Draft Final*
# Fifth Annual Remedial Action Operation Report, LHAAP-46 (Plant 2 Area)

## Longhorn Army Ammunition Plant
## Karnack, Texas

Prepared for

U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

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**Contract No. W9128F-13-D-0012**
**Task Order No. W9128BV17F0150**
**Project No. 501032**
**Rev 0**
**July 2020**

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# Acronyms and Abbreviations

| | |
|---|---|
| µg/L | micrograms per liter |
| amsl | above mean sea level |
| AECOM | AECOM Technical Services, Inc. |
| bgs | below ground surface |
| Bhate | Bhate Environmental, Inc. |
| COC | contaminant of concern |
| DCE | dichloroethene |
| DO | dissolved oxygen |
| LHAAP | Longhorn Army Ammunition Plant |
| LUC | land-use control |
| MCL | maximum contaminant level |
| mg/L | milligram(s) per liter |
| MNA | monitored natural attenuation |
| mV | millivolts |
| ORP | oxidation-reduction potential |
| RA-O | remedial action operation |
| RACR | Remedial Action Completion Report |
| RD | Remedial Design |
| Shaw | Shaw Environmental, Inc. |
| TCE | trichloroethene |
| TNT | trinitrotoluene |
| TOC | total organic carbon |
| USACE | U.S. Army Corps of Engineers |
| USEPA | U.S. Environmental Protection Agency |
| VC | vinyl chloride |
| VOC | volatile organic compound |

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • July 2020

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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 National Small Business Multiple Award Task Order Contract, Environmental Remediation Services with Military Munitions Response Program, Task Order 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.

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, as shown on **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, then 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-46 under the Record of Decision issued for the site in September 2010 (USACE 2010). The Remedial Action Completion Report (RACR) (AECOM Technical Services, Inc [AECOM] 2015) outlined the implementation of RA-O to address risks associated with contaminated groundwater at the LHAAP-46 site. The RACR was developed using the basis and details of the Remedial Design (RD) (Shaw Environmental, Inc. [Shaw] 2011) and the Remedial Action Work Plan for LHAAP-46 (AECOM 2013).

Groundwater monitoring at LHAAP-46 is ongoing, as described in the RACR. This report represents the fifth year of RA-O implementation and summarizes the results of site

inspections and sampling activities. RA-O groundwater sampling performed at LHAAP-46 between May 2013 and February 2018 has identified that 8 of the 12 shallow wells have been dry during nearly every sampling event. Due to contractual reasons, sampling was not performed in 2017. Five of the dry shallow monitoring wells are located within the historical trichloroethene (TCE) plume area or to the east (downgradient) of the current shallow zone TCE plume areas. The inability to sample these shallow wells in key locations has prevented the full evaluation of the plume extent and the progress of the monitored natural attenuation (MNA) remedy at the site (AECOM 2017). A *Final Technical Memorandum – Remedial Action Operation* was submitted in March 2018 (Bhate 2018a), which concluded that the groundwater elevations declining in the area of LHAAP-46 were not likely to be a temporary rain-dependent issue but were part of a long-term trend of declining groundwater elevations. The memorandum recommended that MNA evaluation at LHAAP-46 should proceed without waiting for data from the dry wells, and the regulators concurred with the recommendation. The fifth year RA-O sampling events were conducted in February and August 2019, and an evaluation of the MNA remedy is included in **Section 3.0** of this report.

## 1.1 Remedial Action Objectives

The remedial action objectives for the LHAAP-46 site are to protect human health and meet applicable or relevant and appropriate requirements. There are no unacceptable ecological risks posed by the LHAAP-46 site (USACE 2010). The remedial action objectives for LHAAP-46, consistent with the reasonably anticipated future use of the site as a national wildlife refuge, are:

- Protection of human health by preventing human exposure to the contaminated groundwater;
- Protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water; and
- Returning groundwater to its potential beneficial use as a drinking water source, wherever practicable.

## 1.2 Performance Objectives

The remedy selected for LHAAP-46 is land-use controls (LUC) and MNA. The performance objectives at LHAAP-46 consist of two components: physical inspections and groundwater/surface water monitoring. As a component of the LUC implementation, the civil survey of the LUC boundary was conducted in November 2014 and recorded in the Harrison County Courthouse in December 2014. Physical inspections are conducted annually to confirm compliance with the LUC objectives, which consist of preventing human exposure to groundwater contamination at levels that pose an unacceptable risk to a future maintenance

worker and ensuring that there is no withdrawal or use of groundwater from the site for anything other than environmental monitoring and testing until the cleanup levels – maximum contaminant levels (MCL) – are attained. Groundwater monitoring has been conducted at the site since May 2013, and LHAAP-46 is included in the facility-wide Longhorn Five-Year Review. Groundwater and surface water monitoring are being performed to:

- Detect changes in environmental conditions that may reduce the efficacy of natural attenuation processes;
- Identify potentially toxic and/or mobile transformation products;
- Verify that the plume is not expanding;
- Verify no unacceptable impact to downgradient receptors, such as discharge to surface water;
- Detect new releases of contaminants to the environment that could impact effectiveness of the natural attenuation remedy; and
- Verify attainment of the remediation objectives.

LHAAP-46 RA-O monitoring began in 2013. Monitoring during the first two years was performed on a quarterly basis and documented in annual reports (AECOM 2016a; AECOM 2016b). In accordance with the RD (Shaw 2011), the Year 3 and Year 4 RA-O monitoring events were conducted semiannually (AECOM 2017).

Groundwater monitoring completed as part of the Year 5 RA-O consisted of groundwater sampling events at 11 wells in the shallow zone, nine wells in the intermediate zone, one well in the deep zone, and one surface water sample location adjacent to LHAAP-46. This report summarizes the LUC compliance inspection, monitoring well inspection, and results of groundwater and surface water sampling.

## 1.3 Site Description

Site LHAAP-46 (Plant 2 Area) is located in the north-central portion of LHAAP, in a formerly industrial area where pyrotechnic and illumination devices were produced until 1997 (**Figure 1-2**). LHAAP-46 occupies approximately 190 acres within a triangular area bounded by Avenue P to the southwest, the LHAAP property boundary fence to the north, and site LHAAP-47 to the southeast. The surface features at LHAAP-46 include asphalt paved roads, parking areas, building foundation remnants, abandoned buildings, areas that are wooded, and overgrown grasses and other vegetation. The topography is relatively flat, sloping slightly to the east, with the surface water drainage flowing to the east into tributaries of Goose Prairie

Creek, which eventually discharges into Caddo Lake. LHAAP-46 has no known areas of archaeological or historical importance.

## 1.4 Conceptual Site Model

A detailed Conceptual Site Model for LHAAP-46 was previously developed and is presented in the Record of Decision (USACE 2010). Based on additional data collected as part of final remedy implementation and presented in the LHAAP-46 Draft Final RACR (AECOM 2015), the lithologic units at the site have been characterized. Three water-bearing zones, identified as the shallow, intermediate, and deep zones, are present beneath LHAAP-46. The shallow groundwater zone is encountered at approximately 10 to 28 feet below ground surface (bgs) and extends to approximately 30 feet beneath LHAAP-46. The lithology of the shallow zone consists mostly of clay, with relatively thin discontinuous sand layers. Groundwater tends to occur preferentially in the more permeable thin sand layers. The groundwater is typically unconfined. The intermediate groundwater zone is generally sandier than the shallow groundwater zone. A relatively thick sand layer was identified in the intermediate groundwater zone in three of the five monitoring wells installed during remedy implementation, but it was not present in the boreholes for monitoring wells 46WW08 and 46WW16, in the northern part of the site. Clay that overlies the sand acts as a leaky aquitard to the shallow groundwater zone. The difference in groundwater elevations seen in shallow and intermediate groundwater zone wells supports some degree of hydraulic separation of those zones, although contaminants of concern (COCs) in the shallow groundwater zone are also present in groundwater in the intermediate zone. Depth-to-groundwater was observed to range from approximately 19 feet to 37 feet bgs in the intermediate zone wells. The sand interval representing the intermediate zone is at a depth between 36 feet and 43 feet bgs. Only one groundwater monitoring well, 46WW03, is completed in the deep groundwater zone. Based on previous investigations, the deep groundwater-bearing zone consists primarily of clay, with occasional fine sand and silt layers. However, a thick fine-grained sand bed occurs approximately 88 feet bgs and extends to approximately 101.5 feet bgs. The upper surface of the sand is gradational, with an increase in the proportion of sand beginning at about 80 feet bgs.

The basal contact of the deep zone sand unit with the underlying shale and clay units is sharp. Monitoring well 46WW03 is screened in this deep sand bed between 90 feet and 100 feet bgs. The clayey section above the deep sand layer is interpreted as an aquitard separating the intermediate groundwater zone from the deep groundwater zone. A very hard layer identified at 82 feet bgs may represent the upper boundary of the deep groundwater zone where possible mineralization (cementation) has occurred. Based on the depth to groundwater in well 46WW03, it appears that the water-bearing sand in the deep zone is under confined to semiconfined conditions. Communication between the intermediate groundwater zone and the deep groundwater zone is limited based on the difference in groundwater elevations in

co-located wells 46WW02 and 46WW03 that was 3.0 feet or greater during the second, third, and fourth year RA-O periods. During the fifth year RA-O, the difference in elevation was slightly lower, averaging 2.7 feet, but still indicating a lack of hydraulic communication between the intermediate and deep zones in this area. Additionally, the groundwater analytical results corroborate the lack of communication between the intermediate and deep zones as the COCs in the intermediate zone have not migrated downward in this vicinity.

Groundwater elevations in shallow and intermediate wells at the site have been declining since at least 2000 as documented in the Final Technical Memorandum – Remedial Action Operation Monitoring at LHAAP-46 (Bhate 2018a). The average decline in wells evaluated in the memorandum was greater than 10 feet since 2000, and several of the wells at the site have run dry and have remained that way in most cases even after large rainfall events, as documented in previous RA-O reports. The conclusion of the memorandum was that the decline in groundwater elevations was not attributable to changes in rainfall.

The groundwater COCs in the shallow and intermediate zones at LHAAP-46 are TCE and its daughter products cis-1,2-dichloroethene (DCE) and vinyl chloride (VC). Human health risks associated with these COCs are the primary driver for remedial action, as the site poses no unacceptable ecological risks (USACE 2010). Previous investigations conducted at the Plant 2 Area between 1991 and 2008 determined the nature and extent of contamination in the soil, groundwater, surface water, and sediments at LHAAP-46. The most likely sources of contamination were spills resulting from a variety of support services that occurred in the area (USACE 2009, USACE 2010). The spills resulted in soil contamination, and the COCs released to the surface soil subsequently migrated, through leaching, to the groundwater. The previous investigations and the risk assessments concluded that the soil, sediment, and surface water at LHAAP-46 do not pose a risk to the environment or to human health under an industrial exposure scenario for a future maintenance worker (USACE 2010).

The nearest significant surface water body to LHAAP-46 is Goose Prairie Creek, which is located approximately 1,500 feet east of the site (**Figure 1-2**). Minor drainages are located north of the site and within the south-central portion of the site where they feed into Goose Prairie Creek. The potentially complete exposure pathways are groundwater used as drinking water and migration of impacted groundwater into surface water. Shallow groundwater is not used as drinking water at the refuge, and this potential exposure pathway is eliminated from any hypothetical future receptor because LUCs are in place that prohibit the use of groundwater for any purpose other than for environmental monitoring and testing.

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# 2.0 SITE ACTIVITIES AT LHAAP-46

This section describes the results of the fifth annual RA-O activities, including the annual LUC compliance inspection, semiannual groundwater monitoring, and monitoring system repairs and/or maintenance performed at LHAAP-46.

## 2.1 Annual Land Use Control Compliance Inspection

The annual LUC compliance inspection for LHAAP-46 was performed on August 9, 2019 and no LUC violations were identified. The LUC for LHAAP-46 is groundwater restriction. Groundwater use at LHAAP-46 is restricted to environmental monitoring and testing until levels of COCs in groundwater and soil allow unrestricted use and unlimited exposure. The restriction applies to groundwater underlying a 63.772-acre tract defined by the surveyed LUC boundary (AECOM 2015). The Annual LUC Compliance Certification Documentation Form for the fifth year RA-O period is included in **Appendix A**.

## 2.2 Groundwater Monitoring

LHAAP-46 fifth year RA-O monitoring wells are depicted on **Figure 2-1**. During the February and August 2019 events, 11 of the 23 of the wells were dry or had insufficient water for a sample to be collected, as shown in **Table 2-1**. Before attempting to collect groundwater samples, the wells were gauged using a water level probe, and the depth to water (or bottom of the well) was recorded to the nearest 0.01 foot from the top of casing. Groundwater samples were collected using the low-flow sampling procedures described in the groundwater sampling procedures found in the Installation-Wide Work Plan (Bhate 2018b). The low flow method allows representative samples of groundwater in the formation adjacent to the well screen to be collected, eliminating mixing of stagnant water above and below the well screen. After water quality parameters stabilized and were within acceptable ranges, samples were collected at the same low flow rate. All groundwater samples were analyzed for volatile organic compounds (VOCs) according to SW-846 Method 8260b. Samples from a subset of wells were also analyzed for MNA parameters, as further discussed in **Section 3.0**. Sample collection field forms are provided in **Appendix C**. The MNA parameter list was revised in accordance with the Final Technical Memorandum – Monitored Natural Attenuation Parameters (Bhate 2019a). As a result, phosphorous, manganese, total iron, and dissolved iron (laboratory) were not analyzed for the sampling events covered by this report and will not be analyzed for in future events.

### 2.2.1 Groundwater Elevations and Flow Direction

Synoptic water level measurements were attempted at 23 wells in February and August 2019. Eleven of the wells were dry in February and August 2019, so they could not be gauged.

Groundwater elevations are summarized in **Table 2-2**. Sample collection field forms for 46WW02, 46WW11, and 46WW16 from the February 2019 sampling event were misplaced and could not be located for inclusion in this report. The groundwater elevations from these locations are not included on **Table 2-2** and were not available to use in the February 2019 potentiometric surface maps. In accordance with the recommendations in the Fourth Annual RA-O Report (Bhate 2019b), the off-schedule attempts to gauge and sample wells that were dry during the semi-annual sampling events were discontinued. To gather additional information regarding the potentiometric surface and the extent of dry conditions in the shallow aquifer, groundwater elevations will be measured in the following wells during each sampling event, beginning with the February 2021 event: 46WW15, LHSMW20, and LHSMW24.

#### 2.2.1.1 Shallow Groundwater Zone

During the February and August 2019 monitoring events, shallow wells 46WW01, 46WW04, 46WW10, 46WW12, 46WW13, 46WW15, LHSMW17, LHSMW18, LHSMW20, and LHSMW22 were dry. Only wells 46WW11, LHSMW19, and LHSMW21 could be gauged for groundwater in the shallow zone, but the sample log form from February 2019 for 46WW11 was misplaced and the groundwater elevation at that location could not be included on the figure. **Figures 2-2** and **2-3** represent the groundwater potentiometric surface for the shallow groundwater zone, as interpreted during the February 2019 and August 2019 monitoring events, respectively. Based on the gauging data collected during these events and from historical water levels from currently dry wells, the groundwater flow direction is interpreted to be generally to the east. The groundwater elevations at LHSMW19 and the August 2019 elevation at 46WW11 were 1 to 2.5 feet higher than the 2018 elevations, but were within the same range as the 2013 to 2016 elevations. The LHSMW21 elevations were within the range of the 2013 to 2016 elevations and were not measured in 2018. Although the potentiometric surfaces represent only three data points currently, the interpretation of shallow groundwater flow direction is consistent with what was presented previously in the RD document and the previous years of RA-O sampling.

#### 2.2.1.2 Intermediate Groundwater Zone

The intermediate zone wells contained water during the two gauging events, with the exception of well LHSMW23. A camera inspection was performed in February 2019, which revealed a number of small obstructions, possibly tree roots or other vegetation. Monitoring well LHSMW23R was installed in August 2019 as a replacement for monitoring well LHSMW23. **Figures 2-4** and **2-5** present the groundwater potentiometric surface for the intermediate groundwater zone, as interpreted during the February 2019 and August 2019 monitoring events, respectively. The groundwater elevations in 46WW08 were not used in developing the contour maps as was done in previous RA-O reports because the groundwater elevations

appear to be anomalously high relative to other intermediate zone wells. The groundwater elevation in 46WW08 continues to be similar to the shallow zone elevations, despite the well being screened in the intermediate zone. It is possible that there is leakage from the shallow zone to the intermediate zone in this area of the site such that the well reflects shallow zone conditions. The groundwater flow direction in the intermediate groundwater zone interpreted from the February and August 2019 data is generally to the north, consistent with the flow direction presented in previous RA-O reports.

#### 2.2.1.3 Deep Groundwater Zone

Well 46WW03 is the only well screened in the deep groundwater zone, and therefore, a potentiometric surface map for the deep zone was not constructed.

#### 2.2.1.4 Vertical Gradients

For the shallow and intermediate zone, well pair 46WW04/46WW06 has been used to evaluate the vertical gradient. For the intermediate and deep zone, well pair 46WW02/46WW03 has been used to evaluate the vertical gradient. During the fifth year RA-O sampling events, shallow well 46WW04 was dry during both events, and therefore, a gradient could not be determined in the vicinity of the 46WW04/46WW06 well pair.

**Shallow to Intermediate Zone.** For the most recent monitoring event when water was present in both wells (August 2016), the groundwater elevation difference between 46WW04 and 46WW06 was 16.74 feet with a downward vertical gradient, indicating that there is significant hydraulic separation between the shallow and intermediate zones.

The perpendicular direction of horizontal groundwater gradients between the shallow and intermediate zones also indicates that these zones are discrete water-bearing units. However, as discussed in **Section 1.4**, it is believed that the clay that overlies the intermediate zone sand may act as a leaky aquitard to the shallow groundwater zone, allowing groundwater to slowly move vertically between the zones in some areas of the site.

**Intermediate to Deep Zone.** A similar evaluation was conducted between co-located intermediate and deep zone wells 46WW02 and 46WW03. The groundwater elevations in August 2019 indicate a difference of approximately 2.7 feet between these two zones with a downward vertical gradient. The low vertical gradient indicates that there is still hydraulic separation between these two units, but that the layer between the zones may be more permeable than the layer between the shallow and intermediate zone.

### 2.2.2 Groundwater Analytical Results

VOC and MNA parameter analytical results and field parameter measurements for the 2019 semiannual samples are presented in **Table 2-3**. **Table 2-4** provides historical and 2019 results

for LHAAP-46 COCs. Laboratory reports are provided in **Appendix D**. During the fifth year RA-O monitoring events, TCE was detected at concentrations above the MCL (5 micrograms per liter [µg/L]) in five of the sampled monitoring wells (46WW02, 46WW05, 46WW11, LHSMW19, and LHSMW21), while cis-1,2-DCE was also detected in one of these wells (LHSMW21) at concentrations above the MCL of 70 µg/L.

**Figures 2-6** and **2-7** depict the shallow zone COC results for wells sampled during the fifth year RA-O sampling events. TCE was detected above the MCL in all three of the shallow wells where a sufficient amount of water was present to collect a sample. At 46WW11, TCE was detected at 13 µg/L and 24 µg/L, in February and August 2019, respectively. TCE concentrations at LHSMW19 were 16 µg/L in February 2019 and 13 µg/L in August 2019. Analytical results from the third well, LHSMW21, indicated a TCE concentration of 20 µg/L, as well as a cis-1,2-DCE concentration of 100 µg/L in February, with a TCE concentration of 41 µg/L and a cis-1,2-DCE concentration of 170 µg/L in August 2019.

**Figures 2-8** and **2-9** depict the intermediate zone COC data for wells sampled in February 2019 and August 2019. TCE was detected above the MCL in intermediate wells 46WW02 and 46WW05 in 2019. At 46WW02, TCE was detected at 16 µg/L and 17 µg/L in February and August 2019, respectively. At 46WW05, TCE was detected at 27 µg/L in February 2019 and 62 µg/L in August 2019.

No COCs were detected above the laboratory reporting limits in the deep zone well 46WW03.

## 2.3 Surface Water Sampling

**Figure 2-1** shows the surface water location associated with site LHAAP-46. Surface water sample location 46SW10 is located in a tributary to Goose Prairie Creek. The location is downgradient of the intermediate zone groundwater plume but is cross-gradient from the shallow zone groundwater plume.

To determine if groundwater can potentially influence surface water, groundwater elevations are compared to the elevation at the bottom of the creek. The bottom of the creek at surface water sampling location 46SW10 is 197.27 feet above mean sea level (amsl). LHSMW21 is the nearest shallow zone well to the surface water sampling location. During the fifth year RA-O sampling period, the groundwater elevations were gauged in February and August 2019. At LHSMW21, the groundwater elevations were 187.12 feet amsl and 187.45 feet amsl in February and August 2019, respectively. Based on these data collected during the fifth RA-O sampling period, the groundwater elevations were well below the bottom of the creek, and the groundwater was not discharging to the creek; therefore, a surface water sample was not collected.

## 2.4 Groundwater Monitoring System Maintenance

Inspections of the conditions/integrity of monitoring wells were conducted during each sampling event, and the information was recorded on the field sampling forms. **Table 2-5** provides a summary of the maintenance activities that were performed at the site during the fifth annual RA-O period. **Appendix B** includes a photographic log, which shows the condition of the wells during this period. During the fifth annual reporting period, no noncompliance issues or concerns were noted during the annual inspection. 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 was conducted at LHAAP-46 on February 19, 2019 and August 9, 2019.

During previous sampling events, an obstruction was encountered in monitoring well LHSMW23, preventing sample collection. A camera inspection of monitoring well LHSMW23 was performed in February 2019. This inspection indicated multiple obstructions within the well, possibly roots from nearby vegetation (see Photo #30 in **Appendix B**). A replacement well (LHSMW23R) was installed in August 2019 approximately 10 feet to the west of the original well with the same total depth and screened interval (**Appendix C**). The replacement well was sampled on September 3, 2019. Due to the obstructions observed in LHSMW23, it is recommended this well be replaced by LHSMW23R in the monitoring network. Due to previously recorded siltation, monitoring well 46WW09 was redeveloped on February 8, 2019, prior to the February 2019 sampling event to remove the silt. The well development log is provided in **Appendix C**. The wells to be sampled during the sixth year RA-O are provided in **Table 2-6** and on **Figure 2-10**.

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# 3.0 NATURAL ATTENUATION EVALUATION

The following sections present the results of the natural attenuation evaluation for LHAAP-46 groundwater COCs as described in the Draft Final RD (Shaw 2011). Samples were collected from 12 of the 23 wells planned for sampling during the two semiannual sampling events, and a sample was collected from replacement well LHSMW23R in September 2019. Field parameters were recorded during the sampling of each of these wells. In addition, samples from two shallow zone wells and four intermediate zone wells were analyzed for additional parameters used to evaluate MNA. The analytical results are summarized in **Table 2-3**. The three lines of evidence to evaluate MNA are presented below.

## 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 first line of evidence evaluates the decrease in COC concentrations over time and distance. As with previous RA-O events at LHAAP-46, the inability to sample many of the shallow wells due to dry conditions hinders a full evaluation of MNA at the site. However, evaluation of the groundwater elevation trends indicated that the declining elevations were not related to lack of rainfall, and a rebound of the elevations has not occurred despite significant rainfall in late 2018 and early 2019. COC concentrations for the fifth year of RA-O sampling events are provided on **Figures 2-6** through **2-9** as well as in **Tables 2-3** and **2-4**.

During the fifth annual RA-O sampling, TCE was detected at concentrations above the MCL of 5 µg/L in three shallow (46WW11, LHSMW19, and LHSMW21) and two intermediate (46WW02 and 46WW05) monitoring wells, while cis-1,2-DCE was also detected in one of the shallow wells (LHSMW21) at concentrations above the its MCL of 70 µg/L.

Mann-Kendall analysis for the fifth annual RA-O monitoring period was completed for TCE. The results are presented in **Appendix E** in graphical format, with statistical results presented on the bottom of the page. The GSI Mann-Kendall Tool Kit was used for this analysis. The concentrations of COCs are presented in µg/L. Half the reporting limit was used for non-detects. For duplicate samples, the regular sample result was used. The level of significance is calculated for each analysis and is provided on the trend analysis sheet. A summary table of the Mann-Kendall results is provided in **Table 3-1**. Historical COC results for all wells are presented in **Table 2-4**.

### 3.1.1 Shallow Zone

In the shallow zone, three wells had a sufficient amount of water to collect samples. Analytical results from two wells (46WW11 and LHSMW19) indicated TCE concentrations above the

MCL of 5 µg/L. The analytical results from the third well (LHSMW21) indicated the presence of TCE and cis-1,2-DCE at concentrations above their respective MCLs. LHSMW21 was recently added to the shallow monitoring network, and there is insufficient data to perform a statistical trend analysis. Therefore, shallow monitoring wells 46WW11 and LHSMW19 are the focus of this section. However, it should be noted that LHSMW21 is the northernmost shallow well at the site and COC concentrations were undetectable in 1996 and 1998. COCs were detected below the MCLs in 2013. It is apparent that the shallow plume has expanded or migrated northward towards LHSMW21 and that an additional shallow monitoring location is needed to the north to define the northern plume boundary.

**Well 46WW11**

VOC groundwater results are available for this well since August 2013 (**Table 2-4**). TCE concentrations in this well have decreased over time from a high of 90.6 µg/L in July 2014 to 24 µg/L in the most recent August 2019 sample (**Figure 3-1)**. Since 2015, cis-1,2-DCE and VC have remained below the laboratory reporting limit of 1.0 µg/L. The Mann-Kendall trend analysis in 46WW11 indicates a statistically significant decrease in TCE concentrations over time with a confidence factor greater than 99.9 percent.

**Figure 3-1** shows a graph of TCE concentration and groundwater elevation versus time in 46WW11. The historical decrease in TCE concentrations and the lack of cis-1,2-DCE and VC indicates abiotic processes are likely to be the primary mechanism for the decrease in COCs rather than anaerobic biodegradation of the TCE.

**Well LHSMW19**

VOC groundwater results are available since December 1994 (**Table 2-4**). TCE levels in this well increased from 26 µg/L in December 1994 to a high of 85.5 µg/L in February 2007. Since 2007, TCE levels have decreased to a low of 2.4 µg/L in February 2018 before rebounding to concentrations of 16 µg/L in February 2019 and 13 µg/L in August 2019 (**Table 2-3**). The TCE degradation product cis-1,2-DCE has remained below 5 µg/L and VC has remained below laboratory reporting limits of 1.0 µg/L since 1994. Even with the slight rebound in TCE concentrations, the Mann-Kendall trend analysis of the analytical data for monitoring well LHSMW19 indicates a statistically significant decrease in TCE concentrations over time with a confidence factor of 100 percent.

**Figure 3-1** includes a graph of TCE concentrations and groundwater elevations over time in LHSMW19. The decrease in TCE concentrations over time and the presence of cis-1,2-DCE during the fifth year RA-O period, although below MCL, indicate limited biodegradation is

likely occurring; however, other MNA processes, including dilution and dispersion, may be the primary mechanisms for the decrease in COCs.

**Other Shallow Zone Wells**

Historically, COCs have been below their respective MCLs at the other shallow zone wells, except for 46WW01 and LHSMW18. During the third year RA-O period, groundwater was present at 46WW01 and LHSMW18, and COCs concentrations were below their respective MCLs for each of these wells. There has been insufficient water present in both of these wells for sampling since the third year RA-O period. Samples were collected from monitoring well LHSMW21 during this sampling event. The analytical results from these samples indicated the presence of both TCE and cis-1,2-DCE at concentrations above their respective MCLs in this well. As discussed above, the recent increase in concentrations at LHSMW21 likely indicates plume expansion or migration to the north.

**Shallow Zone COCs and Distance**

Based on the direction of groundwater flow, which is generally to the east in the shallow zone, monitoring well 46WW10 was considered a background well for the shallow zone; however, it was dry in 2018. During the fifth annual sampling event, LHSMW19 was used as the most upgradient well in the shallow zone. TCE at LHSMW19 has fluctuated and was observed below the MCL for the first time in February 2018 before rebounding to current levels. Monitoring wells down gradient of LHSMW19 and 46WW11 were dry in 2018, although monitoring well LHSMW21, which is down and cross gradient of these wells based on the historical flow direction, did have sufficient water for sampling. Based on the concentrations of COCs present in well LHSMW21 above MCLs, it appears concentrations are now increasing away from the historical center of the contaminant plume and that there may be a northward component to the plume migration or expansion that is not visible in the potentiometric surface contours due to the limited groundwater elevation data available.

### 3.1.2 Intermediate Zone

Groundwater samples were collected from nine wells in the intermediate zone during the fifth year RA-O. Two wells, 46WW02 and 46WW05, had TCE above the MCL and are the focus of this section.

**Well 46WW02**

At 46WW02, COCs have been observed above the MCL since November 1998 (**Table 2-4**) and were detected above the MCL during the fifth year RA-O monitoring period. The TCE concentrations in this well were 16 µg/L and 17 µg/L in February 2019 and August 2019, respectively. During the RA-O sampling events, the TCE degradation product cis-1,2-DCE

has remained below 3 µg/L and VC has remained below the laboratory reporting limit of 1.0 µg/L. **Figure 3-1** includes a graph of TCE, cis-1,2-DCE, and VC concentrations over time, and shows decreasing concentrations of TCE and consistently low concentrations of cis-1,2-DCE and VC. Mann-Kendall trend analysis was conducted for TCE, the only COC above the MCL. The results are presented in **Appendix E**. The Mann-Kendall trend analysis in 46WW11 indicates a statistically significant decrease in TCE concentrations over time with a confidence factor greater than 99 percent.

The historical decrease in TCE concentrations and the lack of significant cis-1,2-DCE and VC concentrations indicates abiotic processes are likely to be the primary mechanism for the decrease in TCE, rather than anaerobic biodegradation.

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**Well 46WW05**

VOC groundwater results are available for 46WW05 from October 2008 through the fifth year RA-O monitoring period in 2019 (**Table 2-4**). TCE, cis- 1,2-DCE, VC, and 1,1-DCE have historically been detected in 46WW05; however, only TCE has been detected above its MCL since November 2014. The highest level of TCE was detected at 144 µg/L in May 2013. In 2015, TCE concentrations began declining and during the fifth year RA-O sampling reached a low of 6.4 µg/L in August 2018. Concentrations in 2019 rebounded to 27 µg/L and 62 µg/L in February 2019 and August 2019, respectively. **Figure 3-1** includes a graph of concentrations of TCE, cis-1,2-DCE, and VC in monitoring well 46WW05 over time and shows overall decrease in TCE concentrations. Mann-Kendall trend analysis was conducted for TCE, the only COC currently above the MCL in 2019. The results are presented in **Appendix E**. The trend analysis for TCE in 46WW05 indicates that despite the recent rebound, there is a statistically significant decrease in TCE concentrations over time with a 99.9 percent confidence factor.

The decrease in TCE concentrations over time and the presence of cis-1,2-DCE during the fifth year RA-O period indicate limited biodegradation is likely occurring. Other MNA processes, including dilution and dispersion, are likely to be also occurring to reduce COC concentrations in the vicinity of well 46WW05.

**Other Intermediate Zone Wells**

Historically, all COCs have been below their respective MCLs at the other intermediate zone monitoring wells.

**Intermediate Zone COCs and Distance**

The direction of groundwater flow in the intermediate zone is to the north. Monitoring well LHSMW23 was used as the background well for the intermediate zone; however, the well could not be sampled during the fourth and fifth year RA-O monitoring periods due to an obstruction in the well and was replaced in 2019 with well LHSMW23R. Monitoring well 46WW06 was used as the background well in 2018 and 2019. Two independent plumes exist in the intermediate zone at 46WW02 and 46WW05, separated by 46WW09, where no COCs were detected. COCs have not been detected in wells 46WW09 and 46WW16, located downgradient from wells 46WW02 and 46WW05, respectively. The data from wells in the intermediate zone indicate that TCE is degrading over distance within the individual plumes.

### 3.1.3 Deep Zone

No COCs were detected at deep zone monitoring well 46WW03 during the fifth year RA-O sampling events. COCs have not been observed at this well since the well was installed and first sampled in 1998.

### 3.1.4 Plume Stability

Plume maps completed for each sampling event are presented for the shallow zone on **Figures 2-6** and **2-7** and for the intermediate zone on **Figures 2-8** and **2-9**. Analysis of the historical COC data indicates a decreasing trend in monitoring wells 46WW11 and LHSMW19. However, the presence of COCs in LHSMW21 indicates that the shallow zone plume may be expanding or migrating northward. Although groundwater levels could only be measured from three wells during the fifth year RA-O sampling events, shallow groundwater flow appears to generally be toward the east, which is consistent with the historical, observed groundwater flow direction.

In the intermediate zone, only two wells, 46WW02 and 46WW05, have COCs above the MCLs. Based on the general direction of intermediate groundwater flow (generally to the north), the following wells are considered to be along the groundwater flow path: 46WW02, 46WW09, 46WW05, and 46WW16. Contaminated groundwater in the vicinity of wells 46WW02 and 46WW05 occurs in two separate, isolated plumes; however, no COCs have been detected above MCLs at wells downgradient of these two wells. Therefore, based on the inferred flow path, COC levels are not increasing with distance from the source area. Concentrations of COCs in wells surrounding the most impacted wells (46WW02 and 46WW05) have not increased, and no new COCs have been detected at boundary area wells, indicating the intermediate zone plume is not migrating. Due to the expansion of the shallow plume beyond LHSMW21, 46WW14 will be added to the monitoring network beginning with the February 2021 annual sampling event.

## 3.2 Second Line of Evidence: Geochemical Indicators

To aid in determining if the groundwater is favorable for MNA processes, geochemical indicators are evaluated. During groundwater sampling, field parameters were collected and include dissolved oxygen (DO), oxidation-reduction potential (ORP), pH, conductivity, turbidity, and temperature. Select monitoring wells were sampled for additional MNA parameters, as shown in **Table 2-1**. **Table 2-3** provides the geochemical data used to determine if the site groundwater is favorable for MNA biological degradation processes. The MNA parameters analyzed during the fifth year of RA-O include anions (chloride, nitrate, and sulfate), total organic carbon (TOC), and dissolved gases (ethene, ethane, methane, and carbon dioxide).

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**Dissolved Oxygen**

DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (U.S. Environmental Protection Agency [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 milligram per liter (mg/L). In monitoring wells where COCs are above the MCL, the DO concentrations during the fifth year RA-O ranged from 0.03 mg/L to 2.84 mg/L, with an average of 0.43 mg/L. The low DO levels (<0.5 mg/L) observed in most of the impacted wells are favorable for reductive chlorination.

**Oxidation-Reduction Potential**

The ORP levels indicate the oxidative or reductive potential in the aquifer and aid in determining if conditions are conducive for biodegradation. ORP values less than 50 millivolts (mV) indicate that the aquifer is favorable for biological reductive dechlorination of chlorinated ethenes and ethanes. During the fifth year RA-O monitoring, the ORP measurements ranged from -93 mV to 361 mV, with an average of 161 mV. The ORP measurements at 46WW16 (-93 mV) and 46WW08 (35 mV) in August 2019 were the only values below 50 mV. These measurements indicate oxidative conditions are prevalent, 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 concentrations were all below 0.5 mg/L, with analytical results from most samples below laboratory detection levels during the fifth

year RA-O. The nitrate levels are not expected to inhibit the anaerobic degradation of site COCs.

## Sulfate

After DO, nitrate, and iron have been depleted in the groundwater, sulfate is used as an electron acceptor and is reduced to sulfide. 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 fifth year RA-O and ranged from 123 mg/L to 4,150 mg/L. The elevated sulfate concentrations observed at the site indicate sulfate 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 60 µg/L during the fifth 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. TOC is utilized as an energy and hydrogen source to support reductive dechlorination of the chlorinated COCs. TOC concentrations greater than 20 mg/L are considered adequate to support microbial activity (USEPA 1998). TOC concentrations ranged from 1.37 mg/L to 14.7 mg/L, with an average of 5.92 mg/L during the fifth year RA-O sampling. The data indicate that carbon concentrations in the groundwater are not supportive of reductive dechlorination.

## pH

The pH of the groundwater can affect the activity of microbial populations. Microbes capable of degrading chlorinated aliphatic hydrocarbons generally prefer pH values from 6 to 8 standard units (USEPA 1998). The pH levels in the shallow and intermediate zones ranged from 4.73 to 7.22, with an average of 6.3 during the fifth year RA-O sampling. The pH levels measured in February 2019 averaged 6.90, with 3 readings below 6.0. The pH levels measured in August 2019 averaged 6.30, with 4 readings below 6.0. The measured pH was below 6 in seven of the 22 readings collected during the two sampling events, and the remaining readings were generally low, which may inhibit degradation rates of dechlorinating bacteria.

**Ethene and Ethane**

Ethane and ethene are two end products of the reductive dechlorination pathways for chlorinated ethanes and ethenes. During the fifth year RA-O, ethane and ethene concentrations were below the laboratory reporting limits of 0.47 µg/L and 0.55 µg/L, respectively, in each of the groundwater samples analyzed. The data indicate that complete reductive dechlorination is not occurring.

**Geochemical Indicator MNA Parameter Summary**

The qualitative assessment of groundwater geochemical indicators collected during the fifth year RA-O period suggests that current groundwater conditions are not completely 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 concentrations. The presence of the degradation product cis-1,2-DCE suggests that limited biological degradation may be occurring; however, the primary MNA processes responsible for reducing concentrations appear to be abiotic.

## 3.3 Third Line of Evidence: Predictive Analysis and 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 such as *Dehalococcoides ethenogenes* and associated functional genes have not been measured at this site and could not be used to assess whether they exist naturally at the site.

Also, predictive analysis using degradation rates can be used as a third line of evidence to estimate the time required to reach the MCL. Using Mann-Kendall trend analysis, TCE concentrations showed a significant decrease over time in shallow zone wells 46WW11 and LHSMW19 and intermediate zone wells 46WW02 and 46WW05. The calculated first order rate constants and the times to achieve the MCL of 5 µg/L are included in **Appendix F**.

At shallow groundwater well 46WW11, the first order rate constant was calculated at 0.0009 $day^{-1}$, and the time to achieve the MCL of 5 µg/L from the August 2019 concentration of 24 µg/L is estimated at 4.8 years. For LHSMW19, the first order rate constant is 0.0007 $day^{-1}$, and the time to achieve MCL of 5 µg/L from the August 2019 concentration of 13 µg/L is estimated at 3.7 years. At intermediate zone well 46WW05, the first order rate constant is 0.001 day-$^{1}$, and the time to achieve MCL of 5 µg/L from the August 2019 concentration of 62 µg/L is estimated at 6.9 years. At intermediate zone well 46WW02, the first order rate

constant is 0.0003 day-$^{1}$, and the time to achieve MCL of 5 µg/L from the August 2019 concentration of 17 µg/L is estimated at 11.2 years.

These determinations assume that the decrease in concentrations will continue at the same rate as calculated from recent data. The predictive analysis estimates that TCE may reduce to below the MCL at LHAAP-46 in 11.2 years; however, given lithologic variability at the site, the potential for plume migration, and other factors affecting the concentration trends, the time to MCL may vary by an order of magnitude or more. Additionally, the rate of reduction could diminish over time as the residual concentrations decrease, and the time frames to achieve the MCL might be longer than estimated.

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# 4.0 CONCLUSIONS AND RECOMENDATIONS

During the fifth year RA-O monitoring at LHAAP-46, samples were collected from shallow, intermediate, and deep zone wells during February 2019 and August 2019. Samples were analyzed for VOCs and geochemical parameters to evaluate effectiveness of MNA as a site remedy. Reductions in COC concentrations over time and with distance were evaluated. The results of the evaluation and the conclusions are summarized below.

- Consistent with previous years, groundwater flow direction appears to be to the east in the shallow zone and generally to the north in the intermediate zone. However, the potentiometric contours are based on relatively few locations and may not accurately depict small differences in the flow directions that exist at the site.
- TCE and cis-1,2-DCE are the only COCs detected in the groundwater at concentrations exceeding the MCLs in 2019.
- In the shallow groundwater zone, wells 46WW11, LHSMW19, and LHSMW21 are the only wells where sufficient water was present to collect samples. TCE concentrations demonstrate a decreasing trend in wells 46WW11 and LHSMW19 based on Mann-Kendall trend analysis. There is insufficient historical data to perform a statistical trend analysis on well LHSMW21; however, COCs were not detected in 1996, 1998, or 2008, and were below the MCL in 2013, indicating that the recent detections exceeding the MCL are evidence of an increasing trend.
- The presence of TCE and cis-1,2-DCE in well LHSMW21 exceeding the MCL indicates the current network of monitoring wells needs to be expanded to the north to adequately delineate the shallow groundwater plume. It is recommended that an additional shallow monitoring well be installed north/northeast of the site boundary of LHAAP46 near LHSMW21. LHSMW21 will continue to be monitored as part of the annual RA-O sampling.
- In the intermediate zone, COC concentrations show a decreasing trend. Groundwater elevations have shown a loose correlation with the COC concentrations, and dilution is not apparent when groundwater elevations have increased. COCs have not increased with distance from the most impacted wells, 46WW02 and 46WW05, and no new detection of COCs at boundary area wells have been reported, indicating no plume migration. 46WW14 will be sampled as part of the annual RA-O beginning in February 2021 due to the presence of COCs detected at shallow well LHSMW21.

- No COCs were detected in the one deep well, 46WW03.
- The assessment of geochemical parameters indicate that groundwater conditions are not entirely favorable for reductive dechlorination, and the MNA processes primarily responsible for reducing concentrations appear to be abiotic.
- The predictive analysis estimates that TCE may reduce to below the MCL at LHAAP-46 in 11.2 years; however, given lithologic variability at the site, the potential for plume migration, and other factors affecting the concentration trends, the time to MCL may vary by an order of magnitude or more. Additionally, the rate of reduction could diminish over time as the residual concentrations decrease and the time frames to achieve the MCL might be longer than estimated.

No compliance issues or concerns were noted during the annual LUC inspection for LHAAP-46 conducted on August 9, 2019. LHSMW23 was replaced by LHSMW23R in August 2019. Monitoring well LHSMW21 was added to the monitoring network in place of LHSMW20 due to the persistent dry conditions at LHSMW20. As COCs were detected in LHSMW21, the installation of an additional monitoring well is recommended to verify delineation of the northeastern extent of the plume in the shallow zone.

The trend analysis of COC concentrations in wells with sufficient historical data indicates that the COC concentrations in most individual wells at LHAAP-46 are decreasing; however, the presence of COCs in monitoring well LHSMW21 indicates the shallow groundwater plume may be expanding or migrating. MNA with LUCs is still considered an appropriate remedy at this time. The MNA monitoring will continue on an annual basis beginning in Year 6, in accordance with the RACR (AECOM 2015). The MNA parameter list is shown in the notes on **Table 2-6**. The wells to be sampled include the replacement of monitoring wells LHSMW20 and LHSMW23 with wells LHSMW21 and LHSMW23R, respectively. These wells are included in the Year 6 monitoring network shown in **Table 2-6** and illustrated on **Figure 2-10**. Pending regulatory approval of a new location, an additional well (46WW17) will be installed and sampled to better monitor the potential expansion of the shallow groundwater plume. To gather additional information regarding the potentiometric surface and the extent of dry conditions in the shallow aquifer, groundwater elevations will be measured in the following wells during each sampling event, beginning with the February 2021 event: 46WW15, LHSMW20, and LHSMW24.

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# Tables

## Table 2-1
## Groundwater RA-O Sampling – 2019

| Well ID | Groundwater Unit | Year 5 Semiannual 1 February 2019 | | | Year 5 Semiannual 2 August 2019 | | |
|---|---|---|---|---|---|---|---|
| | | VOC | Field Parameters | MNA | VOC | Field Parameters | MNA |
| 46WW01 | Shallow | Dry | | | Dry | | |
| 46WW04 | Shallow | Dry | | | Dry | | |
| 46WW10 | Shallow | Dry | | | Dry | | |
| 46WW11 | Shallow | X | X | X | X | X | X |
| 46WW12 | Shallow | Dry | | | Dry | | |
| 46WW13 | Shallow | Dry | | | Dry | | |
| 46WW15 | Shallow | Dry | | | Dry | | |
| LHSMW17 | Shallow | Dry | | | Dry | | |
| LHSMW18 [a] | Shallow | Dry | | | Dry | | |
| LHSMW19 | Shallow | X | X | | X | X | |
| LHSMW20 | Shallow | Dry | | | Dry | | |
| LHSMW21 | Shallow | X | X | X | X | X | X |
| LHSMW22 | Shallow | Dry | | | Dry | | |
| 46WW02 | Intermediate | X | X | X | X | X | X |
| 46WW05 | Intermediate | X | X | X | X | X | X |
| 46WW06 | Intermediate | X | X | | X | X | |
| 46WW07 | Intermediate | X | X | | X | X | |
| 46WW08 | Intermediate | X | X | | X | X | |
| 46WW09 | Intermediate | X | X | X | X | X | X |
| 46WW16 | Intermediate | X | X | X | X | X | X |
| LHSMW23 | Intermediate | Dry | | | Dry | | |
| LHSMW23R [b] | Intermediate | Not Sampled | | | X | X | |
| LHSMW25 | Intermediate | X | X | | X | X | |
| 46WW03 | Deep | X | X | | X | X | |
| 46SW10 [c] | Surface Water | Not Sampled | | | Not Sampled | | |

Notes:

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

MNA parameters include nitrate, sulfate, chloride, TOC, dissolved iron, and dissolved gases (carbon dioxide, methane, ethane, and ethene).

[a] LHSMW18 only sampled if LHSMW17 is dry.

[b] Replacement well LHSMW23R was installed in August 2019 and sampled on September 3, 2019.

[c] 46SW10 is only sampled if surface water is present and the GW elevation at either LHSMW21 or 46WW16 exceeds 197 feet.

GW - groundwater

ID - identification

MNA - monitored natural attenuation

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

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| 46WW01 | S | 1/16/2002 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 3/15/2002 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 2/13/2005 | 212.82 | 209.75 | 26.00 | 14.00 | 24.00 | 195.75 | 185.75 | 186.82 | 27.07 |
| | | 5/15/2005 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 2/19/2007 | 212.82 | 209.75 | 22.66 | 14.00 | 24.00 | 195.75 | 185.75 | 190.16 | 27.07 |
| | | 3/16/2008 | 212.82 | 209.75 | 25.45 | 14.00 | 24.00 | 195.75 | 185.75 | 187.37 | 27.07 |
| | | 5/15/2008 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 10/13/2008 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 05/02/13 | 212.82 | 209.75 | 26 | 14.00 | 24.00 | 195.75 | 185.75 | 186.82 | 27.07 |
| | | 05/28/13 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 08/10/13 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 09/20/13 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 01/25/14 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 07/15/14 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 11/18/14 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 02/03/15 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 05/05/15 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 08/05/15 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 02/01/16 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 03/28/16 | 212.82 | 209.75 | 24.85 | 14.00 | 24.00 | 195.75 | 185.75 | 187.97 | 27.07 |
| | | 08/03/16 | 212.82 | 209.75 | 25.45 | 14.00 | 24.00 | 195.75 | 185.75 | 187.37 | 27.07 |
| | | 02/20/18 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 08/27/18 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 02/20/19 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| | | 08/12/19 | 212.82 | 209.75 | Dry | 14.00 | 24.00 | 195.75 | 185.75 | Dry | 27.07 |
| 46WW02 | I | 1/16/2002 | 212.21 | 209.16 | 37.11 | 37.00 | 47.00 | 172.16 | 162.16 | 175.10 | 50.05 |
| | | 5/15/2002 | 212.21 | 209.16 | 37.30 | 37.00 | 47.00 | 172.16 | 162.16 | 174.91 | 50.05 |
| | | 2/13/2005 | 212.21 | 209.16 | 35.90 | 37.00 | 47.00 | 172.16 | 162.16 | 176.31 | 50.05 |
| | | 6/15/2005 | 212.21 | 209.16 | 37.00 | 37.00 | 47.00 | 172.16 | 162.16 | 175.21 | 50.05 |
| | | 2/20/2007 | 212.21 | 209.16 | 31.49 | 37.00 | 47.00 | 172.16 | 162.16 | 180.72 | 50.05 |
| | | 4/7/2008 | 212.21 | 209.16 | 32.30 | 37.00 | 47.00 | 172.16 | 162.16 | 179.91 | 50.05 |
| | | 4/16/2008 | 212.21 | 209.16 | 37.25 | 37.00 | 47.00 | 172.16 | 162.16 | 174.96 | 50.05 |
| | | 5/15/2008 | 212.21 | 209.16 | 37.03 | 37.00 | 47.00 | 172.16 | 162.16 | 175.18 | 50.05 |
| | | 05/02/13 | 212.21 | 209.16 | 35.9 | 37.00 | 47.00 | 172.16 | 162.16 | 176.31 | 50.05 |
| | | 05/28/13 | 212.21 | 209.16 | 35.85 | 37.00 | 47.00 | 172.16 | 162.16 | 176.36 | 50.05 |
| | | 08/14/13 | 212.21 | 209.16 | 36.15 | 37.00 | 47.00 | 172.16 | 162.16 | 176.06 | 50.05 |
| | | 08/17/13 | 212.21 | 209.16 | 36.2 | 37.00 | 47.00 | 172.16 | 162.16 | 176.01 | 50.05 |
| | | 09/19/13 | 212.21 | 209.16 | 36.33 | 37.00 | 47.00 | 172.16 | 162.16 | 175.88 | 50.05 |
| | | 01/27/14 | 212.21 | 209.16 | 36.52 | 37.00 | 47.00 | 172.16 | 162.16 | 175.69 | 50.05 |
| | | 07/15/14 | 212.21 | 209.16 | 36.63 | 37.00 | 47.00 | 172.16 | 162.16 | 175.58 | 50.05 |
| | | 11/18/14 | 212.21 | 209.16 | 37.37 | 37.00 | 47.00 | 172.16 | 162.16 | 174.84 | 50.05 |
| | | 02/05/15 | 212.21 | 209.16 | 37.3 | 37.00 | 47.00 | 172.16 | 162.16 | 174.91 | 50.05 |
| | | 05/06/15 | 212.21 | 209.16 | 37 | 37.00 | 47.00 | 172.16 | 162.16 | 175.21 | 50.05 |
| | | 08/05/15 | 212.21 | 209.16 | 37.03 | 37.00 | 47.00 | 172.16 | 162.16 | 175.18 | 50.05 |
| | | 02/01/16 | 212.21 | 209.16 | 37.11 | 37.00 | 47.00 | 172.16 | 162.16 | 175.10 | 50.05 |
| | | 08/04/16 | 212.21 | 209.16 | 37.25 | 37.00 | 47.00 | 172.16 | 162.16 | 174.96 | 50.05 |
| | | 02/20/18 | 212.21 | 209.16 | 37.76 | 37.00 | 47.00 | 172.16 | 162.16 | 174.45 | 50.05 |
| | | 08/29/18 | 212.21 | 209.16 | 38.25 | 37.00 | 47.00 | 172.16 | 162.16 | 173.96 | 50.05 |
| | | 02/21/19 | 46WW02 contained water and a sample was collected. The sample collection log was misplaced and no water level information is available. | | | | | | | | |
| | | 08/12/19 | 212.21 | 209.16 | 38.23 | 37.00 | 47.00 | 172.16 | 162.16 | 173.98 | 50.05 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| 46WW03 | D | 3/16/2002 | 212.47 | 209.80 | 40.69 | 90.00 | 100.00 | 119.80 | 109.80 | 171.78 | 102.67 |
| | | 5/15/2002 | 212.47 | 209.80 | 40.60 | 90.00 | 100.00 | 119.80 | 109.80 | 171.87 | 102.67 |
| | | 6/15/2005 | 212.47 | 209.80 | 40.32 | 90.00 | 100.00 | 119.80 | 109.80 | 172.15 | 102.67 |
| | | 4/16/2008 | 212.47 | 209.80 | 40.77 | 90.00 | 100.00 | 119.80 | 109.80 | 171.70 | 102.67 |
| | | 5/15/2008 | 212.47 | 209.80 | 40.71 | 90.00 | 100.00 | 119.80 | 109.80 | 171.76 | 102.67 |
| | | 05/30/13 | 212.47 | 209.80 | 39.81 | 90.00 | 100.00 | 119.80 | 109.80 | 172.66 | 102.67 |
| | | 08/17/13 | 212.47 | 209.80 | 40.34 | 90.00 | 100.00 | 119.80 | 109.80 | 172.13 | 102.67 |
| | | 09/26/13 | 212.47 | 209.80 | 46.48 | 90.00 | 100.00 | 119.80 | 109.80 | 165.99 | 102.67 |
| | | 01/25/14 | 212.47 | 209.80 | 40.61 | 90.00 | 100.00 | 119.80 | 109.80 | 171.86 | 102.67 |
| | | 07/17/14 | 212.47 | 209.80 | 40.47 | 90.00 | 100.00 | 119.80 | 109.80 | 172 | 102.67 |
| | | 11/20/14 | 212.47 | 209.80 | 41 | 90.00 | 100.00 | 119.80 | 109.80 | 171.47 | 102.67 |
| | | 02/05/15 | 212.47 | 209.80 | 40.6 | 90.00 | 100.00 | 119.80 | 109.80 | 171.87 | 102.67 |
| | | 05/06/15 | 212.47 | 209.80 | 40.32 | 90.00 | 100.00 | 119.80 | 109.80 | 172.15 | 102.67 |
| | | 08/05/15 | 212.47 | 209.80 | 40.71 | 90.00 | 100.00 | 119.80 | 109.80 | 171.76 | 102.67 |
| | | 02/03/16 | 212.47 | 209.80 | 40.69 | 90.00 | 100.00 | 119.80 | 109.80 | 171.78 | 102.67 |
| | | 08/04/16 | 212.47 | 209.80 | 40.77 | 90.00 | 100.00 | 119.80 | 109.80 | 171.70 | 102.67 |
| | | 02/26/18 | 212.47 | 209.80 | 41.47 | 90.00 | 100.00 | 119.80 | 109.80 | 171.00 | 102.67 |
| | | 08/27/18 | 212.47 | 209.80 | 42.05 | 90.00 | 100.00 | 119.80 | 109.80 | 170.42 | 102.67 |
| | | 02/20/19 | 212.47 | 209.80 | 41.20 | 90.00 | 100.00 | 119.80 | 109.80 | 171.27 | 102.67 |
| | | 08/12/19 | 212.47 | 209.80 | 41.19 | 90.00 | 100.00 | 119.80 | 109.80 | 171.28 | 102.67 |
| 46WW04 | S | 2/16/2002 | 215.39 | 212.47 | 25.67 | 14.00 | 24.00 | 198.47 | 188.47 | 189.72 | 26.92 |
| | | 3/15/2002 | 215.39 | 212.47 | Dry | 14.00 | 24.00 | 198.47 | 188.47 | Dry | 26.92 |
| | | 2/13/2005 | 215.39 | 212.47 | 24.86 | 14.00 | 24.00 | 198.47 | 188.47 | 190.53 | 26.92 |
| | | 5/15/2005 | 215.39 | 212.47 | 24.48 | 14.00 | 24.00 | 198.47 | 188.47 | 190.91 | 26.92 |
| | | 2/19/2007 | 215.39 | 212.47 | 21.31 | 14.00 | 24.00 | 198.47 | 188.47 | 194.08 | 26.92 |
| | | 3/16/2008 | 215.39 | 212.47 | 25.04 | 14.00 | 24.00 | 198.47 | 188.47 | 190.35 | 26.92 |
| | | 4/15/2008 | 215.39 | 212.47 | 24.13 | 14.00 | 24.00 | 198.47 | 188.47 | 191.26 | 26.92 |
| | | 9/13/2008 | 215.39 | 212.47 | 25.48 | 14.00 | 24.00 | 198.47 | 188.47 | 189.91 | 26.92 |
| | | 05/02/13 | 215.39 | 212.47 | 24.86 | 14.00 | 24.00 | 198.47 | 188.47 | 190.53 | 26.92 |
| | | 05/24/13 | 215.39 | 212.47 | 24.9 | 14.00 | 24.00 | 198.47 | 188.47 | 190.49 | 26.92 |
| | | 08/09/13 | 215.39 | 212.47 | 25.48 | 14.00 | 24.00 | 198.47 | 188.47 | 189.91 | 26.92 |
| | | 09/20/13 | 215.39 | 212.47 | 26 | 14.00 | 24.00 | 198.47 | 188.47 | 189.39 | 26.92 |
| | | 01/25/14 | 215.39 | 212.47 | 25.9 | 14.00 | 24.00 | 198.47 | 188.47 | 189.49 | 26.92 |
| | | 07/17/14 | 215.39 | 212.47 | 24.68 | 14.00 | 24.00 | 198.47 | 188.47 | 190.71 | 26.92 |
| | | 11/19/14 | 215.39 | 212.47 | 26 | 14.00 | 24.00 | 198.47 | 188.47 | 189.39 | 26.92 |
| | | 02/03/15 | 215.39 | 212.47 | Dry | 14.00 | 24.00 | 198.47 | 188.47 | Dry | 26.92 |
| | | 05/05/15 | 215.39 | 212.47 | 24.48 | 14.00 | 24.00 | 198.47 | 188.47 | 190.91 | 26.92 |
| | | 08/04/15 | 215.39 | 212.47 | 24.13 | 14.00 | 24.00 | 198.47 | 188.47 | 191.26 | 26.92 |
| | | 02/02/16 | 215.39 | 212.47 | 25.67 | 14.00 | 24.00 | 198.47 | 188.47 | 189.72 | 26.92 |
| | | 08/03/16 | 215.39 | 212.47 | 25.04 | 14.00 | 24.00 | 198.47 | 188.47 | 190.35 | 26.92 |
| | | 02/22/18 | 215.39 | 212.47 | Dry | 14.00 | 24.00 | 198.47 | 188.47 | Dry | 26.92 |
| | | 08/29/18 | 215.39 | 212.47 | Dry | 14.00 | 24.00 | 198.47 | 188.47 | Dry | 26.92 |
| | | 02/20/19 | 215.39 | 212.47 | Dry | 14.00 | 24.00 | 198.47 | 188.47 | Dry | 26.92 |
| | | 08/13/19 | 215.39 | 212.47 | Dry | 14.00 | 24.00 | 198.47 | 188.47 | Dry | 26.92 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| 46WW05 | I | 1/16/2002 | 208.24 | 205.59 | 38.08 | 34.00 | 44.00 | 171.59 | 161.59 | 170.16 | 46.65 |
| | | 5/15/2002 | 208.24 | 205.59 | 37.45 | 34.00 | 44.00 | 171.59 | 161.59 | 170.79 | 46.65 |
| | | 5/15/2005 | 208.24 | 205.59 | 38.03 | 34.00 | 44.00 | 171.59 | 161.59 | 170.21 | 46.65 |
| | | 3/16/2008 | 208.24 | 205.59 | 38.35 | 34.00 | 44.00 | 171.59 | 161.59 | 169.89 | 46.65 |
| | | 6/15/2008 | 208.24 | 205.59 | 37.05 | 34.00 | 44.00 | 171.59 | 161.59 | 171.19 | 46.65 |
| | | 05/30/13 | 208.24 | 205.59 | 37.25 | 34.00 | 44.00 | 171.59 | 161.59 | 170.99 | 46.65 |
| | | 08/14/13 | 208.24 | 205.59 | 37.65 | 34.00 | 44.00 | 171.59 | 161.59 | 170.59 | 46.65 |
| | | 08/17/13 | 208.24 | 205.59 | 37.73 | 34.00 | 44.00 | 171.59 | 161.59 | 170.51 | 46.65 |
| | | 09/24/13 | 208.24 | 205.59 | 37.75 | 34.00 | 44.00 | 171.59 | 161.59 | 170.49 | 46.65 |
| | | 01/28/14 | 208.24 | 205.59 | 38.2 | 34.00 | 44.00 | 171.59 | 161.59 | 170.04 | 46.65 |
| | | 07/16/14 | 208.24 | 205.59 | 37.83 | 34.00 | 44.00 | 171.59 | 161.59 | 170.41 | 46.65 |
| | | 11/19/14 | 208.24 | 205.59 | 38.48 | 34.00 | 44.00 | 171.59 | 161.59 | 169.76 | 46.65 |
| | | 02/05/15 | 208.24 | 205.59 | 37.45 | 34.00 | 44.00 | 171.59 | 161.59 | 170.79 | 46.65 |
| | | 05/05/15 | 208.24 | 205.59 | 38.03 | 34.00 | 44.00 | 171.59 | 161.59 | 170.21 | 46.65 |
| | | 08/06/15 | 208.24 | 205.59 | 37.05 | 34.00 | 44.00 | 171.59 | 161.59 | 171.19 | 46.65 |
| | | 02/01/16 | 208.24 | 205.59 | 38.08 | 34.00 | 44.00 | 171.59 | 161.59 | 170.16 | 46.65 |
| | | 08/03/16 | 208.24 | 205.59 | 38.35 | 34.00 | 44.00 | 171.59 | 161.59 | 169.89 | 46.65 |
| | | 02/26/18 | 208.24 | 205.59 | 39.03 | 34.00 | 44.00 | 171.59 | 161.59 | 169.21 | 46.65 |
| | | 08/28/18 | 208.24 | 205.59 | 39.25 | 34.00 | 44.00 | 171.59 | 161.59 | 168.99 | 46.65 |
| | | 02/25/19 | 208.24 | 205.59 | 39.14 | 34.00 | 44.00 | 171.59 | 161.59 | 169.10 | 46.65 |
| | | 08/13/19 | 208.24 | 205.59 | 38.45 | 34.00 | 44.00 | 171.59 | 161.59 | 169.79 | 46.65 |
| 46WW06 | I | 2/16/2002 | 213.84 | 211.24 | 39.76 | 38.00 | 48.00 | 173.24 | 163.24 | 174.08 | 50.60 |
| | | 6/15/2002 | 213.84 | 211.24 | 39.93 | 38.00 | 48.00 | 173.24 | 163.24 | 173.91 | 50.60 |
| | | 1/15/2005 | 213.84 | 211.24 | 39.91 | 38.00 | 48.00 | 173.24 | 163.24 | 173.93 | 50.60 |
| | | 4/15/2008 | 213.84 | 211.24 | 39.90 | 38.00 | 48.00 | 173.24 | 163.24 | 173.94 | 50.60 |
| | | 4/16/2008 | 213.84 | 211.24 | 40.23 | 38.00 | 48.00 | 173.24 | 163.24 | 173.61 | 50.60 |
| | | 05/24/13 | 213.84 | 211.24 | 38.98 | 38.00 | 48.00 | 173.24 | 163.24 | 174.86 | 50.60 |
| | | 08/16/13 | 213.84 | 211.24 | 39.12 | 38.00 | 48.00 | 173.24 | 163.24 | 174.72 | 50.60 |
| | | 09/25/13 | 213.84 | 211.24 | 39.1 | 38.00 | 48.00 | 173.24 | 163.24 | 174.74 | 50.60 |
| | | 01/25/14 | 213.84 | 211.24 | 39.28 | 38.00 | 48.00 | 173.24 | 163.24 | 174.56 | 50.60 |
| | | 07/17/14 | 213.84 | 211.24 | 39.55 | 38.00 | 48.00 | 173.24 | 163.24 | 174.29 | 50.60 |
| | | 11/19/14 | 213.84 | 211.24 | 39.91 | 38.00 | 48.00 | 173.24 | 163.24 | 173.93 | 50.60 |
| | | 02/06/15 | 213.84 | 211.24 | 39.93 | 38.00 | 48.00 | 173.24 | 163.24 | 173.91 | 50.60 |
| | | 05/01/15 | 213.84 | 211.24 | 39.91 | 38.00 | 48.00 | 173.24 | 163.24 | 173.93 | 50.60 |
| | | 08/04/15 | 213.84 | 211.24 | 39.9 | 38.00 | 48.00 | 173.24 | 163.24 | 173.94 | 50.60 |
| | | 02/02/16 | 213.84 | 211.24 | 39.76 | 38.00 | 48.00 | 173.24 | 163.24 | 174.08 | 50.60 |
| | | 08/04/16 | 213.84 | 211.24 | 40.23 | 38.00 | 48.00 | 173.24 | 163.24 | 173.61 | 50.60 |
| | | 02/26/18 | 213.84 | 211.24 | 39.91 | 38.00 | 48.00 | 173.24 | 163.24 | 173.93 | 50.60 |
| | | 08/27/18 | 213.84 | 211.24 | 41.10 | 38.00 | 48.00 | 173.24 | 163.24 | 172.74 | 50.60 |
| | | 02/20/19 | 213.84 | 211.24 | 41.05 | 38.00 | 48.00 | 173.24 | 163.24 | 172.79 | 50.60 |
| | | 08/13/19 | 213.84 | 211.24 | 39.80 | 38.00 | 48.00 | 173.24 | 163.24 | 174.04 | 50.60 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| 46WW07 | I | 2/16/2002 | 207.87 | 205.37 | 35.70 | 39.00 | 48.50 | 166.37 | 156.87 | 172.17 | 51.00 |
| | | 3/15/2002 | 207.87 | 205.37 | 35.95 | 39.00 | 48.50 | 166.37 | 156.87 | 171.92 | 51.00 |
| | | 1/15/2005 | 207.87 | 205.37 | 35.62 | 39.00 | 48.50 | 166.37 | 156.87 | 172.25 | 51.00 |
| | | 2/16/2008 | 207.87 | 205.37 | 35.96 | 39.00 | 48.50 | 166.37 | 156.87 | 171.91 | 51.00 |
| | | 4/15/2008 | 207.87 | 205.37 | 35.68 | 39.00 | 48.50 | 166.37 | 156.87 | 172.19 | 51.00 |
| | | 05/25/13 | 207.87 | 205.37 | 35.28 | 39.00 | 48.50 | 166.37 | 156.87 | 172.59 | 51.00 |
| | | 08/16/13 | 207.87 | 205.37 | 35.6 | 39.00 | 48.50 | 166.37 | 156.87 | 172.27 | 51.00 |
| | | 09/19/13 | 207.87 | 205.37 | 35.7 | 39.00 | 48.50 | 166.37 | 156.87 | 172.17 | 51.00 |
| | | 01/27/14 | 207.87 | 205.37 | 36.72 | 39.00 | 48.50 | 166.37 | 156.87 | 171.15 | 51.00 |
| | | 07/18/14 | 207.87 | 205.37 | 35.47 | 39.00 | 48.50 | 166.37 | 156.87 | 172.4 | 51.00 |
| | | 11/19/14 | 207.87 | 205.37 | 36.25 | 39.00 | 48.50 | 166.37 | 156.87 | 171.62 | 51.00 |
| | | 02/03/15 | 207.87 | 205.37 | 35.95 | 39.00 | 48.50 | 166.37 | 156.87 | 171.92 | 51.00 |
| | | 05/01/15 | 207.87 | 205.37 | 35.62 | 39.00 | 48.50 | 166.37 | 156.87 | 172.25 | 51.00 |
| | | 08/04/15 | 207.87 | 205.37 | 35.68 | 39.00 | 48.50 | 166.37 | 156.87 | 172.19 | 51.00 |
| | | 02/02/16 | 207.87 | 205.37 | 35.70 | 39.00 | 48.50 | 166.37 | 156.87 | 172.17 | 51.00 |
| | | 08/02/16 | 207.87 | 205.37 | 35.96 | 39.00 | 48.50 | 166.37 | 156.87 | 171.91 | 51.00 |
| | | 03/23/18 | 207.87 | 205.37 | 36.77 | 39.00 | 48.50 | 166.37 | 156.87 | 171.10 | 51.00 |
| | | 08/27/18 | 207.87 | 205.37 | 31.15 | 39.00 | 48.50 | 166.37 | 156.87 | 176.72 | 51.00 |
| | | 02/20/19 | 207.87 | 205.37 | 36.51 | 39.00 | 48.50 | 166.37 | 156.87 | 171.36 | 51.00 |
| | | 08/12/19 | 207.87 | 205.37 | 36.42 | 39.00 | 48.50 | 166.37 | 156.87 | 171.45 | 51.00 |
| 46WW08 | I | 3/15/2002 | 211.73 | 209.51 | 21.85 | 33.50 | 43.00 | 176.01 | 166.51 | 189.88 | 45.22 |
| | | 3/16/2002 | 211.73 | 209.51 | 21.75 | 33.50 | 43.00 | 176.01 | 166.51 | 189.98 | 45.22 |
| | | 1/15/2005 | 211.73 | 209.51 | 20.94 | 33.50 | 43.00 | 176.01 | 166.51 | 190.79 | 45.22 |
| | | 2/16/2008 | 211.73 | 209.51 | 21.37 | 33.50 | 43.00 | 176.01 | 166.51 | 190.36 | 45.22 |
| | | 4/15/2008 | 211.73 | 209.51 | 21.02 | 33.50 | 43.00 | 176.01 | 166.51 | 190.71 | 45.22 |
| | | 05/25/13 | 211.73 | 209.51 | 21.35 | 33.50 | 43.00 | 176.01 | 166.51 | 190.38 | 45.22 |
| | | 08/16/13 | 211.73 | 209.51 | 21.55 | 33.50 | 43.00 | 176.01 | 166.51 | 190.18 | 45.22 |
| | | 09/21/13 | 211.73 | 209.51 | 21.75 | 33.50 | 43.00 | 176.01 | 166.51 | 189.98 | 45.22 |
| | | 01/28/14 | 211.73 | 209.51 | 21.85 | 33.50 | 43.00 | 176.01 | 166.51 | 189.88 | 45.22 |
| | | 07/18/14 | 211.73 | 209.51 | 21.3 | 33.50 | 43.00 | 176.01 | 166.51 | 190.43 | 45.22 |
| | | 11/20/14 | 211.73 | 209.51 | 22.06 | 33.50 | 43.00 | 176.01 | 166.51 | 189.67 | 45.22 |
| | | 02/03/15 | 211.73 | 209.51 | 21.85 | 33.50 | 43.00 | 176.01 | 166.51 | 189.88 | 45.22 |
| | | 05/01/15 | 211.73 | 209.51 | 20.94 | 33.50 | 43.00 | 176.01 | 166.51 | 190.79 | 45.22 |
| | | 08/04/15 | 211.73 | 209.51 | 21.02 | 33.50 | 43.00 | 176.01 | 166.51 | 190.71 | 45.22 |
| | | 02/03/16 | 211.73 | 209.51 | 21.75 | 33.50 | 43.00 | 176.01 | 166.51 | 189.98 | 45.22 |
| | | 08/02/16 | 211.73 | 209.51 | 21.37 | 33.50 | 43.00 | 176.01 | 166.51 | 190.36 | 45.22 |
| | | 02/23/18 | 211.73 | 209.51 | 22.43 | 33.50 | 43.00 | 176.01 | 166.51 | 189.30 | 45.22 |
| | | 08/27/18 | 211.73 | 209.51 | 22.76 | 33.50 | 43.00 | 176.01 | 166.51 | 188.97 | 45.22 |
| | | 02/20/19 | 211.73 | 209.51 | 22.00 | 33.50 | 43.00 | 176.01 | 166.51 | 189.73 | 45.22 |
| | | 08/13/19 | 211.73 | 209.51 | 20.59 | 33.50 | 43.00 | 176.01 | 166.51 | 191.14 | 45.22 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| 46WW09 | I | 2/16/2002 | 210.19 | 207.71 | 37.35 | 29.00 | 38.50 | 178.71 | 169.21 | 172.84 | 40.98 |
| | | 5/15/2002 | 210.19 | 207.71 | 35.90 | 29.00 | 38.50 | 178.71 | 169.21 | 174.29 | 40.98 |
| | | 5/15/2005 | 210.19 | 207.71 | 36.55 | 29.00 | 38.50 | 178.71 | 169.21 | 173.64 | 40.98 |
| | | 3/16/2008 | 210.19 | 207.71 | 37.83 | 29.00 | 38.50 | 178.71 | 169.21 | 172.36 | 40.98 |
| | | 6/15/2008 | 210.19 | 207.71 | 37.47 | 29.00 | 38.50 | 178.71 | 169.21 | 172.72 | 40.98 |
| | | 05/30/13 | 210.19 | 207.71 | 34.5 | 29.00 | 38.50 | 178.71 | 169.21 | 175.69 | 40.98 |
| | | 08/13/13 | 210.19 | 207.71 | 36.95 | 29.00 | 38.50 | 178.71 | 169.21 | 173.24 | 40.98 |
| | | 08/17/13 | 210.19 | 207.71 | 36.03 | 29.00 | 38.50 | 178.71 | 169.21 | 174.16 | 40.98 |
| | | 09/24/13 | 210.19 | 207.71 | 32.5 | 29.00 | 38.50 | 178.71 | 169.21 | 177.69 | 40.98 |
| | | 01/27/14 | 210.19 | 207.71 | 33.05 | 29.00 | 38.50 | 178.71 | 169.21 | 177.14 | 40.98 |
| | | 07/15/14 | 210.19 | 207.71 | 38.18 | 29.00 | 38.50 | 178.71 | 169.21 | 172.01 | 40.98 |
| | | 11/19/14 | 210.19 | 207.71 | 36.99 | 29.00 | 38.50 | 178.71 | 169.21 | 173.2 | 40.98 |
| | | 02/05/15 | 210.19 | 207.71 | 35.9 | 29.00 | 38.50 | 178.71 | 169.21 | 174.29 | 40.98 |
| | | 05/05/15 | 210.19 | 207.71 | 36.55 | 29.00 | 38.50 | 178.71 | 169.21 | 173.64 | 40.98 |
| | | 08/06/15 | 210.19 | 207.71 | 37.47 | 29.00 | 38.50 | 178.71 | 169.21 | 172.72 | 40.98 |
| | | 02/02/16 | 210.19 | 207.71 | 37.35 | 29.00 | 38.50 | 178.71 | 169.21 | 172.84 | 40.98 |
| | | 08/03/16 | 210.19 | 207.71 | 37.83 | 29.00 | 38.50 | 178.71 | 169.21 | 172.36 | 40.98 |
| | | 02/22/18 | 210.19 | 207.71 | 38.65 | 29.00 | 38.50 | 178.71 | 169.21 | 171.54 | 40.98 |
| | | 08/28/18 | 210.19 | 207.71 | 38.81 | 29.00 | 38.50 | 178.71 | 169.21 | 171.38 | 40.98 |
| | | 02/25/19 | 210.19 | 207.71 | 38.81 | 29.00 | 38.50 | 178.71 | 169.21 | 171.38 | 40.98 |
| | | 08/12/19 | 210.19 | 207.71 | 38.40 | 29.00 | 38.50 | 178.71 | 169.21 | 171.79 | 40.98 |
| 46WW10 | S | 2/16/2002 | 213.69 | 211.40 | 24.08 | 11.90 | 21.40 | 199.50 | 190.00 | 189.61 | 23.69 |
| | | 3/15/2002 | 213.69 | 211.40 | 23.95 | 11.90 | 21.40 | 199.50 | 190.00 | 189.74 | 23.69 |
| | | 5/15/2005 | 213.69 | 211.40 | 23.80 | 11.90 | 21.40 | 199.50 | 190.00 | 189.89 | 23.69 |
| | | 3/16/2008 | 213.69 | 211.40 | 24.17 | 11.90 | 21.40 | 199.50 | 190.00 | 189.52 | 23.69 |
| | | 4/15/2008 | 213.69 | 211.40 | 23.57 | 11.90 | 21.40 | 199.50 | 190.00 | 190.12 | 23.69 |
| | | 9/13/2008 | 213.69 | 211.40 | 22.00 | 11.90 | 21.40 | 199.50 | 190.00 | 191.69 | 23.69 |
| | | 05/24/13 | 213.69 | 211.40 | 23.2 | 11.90 | 21.40 | 199.50 | 190.00 | 190.49 | 23.69 |
| | | 08/09/13 | 213.69 | 211.40 | 22 | 11.90 | 21.40 | 199.50 | 190.00 | 191.69 | 23.69 |
| | | 09/20/13 | 213.69 | 211.40 | 23.42 | 11.90 | 21.40 | 199.50 | 190.00 | 190.27 | 23.69 |
| | | 01/25/14 | 213.69 | 211.40 | 23.61 | 11.90 | 21.40 | 199.50 | 190.00 | 190.08 | 23.69 |
| | | 07/17/14 | 213.69 | 211.40 | 23.57 | 11.90 | 21.40 | 199.50 | 190.00 | 190.12 | 23.69 |
| | | 11/19/14 | 213.69 | 211.40 | 23.83 | 11.90 | 21.40 | 199.50 | 190.00 | 189.86 | 23.69 |
| | | 02/03/15 | 213.69 | 211.40 | 23.95 | 11.90 | 21.40 | 199.50 | 190.00 | 189.74 | 23.69 |
| | | 05/05/15 | 213.69 | 211.40 | 23.8 | 11.90 | 21.40 | 199.50 | 190.00 | 189.89 | 23.69 |
| | | 08/04/15 | 213.69 | 211.40 | 23.57 | 11.90 | 21.40 | 199.50 | 190.00 | 190.12 | 23.69 |
| | | 02/02/16 | 213.69 | 211.40 | 24.08 | 11.90 | 21.40 | 199.50 | 190.00 | 189.61 | 23.69 |
| | | 08/03/16 | 213.69 | 211.40 | 24.17 | 11.90 | 21.40 | 199.50 | 190.00 | 189.52 | 23.69 |
| | | 02/22/18 | 213.69 | 211.40 | Dry | 11.90 | 21.40 | 199.50 | 190.00 | Dry | 23.69 |
| | | 08/29/18 | 213.69 | 211.40 | Dry | 11.90 | 21.40 | 199.50 | 190.00 | Dry | 23.69 |
| | | 02/20/19 | 213.69 | 211.40 | Dry | 11.90 | 21.40 | 199.50 | 190.00 | Dry | 23.69 |
| | | 08/13/19 | 213.69 | 211.40 | Dry | 11.90 | 21.40 | 199.50 | 190.00 | Dry | 23.69 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| 46WW11 | S | 1/16/2002 | 212.22 | 209.97 | 25.25 | 20.00 | 30.00 | 189.97 | 179.97 | 186.97 | 32.25 |
| | | 4/15/2002 | 212.22 | 209.97 | 25.37 | 20.00 | 30.00 | 189.97 | 179.97 | 186.85 | 32.25 |
| | | 6/15/2005 | 212.22 | 209.97 | 24.48 | 20.00 | 30.00 | 189.97 | 179.97 | 187.74 | 32.25 |
| | | 3/16/2008 | 212.22 | 209.97 | 25.02 | 20.00 | 30.00 | 189.97 | 179.97 | 187.20 | 32.25 |
| | | 5/15/2008 | 212.22 | 209.97 | 24.37 | 20.00 | 30.00 | 189.97 | 179.97 | 187.85 | 32.25 |
| | | 05/25/13 | 212.22 | 209.97 | Dry | 20.00 | 30.00 | 189.97 | 179.97 | Dry | 32.25 |
| | | 08/14/13 | 212.22 | 209.97 | 25.63 | 20.00 | 30.00 | 189.97 | 179.97 | 186.59 | 32.25 |
| | | 09/19/13 | 212.22 | 209.97 | 25.98 | 20.00 | 30.00 | 189.97 | 179.97 | 186.24 | 32.25 |
| | | 01/28/14 | 212.22 | 209.97 | 25.35 | 20.00 | 30.00 | 189.97 | 179.97 | 186.87 | 32.25 |
| | | 07/16/14 | 212.22 | 209.97 | 24.76 | 20.00 | 30.00 | 189.97 | 179.97 | 187.46 | 32.25 |
| | | 11/18/14 | 212.22 | 209.97 | 25.8 | 20.00 | 30.00 | 189.97 | 179.97 | 186.42 | 32.25 |
| | | 02/04/15 | 212.22 | 209.97 | 25.37 | 20.00 | 30.00 | 189.97 | 179.97 | 186.85 | 32.25 |
| | | 05/06/15 | 212.22 | 209.97 | 24.48 | 20.00 | 30.00 | 189.97 | 179.97 | 187.74 | 32.25 |
| | | 08/05/15 | 212.22 | 209.97 | 24.37 | 20.00 | 30.00 | 189.97 | 179.97 | 187.85 | 32.25 |
| | | 02/01/16 | 212.22 | 209.97 | 25.25 | 20.00 | 30.00 | 189.97 | 179.97 | 186.97 | 32.25 |
| | | 08/03/16 | 212.22 | 209.97 | 25.02 | 20.00 | 30.00 | 189.97 | 179.97 | 187.20 | 32.25 |
| | | 02/20/18 | 212.22 | 209.97 | 26.0 | 20.00 | 30.00 | 189.97 | 179.97 | 186.27 | 32.25 |
| | | 08/29/18 | 212.22 | 209.97 | 27.30 | 20.00 | 30.00 | 189.97 | 179.97 | 184.92 | 32.25 |
| | | 02/21/19 | 46WW11 contained water and a sample was collected. The sample collection log was misplaced and no water level information is available. | | | | | | | | |
| | | 08/12/19 | 212.22 | 209.97 | 24.62 | 20.00 | 30.00 | 189.97 | 179.97 | 187.60 | 32.25 |
| 46WW12 | S | 1/16/2002 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 3/15/2002 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 5/15/2005 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 4/15/2008 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 4/16/2008 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 10/13/2008 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 05/28/13 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 08/10/13 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 09/20/13 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 01/25/14 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 07/15/14 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 11/19/14 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 02/03/15 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 05/05/15 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 08/04/15 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 02/01/16 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 08/04/16 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 02/20/18 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 08/27/18 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 02/20/19 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |
| | | 08/13/19 | 209.57 | 207.10 | Dry | 16.50 | 26.00 | 190.60 | 181.10 | Dry | 28.47 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| 46WW13 | S | 1/16/2002 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 3/15/2002 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 5/15/2005 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 4/16/2008 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 5/15/2008 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 05/28/13 | 208.38 | 205.96 | 30.05 | 19.00 | 28.50 | 186.96 | 177.46 | 178.33 | 30.92 |
| | | 08/13/13 | 208.38 | 205.96 | 30.2 | 19.00 | 28.50 | 186.96 | 177.46 | 178.18 | 30.92 |
| | | 09/23/13 | 208.38 | 205.96 | 30.35 | 19.00 | 28.50 | 186.96 | 177.46 | 178.03 | 30.92 |
| | | 01/27/14 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 07/15/14 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 11/19/14 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 02/03/15 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 05/05/15 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 08/05/15 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 02/01/16 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 08/04/16 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 02/20/18 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 08/27/18 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 02/20/19 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| | | 08/13/19 | 208.38 | 205.96 | Dry | 19.00 | 28.50 | 186.96 | 177.46 | Dry | 30.92 |
| 46WW15 | S | 05/29/13 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 08/10/13 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 09/24/13 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 01/25/14 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 07/15/14 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 11/19/14 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 02/03/15 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 05/05/15 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 08/04/15 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 02/01/16 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 08/04/16 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 02/20/19 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| | | 08/13/19 | 206.96 | 205.01 | Dry | 20.45 | 29.95 | 184.56 | 175.06 | Dry | 31.90 |
| 46WW16 | I | 4/15/2002 | 208.23 | 205.57 | 37.31 | 38.00 | 47.80 | 167.57 | 157.77 | 170.92 | 50.46 |
| | | 5/15/2005 | 208.23 | 205.57 | 37.31 | 38.00 | 47.80 | 167.57 | 157.77 | 170.92 | 50.46 |
| | | 1/14/2007 | 208.23 | 205.57 | 37.00 | 38.00 | 47.80 | 167.57 | 157.77 | 171.23 | 50.46 |
| | | 6/15/2008 | 208.23 | 205.57 | 37.35 | 38.00 | 47.80 | 167.57 | 157.77 | 170.88 | 50.46 |
| | | 07/01/14 | 208.23 | 205.57 | 37.00 | 38.00 | 47.80 | 167.57 | 157.77 | 171.23 | 50.46 |
| | | 07/16/14 | 208.23 | 205.57 | 37.15 | 38.00 | 47.80 | 167.57 | 157.77 | 171.08 | 50.46 |
| | | 11/18/14 | 208.23 | 205.57 | 38.00 | 38.00 | 47.80 | 167.57 | 157.77 | 170.23 | 50.46 |
| | | 02/04/15 | 208.23 | 205.57 | 37.31 | 38.00 | 47.80 | 167.57 | 157.77 | 170.92 | 50.46 |
| | | 05/05/15 | 208.23 | 205.57 | 37.31 | 38.00 | 47.80 | 167.57 | 157.77 | 170.92 | 50.46 |
| | | 08/06/15 | 208.23 | 205.57 | 37.35 | 38.00 | 47.80 | 167.57 | 157.77 | 170.88 | 50.46 |
| | | 02/22/18 | 208.23 | 205.57 | 38.33 | 38.00 | 47.80 | 167.57 | 157.77 | 169.9 | 50.46 |
| | | 08/28/18 | 208.23 | 205.57 | 38.62 | 38.00 | 47.80 | 167.57 | 157.77 | 169.61 | 50.46 |
| | | 02/21/19 | 46WW16 contained water and a sample was collected. The sample collection log was misplaced and no water level information is available. | | | | | | | | |
| | | 08/13/19 | 208.23 | 205.57 | 37.95 | 38.00 | 47.80 | 167.57 | 157.77 | 170.28 | 50.46 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| LHSMW08 | I | 12/1/1994 | 211.73 | 209.51 | 13.52 | 23.30 | 33.30 | 186.21 | 176.21 | 194.33 | 35.52 |
| | | 2/1/1996 | 211.73 | 209.51 | 15.24 | 23.30 | 33.30 | 186.21 | 176.21 | 192.61 | 35.52 |
| | | 12/1/1996 | 211.73 | 209.51 | 15.24 | 23.30 | 33.30 | 186.21 | 176.21 | 192.61 | 35.52 |
| | | 4/7/2008 | 211.73 | 209.51 | 25.78 | 23.30 | 33.30 | 186.21 | 176.21 | 182.07 | 35.52 |
| | | 9/13/2008 | 211.73 | 209.51 | 32.50 | 23.30 | 33.30 | 186.21 | 176.21 | 175.35 | 35.52 |
| | | 05/29/13 | 207.85 | 205.57 | 30.48 | 23.30 | 33.30 | 182.27 | 172.27 | 177.37 | 35.58 |
| | | 08/09/13 | 207.85 | 205.57 | 32.50 | 23.30 | 33.30 | 182.27 | 172.27 | 175.35 | 35.58 |
| | | 09/21/13 | 207.85 | 205.57 | 31.70 | 23.30 | 33.30 | 182.27 | 172.27 | 176.15 | 35.58 |
| LHSMW11 | S | 12/1/1994 | 212.91 | 209.89 | 13.54 | 14.00 | 24.00 | 195.89 | 185.89 | 199.37 | 27.02 |
| | | 2/1/1996 | 212.91 | 209.89 | 15.40 | 14.00 | 24.00 | 195.89 | 185.89 | 197.51 | 27.02 |
| | | 12/1/1996 | 212.91 | 209.89 | 15.40 | 14.00 | 24.00 | 195.89 | 185.89 | 197.51 | 27.02 |
| | | 3/16/2002 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 27.02 |
| | | 5/16/2008 | 212.91 | 209.89 | 26.46 | 14.00 | 24.00 | 195.89 | 185.89 | 186.45 | 27.02 |
| | | 10/13/2008 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 27.02 |
| | | 05/24/13 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 27.02 |
| | | 08/10/13 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 27.02 |
| | | 09/20/13 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 27.02 |
| | | 01/25/14 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 27.02 |
| | | 02/03/16 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 27.02 |
| | | 08/05/16 | 212.91 | 209.89 | 26.46 | 14.00 | 24.00 | 195.89 | 185.89 | 186.45 | 27.02 |
| | | 02/25/19 | 212.91 | 209.89 | Dry | 14.00 | 24.00 | 195.89 | 185.89 | Dry | 29.52 |
| LHSMW12 | S | 12/1/1994 | 209.02 | 205.98 | 9.66 | 3.60 | 13.60 | 202.38 | 192.38 | 199.36 | 16.64 |
| | | 2/1/1996 | 209.02 | 205.98 | 10.48 | 3.60 | 13.60 | 202.38 | 192.38 | 198.54 | 16.64 |
| | | 12/1/1996 | 209.02 | 205.98 | 10.48 | 3.60 | 13.60 | 202.38 | 192.38 | 198.54 | 16.64 |
| | | 3/16/2002 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 5/16/2008 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 10/13/2008 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 05/24/13 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 08/10/13 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 09/20/13 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 01/25/14 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 02/03/16 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 08/05/16 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| | | 02/25/19 | 209.02 | 205.98 | Dry | 3.60 | 13.60 | 202.38 | 192.38 | Dry | 16.64 |
| LHSMW14 | S | 12/1/1994 | 244.78 | 241.67 | 9.80 | 7.40 | 17.40 | 234.27 | 224.27 | 234.98 | 20.51 |
| | | 2/1/1996 | 244.78 | 241.67 | 9.94 | 7.40 | 17.40 | 234.27 | 224.27 | 234.84 | 20.51 |
| | | 12/1/1996 | 244.78 | 241.67 | 9.94 | 7.40 | 17.40 | 234.27 | 224.27 | 234.84 | 20.51 |
| | | 3/16/2002 | 244.78 | 241.67 | 9.55 | 7.40 | 17.40 | 234.27 | 224.27 | 235.23 | 20.51 |
| | | 9/13/2008 | 244.78 | 241.67 | 14.92 | 7.40 | 17.40 | 234.27 | 224.27 | 229.86 | 20.51 |
| | | 05/24/13 | 244.78 | 241.67 | 12.81 | 7.40 | 17.40 | 234.27 | 224.27 | 231.97 | 20.51 |
| | | 08/09/13 | 244.78 | 241.67 | 14.92 | 7.40 | 17.40 | 234.27 | 224.27 | 229.86 | 20.51 |
| | | 09/24/13 | 244.78 | 241.67 | 15.5 | 7.40 | 17.40 | 234.27 | 224.27 | 229.28 | 20.51 |
| | | 02/03/16 | 244.78 | 241.67 | 9.55 | 7.40 | 17.40 | 234.27 | 224.27 | 235.23 | 20.51 |
| | | 02/25/19 | 244.78 | 241.67 | 8.47 | 7.40 | 17.40 | 234.27 | 224.27 | 236.31 | 20.51 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| LHSMW15 | S | 12/1/1994 | 226.65 | 223.68 | 16.05 | 11.60 | 21.60 | 212.08 | 202.08 | 210.60 | 24.57 |
| | | 2/1/1996 | 226.65 | 223.68 | 16.60 | 11.60 | 21.60 | 212.08 | 202.08 | 210.05 | 24.57 |
| | | 12/1/1996 | 226.65 | 223.68 | 16.60 | 11.60 | 21.60 | 212.08 | 202.08 | 210.05 | 24.57 |
| | | 3/16/2002 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 5/16/2008 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 10/13/2008 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 05/25/13 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 08/10/13 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 09/20/13 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 01/25/14 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 02/03/16 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 08/05/16 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| | | 02/25/19 | 226.65 | 223.68 | Dry | 11.60 | 21.60 | 212.08 | 202.08 | Dry | 24.57 |
| LHSMW16 | S | 12/1/1994 | 232.19 | 229.30 | 8.25 | 11.60 | 21.60 | 217.70 | 207.70 | 223.94 | 24.49 |
| | | 2/1/1996 | 232.19 | 229.30 | 9.96 | 11.60 | 21.60 | 217.70 | 207.70 | 222.23 | 24.49 |
| | | 12/1/1996 | 232.19 | 229.30 | 9.96 | 11.60 | 21.60 | 217.70 | 207.70 | 222.23 | 24.49 |
| | | 3/16/2002 | 232.19 | 229.30 | 14.22 | 11.60 | 21.60 | 217.70 | 207.70 | 217.97 | 24.49 |
| | | 4/15/2002 | 232.19 | 229.30 | Dry | 11.60 | 21.60 | 217.70 | 207.70 | Dry | 24.49 |
| | | 5/15/2005 | 232.19 | 229.30 | Dry | 11.60 | 21.60 | 217.70 | 207.70 | Dry | 24.49 |
| | | 5/15/2008 | 232.19 | 229.30 | Dry | 11.60 | 21.60 | 217.70 | 207.70 | Dry | 24.49 |
| | | 5/16/2008 | 232.19 | 229.30 | 11.25 | 11.60 | 21.60 | 217.70 | 207.70 | 220.94 | 24.49 |
| | | 10/13/2008 | 232.19 | 229.30 | 18.80 | 11.60 | 21.60 | 217.70 | 207.70 | 213.39 | 24.49 |
| | | 05/29/13 | 232.19 | 229.30 | 16.7 | 11.60 | 21.60 | 217.70 | 207.70 | 215.49 | 24.49 |
| | | 08/10/13 | 232.19 | 229.30 | 18.8 | 11.60 | 21.60 | 217.70 | 207.70 | 213.39 | 24.49 |
| | | 09/25/13 | 232.19 | 229.30 | 20.95 | 11.60 | 21.60 | 217.70 | 207.70 | 211.24 | 24.49 |
| | | 01/29/14 | 232.19 | 229.30 | 20.54 | 11.60 | 21.60 | 217.70 | 207.70 | 211.65 | 24.49 |
| | | 11/19/14 | 232.19 | 229.30 | 21.26 | 11.60 | 21.60 | 217.70 | 207.70 | 210.93 | 24.49 |
| | | 02/04/15 | 232.19 | 229.30 | NM | 11.60 | 21.60 | 217.70 | 207.70 | NM | 24.49 |
| | | 05/05/15 | 232.19 | 229.30 | NM | 11.60 | 21.60 | 217.70 | 207.70 | NM | 24.49 |
| | | 08/05/15 | 232.19 | 229.30 | NM | 11.60 | 21.60 | 217.70 | 207.70 | NM | 24.49 |
| | | 02/03/16 | 232.19 | 229.30 | 14.22 | 11.60 | 21.60 | 217.70 | 207.70 | 217.97 | 24.49 |
| | | 08/05/16 | 232.19 | 229.30 | 11.25 | 11.60 | 21.60 | 217.70 | 207.70 | 220.94 | 24.49 |
| | | 02/22/18 | 232.19 | 229.30 | Dry | 11.60 | 21.60 | 217.70 | 207.70 | Dry | 24.49 |
| | | 08/28/18 | 232.19 | 229.30 | Dry | 11.60 | 21.60 | 217.70 | 207.70 | Dry | 24.49 |
| | | 02/25/19 | 232.19 | 229.30 | 10.32 | 11.60 | 21.60 | 217.70 | 207.70 | 221.87 | 24.49 |
| LHSMW17 | S | 12/1/1994 | 214.58 | 211.50 | 11.24 | 13.60 | 23.60 | 197.90 | 187.90 | 203.34 | 23.60 |
| | | 2/1/1996 | 214.58 | 211.50 | 13.15 | 13.60 | 23.60 | 197.90 | 187.90 | 201.43 | 23.60 |
| | | 12/1/1996 | 214.58 | 211.50 | 13.15 | 13.60 | 23.60 | 197.90 | 187.90 | 201.43 | 23.60 |
| | | 2/16/2002 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 3/15/2002 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 5/15/2005 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 3/16/2008 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 5/15/2008 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 11/18/14 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 02/03/15 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 05/05/15 | 214.58 | 211.50 | NM | 13.60 | 23.60 | 197.90 | 187.90 | NM | 23.60 |
| | | 08/05/15 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 02/02/16 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 08/03/16 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 02/22/18 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 08/29/18 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 02/20/19 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |
| | | 08/13/19 | 214.58 | 211.50 | Dry | 13.60 | 23.60 | 197.90 | 187.90 | Dry | 23.60 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| LHSMW18 | S | 12/1/1994 | 215.35 | 212.38 | 13.68 | 14.50 | 24.50 | 197.88 | 187.88 | 201.67 | 27.47 |
| | | 2/1/1996 | 215.35 | 212.38 | 15.07 | 14.50 | 24.50 | 197.88 | 187.88 | 200.28 | 27.47 |
| | | 12/1/1996 | 215.35 | 212.38 | 15.07 | 14.50 | 24.50 | 197.88 | 187.88 | 200.28 | 27.47 |
| | | 2/16/2002 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 3/15/2002 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 5/15/2005 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 2/20/2007 | 215.35 | 212.38 | 22.47 | 14.50 | 24.50 | 197.88 | 187.88 | 192.88 | 27.47 |
| | | 3/16/2008 | 215.35 | 212.38 | 24.66 | 14.50 | 24.50 | 197.88 | 187.88 | 190.69 | 27.47 |
| | | 5/15/2008 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 10/13/2008 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 05/28/13 | 215.35 | 212.38 | 25.62 | 14.50 | 24.50 | 197.88 | 187.88 | 189.73 | 27.47 |
| | | 08/10/13 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 09/20/13 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 01/25/14 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 07/17/14 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 11/20/14 | 215.35 | 212.38 | NM | 14.50 | 24.50 | 197.88 | 187.88 | NM | 27.47 |
| | | 02/03/15 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 05/05/15 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 08/05/15 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 02/02/16 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 03/28/16 | 215.35 | 212.38 | 25.15 | 14.50 | 24.50 | 197.88 | 187.88 | 190.2 | 27.47 |
| | | 08/03/16 | 215.35 | 212.38 | 24.66 | 14.50 | 24.50 | 197.88 | 187.88 | 190.69 | 27.47 |
| | | 02/22/18 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 08/29/18 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 02/20/19 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| | | 08/13/19 | 215.35 | 212.38 | Dry | 14.50 | 24.50 | 197.88 | 187.88 | Dry | 27.47 |
| LHSMW19 | S | 12/1/1994 | 212.96 | 209.80 | 11.15 | 16.60 | 26.60 | 193.20 | 183.20 | 201.81 | 29.76 |
| | | 2/1/1996 | 212.96 | 209.80 | 12.35 | 16.60 | 26.60 | 193.20 | 183.20 | 200.61 | 29.76 |
| | | 12/1/1996 | 212.96 | 209.80 | 12.35 | 16.60 | 26.60 | 193.20 | 183.20 | 200.61 | 29.76 |
| | | 1/16/2002 | 212.96 | 209.80 | 24.91 | 16.60 | 26.60 | 193.20 | 183.20 | 188.05 | 29.76 |
| | | 4/15/2002 | 212.96 | 209.80 | 24.90 | 16.60 | 26.60 | 193.20 | 183.20 | 188.06 | 29.76 |
| | | 6/15/2005 | 212.96 | 209.80 | 24.25 | 16.60 | 26.60 | 193.20 | 183.20 | 188.71 | 29.76 |
| | | 2/20/2007 | 212.96 | 209.80 | 20.90 | 16.60 | 26.60 | 193.20 | 183.20 | 192.06 | 29.76 |
| | | 3/16/2008 | 212.96 | 209.80 | 24.84 | 16.60 | 26.60 | 193.20 | 183.20 | 188.12 | 29.76 |
| | | 5/15/2008 | 212.96 | 209.80 | 24.36 | 16.60 | 26.60 | 193.20 | 183.20 | 188.60 | 29.76 |
| | | 05/28/13 | 212.96 | 209.80 | 24.5 | 16.60 | 26.60 | 193.20 | 183.20 | 188.46 | 29.76 |
| | | 08/13/13 | 212.96 | 209.80 | 25.13 | 16.60 | 26.60 | 193.20 | 183.20 | 187.83 | 29.76 |
| | | 09/23/13 | 212.96 | 209.80 | 26.38 | 16.60 | 26.60 | 193.20 | 183.20 | 186.58 | 29.76 |
| | | 01/28/14 | 212.96 | 209.80 | 24.9 | 16.60 | 26.60 | 193.20 | 183.20 | 188.06 | 29.76 |
| | | 07/16/14 | 212.96 | 209.80 | 24.55 | 16.60 | 26.60 | 193.20 | 183.20 | 188.41 | 29.76 |
| | | 11/18/14 | 212.96 | 209.80 | 25.33 | 16.60 | 26.60 | 193.20 | 183.20 | 187.63 | 29.76 |
| | | 02/04/15 | 212.96 | 209.80 | 24.9 | 16.60 | 26.60 | 193.20 | 183.20 | 188.06 | 29.76 |
| | | 05/06/15 | 212.96 | 209.80 | 24.25 | 16.60 | 26.60 | 193.20 | 183.20 | 188.71 | 29.76 |
| | | 08/05/15 | 212.96 | 209.80 | 24.36 | 16.60 | 26.60 | 193.20 | 183.20 | 188.60 | 29.76 |
| | | 02/01/16 | 212.96 | 209.80 | 24.91 | 16.60 | 26.60 | 193.20 | 183.20 | 188.05 | 29.76 |
| | | 08/03/16 | 212.96 | 209.80 | 24.84 | 16.60 | 26.60 | 193.20 | 183.20 | 188.12 | 29.76 |
| | | 02/20/18 | 212.96 | 209.80 | 25.91 | 16.60 | 26.60 | 193.20 | 183.20 | 187.05 | 29.76 |
| | | 08/28/18 | 212.96 | 209.80 | 26.61 | 16.60 | 26.60 | 193.20 | 183.20 | 186.35 | 29.76 |
| | | 02/20/19 | 212.96 | 209.80 | 25.55 | 16.60 | 26.60 | 193.20 | 183.20 | 187.41 | 29.76 |
| | | 08/12/19 | 212.96 | 209.80 | 24.70 | 16.60 | 26.60 | 193.20 | 183.20 | 188.26 | 29.76 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| LHSMW20 | S | 12/1/1994 | 209.29 | 206.21 | 12.60 | 12.00 | 22.00 | 194.21 | 184.21 | 196.69 | 25.08 |
| | | 2/1/1996 | 209.29 | 206.21 | 12.84 | 12.00 | 22.00 | 194.21 | 184.21 | 196.45 | 25.08 |
| | | 12/1/1996 | 209.29 | 206.21 | 12.84 | 12.00 | 22.00 | 194.21 | 184.21 | 196.45 | 25.08 |
| | | 05/28/13 | 209.29 | 206.21 | 24.2 | 12.00 | 22.00 | 194.21 | 184.21 | 185.09 | 25.08 |
| | | 08/10/13 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 09/20/13 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 01/25/14 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 07/17/14 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 11/20/14 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 02/03/15 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 05/05/15 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 08/04/15 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 02/01/16 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 08/04/16 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 02/20/19 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| | | 08/13/19 | 209.29 | 206.21 | Dry | 12.00 | 22.00 | 194.21 | 184.21 | Dry | 25.08 |
| LHSMW21 | S | 12/1/1994 | 207.67 | 204.66 | 10.92 | 16.60 | 26.60 | 188.06 | 178.06 | 196.75 | 29.61 |
| | | 2/1/1996 | 207.67 | 204.66 | 11.70 | 16.60 | 26.60 | 188.06 | 178.06 | 195.97 | 29.61 |
| | | 12/1/1996 | 207.67 | 204.66 | 11.70 | 16.60 | 26.60 | 188.06 | 178.06 | 195.97 | 29.61 |
| | | 05/28/13 | 207.67 | 204.66 | 19.87 | 16.60 | 26.60 | 188.06 | 178.06 | 187.8 | 29.61 |
| | | 08/10/13 | 207.67 | 204.66 | 22.40 | 16.60 | 26.60 | 188.06 | 178.06 | 185.27 | 29.61 |
| | | 09/25/13 | 207.67 | 204.66 | 23.60 | 16.60 | 26.60 | 188.06 | 178.06 | 184.07 | 29.61 |
| | | 02/02/16 | 207.67 | 204.66 | 22.15 | 16.60 | 26.60 | 188.06 | 178.06 | 185.52 | 29.61 |
| | | 08/05/16 | 207.67 | 204.66 | 21.12 | 16.60 | 26.60 | 188.06 | 178.06 | 186.55 | 29.61 |
| | | 02/25/19 | 207.67 | 204.66 | 22.22 | 16.60 | 26.60 | 188.06 | 178.06 | 185.45 | 29.61 |
| | | 08/13/19 | 207.67 | 204.66 | 20.55 | 16.60 | 26.60 | 188.06 | 178.06 | 187.12 | 29.61 |
| LHSMW22 | S | 12/1/1994 | 209.60 | 206.41 | 13.89 | 15.50 | 25.50 | 190.91 | 180.91 | 195.71 | 28.69 |
| | | 2/1/1996 | 209.60 | 206.41 | 15.08 | 15.50 | 25.50 | 190.91 | 180.91 | 194.52 | 28.69 |
| | | 12/1/1996 | 209.60 | 206.41 | 15.08 | 15.50 | 25.50 | 190.91 | 180.91 | 194.52 | 28.69 |
| | | 1/16/2002 | 209.60 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 3/15/2002 | 209.60 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 5/15/2005 | 209.60 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 2/19/2007 | 209.60 | 206.41 | 25.21 | 15.50 | 25.50 | 190.91 | 180.91 | 184.39 | 28.69 |
| | | 4/15/2008 | 209.60 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 4/16/2008 | 209.60 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 10/13/2008 | 209.60 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 05/28/13 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 08/10/13 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 09/20/13 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 01/25/14 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 07/17/14 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 11/20/14 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 02/03/15 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 05/05/15 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 08/04/15 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 02/01/16 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 08/04/16 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 02/20/18 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 08/28/18 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 02/20/19 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |
| | | 08/13/19 | 209.6 | 206.41 | Dry | 15.50 | 25.50 | 190.91 | 180.91 | Dry | 28.69 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| LHSMW23 | I | 12/1/1994 | 208.82 | 205.80 | 15.53 | 18.40 | 38.40 | 187.40 | 167.40 | 193.29 | 41.42 |
| | | 2/1/1996 | 208.82 | 205.80 | 17.02 | 18.40 | 38.40 | 187.40 | 167.40 | 191.80 | 41.42 |
| | | 12/1/1996 | 208.82 | 205.80 | 17.02 | 18.40 | 38.40 | 187.40 | 167.40 | 191.80 | 41.42 |
| | | 1/16/2002 | 208.82 | 205.80 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 3/15/2002 | 208.82 | 205.80 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 5/15/2005 | 208.82 | 205.80 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 2/19/2007 | 208.82 | 205.80 | 26.55 | 18.40 | 38.40 | 187.40 | 167.40 | 182.27 | 41.42 |
| | | 4/7/2008 | 208.82 | 205.80 | 27.64 | 18.40 | 38.40 | 187.40 | 167.40 | 181.18 | 41.42 |
| | | 4/15/2008 | 208.82 | 205.80 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 4/16/2008 | 208.82 | 205.80 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 10/13/2008 | 208.82 | 205.80 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 05/25/13 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 08/10/13 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 09/20/13 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 01/25/14 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 07/17/14 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 11/20/14 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 02/03/15 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 05/05/15 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 08/04/15 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 02/01/16 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 03/28/16 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 08/04/16 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 02/20/18 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 08/28/18 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 02/20/19 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| | | 08/13/19 | 208.82 | 205.8 | Dry | 18.40 | 38.40 | 187.40 | 167.40 | Dry | 41.42 |
| LHSMW23R | I | 09/03/19 | 208.84 | 205.8 | 35.8 | 20.00 | 40.00 | 185.75 | 165.75 | 173.04 | 43.04 |
| LHSMW24 | S | 12/1/1994 | 203.84 | 200.52 | 11.90 | 15.60 | 25.60 | 184.92 | 174.92 | 191.94 | 28.96 |
| | | 2/1/1996 | 203.84 | 200.52 | 13.84 | 15.60 | 25.60 | 184.92 | 174.92 | 190.00 | 28.96 |
| | | 12/1/1996 | 203.84 | 200.52 | 13.84 | 15.60 | 25.60 | 184.92 | 174.92 | 190.00 | 28.96 |
| | | 2/16/2002 | 203.84 | 200.52 | 27.88 | 15.60 | 25.60 | 184.92 | 174.92 | 175.96 | 28.96 |
| | | 5/16/2008 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.96 |
| | | 10/13/2008 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.96 |
| | | 05/28/13 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.92 |
| | | 08/10/13 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.92 |
| | | 09/20/13 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.92 |
| | | 01/25/14 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.92 |
| | | 07/17/14 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.92 |
| | | 02/02/16 | 203.84 | 200.52 | 27.88 | 15.60 | 25.60 | 184.92 | 174.92 | 175.96 | 28.92 |
| | | 08/05/16 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.92 |
| | | 02/25/19 | 203.84 | 200.52 | Dry | 15.60 | 25.60 | 184.92 | 174.92 | Dry | 28.92 |
| LHSMW25 | I | 12/1/1994 | 201.97 | 199.07 | 15.75 | 19.20 | 39.20 | 179.87 | 159.87 | 186.22 | 42.10 |
| | | 2/1/1996 | 201.97 | 199.07 | 17.10 | 19.20 | 39.20 | 179.87 | 159.87 | 184.87 | 42.10 |
| | | 12/1/1996 | 201.97 | 199.07 | 17.10 | 19.20 | 39.20 | 179.87 | 159.87 | 184.87 | 42.10 |
| | | 4/7/2008 | 201.97 | 199.07 | 25.50 | 19.20 | 39.20 | 179.87 | 159.87 | 176.47 | 42.10 |
| | | 02/22/18 | 201.97 | 199.07 | 30.9 | 19.20 | 39.20 | 179.87 | 159.87 | 171.07 | 42.10 |
| | | 08/27/18 | 201.97 | 199.07 | 31.33 | 19.20 | 39.20 | 179.87 | 159.87 | 170.64 | 42.10 |
| | | 02/25/19 | 201.97 | 199.07 | 30.93 | 19.20 | 39.20 | 179.87 | 159.87 | 171.04 | 42.10 |
| | | 08/12/19 | 201.97 | 199.07 | 29.85 | 19.20 | 39.20 | 179.87 | 159.87 | 172.12 | 42.10 |

## Table 2-2
## Groundwater Elevation Data

| Well ID | Zone | Sampling Date | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Depth to Water (ft BTOC) | Screen Interval (ft bgs) | | Screen Interval (ft MSL) | | Groundwater Elevation (ft MSL) | Depth to Bottom of Screen (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Top | Bottom | Top | Bottom | | |
| LHSMW27 | S | 12/1/1994 | 202.10 | 199.20 | 12.19 | 7.60 | 17.60 | 191.60 | 181.60 | 189.91 | 20.50 |
| | | 2/1/1996 | 202.10 | 199.20 | 14.05 | 7.60 | 17.60 | 191.60 | 181.60 | 188.05 | 20.50 |
| | | 12/1/1996 | 202.10 | 199.20 | 14.05 | 7.60 | 17.60 | 191.60 | 181.60 | 188.05 | 20.50 |
| | | 2/16/2002 | 202.10 | 199.20 | 17.82 | 7.60 | 17.60 | 191.60 | 181.60 | 184.28 | 20.50 |
| | | 5/16/2008 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 10/13/2008 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 05/28/13 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 08/10/13 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 09/20/13 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 01/25/14 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 07/18/14 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 02/02/16 | 202.10 | 199.20 | 17.82 | 7.60 | 17.60 | 191.60 | 181.60 | 184.28 | 20.50 |
| | | 08/05/16 | 202.10 | 199.20 | Dry | 7.60 | 17.60 | 191.60 | 181.60 | Dry | 20.50 |
| | | 02/25/19 | 202.10 | 199.20 | 19.17 | 7.60 | 17.60 | 191.60 | 181.60 | 182.93 | 20.50 |

Notes:
ID - identification
S - shallow
I - Intermediate
D - Deep
bgs - below ground surface
ft - feet
NM - not measured
BTOC - below top of casing
MSL - mean seal level

# Table 2-3
## Groundwater and Surface Water RA-O Results - 2019

| | | Location Code | 46WW02 | | | | 46WW03 | | | | 46WW05 | | | | 46WW06 | | | | 46WW07 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | 46WW02-190221 | | 46WW02-190812 | | 46WW03-190220 | | 46WW03-190812 | | 46WW05-190225 | | 46WW05-190813 | | 46WW06-190220 | | 46WW06-190813 | | 46WW07-190220 | | 46WW07-190812 | |
| | | Sample Date | 2/21/2019 | | 8/12/2019 | | 2/20/2019 | | 8/12/2019 | | 2/25/2019 | | 8/13/2019 | | 2/20/2019 | | 8/13/2019 | | 2/20/2019 | | 8/12/2019 | |
| | | Sample Purpose | REG | | REG | | REG | | REG | | REG | | REG | | REG | | REG | | REG | | REG | |
| Parameter | Units | MCL [a] | 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 | | | | | | | | | | | | | | | | | | | | | | |
| Chloride | mg/L | NV | 26.1 | | 13.9 | | NA | | NA | | 206 | | 228 | | NA | | NA | | NA | | NA | |
| Nitrate | mg/L | NV | < 0.1 | U | < 0.1 | U | NA | | NA | | < 0.5 | U | < 0.1 | U | NA | | NA | | NA | | NA | |
| Sulfate | mg/L | NV | 153 | | 123 | | NA | | NA | | 4150 | | 3940 | | NA | | NA | | NA | | NA | |
| FIELD TESTS | | | | | | | | | | | | | | | | | | | | | | |
| Conductivity | mS/cm | NV | NM | | 0.287 | | 0.739 | | 0.681 | | 6.32 | | 6.15 | | 1.97 | | 1.71 | | 1.02 | | 1.49 | |
| Dissolved oxygen | mg/L | NV | NM | | 2.84 | | 0.07 | | 0.03 | | 0.08 | | 0.07 | | 0.09 | | 0.08 | | 0.84 | | 0.38 | |
| Oxidation-Reduction Potential | mV | NV | NM | | 361 | | 116 | | 168 | | 434 | | 249 | | 93 | | 59 | | 138 | | 162 | |
| pH | SU | NV | NM | | 4.73 | | 6.49 | | 7.17 | | 4.00 | | 4.74 | | 6.39 | | 6.47 | | 6.15 | | 6.64 | |
| GASES | | | | | | | | | | | | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | 760,000 | | 120,000 | | NA | | NA | | 870,000 | J | 340,000 | | NA | | NA | | NA | | NA | |
| Ethane | µg/L | NV | < 0.47 | U | < 0.47 | U | NA | | NA | | < 0.47 | U | < 0.47 | U | NA | | NA | | NA | | NA | |
| Ethene | µg/L | NV | < 0.55 | U | < 0.55 | U | NA | | NA | | < 0.55 | U | < 0.55 | U | NA | | NA | | NA | | NA | |
| Methane | µg/L | NV | 1 | U | 1 | U | NA | | NA | | 7.2 | | 12 | | NA | | NA | | NA | | NA | |
| TOTAL ORGANIC CARBON | | | | | | | | | | | | | | | | | | | | | | |
| Total organic carbon | mg/L | NV | 11.2 | | 7.63 | | NA | | NA | | 14.7 | | 11.6 | | NA | | NA | | NA | | NA | |
| VOC | | | | | | | | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | µg/L | 70 | 1 | | 1.1 | | 0.5 | U | 0.5 | U | 2.2 | | 4.8 | | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| Trichloroethene | µg/L | 5 | 16 | | 17 | | 0.5 | U | 0.5 | U | 27 | | 62 | | 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 | 1.2 | | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

# Table 2-3
## Groundwater and Surface Water RA-O Results - 2019

| | | Location Code | 46WW08 | | | | | | 46WW09 | | | | | | 46WW11 | | | | | | 46WW16 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | 46WW08-190220 | | 46WW08-190813 | | 46WW08-190813-FD | | 46WW09-190225 | | 46WW09-190225-FD | | 46WW09-190812 | | 46WW11-190221 | | 46WW11-190812 | | 46WW11-190812-FD | | 46WW16-190221 | | 46WW16-190813 | |
| | | Sample Date | 2/20/2019 | | 8/13/2019 | | 8/13/2019 | | 2/25/2019 | | 2/25/2019 | | 8/12/2019 | | 2/21/2019 | | 8/12/2019 | | 8/12/2019 | | 2/21/2019 | | 8/13/2019 | |
| | | Sample Purpose | REG | | REG | | FD | | REG | | FD | | REG | | REG | | REG | | FD | | REG | | REG | |
| Parameter | Units | MCL [a] | 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 | | | | | | | | | | | | | | | | | | | | | | | | |
| Chloride | mg/L | NV | NA | | NA | | NA | | 426 | | 427 | | 479 | | 239 | | 208 | | 202 | | 279 | | 299 | |
| Nitrate | mg/L | NV | NA | | NA | | NA | | < 0.5 | U | < 0.5 | U | < 0.1 | U | < 0.1 | U | < 0.1 | U | < 0.1 | U | < 0.1 | U | < 0.1 | U |
| Sulfate | mg/L | NV | NA | | NA | | NA | | 2000 | | 2030 | | 2330 | | 222 | | 183 | | 192 | | 661 | | 740 | |
| FIELD TESTS | | | | | | | | | | | | | | | | | | | | | | | | |
| Conductivity | mS/cm | NV | 4.36 | | 5.44 | | NA | | 4.52 | | 4.52 | | 4.67 | | NM | | 1 | | 1 | | NM | | 2.85 | |
| Dissolved oxygen | mg/L | NV | 0.06 | | 0.04 | | NA | | 0.13 | | 0.13 | | 1.1 | | NM | | 0.07 | | 0.07 | | NM | | 0.04 | |
| Oxidation-Reduction Potential | mV | NV | 107 | | 35 | | NA | | 389 | | 389 | | 196 | | NM | | 135 | | 135 | | NM | | -93 | |
| pH | SU | NV | 6.19 | | 6.49 | | NA | | 5.45 | | 5.45 | | 6.38 | | NM | | 5.54 | | 5.54 | | NM | | 7.11 | |
| GASES | | | | | | | | | | | | | | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | NA | | NA | | NA | | 920,000 | | 930,000 | | 160,000 | | 680,000 | | 140,000 | | 150,000 | | 580,000 | | 99,000 | J |
| Ethane | µg/L | NV | NA | | NA | | NA | | < 0.47 | U | < 0.47 | U | < 0.47 | U | < 0.47 | U | < 0.47 | U | < 0.47 | U | < 0.47 | U | < 0.47 | U |
| Ethene | µg/L | NV | NA | | NA | | NA | | < 0.55 | U | < 0.55 | U | < 0.55 | U | < 0.55 | U | < 0.55 | U | < 0.55 | U | < 0.55 | U | < 0.55 | U |
| Methane | µg/L | NV | NA | | NA | | NA | | < 1 | U | < 1 | U | 7.7 | | 56 | | 15 | | < 1 | U | < 1 | U | 1.1 | J |
| TOTAL ORGANIC CARBON | | | | | | | | | | | | | | | | | | | | | | | | |
| Total organic carbon | mg/L | NV | NA | | NA | | NA | | 9.39 | | 6.28 | | 3.84 | | 2.65 | | 1.5 | | 1.37 | | 4.88 | | 2.73 | |
| VOC | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | 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 | 0.5 | U | 13 | | 24 | | 24 | | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

## Table 2-3
## Groundwater and Surface Water RA-O Results - 2019

| | | Location Code | LHSMW19 | | | | LHSMW21 | | | | LHSMW23R | | LHSMW25 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | LHSMW19-190220 | | LHSMW19-190812 | | LHSMW21-190225 | | LHSMW21-190813 | | LHSMW23R-190903 | | LHSMW25-190225 | | LHSMW25-190812 | |
| | | Sample Date | 2/20/2019 | | 8/12/2019 | | 2/25/2019 | | 8/13/2019 | | 9/3/2019 | | 2/25/2019 | | 8/12/2019 | |
| | | Sample Purpose | REG | | REG | | REG | | REG | | REG | | REG | | REG | |
| Parameter | Units | MCL [a] | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual | Result | Val Qual |
| ANIONS | | | | | | | | | | | | | | | | |
| Chloride | mg/L | NV | NA | | NA | | 112 | | 124 | | NA | | NA | | NA | |
| Nitrate | mg/L | NV | NA | | NA | | < 0.5 | U | 0.0605 | J | NA | | NA | | NA | |
| Sulfate | mg/L | NV | NA | | NA | | 829 | | 823 | | NA | | NA | | NA | |
| FIELD TESTS | | | | | | | | | | | | | | | | |
| Conductivity | mS/cm | NV | 2.52 | | 3.3 | | 2.57 | | 2.32 | | 4.53 | | 2.34 | | 2.13 | |
| Dissolved oxygen | mg/L | NV | 0.16 | | 0.09 | | 0.11 | | 0.07 | | 0.5 | | 0.23 | | 0.29 | |
| Oxidation-Reduction Potential | mV | NV | 182 | | 102 | | 233 | | 53 | | 148.9 | | 158 | | 121 | |
| pH | SU | NV | 5.98 | | 7.05 | | 6.1 | | 7.22 | | 5.56 | | 6.37 | | 6.84 | |
| GASES | | | | | | | | | | | | | | | | |
| Carbon dioxide | µg/L | NV | NA | | NA | | 680,000 | | 64,000 | | NA | | NA | | NA | |
| Ethane | µg/L | NV | NA | | NA | | < 0.47 | U | < 0.47 | U | NA | | NA | | NA | |
| Ethene | µg/L | NV | NA | | NA | | < 0.55 | U | < 0.55 | U | NA | | NA | | NA | |
| Methane | µg/L | NV | NA | | NA | | < 1 | U | < 1 | U | NA | | NA | | NA | |
| TOTAL ORGANIC CARBON | | | | | | | | | | | | | | | | |
| Total organic carbon | mg/L | NV | NA | | NA | | 3.15 | | 1.95 | | NA | | NA | | NA | |
| VOC | | | | | | | | | | | | | | | | |
| cis-1,2-Dichloroethene | µg/L | 70 | 3.9 | | 4.2 | | 100 | | 170 | | 0.5 | U | 0.5 | U | 0.5 | U |
| Trichloroethene | µg/L | 5 | 16 | | 13 | | 20 | | 41 | | 0.5 | U | 0.5 | U | 0.5 | U |
| Vinyl chloride | µg/L | 2 | 0.5 | U | 0.5 | U | 0.5 | U | 0.97 | J | 0.5 | U | 0.5 | U | 0.5 | U |

**Table 2-3**
**Groundwater and Surface Water RA-O Results - 2019**

Notes:
Bold values indicate result exceeds the cleanup level.

[a] The MCLs are shown only for LHAAP-46 chemicals of concern.

J - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected.

U - Not detected. The analyte was analyzed for, but not detected at or 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 considered to be estimated.

µg/L - micrograms per liter

FD - field duplicate sample

ID - identification

MCL - maximum contaminant level

mg/L - milligrams per Liter

MNA - monitored natural attenuation

mS/cm - millisiemens per centimeter

mV - millivolts

NA - not analyzed

NM - no measurement; The measurements were recorded during sampling, but the collection log was misplaced and is not available.

NV - no value; the parameter is not a chemical of concern and is monitored for evaluation of MNA

REG - regular sample

SU - standard unit

Val Qual - validation qualifier

VOC - volatile organic compound

## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW01 | | | | | | | | | | | | 46WW02 | | | | | | | | | |
| Sample ID | | | 46WW01-981001 | | 46WW01-981107 | | 46WW01-981107FD | | 46WW01-FEB2007 | | 46WW01-032916 | | 46WW01-080416 | | 46WW02-981106 | | 46WW02-FEB2007 | | 46WW02-102808 | | 46WW02-052813 | | 46WW02-091913 | | 46WW02-012714 | |
| Sample Date | | | 10/1/1998 | | 11/7/1998 | | 11/7/1998 | | 2/19/2007 | | 3/29/2016 | | 8/4/2016 | | 11/6/1998 | | 2/20/2007 | | 10/28/2008 | | 5/28/2013 | | 9/19/2013 | | 1/27/2014 | |
| Location Description | | | Shallow | | | | | | | | | | | | Site 46 - Central, inside site boundary. Intermediate Zone. | | | | | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 1.2 | | 1 | U | 1 | U | 2 | U | 0.5 | U | 0.5 | U | 1 | | 1.4 | J | 1.45 | | 1.76 | | 1.91 | | 2.09 | |
| Trichloroethene | µg/L | 5 | 6.6 | | 1 | U | 1 | U | 2 | U | 0.5 | U | 0.5 | U | 24 | | 28.9 | | 31.2 | | 30 | | 37.4 | | 35.2 | |
| Vinyl chloride | µg/L | 2 | 1 | U | 1 | U | 1 | U | 2 | U | 0.5 | U | 0.5 | U | 1 | U | 2 | U | 1 | U | 0.495 | J | 0.465 | J | 0.556 | J |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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 - Not detected. The analyte was analyzed for, but not detected at or above the associated reporting limit.

COC - contaminant of concern

FD - field duplicate

ID - identification

MCL - Maximum Contaminant Level

Val Qual - validation qualifier

# Table 2-4
# COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW02 | | | | 46WW02 | | | | | | | | | | | | | | | | | | 46WW03-981106 | | | |
| Sample ID | | | 46WW02-071514 | | 46WW02-111814 | | 46WW02-020515 | | 46WW02-050615 | | 46WW02-080515 | | 46WW02-020116 | | 46WW02-080416 | | 46WW02-022018 | | 46WW02-180829 | | 46WW02-190221 | | 46WW02-190812 | | 46WW03-981106 | | 46WW03-053013-FD | |
| Sample Date | | | 7/15/2014 | | 11/18/2014 | | 2/5/2015 | | 5/6/2015 | | 8/5/2015 | | 2/1/2016 | | 8/4/2016 | | 2/20/2018 | | 8/29/2018 | | 2/21/2019 | | 8/12/2019 | | 11/6/1998 | | 5/30/2013 | |
| Location Description | | | Site 46 - Central, inside site boundary. Intermediate Zone. | | | | | | | | | | | | | | | | | | | | | | Site 46 - Central, inside site boundary. Deep Zone. | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 1.72 | | 1.97 | | 2.08 | | 1.44 | | 1.37 | | 1.28 | | 1.31 | | 0.52 | J | 1.4 | | 1.0 | | 1.1 | | 1 | U | 0.25 | U |
| Trichloroethene | µg/L | 5 | 32.8 | | 38.2 | | 37.6 | | 24 | | 20.3 | | 16.6 | | 20.7 | | 21 | | 24 | | 16 | | 17 | | 1 | U | 0.25 | U |
| Vinyl chloride | µg/L | 2 | 0.493 | J | 0.501 | J | 0.432 | J | 0.5 | U | 0.5 | U | 0.5 | U | 0.259 | J | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 1 | U | 0.25 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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 - Not detected. The analyte was analyzed for, but not detected at or above the associated reporting limit.

COC - contaminant of concern

FD - field duplicate

ID - identification

MCL - Maximum Contaminant Level

Val Qual - validation qualifier

# Table 2-4
# COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW03 | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample ID | | | 46WW03-053013 | | 46WW03-092613 | | 46WW03FD-012514 | | 46WW03-012514 | | 46WW03-071714 | | 46WW03-112014 | | 46WW03FD-112014 | | 46WW03-020515 | | 46WW03-050615 | | 46WW03-080515 | | 46WW03FD-080515 | | 46WW03-020316 | | 46WW03-080416 | |
| Sample Date | | | 5/30/2013 | | 9/26/2013 | | 1/25/2014 | | 1/25/2014 | | 7/17/2014 | | 11/20/2014 | | 11/20/2014 | | 2/5/2015 | | 5/6/2015 | | 8/5/2015 | | 8/5/2015 | | 2/3/2016 | | 8/4/2016 | |
| Location Description | | | Site 46 - Central, inside site boundary. Deep Zone. | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 0.25 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 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 | 0.25 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 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 | 0.25 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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 - Not detected. The analyte was analyzed for, but not detected at or above the associated reporting limit.

COC - contaminant of concern

FD - field duplicate

ID - identification

MCL - Maximum Contaminant Level

Val Qual - validation qualifier

## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW03 | | | | | | | | 46WW04 | | | | | | | | | | | | | | | | |
| Sample ID | | | 46WW03-022618 | | 46WW03-180827 | | 46WW03-190220 | | 46WW03-190812 | | 46WW04-981107 | | 46WW04-FEB2007 | | 46WW04F-052413 | | 46WW04-092113 | | 46WW04-012514 | | 46WW04-071814 | | 46WW04-050615 | | 46WW04-080515 | | 46WW04-020316 | |
| Sample Date | | | 2/26/2018 | | 8/27/2018 | | 2/20/2019 | | 8/12/2019 | | 11/7/1998 | | 2/19/2007 | | 5/24/2013 | | 9/21/2013 | | 1/25/2014 | | 7/18/2014 | | 5/6/2015 | | 8/5/2015 | | 2/3/2016 | |
| Location Description | | | Site 46 - Central, inside site boundary. Deep Zone. | | | | | | | | Shallow | | | | | | | | | | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 1 | U | 2 | 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 | 0.71 | | 2 | 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 | 1 | U | 2 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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 - Not detected. The analyte was analyzed for, but not detected at or above the associated reporting limit.

COC - contaminant of concern

FD - field duplicate

ID - identification

MCL - Maximum Contaminant Level

Val Qual - validation qualifier

## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW05 | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample ID | | | 46WW05-100908 | | 46WW05-053013 | | 46WW05-092413 | | 46WW05-012814 | | 46WW05-071614 | | 46WW05-111914 | | 46WW05-020515 | | 46WW05-050515 | | 46WW05-080615 | | 46WW05-020116 | | 46WW05-080316 | | 46WW05-022618 | | 46WW05-022618-FD | |
| Sample Date | | | 10/9/2008 | | 5/30/2013 | | 9/24/2013 | | 1/28/2014 | | 7/16/2014 | | 11/19/2014 | | 2/5/2015 | | 5/5/2015 | | 8/6/2015 | | 2/1/2016 | | 8/3/2016 | | 2/26/2018 | | 2/26/2018 | |
| Location Description | | | Site 46 - N, inside site boundary. Intermediate Zone. | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 1.72 | | 10.2 | | 8.12 | | 10.3 | | 9.74 | | 9.55 | | 10.9 | | 7 | | 3.87 | | 3.12 | | 1.86 | | 0.5 | U | 0.62 | J |
| Trichloroethene | µg/L | 5 | 5.9 | | 144 | | 112 | | 131 | | 130 | | 128 | | 143 | | 80.5 | | 34 | | 46.4 | | 23.6 | | 14 | | 14 | |
| Vinyl chloride | µg/L | 2 | 1 | U | 2.14 | | 1.79 | | 2.53 | | 2.09 | | 1.59 | | 1.72 | | 0.956 | J | 0.274 | J | 0.832 | J | 0.522 | J | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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.

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW05 | | | | | | 46WW06 | | | | | | | | | | | | | | | | | | | | |
| Sample ID | | | 46WW05-180828 | | 46WW05-190225 | | 46WW05-190813 | | 46WW06-100908 | | 46WW06-052413 | | 46WW06-092513 | | 46WW06-012514 | | 46WW06-071714 | | 46WW06FD-071714 | | 46WW06FD-111914 | | 46WW06-111914 | | 46WW06-020615 | | 46WW06-050115 | |
| Sample Date | | | 8/28/2018 | | 2/25/2019 | | 8/13/2019 | | 10/9/2008 | | 5/24/2013 | | 9/25/2013 | | 1/25/2014 | | 7/17/2014 | | 7/17/2014 | | 11/19/2014 | | 11/19/2014 | | 2/6/2015 | | 5/1/2015 | |
| Location Description | | | Site 46 - N, inside site boundary. Intermediate Zone. | | | | | | Site 46 - W, inside site boundary. Intermediate Zone. | | | | | | | | Site 46 - W, inside site boundary. Intermediate Zone. | | | | | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 0.5 | U | 2.2 | U | 4.8 | | 1 | U | 0.5 | U | 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 | 6.4 | | 27 | | 62 | | 1 | U | 0.5 | U | 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 | 0.5 | U | 0.5 | U | 1.2 | | 1 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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.

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location Code | | 46WW06 | | | | | | | | | | | | | | | | 46WW07 | | | | | | | | | | |
| | Sample ID | | 46WW06-080415 | | 46WW06-020216 | | 46WW06-080416 | | 46WW06FD-080416 | | 46WW06-022618 | | 46WW06-180827 | | 46WW06-190220 | | 46WW06-190813 | | 46WW07-052513-FD | | 46WW07-052513 | | 46WW07-091913 | | 46WW07-012714 | | 46WW07-071814 | |
| | Sample Date | | 8/4/2015 | | 2/2/2016 | | 8/4/2016 | | 8/4/2016 | | 2/26/2018 | | 8/27/2018 | | 2/20/2019 | | 8/13/2019 | | 5/25/2013 | | 5/25/2013 | | 9/21/2013 | | 1/27/2014 | | 7/18/2014 | |
| | Location Description | | Site 46 - W, inside site boundary. Intermediate Zone. | | | | | | | | | | | | | | | | Inside site boundary. Intermediate Zone. | | | | | | | | | | |
| 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 |
| 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 | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

µg/L - micrograms per liter

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Val Qual - validation qualifier

## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW07 | | | | | | | | | | | | | | | | | | | | | | 46WW08 | | | |
| Sample ID | | | 46WW07FD-071814 | | 46WW07-112014 | | 46WW07-020315 | | 46WW07-050115 | | 46WW07-080415 | | 46WW07-020216 | | 46WW07-080216 | | 46WW07-022318 | | 46WW07-180827 | | 46WW07-190220 | | 46WW07-190812 | | 46WW08-052513 | | 46WW08-092113 | |
| Sample Date | | | 7/18/2014 | | 11/20/2014 | | 2/3/2015 | | 5/1/2015 | | 8/4/2015 | | 2/2/2016 | | 8/2/2016 | | 2/23/2018 | | 8/27/2018 | | 2/20/2019 | | 8/12/2019 | | 5/25/2013 | | 9/21/2013 | |
| Location Description | | | Inside site boundary. Intermediate Zone. | | | | | | | | | | | | | | | | | | | | | | North North/West. Inside site boundary. Intermediate Zone. | | | |
| 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 |
| 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 | 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 | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW08 | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample ID | | | 46WW08-092113-FD | | 46WW08-012814 | | 46WW08FD-012814 | | 46WW08-071814 | | 46WW08-112014 | | 46WW08-020315 | | 46WW08FD-020315 | | 46WW08FD-050115 | | 46WW08-050115 | | 46WW08-080415 | | 46WW08-020316 | | 46WW08-080216 | | 46WW08-022318-FD | |
| Sample Date | | | 9/21/2013 | | 1/28/2014 | | 1/28/2014 | | 7/18/2014 | | 11/20/2014 | | 2/3/2015 | | 2/3/2015 | | 5/1/2015 | | 5/1/2015 | | 8/4/2015 | | 2/3/2016 | | 8/2/2016 | | 2/23/2018 | |
| Location Description | | | North North/West. Inside site boundary. Intermediate Zone. | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 |
| 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 | 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 | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW08 | | | | | | | | | | | | 46WW09 | | | | | | | | | | | | |
| Sample ID | | | 46WW08-022318 | | 46WW08-180827 | | 46WW08-180827FD | | 46WW08-190220 | | 46WW08-190813 | | 46WW08-190813-FD | | 46WW09-053013 | | 46WW09-092413 | | 46WW09-012714 | | 46WW09-071514 | | 46WW09-111914 | | 46WW09-020515 | | 46WW09-050515 | |
| Sample Date | | | 2/23/2018 | | 8/27/2018 | | 8/27/2018 | | 2/20/2019 | | 8/13/2019 | | 8/13/2019 | | 5/30/2013 | | 9/24/2013 | | 1/27/2014 | | 7/15/2014 | | 11/19/2014 | | 2/5/2015 | | 5/5/2015 | |
| Location Description | | | North North/West. Inside site boundary. Intermediate Zone. | | | | | | | | | | | | Central. Inside site boundary. Intermediate Zone. | | | | | | | | | | | | |
| 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 |
| 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 | 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 | 0.5 | U | 1 | 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 | 0.5 | U | 1 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location Code | | 46WW09 | | | | | | | | | | | | | | | | 46WW10 | | | | | | | | | | | |
| | Sample ID | | 46WW09-080615 | | 46WW09-020216 | | 46WW09-080316 | | 46WW09-022218 | | 46WW09-180828 | | 46WW09-190225 | | 46WW09-190225-FD | | 46WW09-190812 | | 46WW10-052513 | | 46WW10-092113 | | 46WW10-012514 | | 46WW10-071714 | | 46WW10-112014 | | | |
| | Sample Date | | 8/6/2015 | | 2/2/2016 | | 8/3/2016 | | 2/22/2018 | | 8/28/2018 | | 2/25/2019 | | 2/25/2019 | | 8/12/2019 | | 5/25/2013 | | 9/21/2013 | | 1/25/2014 | | 7/17/2014 | | 11/20/2014 | | | |
| | Location Description | | Central. Inside site boundary. Intermediate Zone. | | | | | | | | | | | | | | | | Shallow | | | | | | | | | | | |
| 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 | | |
| 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 | 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 | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | | |

Notes:

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µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Location Code | | 46WW10 | | | | | | | | | | | | 46WW11 | | | | | | | | | | | | |
| | Sample ID | | 46WW10-020415 | | 46WW10FD-050615 | | 46WW10-050615 | | 46WW10-080515 | | 46WW10-020316 | | 46WW10-080416 | | 46WW11-081413 | | 46WW11-091913 | | 46WW11-012814 | | 46WW11-071614 | | 46WW11-111814 | | 46WW11-020415 | | 46WW11-050615 | |
| | Sample Date | | 2/4/2015 | | 5/6/2015 | | 5/6/2015 | | 8/5/2015 | | 2/3/2016 | | 8/4/2016 | | 8/14/2013 | | 9/19/2013 | | 1/28/2014 | | 7/16/2014 | | 11/18/2014 | | 2/4/2015 | | 5/6/2015 | |
| | Location Description | | Shallow | | | | | | | | | | | | Central. Inside in 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 |
| 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 | 1.56 | | 1.11 | | 2.04 | | 2.12 | | 1.28 | | 1.99 | | 1.4 | |
| Trichloroethene | µg/L | 5 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 85.9 | | 79.8 | | 87.5 | | 90.6 | | 70.7 | | 63.6 | | 45.3 | |
| Vinyl chloride | µg/L | 2 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

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.

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Val Qual - validation qualifier

## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW11 | | | | | | | | | | | | | | | | | | 46WW13 | | | | 46WW14 | | | |
| Sample ID | | | 46WW11-080515 | | 46WW11-020116 | | 46WW11-080316 | | 46WW11-022018 | | 46WW11-180829FD | | 46WW11-180829 | | 46WW11-190221 | | 46WW11-190812 | | 46WW11-190812-FD | | 46WW13-052913 | | 46WW13-092413 | | 46WW14-052913 | | 46WW14-091913 | |
| Sample Date | | | 8/5/2015 | | 2/1/2016 | | 8/3/2016 | | 2/20/2018 | | 8/29/2018 | | 8/29/2018 | | 2/21/2019 | | 8/12/2019 | | 8/12/2019 | | 5/29/2013 | | 9/24/2013 | | 5/29/2013 | | 9/19/2013 | |
| Location Description | | | Central. Inside in site boundary. | | | | | | | | | | | | | | | | | | Shallow | | | | Intermediate | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 0.749 | J | 0.578 | J | 0.325 | J | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 37.3 | | 35.5 | | 1 | U | 0.5 | U |
| Trichloroethene | µg/L | 5 | 26.3 | | 20.5 | | 21.2 | | 18 | | 12 | | 13 | | 13 | | 24 | | 24 | | 107 | | 103 | | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 13.1 | | 9.83 | | 1 | U | 0.5 | U |

Notes:

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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 - Not detected. The analyte was analyzed for, but not detected at or above the associated reporting limit.

COC - contaminant of concern

FD - field duplicate

ID - identification

MCL - Maximum Contaminant Level

Val Qual - validation qualifier

## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 46WW14 | | | | | | | | | | | | | | | | | | | | | | 46WW16 | | | | | |
| Sample ID | | | 46WW14-012714 | | 46WW14-071514 | | 46WW14-111914 | | 46WW14FD-020615 | | 46WW14-020615 | | 46WW14-050515 | | 46WW14FD-020216 | | 46WW14-020216 | | 46WW14-080216 | | 46WW14FD-080216 | | 46WW16-070114 | | 46WW16-071614 | | 46WW16-111814 | |
| Sample Date | | | 1/27/2014 | | 7/15/2014 | | 11/19/2014 | | 2/6/2015 | | 2/6/2015 | | 5/5/2015 | | 2/2/2016 | | 2/2/2016 | | 8/2/2016 | | 8/2/2016 | | 7/1/2014 | | 7/16/2014 | | 11/18/2014 | |
| Location Description | | | Intermediate | | | | | | | | | | | | | | | | | | | | North. Inside site boundary. Intermediate Zone. | | | | | |
| 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 |
| 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 | 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 | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | 44WW16 | | | | | | | | | | | | | | | | LHSMW08 | | | | | | | |
| Sample ID | | | 46WW16-050515 | | 46WW16-080615 | | 46WW16-020116 | | 46WW16-080316 | | 46WW16-022218 | | 46WW16-180828 | | 46WW16-190221 | | 46WW16-190813 | | LHSMW08-092113 | | LHSMW08-092113 | | LHSMW08-092113 | | LHSMW08-092113 | |
| Sample Date | | | 5/5/2015 | | 8/6/2015 | | 2/1/2016 | | 8/3/2016 | | 2/22/2018 | | 8/28/2018 | | 2/21/2019 | | 8/13/2019 | | 8/13/1996 | | 8/13/1996 | | 5/13/1998 | | 9/21/2013 | |
| Location Description | | | North. Inside site boundary. Intermediate Zone. | | | | | | | | | | | | | | | | Intermediate | | | | | | | |
| 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 |
| 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 | 0.5 | U | 0.5 | U | 0.2 | U | 0.2 | U | 1 | U | 0.5 | U |
| Trichloroethene | µg/L | 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 | 0.25 | U | 0.25 | 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.24 | U | 0.24 | U | 1 | U | 0.5 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | LHSMW11 | | | | | | | | LHSMW12 | | | | LHSMW14 | | | | | | | | | | LHSMW15 | | | | |
| Sample ID | | | LHSMW11-960813 | | LHSMW11-980514 | | LHSMW11-980514FD | | LHSMW11-031508 | | LHSMW12-960813 | | LHSMW12-980514 | | LHSMW14-941129 | | LHSMW14-960814 | | LHSMW14-960814FD | | LHSMW14-980514 | | LHSMW14-092413 | | LHSMW15-960815 | | LHSMW15-980514 | | LHSMW15-102708 | |
| Sample Date | | | 8/13/1996 | | 5/14/1998 | | 5/14/1998 | | 3/15/2008 | | 8/13/1996 | | 5/14/1998 | | 11/29/1994 | | 8/14/1996 | | 8/14/1996 | | 5/14/1998 | | 9/24/2013 | | 8/15/1996 | | 5/14/1998 | | 10/27/2008 | |
| Location Description | | | Shallow | | | | | | | | Shallow | | | | Shallow | | | | | | | | | | Shallow | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 0.2 | U | 1 | U | 1 | U | 1 | U | 0.2 | U | 1 | U | NA | U | 0.2 | U | 0.2 | U | 1 | U | 0.5 | U | 0.2 | U | 1 | U | 1 | U |
| Trichloroethene | µg/L | 5 | 0.25 | U | 1 | U | 1 | U | 1 | U | 0.25 | U | 1 | U | 5 | | 0.25 | U | 0.25 | U | 1 | U | 0.5 | U | 0.25 | U | 1 | U | 1 | U |
| Vinyl chloride | µg/L | 2 | 0.24 | U | 1 | U | 1 | U | 1 | U | 0.24 | U | 1 | U | NA | U | 0.24 | U | 0.24 | U | 1 | U | 0.5 | U | 0.24 | U | 1 | U | 1 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | LHSMW16 | | | | | | LHSMW17 | | | | | | | | | | | | LHSMW18 | | | | | | | | | |
| Sample ID | | | LHSMW16-941129 | | LHSMW16-960815 | | LHSMW16-980514 | | LHSMW17-960815 | | LHSMW17-980514 | | LHSMW17-000524 | | LHSMW17-000524FD | | LHSMW17-001002FD | | LHSMW17-001003 | | LHSMW18-941202 | | LHSMW18-960212 | | LHSMW18-960815 | | LHSMW18-980514 | | LHSMW18-FEB2007 | |
| Sample Date | | | 11/29/1994 | | 8/15/1996 | | 5/14/1998 | | 8/15/1996 | | 5/14/1998 | | 5/24/2000 | | 5/24/2000 | | 10/2/2000 | | 10/2/2000 | | 12/2/1994 | | 2/12/1996 | | 8/15/1996 | | 5/14/1998 | | 2/20/2007 | |
| Location Description | | | Shallow | | | | | | Shallow | | | | | | | | | | | | Shallow | | | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | NA | U | 0.2 | U | 0.2 | U | 0.2 | U | 1 | U | 1 | U | 9.6 | | 1 | U | 1 | U | NA | | 4.5 | | 6.1 | | 9.8 | | 1.5 | J |
| Trichloroethene | µg/L | 5 | 5 | | 0.25 | U | 0.25 | U | 0.25 | U | 1 | U | 1 | U | 4 | | 1 | U | 1 | U | 14 | | 21 | | 27.5 | | 38 | | 4.8 | |
| Vinyl chloride | µg/L | 2 | NA | U | 0.24 | U | 0.24 | U | 0.24 | U | 1 | U | 1 | U | 100 | U | 1 | U | 1 | U | NA | | 1 | U | 0.68 | | 0.71 | | 2 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | LHSMW18 | | LHSMW19 | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample ID | | | LHSMW18-032916 | | LHSMW19-941202 | | LHSMW19- 960206 | | LHSMW19-960815 | | LHSMW19-980515 | | LHSMW19-FEB2007 | | LHSMW19-110620 | | LHSMW19-052813 | | LHSMW19-092413 | | LHSMW19-012814 | | LHSMW19-071614 | | LHSMW19-111814 | | LHSMW19-020415 | | LHSMW19-050615 | |
| Sample Date | | | 3/29/2016 | | 12/2/1994 | | 2/6/1996 | | 8/15/1996 | | 5/15/1998 | | 2/20/2007 | | 6/20/2011 | | 5/28/2013 | | 9/24/2013 | | 1/28/2014 | | 7/16/2014 | | 11/18/2014 | | 2/4/2015 | | 5/6/2015 | |
| Location Description | | | Shallow | | Central. Inside 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 1.28 | | NA | | NA | | 0.2 | U | 1 | U | 2 | U | 2.98 | | 1.45 | | 2.44 | | 2.15 | | 1.52 | | 1.59 | | 1.9 | | 0.944 | J |
| Trichloroethene | µg/L | 5 | 3.35 | | 26 | | 77 | | 47.1 | | 70 | | 85.5 | | 66.4 | | 32.3 | | 40.9 | | 33.5 | | 28.6 | | 31.2 | | 31.3 | | 13.4 | |
| Vinyl chloride | µg/L | 2 | 0.5 | U | NA | | NA | | 0.24 | U | 1 | U | 2 | U | 1 | U | 0.25 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

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µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | LHSMW19 | | | | | | | | | | | | | | LHSMW20 | | | | | | LHSMW21 | | | | | | | |
| Sample ID | | | LHSMW19-080515 | | LHSMW19-020116 | | LHSMW19-080316 | | LHSMW19-022018 | | LHSMW19-180828 | | LHSMW19-190220 | | LHSMW19-190812 | | LHSMW20-960815 | | LHSMW20-980515 | | LHSMW20-102708 | | LHSMW21-960815 | | LHSMW21-980515 | | LHSMW21-092513 | | LHSMW21-190225 | |
| Sample Date | | | 8/5/2015 | | 2/1/2016 | | 8/3/2016 | | 2/20/2018 | | 8/28/2018 | | 2/20/2019 | | 8/12/2019 | | 8/15/1996 | | 5/15/1998 | | 10/27/2008 | | 8/15/1996 | | 5/15/1998 | | 9/25/2013 | | 2/25/2019 | |
| Location Description | | | Central. Inside site boundary. | | | | | | | | | | | | | | Shallow | | | | | | Shallow | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 2.3 | | 1.92 | | 0.967 | J | 0.5 | U | 1.7 | | 3.9 | | 4.2 | | 0.2 | U | 1 | U | 1 | U | 0.2 | U | 1 | U | 30.6 | | **100** | |
| Trichloroethene | µg/L | 5 | **26.2** | | **24.2** | | **8.53** | | 2.4 | | **8.8** | | **16** | | **13** | | 0.25 | U | 1 | U | 1 | U | 0.25 | U | 1 | U | 1.64 | | **20** | |
| Vinyl chloride | µg/L | 2 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.24 | U | 1 | U | 1 | U | 0.24 | U | 1 | U | 1.44 | | 0.5 | U |

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | LHSMW21 | | LHSMW22 | | | | | | | | LHSMW23 | | | | | | | | | | | | LHSMW23R | | LHSMW24 | | | |
| Sample ID | | | LHSMW21-190813 | | LHSMW22-960207 | | LHSMW22-960815 | | LHSMW22-980515 | | LHSMW22-FEB2007 | | LHSMW23-941204 | | LHSMW23-941204FD | | LHSMW23-960815 | | LHSMW23-980515 | | LHSMW23-FEB2007 | | LHSMW23-102808 | | LHSMW23R-190903 | | LHSMW24-941204 | | LHSMW24-960820 | |
| Sample Date | | | 8/13/2019 | | 2/7/1996 | | 8/15/1996 | | 5/15/1998 | | 2/19/2007 | | 12/4/1994 | | 12/4/1994 | | 8/15/1996 | | 5/15/1998 | | 2/19/2007 | | 10/28/2008 | | 9/3/2019 | | 12/4/1994 | | 8/20/1996 | |
| Location Description | | | Shallow | | Shallow | | | | | | | | Intermediate | | | | | | | | | | | | Intermediate | | Shallow | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 170 | | NA | | 0.54 | | 1.1 | | 2 | U | NA | | NA | | 0.2 | U | 1 | U | 2 | U | 0.614 | J | 0.5 | U | NA | | 0.2 | U |
| Trichloroethene | µg/L | 5 | 41 | | 1 | | 1.7 | | 3.1 | | 2 | U | 5 | U | 5 | U | 0.25 | U | 1.3 | | 1.4 | J | 2.51 | | 0.5 | U | 5 | U | 0.25 | U |
| Vinyl chloride | µg/L | 2 | 0.97 | J | NA | | 0.24 | U | 1 | U | 2 | U | NA | | NA | | 0.24 | U | 1 | U | 2 | U | 0.412 | J | 0.5 | U | NA | | 0.24 | U |

Notes:

Blue highlighting with bold text indicates concentrations above the MCL.

µg/L - micrograms per liter

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## Table 2-4
## COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | LHSMW24 | | LHSMW25 | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample ID | | | LHSMW24-980515 | | LHSMW25-941204 | | LHSMW25-960820 | | LHSMW25-980515 | | LHSMW25-102808 | | LHSMW25-102808-QA | | LHSMW25-052513 | | LHSMW25-092513 | | LHSMW25-092513-FD | | LHSMW25-012514 | | LHSMW25-071814 | | LHSMW25-112014 | | LHSMW25-020615 | | LHSMW25-050115 | |
| Sample Date | | | 5/15/1998 | | 12/4/1994 | | 8/20/1996 | | 5/15/1998 | | 10/28/2008 | | 10/28/2008 | | 5/25/2013 | | 9/25/2013 | | 9/25/2013 | | 1/25/2014 | | 7/18/2014 | | 11/20/2014 | | 2/6/2015 | | 5/1/2015 | |
| Location Description | | | Shallow | | East. Inside site boundary. Intermediate zone. | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 |
| cis-1,2-Dichloroethene | µg/L | 70 | 1 | U | NA | | 0.2 | U | 1 | U | 1 | U | 1 | U | 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 | 1 | U | 5 | U | 0.25 | U | 1 | U | 1 | U | 1 | U | 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 | 1 | U | NA | | 0.24 | U | 1 | U | 1 | U | 1 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |

Notes:

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µg/L - micrograms per liter

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# Table 2-4
# COC Concentrations

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location Code | | | LHSMW25 | | | | | | | | | | | | | | | | | | LHSMW27 | | | |
| Sample ID | | | LHSMW25-080415 | | LHSMW25FD-080415 | | LHSMW25-020216 | | LHSMW25FD-020216 | | LHSMW25-080416 | | LHSMW25-022218 | | LHSMW25-180827 | | LHSMW25-190225 | | LHSMW25-190812 | | LHSMW27-960820 | | LHSMW27-980515 | |
| Sample Date | | | 8/4/2015 | | 8/4/2015 | | 2/2/2016 | | 2/2/2016 | | 8/4/2016 | | 2/22/2018 | | 8/27/2018 | | 2/25/2019 | | 8/12/2019 | | 8/20/1996 | | 5/15/1998 | |
| Location Description | | | East. Inside site boundary. Intermediate zone. | | | | | | | | | | | | | | | | | | Shallow | | | |
| 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 |
| 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 | 0.5 | U | 0.5 | U | 0.5 | U | 0.2 | U | 1 | U |
| Trichloroethene | µg/L | 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 | 0.25 | U | 1 | U |
| Vinyl chloride | µg/L | 2 | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.24 | U | 1 | U |

Notes:

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µg/L - micrograms per liter

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**Table 2-5**
**Well Maintenance Activities Year 5 RA-O**

| Well ID | Date Inspected | Pads | Bollards | Protective Casings | Locks | Date Mowed | Photos | Comments |
|---|---|---|---|---|---|---|---|---|
| 46WW01 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW02 | 2/21/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW03 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW04 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW05 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW06 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW07 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW08 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW09 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW10 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW11 | 2/21/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW12 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW13 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW15 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| 46WW16 | 2/21/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW11 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW12 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW14 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW15 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW17 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW18 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW19 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW20 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW21 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW22 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW23 | 2/20/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | Well obstructed |
| LHSMW23R | Installed 8/2019 | Good | Good | Good | In Place | Not mowed in 2019 | No | Replacement well installed August 2019 |
| LHSMW24 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |
| LHSMW25 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | Hinge rusted |
| LHSMW27 | 2/25/2019 | Good | Good | Good | In Place | 2/19/2019 and 8/09/2019 | Yes | |

Notes:

ID - identification

RA-O - remedial action operation

## Table 2-6
## Year 6 Annual RA-O Sampling Locations

| Well ID | Groundwater Zone | VOC | Field Parameters | MNA |
|---|---|---|---|---|
| 46WW01 | Shallow | X | X | |
| 46WW04 | Shallow | X | X | |
| 46WW10 | Shallow | X | X | |
| 46WW11 | Shallow | X | X | X |
| 46WW12 | Shallow | X | X | |
| 46WW13 | Shallow | X | X | |
| 46WW15 | Shallow | X | X | |
| LHSMW17 | Shallow | X | X | |
| LHSMW18 [a] | Shallow | X | X | |
| LHSMW19 | Shallow | X | X | |
| LHSMW21 | Shallow | X | X | X |
| LHSMW22 | Shallow | X | X | |
| 46WW02 | Intermediate | X | X | X |
| 46WW05 | Intermediate | X | X | X |
| 46WW06 | Intermediate | X | X | |
| 46WW07 | Intermediate | X | X | |
| 46WW08 | Intermediate | X | X | |
| 46WW09 | Intermediate | X | X | X |
| 46WW14 | Intermediate | X | X | |
| 46WW16 | Intermediate | X | X | X |
| LHSMW23R | Intermediate | X | X | |
| LHSMW25 | Intermediate | X | X | |
| 46WW03 | Deep | X | X | |
| 46SW10 [b] | Surface Water | X | X | |

Notes:

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

MNA parameters include nitrate, sulfate, chloride, TOC, dissolved iron (field), and dissolved gases (methane, ethane, ethene, carbon dioxide).

[a] LHSMW18 only sampled if LHSMW17 is dry.

[b] 46SW10 is only sampled if surface water is present and the GW elevation at either LHSMW21 or 46WW16 exceeds 197 feet.

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

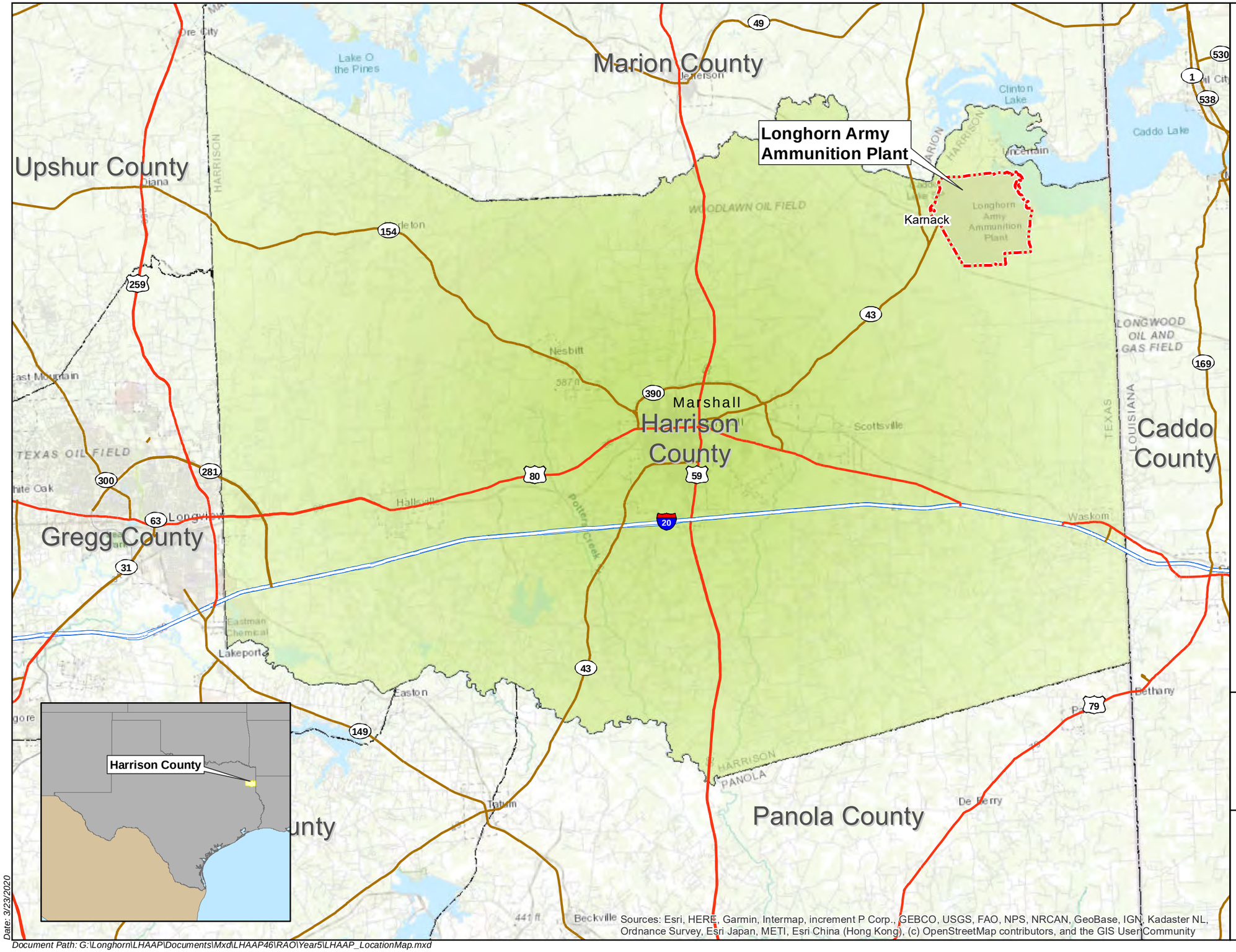
**Table 3-1**
**Mann-Kendall Trend Summary**

| Monitoring Well | Groundwater Zone | Statistical TCE Trend | Confidence Factor |
|---|---|---|---|
| 46WW11 | Shallow | Decrease | 99.9% |
| LHSMW19 | Shallow | Decrease | 100.0% |
| 46WW02 | Intermediate | Decrease | 99.4% |
| 46WW05 | Intermediate | Decrease | 99.9% |

Notes:

TCE - trichloroethene

# Figures




Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N

0 2 4 Miles

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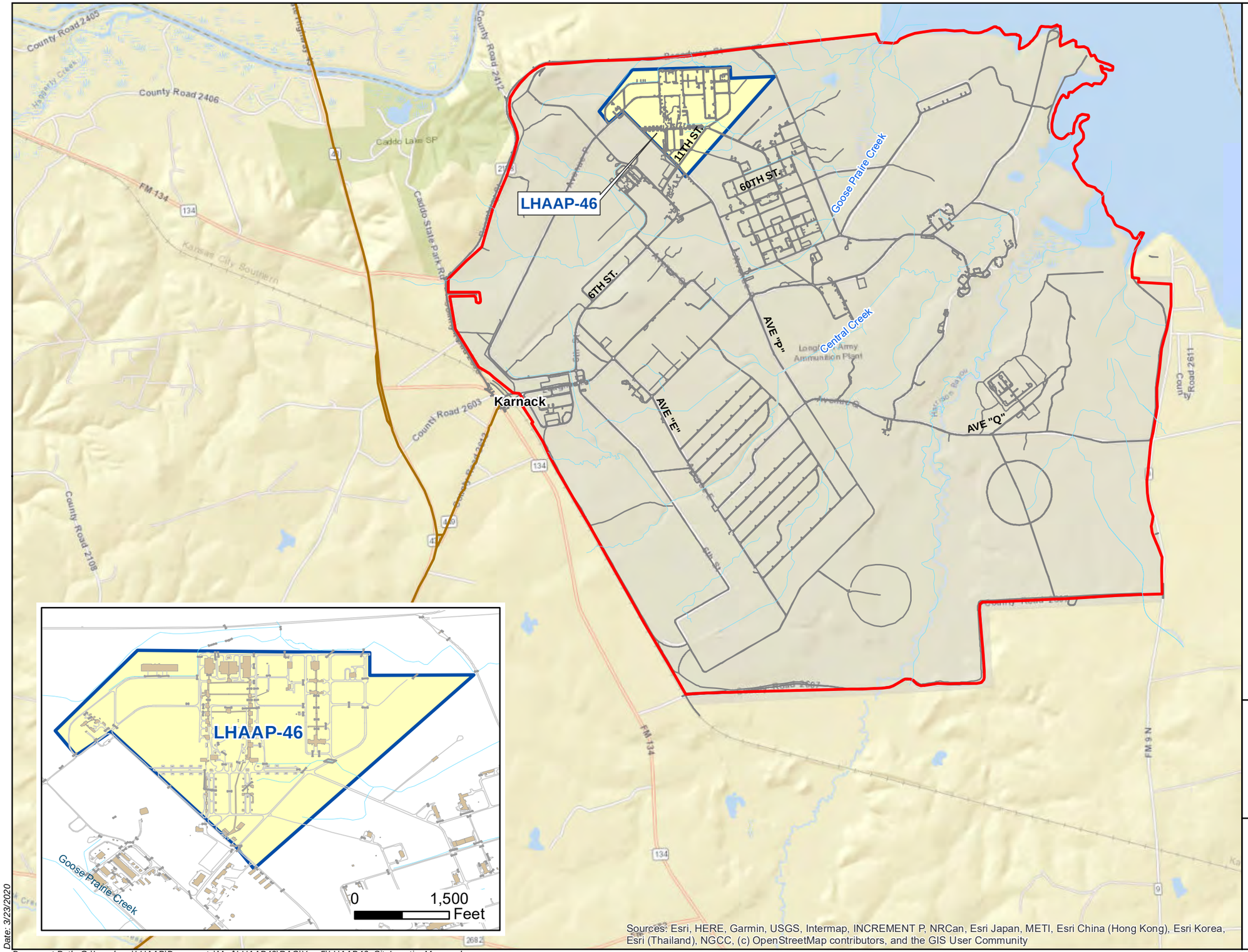
Figure 1-1

LHAAP Location Map
Fifth Annual RA-O Report
LHAAP-46

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/23/2020

*Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP_LocationMap.mxd*







Stream
Road
LHAAP Boundary
LHAAP-46 Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

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, (c) OpenStreetMap contributors, and the GIS User Community

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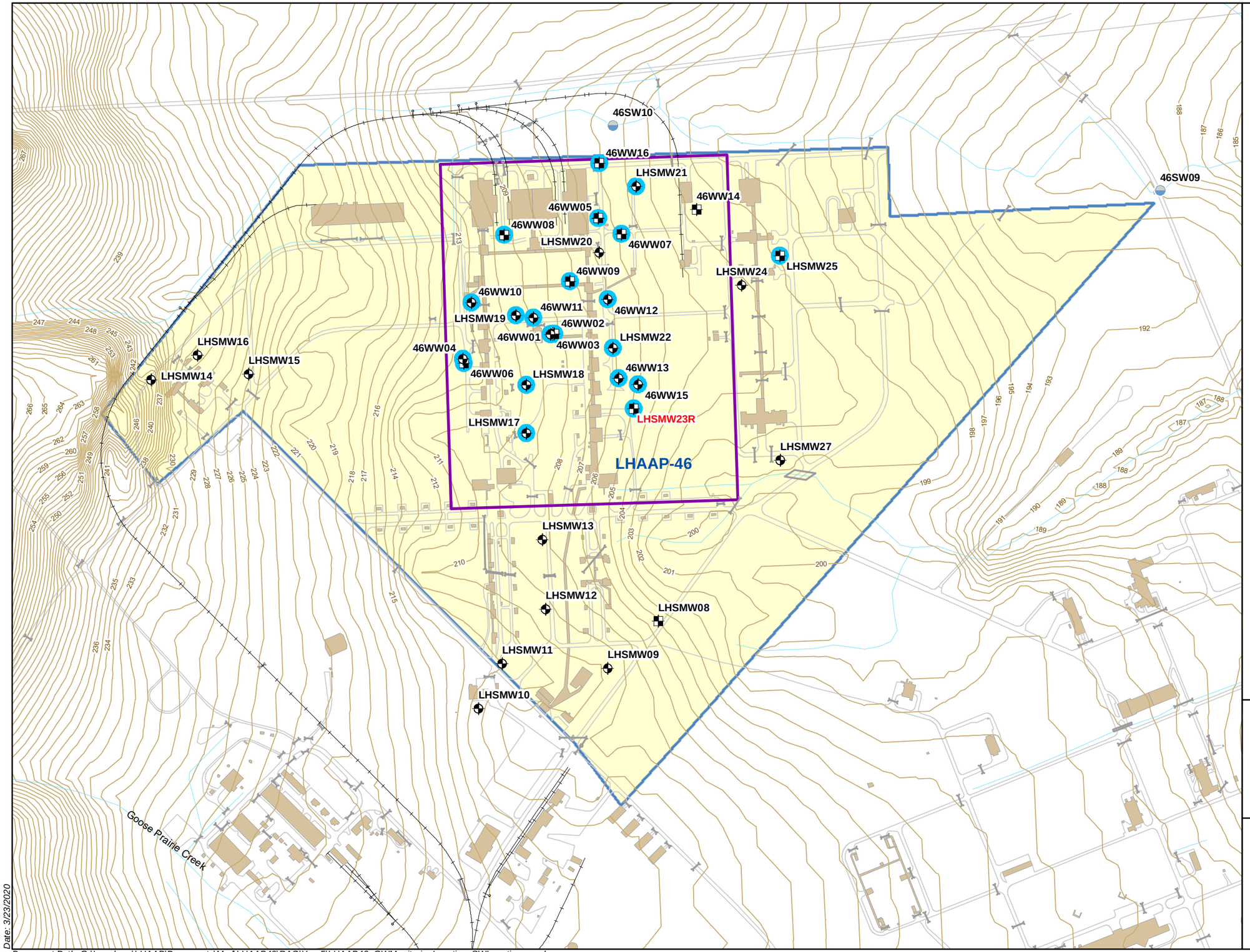
Figure 1-2

LHAAP Site Vicinity Map
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/23/2020

*Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_SiteLocationMap.mxd*

00971201




Shallow Monitoring Well
Intermediate Monitoring Well
Deep Monitoring Well
RA-O Monitoring Well
Surface Water Sample Location
Former Railroad Location
Culvert
Surveyed Land Use Control Boundary
Stream
Surface Elevation Lines (in feet above mean sea level)
Roads
Former Buildings
LHAAP-46 Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. LHSMW23R was installed in August 2019 to replace LHSMW23

N

0 250 500 Feet

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Figure 2-1
Groundwater Monitoring Wells and Surface Water Locations
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/23/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_GWMonitoringLocationsSWLocations.mxd

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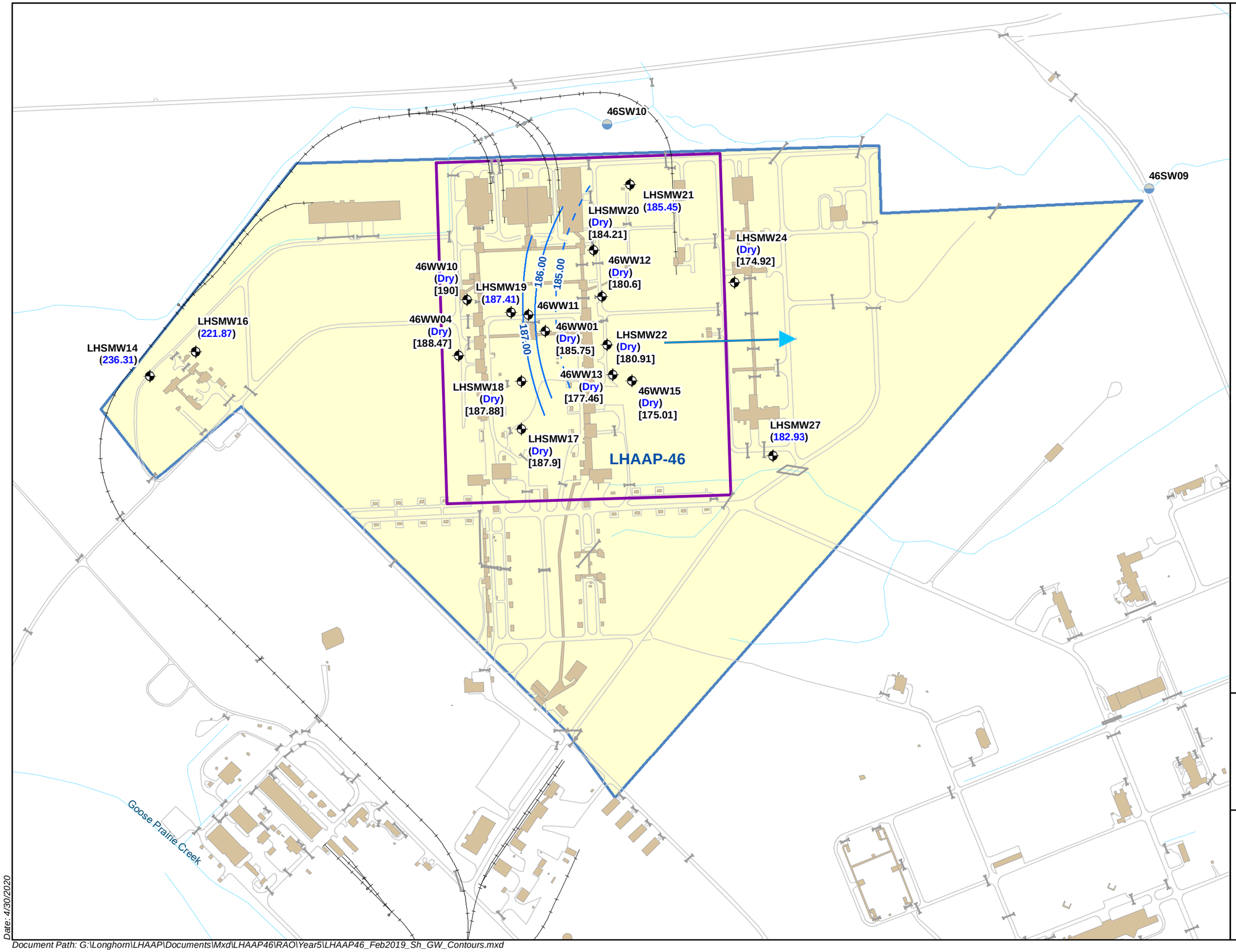


Shallow Monitoring Well
Surface Water Sample Location
Former Railroad Location
Historical Groundwater Flow Direction
Groundwater Contour (in feet above msl)
Culvert
Surveyed Land Use Control Boundary
Stream
Roads
Former Buildings
LHAAP-46 Site Boundary

186.27 Groundwater Elevation (ft msl)
[177.46] Elevation of Well Screen Bottom for Dry Well

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. msl = Mean Sea Level
4. Water was present in monitoring well 46WW11 during the February 2019 sampling event and a sample was collected. However, the sample collection form is missing and groundwater elevation data is not available.

N

0 250 500 Feet

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Figure 2-2
Shallow Zone Potentiometric Map – February 2019
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/30/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Feb2019_Sh_GW_Contours.mxd

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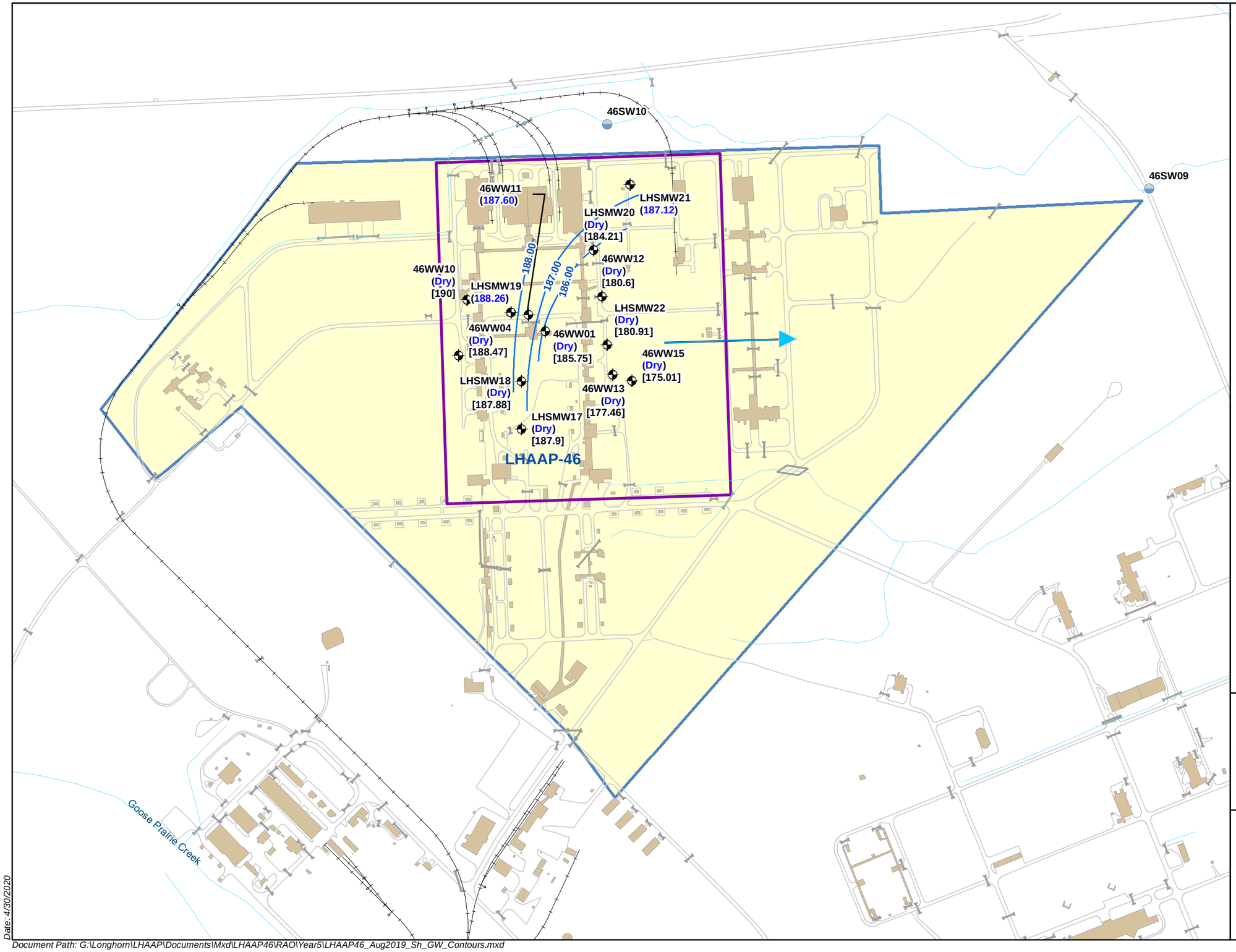


Shallow Monitoring Well
Surface Water Sample Location
Former Railroad Location
Historical Groundwater Flow Direction
Groundwater Contour (in feet above msl)
Stream
Culvert
Surveyed Land Use Control Boundary
Roads
Former Buildings
LHAAP-46 Site Boundary

186.27 Groundwater Elevation (ft msl)
[177.46] Elevation of Well Screen Bottom for Dry Well

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. msl = Mean Sea Level

N
0 250 500
Feet

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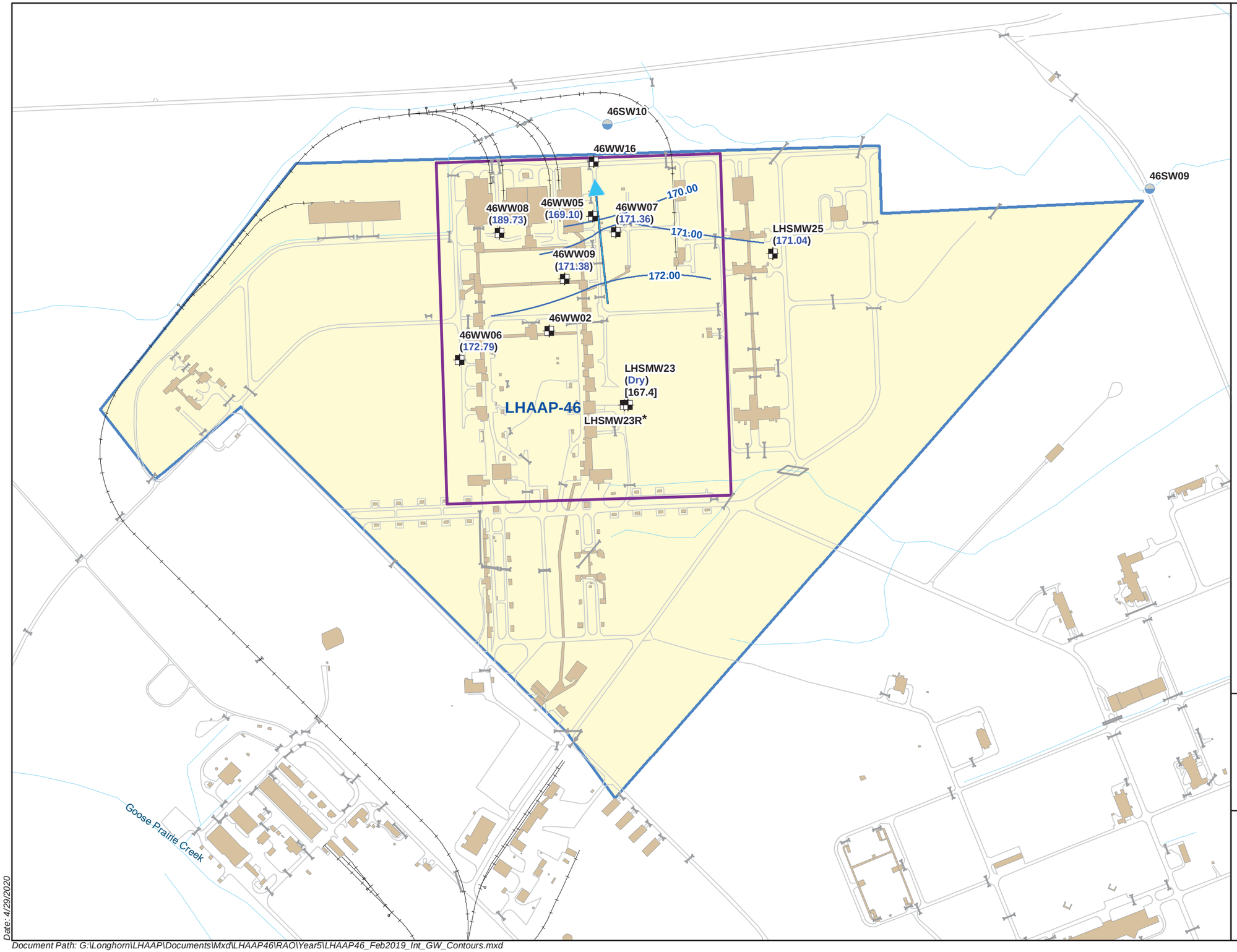
Figure 2-3
Shallow Zone Potentiometric Map – August 2019
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/30/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Aug2019_Sh_GW_Contours.mxd

00971204




Intermediate Monitoring Well
Surface Water Sample Location
Former Railroad Location
Groundwater Flow Direction
Groundwater Contour (in feet above msl)
Culvert
Surveyed Land Use Control Boundary
Stream
Roads
Former Buildings
LHAAP-46 Site Boundary
186.27 Groundwater Elevation (ft msl)
[177.46] Elevation of Well Screen Bottom for Dry Well

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. msl = Mean Sea Level
4. The groundwater elevation in 46WW08 continues to be similar to the shallow zone elevations, despite the well being screened in the intermediate zone. It is possible that there is leakage from the shallow zone to the intermediate zone in this area of the site such that the well reflects shallow zone conditions. Water level elevation from this well was not used for constructing intermediate zone contours.
5. Water was present in monitoring wells 46WW02 and 46WW16 during the February 2019 sampling event and samples were collected. However, the sample collection forms are missing and groundwater elevation data is not available.
6. LHSMW23R was installed in August 2019 to replace LHSMW23.

N
0 250 500
Feet

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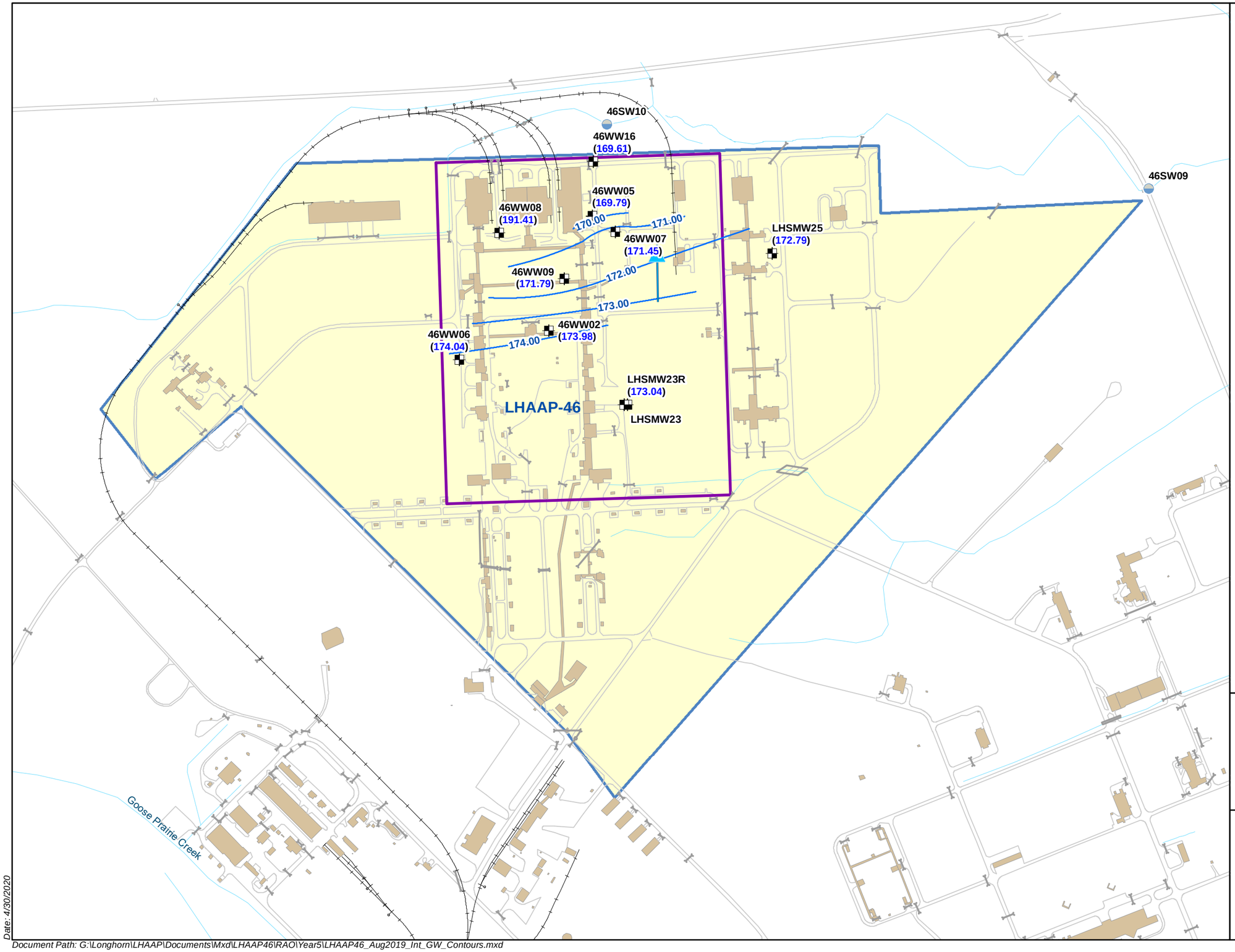
Figure 2-4
Intermediate Zone Potentiometric Map – February 2019
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/29/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Feb2019_Int_GW_Contours.mxd




Surface Water Sample Location
Intermediate Monitoring Well
Former Railroad Location
Groundwater Flow Direction
Groundwater Contour (in feet above msl)
Culvert
Surveyed Land Use Control Boundary
Stream
Roads
Former Buildings
LHAAP-46 Site Boundary
186.27 Groundwater Elevation (ft msl)
[177.46] Elevation of Well Screen Bottom for Dry Well

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. msl = Mean Sea Level
4. The groundwater elevation in 46WW08 continues to be similar to the shallow zone elevations, despite the well being screened in the intermediate zone. It is possible that there is leakage from the shallow zone to the intermediate zone in this area of the site such that the well reflects shallow zone conditions. Water level elevation from this well was not used for constructing intermediate zone contours.
5. LHSMW23R was installed in August 2019 to replace LHSMW23 due to an obstruction encountered in LHSMW23.The elevation shown for LHSMW23R was measured on September 3, 2019, and may not reflect the same potentiometric conditions that were present when the other groundwater elevations were measured in mid-August.

N
0 250 500
Feet

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Figure 2-5

Intermediate Zone Potentiometric Map – August 2019
Fifth Annual RA(O) Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/30/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Aug2019_Int_GW_Contours.mxd

00971206

| LHSMW19 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 3.9 |
| TCE | 5 | **16** |
| VC | 2 | 0.5 U |

| LHSMW21 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | **100** |
| TCE | 5 | **20** |
| VC | 2 | 0.5 U |

| 46WW11 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | **13** |
| VC | 2 | 0.5 U |

46SW10
46SW09
LHSMW20 Dry
46WW12 Dry
46WW10 Dry
46WW01 Dry
LHSMW22 Dry
46WW04 Dry
46WW13 Dry
LHSMW18 Dry
46WW15 Dry
LHSMW17 Dry
LHSMW24
LHSMW16
LHSMW14
LHSMW15
LHSMW27
LHSMW13
LHSMW12
LHSMW11
LHSMW09
LHSMW10
LHAAP-46
1/bfn 0.2
1/bfn 5
Goose Prairie Creek

- Shallow Monitoring Well
- Surface Water Sample Location
- Shallow Zone TCE Plume (*Dashed where inferred*)
- Shallow Zone cis-1,2 DCE Plume (*Dashed where inferred*)
- Former Railroad Location
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary
- Historical Groundwater Flow Direction

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. All Concentrations and MCLs are shown in micrograms per liter (µg/L)
4. U = Analyte was not detected above the laboratory reporting limit

N

0 250 500 Feet

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Figure 2-6
Shallow Groundwater Results,
February 2019
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/23/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Feb2019_Sh_GW_Analytical.mxd

00971207

| LHSMW19 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-DCE | 70 | 4.2 |
| TCE | 5 | **13** |
| VC | 2 | 0.5 U |

| LHSMW21 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-DCE | 70 | **170** |
| TCE | 5 | **41** |
| VC | 2 | 0.97 J |

| 46WW11 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-DCE | 70 | 0.5 U |
| TCE | 5 | **24** |
| VC | 2 | 0.5 U |

46SW10
46SW09
70 µg/L
5 µg/L
LHSMW20
LHSMW24
46WW12 Dry
46WW10 Dry
46WW01 Dry
LHSMW22 Dry
46WW04 Dry
46WW13 Dry
LHSMW16
LHSMW15
LHSMW14
LHSMW18 Dry
46WW15 Dry
LHSMW17 Dry
LHSMW27
LHAAP-46
LHSMW13
LHSMW12
LHSMW11
LHSMW09
LHSMW10
Goose Prairie Creek

- Shallow Monitoring Well
- Surface Water Sample Location
- Former Railroad Location
- Shallow Zone TCE Plume (*Dashed where inferred*)
- Shallow Zone cis-1,2 DCE Plume (*Dashed where inferred*)
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary
- Historical Groundwater Flow Direction

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. All Concentrations and MCLs are shown in micrograms per liter (µg/L)
4. U = Analyte was not detected above the laboratory reporting limit
5. J = The contaminant was detected at a concentration below the limit of quantitation and is estimated

N
0 250 500 Feet

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Figure 2-7
Shallow Groundwater Results, August 2019
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/23/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Aug2019_Sh_GW_Analytical.mxd

00971208

| 46WW05 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 2.2 U |
| TCE | 5 | 27 |
| VC | 2 | 0.5 U |

| 46WW16 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW08 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

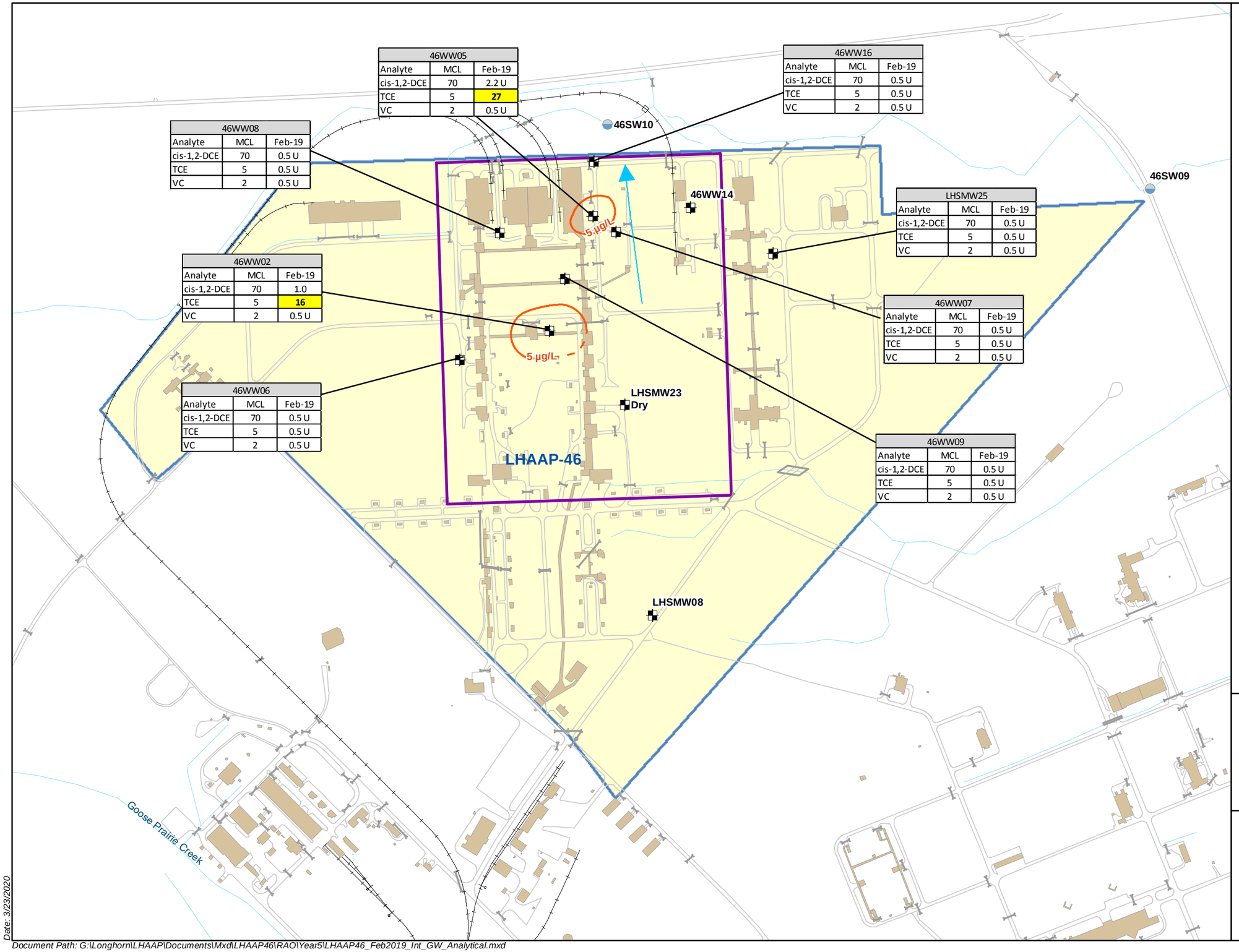
| LHSMW25 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW02 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 1.0 |
| TCE | 5 | 16 |
| VC | 2 | 0.5 U |

| 46WW07 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW06 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW09 | | |
|---|---|---|
| Analyte | MCL | Feb-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |




- Intermediate Monitoring Well
- Surface Water Sample Location
- Intermediate Zone TCE Plume (*Dashed where inferred*)
- Former Railroad Location
- Culvert
- Surveyed Land Use Control Boundary
- Stream
- Roads
- Former Buildings
- LHAAP-46 Site Boundary
- Historical Groundwater Flow Direction

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. All Concentrations and MCLs are shown in micrograms per liter (µg/L)
4. U = Analyte was not detected above the laboratory reporting limit

N

0 250 500 Feet

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Figure 2-8
Intermediate Groundwater Results, February 2019
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/23/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Feb2019_Int_GW_Analytical.mxd

00971209

| 46WW08 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW05 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 4.8 |
| TCE | 5 | **62** |
| VC | 2 | 1.2 |

| 46WW16 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| LHSMW25 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW02 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 1.1 |
| TCE | 5 | **17** |
| VC | 2 | 0.5 U |

| 46WW07 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW06 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| 46WW09 | | |
|---|---|---|
| Analyte | MCL | Aug-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

| LHSMW23R | | |
|---|---|---|
| Analyte | MCL | Sep-19 |
| cis-1,2-DCE | 70 | 0.5 U |
| TCE | 5 | 0.5 U |
| VC | 2 | 0.5 U |

46WW14

46SW09

5 µg/L

5 µg/L

LHAAP-46

LHSMW08

Goose Prairie Creek

- Intermediate Monitoring Well
- Surface Water Sample Location
- Intermediate Zone TCE Plume (*Dashed where inferred*)
- Former Railroad Location
- Stream
- Culvert
- Surveyed Land Use Control Boundary
- Roads
- Former Buildings
- LHAAP-46 Site Boundary
- Historical Groundwater Flow Direction

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant
3. All Concentrations and MCLs are shown in micrograms per liter (µg/L)
4. U = Analyte was not detected above the laboratory reporting limit

N

0 250 500 Feet

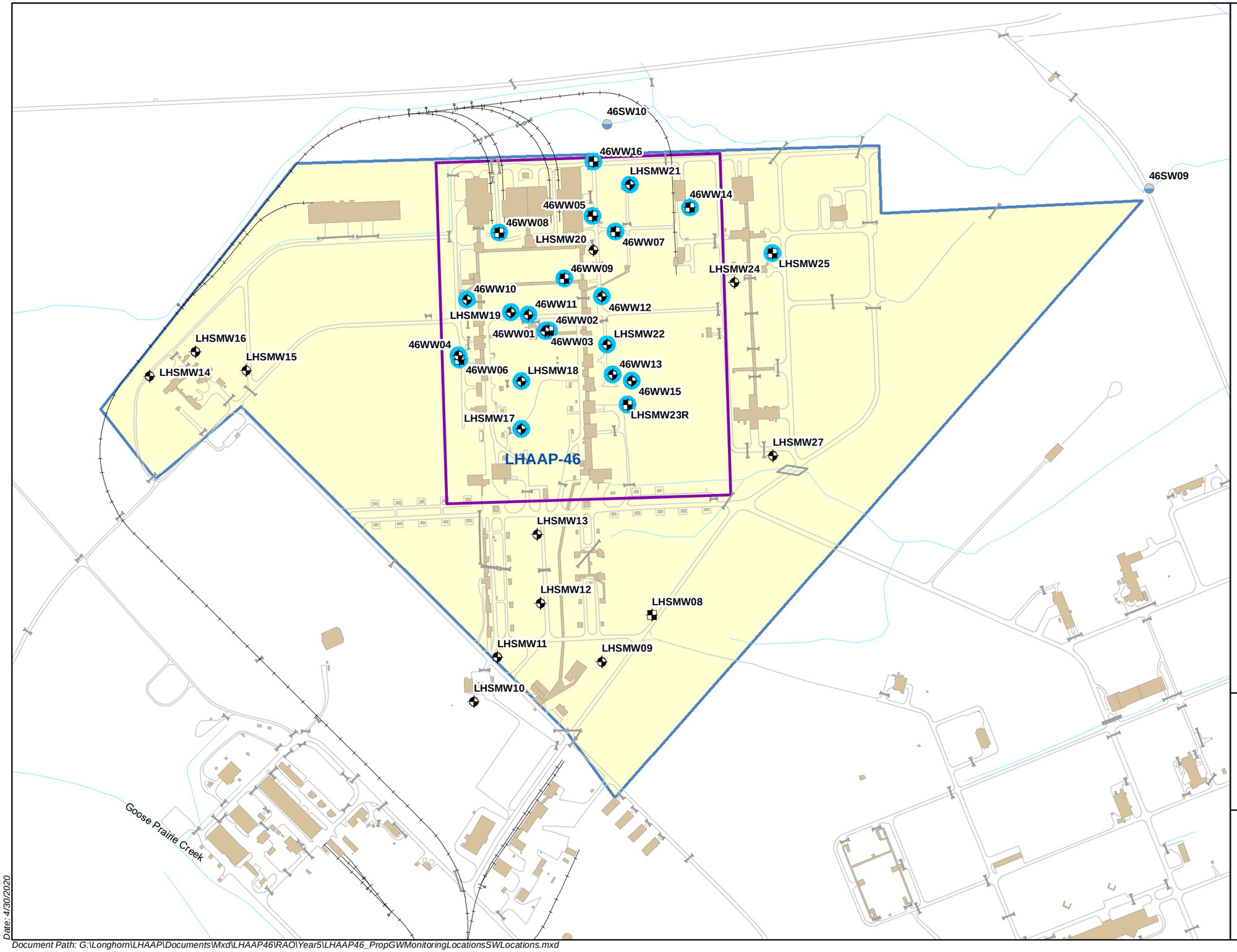
U.S. ARMY CORP OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

bhate APTIM

Figure 2-9
Intermediate Groundwater Results, August 2019
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/23/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_Aug2019_Int_GW_Analytical.mxd




Shallow Monitoring Well
Intermediate Monitoring Well
Deep Monitoring Well
RA-O Monitoring Well
Surface Water Sample Location
Former Railroad Location
Culvert
Surveyed Land Use Control Boundary
Stream
Roads
Former Buildings
LHAAP-46 Site Boundary

Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

N
0 250 500 Feet

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

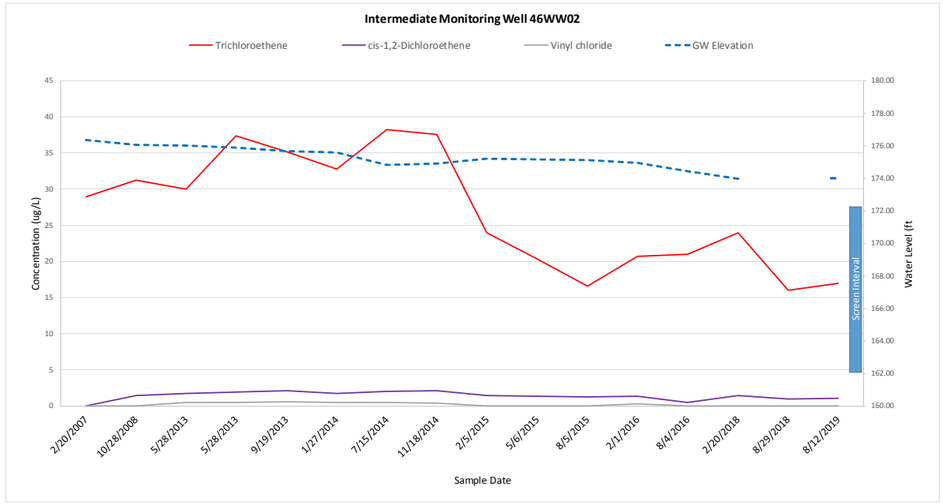
bhate APTIM

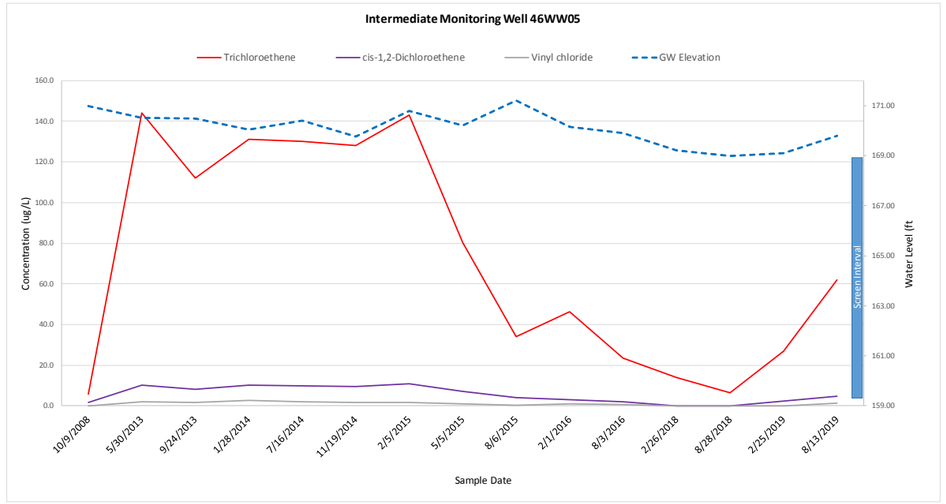
Figure 2-10

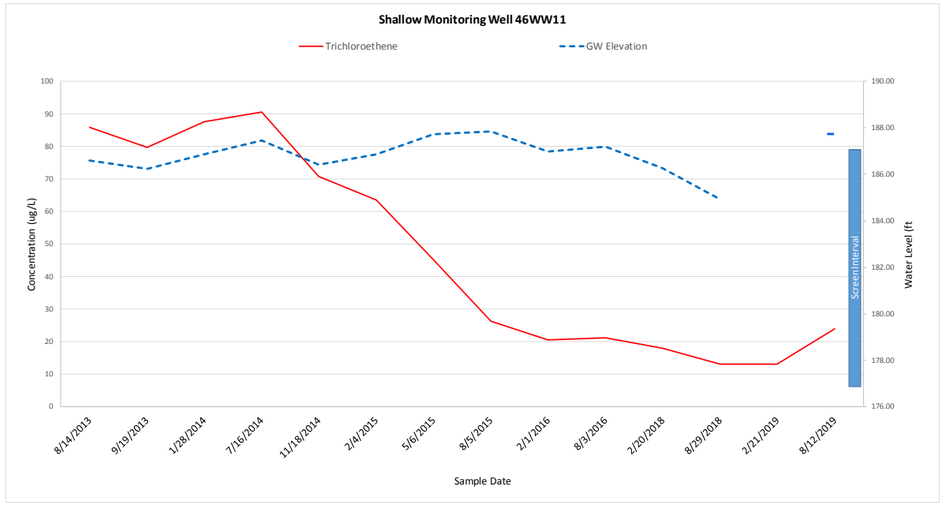
Year 6 Annual RA-O Monitoring Locations
Fifth Annual RA-O Report
LHAAP-46
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

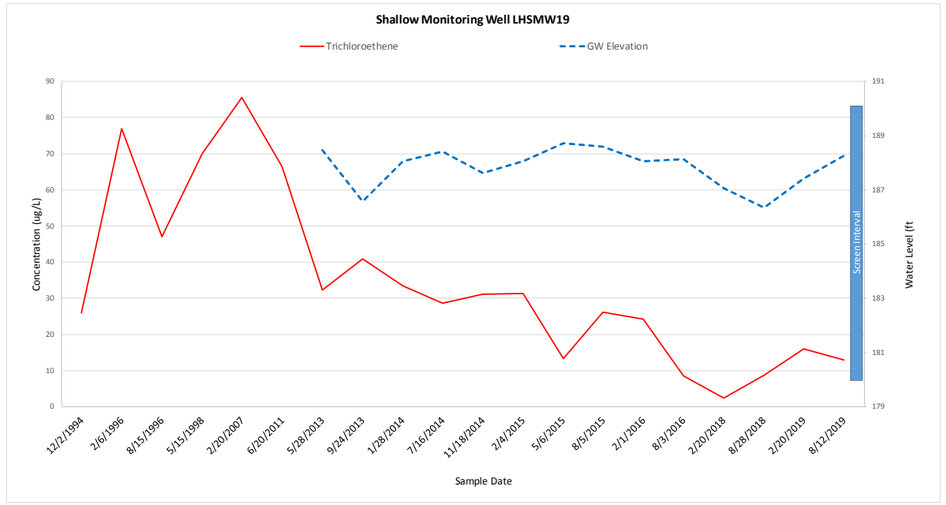
Date: 4/30/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_PropGWMonitoringLocationsSWLocations.mxd




Cleanup Levels:
1,1-Dichlorothene = 7 µg/L
cis-1,2-Dichloroethene = 70 µg/L
Trichloroethene = 5 µg/L
Vinyl Chloride = 2 µg/L

Notes:
1. RA-O = Remedial Action Operations

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

bhate APTIM

Figure 3-1

COC Concentration Trends
Fifth Annual RA-O Report
LHAAP-46

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/29/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP46\RAO\Year5\LHAAP46_COC_Concentrations.mxd

# Appendix A

# Annual Land Use Control Compliance Certification and Documentation

# Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated September 2011 for LHAAP-46 a certification of site was conducted by Aptim [indicate transferee] on 8/9/19.

A summary of land use control mechanisms is as follows:

Groundwater restriction – restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met [Indicate whether groundwater restrictions are still required at LHAAP-46]

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-46.

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.

Date: 8/9/19

Name/Title: William Foss / Aptim Tech Lead

Signature:

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 | 2/20/19 | Well Inspection at 46WW01 |
| 2 | 2/21/19 | Well Inspection at 46WW02 |
| 3 | 2/20/19 | Well Inspection at 46WW03 |
| 4 | 2/20/19 | Well Inspection at 46WW04 |
| 5 | 2/25/19 | Well Inspection at 46WW05 |
| 6 | 2/20/19 | Well Inspection at 46WW06 |
| 7 | 2/20/19 | Well Inspection at 46WW07 |
| 8 | 2/20/19 | Well Inspection at 46WW08 |
| 9 | 2/2519 | Well Inspection at 46WW09 |
| 10 | 2/20/19 | Well Inspection at 46WW10 |
| 11 | 2/21/19 | Well Inspection at 46WW11 |
| 12 | 2/20/19 | Well Inspection at 46WW12 |
| 13 | 2/20/19 | Well Inspection at 46WW13 |
| 14 | 2/20/19 | Well Inspection at 46WW15 |
| 15 | 2/21/19 | Well Inspection at 46WW16 |
| 16 | 2/25/19 | Well Inspection at LHSMW11 |
| 17 | 2/25/19 | Well Inspection at LHSMW12 |
| 18 | 2/25/19 | Well Inspection at LHSMW14 |
| 19 | 2/25/19 | Well Inspection at LHSMW15 |
| 20 | 2/20/19 | Well Inspection at LHSMW17 |
| 21 | 2/20/19 | Well Inspection at LHSMW18 |
| 22 | 2/20/19 | Well Inspection at LHSMW19 |
| 23 | 2/20/19 | Well Inspection at LHSMW20 |
| 24 | 2/25/19 | Well Inspection at LHSMW21 |
| 25 | 2/20/19 | Well Inspection at LHSMW22 |
| 26 | 2/20/19 | Well Inspection at LHSMW23 |
| 27 | 2/25/19 | Well Inspection at LHSMW24 |
| 28 | 2/25/19 | Well Inspection at LHSMW25 |
| 29 | 2/25/19 | Well Inspection at LHSMW27 |
| 30 | 2/5/19 | Downhole Camera Inspection at LHSMW23 |

PHOTO 1: Well Inspection at 46WW01
DATE: February 20, 2019

PHOTO 2: Well Inspection at 46WW02
DATE: February 21, 2019

PHOTO 3: Well Inspection at 46WW03
DATE: February 20, 2019

PHOTO 4: Well Inspection at 46WW04
DATE: February 20, 2019

PHOTO 5: Well Inspection at 46WW05
DATE: February 25, 2019

PHOTO 6: Well Inspection at 46WW06
DATE: February 20, 2019

PHOTO 7: Well Inspection at 46WW07
DATE: February 20, 2019

PHOTO 8: Well Inspection at 46WW08
DATE: February 20, 2019

PHOTO 9: Well Inspection at 46WW09
DATE: February 25, 2019

PHOTO 10: Well Inspection at 46WW10
DATE: February 20, 2019

PHOTO 11: Well Inspection at 46WW11
DATE: February 21, 2019

PHOTO 12: Well Inspection at 46WW12
DATE: February 20, 2019

PHOTO 13: Well Inspection at 46WW13
DATE: February 20, 2019

PHOTO 14: Well Inspection at 46WW15
DATE: February 20, 2019

PHOTO 15: Well Inspection at 46WW16
DATE: February 21, 2019

PHOTO 16: Well Inspection at LHSMW11
DATE: February 25, 2019

PHOTO 17: Well Inspection at LHSMW12
DATE: February 25, 2019

PHOTO 18: Well Inspection at LHSMW14
DATE: February 25, 2019

PHOTO 19: Well Inspection at LHSMW15
DATE: February 25, 2019

PHOTO 20: Well Inspection at LHSMW17
DATE: February 20, 2019

PHOTO 21: Well Inspection at LHSMW18
DATE: February 20, 2019

PHOTO 22: Well Inspection at LHSMW19
DATE: February 20, 2019

PHOTO 23: Well Inspection at LHSMW20
DATE: February 20, 2019

PHOTO 24: Well Inspection at LHSMW21
DATE: February 25, 2019

PHOTO 25: Well Inspection at LHSMW22
DATE: February 20, 2019

PHOTO 26: Well Inspection at LHSMW23
DATE: February 20, 2019

PHOTO 27: Well Inspection at LHSMW24
DATE: February 25, 2019

PHOTO 28: Well Inspection at LHSMW25
DATE: February 25, 2019

PHOTO 29: Well Inspection at LHSMW27
DATE: February 25, 2019

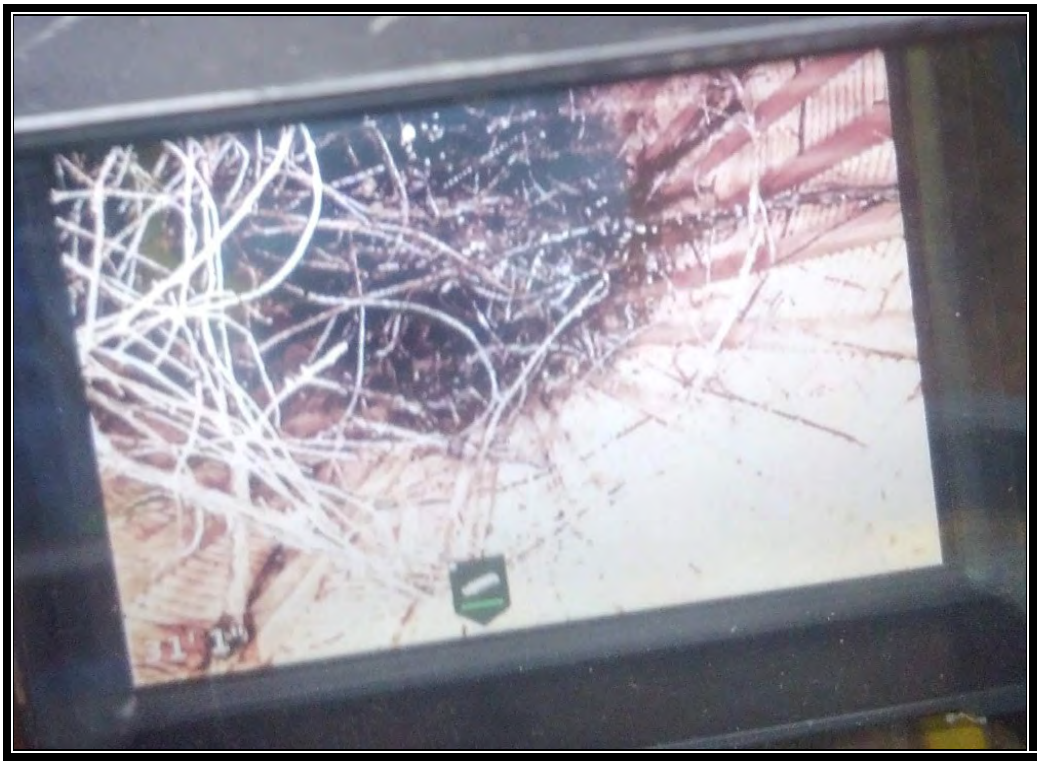


PHOTO 30: Downhole Camera Inspection at LHSMW23
DATE: February 5, 2019

# Appendix C

# Boring Log, Well Development, and Groundwater Sampling Forms

(Note: Sample collection logs for monitoring wells 46WW02, 46WW11, and 46WW16 from the February 2019 sampling event were misplaced following sampling and could not be located for inclusion in this report. The sample collection logs from February and August were edited to delete the recorded "Sample Interval", which was the range of depths to water measured during purging. The sample interval was replaced with the pump inlet depth, which accurately reflects the depth the sample was collected from.)

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW01**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** cold / cloudy

**SAMPLING INFORMATION**

**Sample No:** 46WW01-190220

**DATE/TIME:** 2/20/19 / 0847

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~27.07~~ 27.03

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~15~~ NA

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: 46WW01 | | | | Sample No: 46WW01-190220 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | DRY WELL | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW03**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

98.00

**Sample No:** 46WW03-190220 **DATE/TIME:** 2/20/19 / 0950 **Sample Interval:** ~~41.20 41.38~~

Edited by William Foss 20Mar2020

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/20/19 1005

Depth to Water - Initial (DTWi) (ft) 41.20

Purge End Date/Time: 2/20/19 1035

Depth to Well Bottom (ft) ~~105.84~~ 103.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 93.00 - 103.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~97.87~~ 98.00

Pump Start Time: 1005

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 41.20

APTIM

# Sample Collection Log



Location ID: 46WW03 Sample No: 46WW03-190220

| 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 |
| 2/20/19 | 1010 | 100 | 1.5 | 41.26 | 0.761 | 15.34 | 6.53 | 17.9 | 134 | 0.97 |
| | 1015 | 100 | 1.0 | 41.30 | 0.741 | 16.15 | 6.51 | 8.7 | 120 | 0.37 |
| | 1020 | 100 | 1.5 | 41.33 | 0.740 | 16.49 | 6.50 | 6.9 | 117 | 0.08 |
| | 1025 | 100 | 2.0 | 41.35 | 0.739 | 16.60 | 6.49 | 6.3 | 117 | 0.07 |
| | 1030 | 100 | 2.5 | 41.37 | 0.739 | 16.75 | 6.49 | 5.6 | 116 | 0.08 |
| | 1035 | 100 | 3.0 | 41.38 | 0.739 | 16.88 | 6.49 | 5.0 | 116 | 0.07 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW03**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Cold / Cloudy

**SAMPLING INFORMATION**

98.00

**Sample No:** 46WW03-1902~~20~~-MS **DATE/TIME:** 2/20/19 / 0950 **Sample Interval:** ~~41.20~~ - ~~41.30~~

Edited by William Foss 20Mar2020

**Sampling Method:** **Sample Purpose: MS** **Sample Matrix: GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/20/19 1005

Depth to Water - Initial (DTWi) (ft) 41.20

Purge End Date/Time: 2/20/19 1035

Depth to Well Bottom (ft) ~~104~~ 103.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 93.00 - 103.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~97~~ 98.00

Pump Start Time: 1005

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



Location ID: 46WW03 Sample No: 46WW03-190220-MS

| 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 |
| 2/20/19 | 1010 | 100 | .5 | 41.26 | 0.761 | 15.34 | 6.53 | 17.9 | 134 | 0.97 |
| | 1015 | 100 | 1.0 | 41.30 | 0.741 | 16.15 | 6.51 | 8.7 | 120 | 0.37 |
| | 1020 | 100 | 1.5 | 41.33 | 0.740 | 16.49 | 6.50 | 6.9 | 117 | 0.08 |
| | 1025 | 100 | 2.0 | 41.35 | 0.739 | 16.60 | 6.49 | 6.3 | 117 | 0.07 |
| | 1030 | 100 | 2.5 | 41.37 | 0.739 | 16.75 | 6.49 | 5.6 | 116 | 0.08 |
| | 1035 | 100 | 3.0 | 41.38 | 0.739 | 16.88 | 6.49 | 5.0 | 116 | 0.07 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW03**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

98.00

**Sample No:** 46WW03-1902 20-MSD **DATE/TIME:** 2/20/19 / 0950 **Sample Interval:** ~~41.20 - 41.30~~

Edited by William Foss
20Mar2020

**Sampling Method:** **Sample Purpose: MSD** **Sample Matrix: GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/20/19 1005

Depth to Water - Initial (DTWi) (ft) 41.20

Purge End Date/Time: 2/20/19 1035

Depth to Well Bottom (ft) ~~105.24~~ 103.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 93.00 - 103.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~97.87~~ 98.00

Pump Start Time: 1005

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW03 | | Sample No: 46WW03-190220-MSD | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 2/20/19 | 1010 | 100 | .5 | 41.26 | 0.761 | 15.34 | 6.53 | 17.9 | 134 | 0.97 |
| | 1015 | 100 | 1.0 | 41.30 | 0.744 | 16.15 | 6.51 | 8.7 | 120 | 0.37 |
| | 1020 | 100 | 1.5 | 41.33 | 0.740 | 16.49 | 6.50 | 6.9 | 117 | 0.08 |
| | 1025 | 100 | 2.0 | 41.35 | 0.739 | 16.60 | 6.49 | 6.3 | 117 | 0.07 |
| | 1030 | 100 | 2.5 | 41.37 | 0.739 | 16.75 | 6.49 | 5.6 | 116 | 0.08 |
| ↓ | 1035 | 100 | 3.0 | 41.38 | 0.739 | 16.88 | 6.49 | 5.0 | 116 | 0.07 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW04**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / cloudy

**SAMPLING INFORMATION**

**Sample No:** 46WW04-190220 **DATE/TIME:** 2/20/19 / 0826 **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~29.92~~ 27.03

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~29~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW04 | | | | Sample No: 46WW04-190220 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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| | | | | Dry | Well | | | | | |
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| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW06**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

45.50

**Sample No:** 46WW06-190220 **DATE/TIME:** 2/20/19 / 1136 **Sample Interval:** ~~41.5 - 47.25~~

Edited by William Foss
20Mar2020

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

**Appearance of Sample** **Assoc. QC Samples** **Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/20/19 1145

Depth to Water - Initial (DTWi) (ft) 41.05

Purge End Date/Time: 2/20/19 1215

Depth to Well Bottom (ft) ~~58.2~~ 52.38

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 42.68 - 52.38

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~48.6~~ 45.50

Pump Start Time: 1145

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 41.05

APTIM

# Sample Collection Log



Location ID: 46WW06 Sample No: 46WW06-190220

| 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 |
| 2/20/19 | 1150 | 100 | .5 | 41.12 | 1.86 | 14.21 | 6.51 | 226 | 166 | 0.94 |
| | 1155 | 100 | 1.0 | 41.17 | 1.90 | 15.70 | 6.41 | 175 | 107 | 0.39 |
| | 1200 | 100 | 1.5 | 41.21 | 1.96 | 15.91 | 6.40 | 155 | 95 | 0.10 |
| | 1205 | 100 | 2.0 | 41.23 | 1.97 | 16.10 | 6.39 | 154 | 94 | 0.10 |
| | 1210 | 100 | 2.5 | 41.25 | 1.97 | 16.21 | 6.39 | 153 | 93 | 0.09 |
| | 1215 | 100 | 3.0 | 41.26 | 1.97 | 16.35 | 6.39 | 152 | 93 | 0.09 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW07**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** cool / clear

**SAMPLING INFORMATION**

46.25

**Sample No:** 46WW07-190220

**DATE/TIME:** 2/20/19 / 1315

**Sample Interval:** ~~31.5~~ ~~36.70~~

Edited by William Foss
20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/20/19 1325

Depth to Water - Initial (DTWi) (ft) 36.51

Purge End Date/Time: 2/20/19 1355

Depth to Well Bottom (ft) ~~50.5~~ 51.78

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 41.50 - 51.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): 46.25

Pump Start Time: 1325

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DTW PRE-PURGE - 36.51

APTIM

# Sample Collection Log



Location ID: 46WW07 Sample No: 46WW07-190220

| 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 |
| 2/20/19 | 1330 | 100 | .5 | 36.60 | 1.17 | 16.14 | 6.46 | 40.5 | 108 | 0.97 |
| | 1335 | 100 | 1.0 | 36.66 | 1.09 | 16.67 | 6.21 | 35.9 | 129 | 0.85 |
| | 1340 | 100 | 1.5 | 36.70 | 1.03 | 16.66 | 6.16 | 35.4 | 135 | 0.83 |
| | 1345 | 100 | 2.0 | 36.73 | 1.02 | 16.64 | 6.15 | 34.8 | 136 | 0.83 |
| | 1350 | 100 | 2.5 | 36.75 | 1.02 | 16.62 | 6.15 | 34.2 | 137 | 0.84 |
| ↓ | 1355 | 100 | 3.0 | 36.76 | 1.02 | 16.61 | 6.15 | 33.9 | 138 | 0.84 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW08**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Cool / clear

**SAMPLING INFORMATION**

40.50

**Sample No:** 46WW08-190220 **DATE/TIME:** 2/20/19 / 1226 **Sample Interval:** ~~22.00 - 22.24~~

Edited by William Foss
20Mar2020

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/20/19 1235

Depth to Water - Initial (DTWi) (ft) 22.00

Purge End Date/Time: 2/20/19 1305

Depth to Well Bottom (ft) ~~47.44~~ 45.29

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 35.72 - 45.22

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~46.47~~ 40.50

Pump Start Time: 1235

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 22.00

APTIM

# Sample Collection Log



| Location ID: 46WW08 | | | | Sample No: 46WW08-190220 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 2/20/19 | 1240 | 100 | .5 | 22.08 | 4.75 | 17.64 | 6.35 | 43.5 | 97 | 0.86 |
| | 1245 | 100 | 1.0 | 22.15 | 4.53 | 18.11 | 6.20 | 19.1 | 105 | 0.36 |
| | 1250 | 100 | 1.5 | 22.19 | 4.38 | 18.25 | 6.19 | 15.0 | 106 | 0.05 |
| | 1255 | 100 | 2.0 | 22.21 | 4.37 | 18.34 | 6.19 | 14.5 | 107 | 0.06 |
| | 1300 | 100 | 2.5 | 22.23 | 4.36 | 18.44 | 6.19 | 14.1 | 107 | 0.05 |
| | 1305 | 100 | 3.0 | 22.24 | 4.36 | 18.50 | 6.19 | 13.7 | 107 | 0.06 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW10**

Sampler(s): Scott Beesinger

## FIELD CONDITIONS

## SAMPLING INFORMATION

**Sample No:** 46WW10-190220

**DATE/TIME:** 2/20/19 / 0817

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
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| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

## WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~25.86~~ 25.43

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~18.94~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW10 | | | | Sample No: 46WW10-190220 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW10**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / cloudy

**SAMPLING INFORMATION**

**Sample No:** 46WW10-190220-MS **DATE/TIME:** 2/20/19 / 0817 **Sample Interval:** ___ - ___

**Sampling Method:** **Sample Purpose:** MS **Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~25.98~~ 25.43

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~18.94~~ NA

Ferrous Iron (Required Y or N) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: 46WW10 | | Sample No: 46WW10-190220-MS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW10**

Sampler(s): Scott Bessinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

**Sample No:** 46WW10-190220MSD **DATE/TIME:** 2/20/19 / 0817 **Sample Interval:** ___ - ___

**Sampling Method:** **Sample Purpose: MSD** **Sample Matrix: GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~25.00~~ 25.43

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~18.94~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW10 | | Sample No: 46WW10-1902 ~~MS~~/MSD | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW12**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

**Sample No:** 46WW12-190220

**DATE/TIME:** 2/20/19 / 0803

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~30.94~~ 29.52

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~28.79~~ NA

Ferrous Iron (Required Y or N) N _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: 46WW12 | | Sample No: 46WW12-190220 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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| | | | | Dry Well | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW13**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / cloudy

**SAMPLING INFORMATION**

**Sample No:** 46WW13-190220 **DATE/TIME:** 2/20/19 / 0749 **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~33.24~~ 31.73

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28.17~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW13 | | | | Sample No: 46WW13-190220 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW15**

Sampler(s): Scott Bessinger

**FIELD CONDITIONS** COLD / Cloudy

**SAMPLING INFORMATION**

**Sample No:** 46WW15-190220

**DATE/TIME:** 2/20/19 / 0742

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~31.0~~ 30.28

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.2~~

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW15 | | | | | Sample No: 46WW15-190220 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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Dry well

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW17**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

**Sample No:** LHSMW17-190220

**DATE/TIME:** 2/20/19 / 0835

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) 27.10

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: LHSMW17 | | | | Sample No: LHSMW17-190220 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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| | | | Dry well | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW17**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** cold/cloudy

**SAMPLING INFORMATION**

**Sample No:** LHSMW17-190220-FD

**DATE/TIME:** 2/20/19 / 0835

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** FD

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~22~~ 27.10

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~15~~ NA

Ferrous Iron (Required Y or N) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: LHSMW17 | | | | Sample No: LHSMW17-190220FD | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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| | | | Dry Well | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW18**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Cold / Cloudy

**SAMPLING INFORMATION**

**Sample No:** LHSMW18-190220

**DATE/TIME:** 2/20/19 / 0843

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~30.32~~ 27.91

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~24.35~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: LHSMW18 | | | | | Sample No: LHSMW18-190220 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW19**

Sampler(s): Scott Bressingall

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

Sample No: **LHSMW19-190220**

DATE/TIME: 2/20/19 / 0900

Sample Interval: ~~25.55 - 27.79~~ 27.50

Edited by William Foss 20Mar2020

Sampling Method:

Sample Purpose: **REG**

Sample Matrix: **GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER PUMP

Casing ID (in.): 4

Purge Start Date/Time: 2/20/19 0910

Depth to Water - Initial (DTWi) (ft) ~~30.06~~ 25.55

Purge End Date/Time: 2/20/19 0940

Depth to Well Bottom (ft) ~~30.10~~ 30.06

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 20.00 - 30.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25~~ 27.50

Pump Start Time: 0910

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DTW PRE-PURGE - 25.55

APTIM

# Sample Collection Log



| Location ID: LHSMW19 | | Sample No: LHSMW19-190220 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 2/20/19 | 0915 | 100 | .5 | 25.63 | 2.51 | 15.26 | 6.17 | 23.7 | 320 | 0.96 |
| | 0920 | 100 | 1.0 | 25.69 | 2.51 | 16.45 | 6.05 | 14.1 | 217 | 0.40 |
| | 0925 | 100 | 1.5 | 25.73 | 2.51 | 16.51 | 6.00 | 9.9 | 185 | 0.18 |
| | 0930 | 100 | 2.0 | 25.75 | 2.51 | 16.59 | 5.99 | 9.4 | 184 | 0.17 |
| | 0935 | 100 | 2.5 | 25.77 | 2.52 | 16.65 | 5.99 | 8.8 | 183 | 0.16 |
| ↓ | 0940 | 100 | 3.0 | 25.79 | 2.52 | 16.70 | 5.98 | 8.3 | 182 | 0.16 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW20**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

**Sample No:** LHSMW20-190220 **DATE/TIME:** 2/20/19 / 0809 **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
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| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | Dissolved Gases in Water by RSK175 | 3 x 40 mL Glass | ~~Cool 4C~~ HCL |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~27.59~~ 25.16

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~19.5~~ NA

Ferrous Iron (Required (Y) or N) NA mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / (N)

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: LHSMW20 | | | | Sample No: LHSMW20-190220 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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| | | | | DRY WELL | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW22**

Sampler(s): Scott Bressinger

**FIELD CONDITIONS** COLD / cloudy

**SAMPLING INFORMATION**

**Sample No:** LHSMW22-190220

**DATE/TIME:** 2/20/19 / 0754

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
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| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~34.88~~ 28.85

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~29.818~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: LHSMW22 | | | | Sample No: LHSMW22-190226 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
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Dry Well

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW22**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / Cloudy

**SAMPLING INFORMATION**

**Sample No:** LHSMW22-190220-FD **DATE/TIME:** 2/20/19 / 0754 **Sample Interval:** ___ - ___

**Sampling Method:** **Sample Purpose:** FD **Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~38.88~~ 28.85

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~23.875~~ NA

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / (N)

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: LHSMW22 | | | | Sample No: LHSMW22-190220-FD | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW23**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLOUDY

**SAMPLING INFORMATION**

**Sample No:** LHSMW23-190220

**DATE/TIME:** 2/20/19 / 0735

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
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| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~41.52~~ 31.80

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~32.18~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



Location ID: LHSMW23 Sample No: LHSMW23-1902_20

| 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 |
| | | | | | | | | | | |
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| | | | | Dry Well | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW05**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Cool / clear

**SAMPLING INFORMATION**

40.00

**Sample No:** 46WW05-190225

**DATE/TIME:** 2/25/19 / 0953

**Sample Interval:** ~~39.14~~ - ~~39.37~~

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | Dissolved Gases in Water by RSK175 | 3 x 40 mL Glass | ~~Cool 4C~~ HCL |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/25/19 1005

Depth to Water - Initial (DTWi) (ft) 39.14

Purge End Date/Time: 2/25/19 1035

Depth to Well Bottom (ft) ~~49~~ 45.55

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 35.65 - 45.35

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~44.5~~ 40.00

Pump Start Time: 1005

Ferrous Iron (Required (Y) or N) 0.66 mg/L

2ND DTW PRE-PURGE - 39.14

APTIM

# Sample Collection Log



Location ID: 46WW05 Sample No: 46WW05-190225

| 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 |
| 2/25/19 | 1010 | 100 | .5 | 39.20 | 6.30 | 15.92 | 4.70 | 103 | 334 | 0.87 |
| | 1015 | 100 | 1.0 | 39.25 | 6.33 | 17.35 | 4.04 | 84.2 | 415 | 0.25 |
| | 1020 | 100 | 1.5 | 39.30 | 6.32 | 17.37 | 4.01 | 79.2 | 432 | 0.09 |
| | 1025 | 100 | 2.0 | 39.33 | 6.32 | 17.40 | 4.00 | 78.8 | 433 | 0.09 |
| | 1030 | 100 | 2.5 | 39.35 | 6.32 | 17.44 | 4.00 | 78.1 | 434 | 0.08 |
| | 1035 | 100 | 3.0 | 39.37 | 6.32 | 17.47 | 4.00 | 77.8 | 434 | 0.08 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW09**

Sampler(s): Scott Bressinger

**FIELD CONDITIONS** Cool / clear

**SAMPLING INFORMATION**

**Sample No:** 46WW09-190225

**DATE/TIME:** 2/25/19 / 0954

**Sample Interval:** ~~38.81 - 39.06~~ 39.50

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | Dissolved Gases in Water by RSK175 | 3 x 40 mL Glass | ~~Cool 4C~~ ~~HCL~~ |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/25/19 1105

Depth to Water - Initial (DTWi) (ft) 38.81

Purge End Date/Time: 2/25/19 1135

Depth to Well Bottom (ft) ~~42.36~~ 42.35

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 33.48 - 42.98

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~39.28~~ 39.50

Pump Start Time: 1105

Ferrous Iron (Required (Y) or N) 0.22 mg/L

2ND DTW PRE-PURGE - 38.81

APTIM

# Sample Collection Log



Location ID: 46WW09 Sample No: 46WW09-190225

| 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 |
| 2/25/10 | 1110 | 100 | .5 | 38.89 | 4.55 | 16.24 | 5.89 | 60.3 | 395 | 0.97 |
| | 1115 | 100 | 1.0 | 38.95 | 4.54 | 16.54 | 5.55 | 45.5 | 392 | 0.35 |
| | 1120 | 100 | 1.5 | 38.99 | 4.53 | 16.57 | 5.46 | 42.9 | 390 | 0.14 |
| | 1125 | 100 | 2.0 | 39.02 | 4.52 | 16.60 | 5.46 | 42.4 | 390 | 0.14 |
| | 1130 | 100 | 2.5 | 39.04 | 4.52 | 16.64 | 5.45 | 41.7 | 389 | 0.13 |
| | 1135 | 100 | 3.0 | 39.06 | 4.52 | 16.67 | 5.45 | 41.3 | 389 | 0.13 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW09**

Sampler(s): Scott Beesinger

## FIELD CONDITIONS

Cool / Clear

## SAMPLING INFORMATION

**Sample No:** 46WW09-1902 25-FD

**DATE/TIME:** 2/25/19 / 0954

**Sample Interval:** ~~38.81 - 39.06~~ 39.50

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** FD

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | Dissolved Gases in Water by RSK175 | 3 x 40 mL Glass | ~~Cool 4C~~ HCL |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

## WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/25/19 1105

Depth to Water - Initial (DTWi) (ft) 38.81

Purge End Date/Time: 2/25/19 1135

Depth to Well Bottom (ft) ~~40.48~~ 42.35

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 33.48 - 42.98

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~36.98~~ 39.50

Pump Start Time: 1105

Ferrous Iron (Required (Y) or N) 0.22 mg/L

APTIM

# Sample Collection Log

**Location ID: 46WW09** **Sample No: 46WW09-190225-FD**

| 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 |
| 2/25/19 | 1110 | 100 | .5 | 38.89 | 4.55 | 16.24 | 5.89 | 60.3 | 395 | 0.97 |
| | 1115 | 100 | 1.0 | 38.95 | 4.54 | 16.54 | 5.55 | 45.5 | 392 | 0.35 |
| | 1120 | 100 | 1.5 | 38.99 | 4.53 | 16.57 | 5.46 | 42.9 | 390 | 0.14 |
| | 1125 | 100 | 2.0 | 39.02 | 4.52 | 16.60 | 5.46 | 42.4 | 390 | 0.14 |
| | 1130 | 100 | 2.5 | 39.04 | 4.52 | 16.64 | 5.45 | 41.7 | 389 | 0.13 |
| ↓ | 1135 | 100 | 3.0 | 39.06 | 4.52 | 16.67 | 5.45 | 41.3 | 389 | 0.13 |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW21**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLEAR

**SAMPLING INFORMATION**

**Sample No:** LHSMW21-190225

**DATE/TIME:** 2/25/19 / 0853

**Sample Interval:** ~~22.43~~ 24.61

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | Dissolved Gases in Water by RSK175 | 3 x 40 mL Glass | ~~Cool 4C~~ HCL |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 22.22

Depth to Well Bottom (ft) ~~29.69~~ 29.83

Screen Interval (ft): 19.61 - 29.61

Approximate depth of pump inlet*(ft): ~~24.61~~ 24.61

Ferrous Iron (Required Y or N) Y 0.43 mg/L

Purging Method/Equipment: Low flow / BLADDER Pump

Purge Start Date/Time: 2/25/19 0905

Purge End Date/Time: 2/25/19 0935

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Pump Start Time: 0905

2ND DTW PRE-PURGE - 22.22

APTIM

# Sample Collection Log



| Location ID: LHSMW21 | | Sample No: LHSMW21-190225 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 2/25/19 | 0910 | 100 | 1.5 | 22.30 | 2.56 | 15.08 | 6.92 | 6.6 | 200 | 0.80 |
| ↓ | 0915 | 100 | 1.0 | 22.36 | 2.57 | 15.74 | 6.25 | 7.7 | 220 | 0.29 |
| | 0920 | 100 | 1.5 | 22.40 | 2.57 | 15.77 | 6.12 | 8.0 | 230 | 0.11 |
| | 0925 | 100 | 2.0 | 22.42 | 2.57 | 15.79 | 6.11 | 8.5 | 231 | 0.10 |
| | 0930 | 100 | 2.5 | 22.43 | 2.57 | 15.81 | 6.11 | 9.0 | 232 | 0.10 |
| ↓ | 0935 | 100 | 3.0 | 22.43 | 2.57 | 15.82 | 6.10 | 9.4 | 233 | 0.11 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **LHSMW25**

Project No: **501032**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COLD / CLEAR

**SAMPLING INFORMATION**

37.00

**Sample No:** LHSMW25-190225

**DATE/TIME:** 2/25/19 0755 /

**Sample Interval:** ~~30.93 - 31.15~~

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow / Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 2/25/19 0810

Depth to Water - Initial (DTWi) (ft) 30.93

Purge End Date/Time: 2/25/19 0840

Depth to Well Bottom (ft) ~~42.5~~ 42.68

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 32.00 - 42.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~39.2~~ 37.00

Pump Start Time: 0810

Ferrous Iron (Required Y or (N)) _____ mg/L

*2ND DTW PRE-PURGE - 30.93

APTIM

# Sample Collection Log



Location ID: LHSMW25 Sample No: LHSMW25-190225

| 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 |
| 2/25/19 | 0815 | 100 | .5 | 31.00 | 2.37 | 14.90 | 6.87 | 42.5 | 239 | 0.98 |
| | 0820 | 100 | 1.0 | 31.06 | 2.36 | 16.56 | 6.49 | 19.2 | 176 | 0.67 |
| | 0825 | 100 | 1.5 | 31.10 | 2.35 | 16.61 | 6.38 | 13.1 | 160 | 0.25 |
| | 0830 | 100 | 2.0 | 31.12 | 2.34 | 16.75 | 6.37 | 12.6 | 159 | 0.24 |
| | 0835 | 100 | 2.5 | 31.14 | 2.34 | 16.80 | 6.37 | 12.2 | 159 | 0.23 |
| | 0840 | 100 | 3.0 | 31.15 | 2.34 | 16.87 | 6.37 | 11.9 | 158 | 0.23 |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46SW10**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** COOL/CLEAR

**SAMPLING INFORMATION**

**Sample No:** 46SW10-190225 **DATE/TIME:** 2/25/19 / **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): NA

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) NA

Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): Screen Interval Not Defined Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



Location ID: 46SW10 Sample No: 46SW10-1902_25

| 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 |
| | | | | | | | | | | |
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Sample Not Required

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00971288

# EQUIPMENT CALIBRATION DAILY LOG

Date: 8/12/19

Project Number: 501032

Project Name: LHAAP-46

Recorded By: Scott Bassinger

## PID

Model:

Bulb: 10.6 meV

Equipment ID #:

| | Parameter | Standard | Exp. Date | Lot # | Morning Calibration | Evening Check | Additional Calib./Check (if necessary) |
|---|---|---|---|---|---|---|---|
| | | | | | Time: | Time: | Time: |
| | | | | | Initials: | Initials: | Initials: |
| First Point Calibration | Vapor conc. (ppm) | 0.0 (ambient air) | NA | NA | Value: | Value: | Value: |
| Second Point Calibration | Vapor conc. (ppm) | (isobutylene) | | | Value: | Value: | Value: |

## COMB. GAS/$O_2$ METER

Model:

Equipment ID #:

| | Parameter | Standard | Exp. Date | Lot # | Morning Calibration | Evening Check | Additional Calib./Check (if necessary) |
|---|---|---|---|---|---|---|---|
| | | | | | Time: | Time: | Time: |
| | | | | | Initials: | Initials: | Initials: |
| First Point Calibration | O2 (%) | | | | Value: | Value: | Value: |
| | % LEL Pentane | | | | Value: | Value: | Value: |

## WATER QUALITY METER

Model: U-52 HORIBA

Equipment ID #:

| | Parameter | Standard | Exp. Date | Lot # | Morning Calibration/Check | Evening Check (one point only) | Additional Calib./Check (if necessary) |
|---|---|---|---|---|---|---|---|
| | | | | | Time: 0645 | Time: | Time: |
| | | | | | Initials: SB | Initials: | Initials: |
| First Point Calibration (Auto) | pH | 4.00 | 10/19 | 8GJ693 | Value: 4.00 | Value: | Value: |
| | Conductivity (mS/cm) | 4.49 | | | Value: 4.49 | Value: | Value: |
| | Turbidity (NTU) | 0 | | | Value: 0.0 | Value: | Value: |
| | DO (mg/L) | 8.9-9.1 (ambient air) | NA | NA | Value: 9.03 | Value: | Value: |
| Second Point Calibration | pH | 6.86 | | | Value: | Value: | Value: |
| | Conductivity (mS/cm) | 53.7 | | | Value: | Value: | Value: |
| | Turbidity (NTU) | 100 | | | Value: | Value: | Value: |
| Third Point Calibration | pH | 9.18 | | | Value: | Value: | Value: |
| | Conductivity (mS/cm) | 53.7 | | | Value: | Value: | Value: |
| | Turbidity (NTU) | 100 | | | Value: | Value: | Value: |

**Additional Remarks:**

00971289

# EQUIPMENT CALIBRATION DAILY LOG

**Date:** 8/13/19 **Project Name:** LHAAP-46

**Project Number:** 50/032 **Recorded By:** Scott Baessinger

| | | | | | Morning Calibration | Evening Check | Additional Calib./Check (if necessary) |
|---|---|---|---|---|---|---|---|
| PID | Model: | | Bulb: 10.6 meV | | Time: | Time: | Time: |
| | Equipment ID #: | | | | Initials: | Initials: | Initials: |
| | Parameter | Standard | Exp. Date | Lot # | | | |
| First Point Calibration | Vapor conc. (ppm) | 0.0 (ambient air) | NA | NA | Value: | Value: | Value: |
| Second Point Calibration | Vapor conc. (ppm) | (isobutylene) | | | Value: | Value: | Value: |

| | | | | | Morning Calibration | Evening Check | Additional Calib./Check (if necessary) |
|---|---|---|---|---|---|---|---|
| COMB. GAS/$O_2$ METER | Model: | | | | Time: | Time: | Time: |
| | Equipment ID #: | | | | Initials: | Initials: | Initials: |
| | Parameter | Standard | Exp. Date | Lot # | | | |
| First Point Calibration | O2 (%) | | | | Value: | Value: | Value: |
| | % LEL Pentane | | | | Value: | Value: | Value: |

| | | | | | Morning Calibration/Check | Evening Check (one point only) | Additional Calib./Check (if necessary) |
|---|---|---|---|---|---|---|---|
| WATER QUALITY METER | Model: | U-52 Horiba | | | Time: 0655 | Time: | Time: |
| | Equipment ID #: | | | | Initials: SB | Initials: | Initials: |
| | Parameter | Standard | Exp. Date | Lot # | | | |
| First Point Calibration (Auto) | pH | 4.00 | 10/19 | BGJ693 | Value: 4.00 | Value: | Value: |
| | Conductivity (mS/cm) | 4.49 | | | Value: 4.49 | Value: | Value: |
| | Turbidity (NTU) | 0 | | | Value: 0.0 | Value: | Value: |
| | DO (mg/L) | 8.9-9.1 (ambient air) | NA | NA | Value: 8.99 | Value: | Value: |
| Second Point Calibration | pH | 6.86 | | | Value: | Value: | Value: |
| | Conductivity (mS/cm) | 53.7 | | | Value: | Value: | Value: |
| | Turbidity (NTU) | 100 | | | Value: | Value: | Value: |
| Third Point Calibration | pH | 9.18 | | | Value: | Value: | Value: |
| | Conductivity (mS/cm) | 53.7 | | | Value: | Value: | Value: |
| | Turbidity (NTU) | 100 | | | Value: | Value: | Value: |

**Additional Remarks:**

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW03**

Project No: **501032**

Sampler(s): Scott Bessinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

98.00

**Sample No:** 46WW03-190812

**DATE/TIME:** 8/12/19 / 0710

**Sample Interval:** ~~41.19 103.47~~

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/12/19 0725

Depth to Water - Initial (DTWi) (ft) 41.19

Purge End Date/Time: 8/12/19 0755

Depth to Well Bottom (ft) ~~105.97~~ 103.47

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 93.00 - 103.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~97.97~~ 98.00

Pump Start Time: 0725

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DUPTH TO WATER - 41.19

APTIM

# Sample Collection Log



| Location ID: 46WW03 | | Sample No: 46WW03-190812 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/12/19 | 0730 | 100 | 0.5 | 41.25 | 0.760 | 23.13 | 6.51 | 2.3 | 213 | 0.87 |
| | 0735 | 100 | 1.0 | 41.30 | 0.699 | 21.91 | 7.02 | 0.8 | 176 | 0.33 |
| | 0740 | 100 | 1.5 | 41.33 | 0.682 | 21.63 | 7.14 | 0.0 | 170 | 0.04 |
| | 0745 | 100 | 2.0 | 41.35 | 0.681 | 21.57 | 7.15 | 0.0 | 169 | 0.04 |
| | 0750 | 100 | 2.5 | 41.36 | 0.681 | 21.49 | 7.16 | 0.0 | 168 | 0.04 |
| | 0755 | 100 | 3.0 | 41.37 | 0.681 | 21.45 | 7.17 | 0.0 | 168 | 0.03 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW02**

Sampler(s): Scott Bressinger

**FIELD CONDITIONS** Clear/Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW02-1908~~12~~

**DATE/TIME:** 8/12/19 / 0802

**Sample Interval:** ~~38.23 - 38.44~~ 42.00

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/12/19 0810

Depth to Water - Initial (DTWi) (ft) 38.23

Purge End Date/Time: 8/12/19 0840

Depth to Well Bottom (ft) ~~50.05~~ 48.60

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 37.00-47.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~42~~ 42.00

Pump Start Time: 0810

Ferrous Iron (Required (Y) or N) 0.50 mg/L

2ND Depth to water - 38.23

APTIM

# Sample Collection Log



Location ID: 46WW02 Sample No: 46WW02-190812

| 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 |
| 8/12/19 | 0815 | 100 | .5 | 38.30 | 0.337 | 22.91 | 6.15 | 0.9 | 267 | 3.45 |
| | 0820 | 100 | 1.0 | 38.35 | 0.297 | 22.25 | 4.86 | 0.0 | 336 | 3.02 |
| | 0825 | 100 | 1.5 | 38.39 | 0.288 | 22.22 | 4.75 | 0.0 | 358 | 2.89 |
| | 0830 | 100 | 2.0 | 38.41 | 0.288 | 22.19 | 4.74 | 0.0 | 359 | 2.87 |
| | 0835 | 100 | 2.5 | 38.43 | 0.287 | 22.17 | 4.74 | 0.0 | 360 | 2.85 |
| ↓ | 0840 | 100 | 3.0 | 38.45 | 0.287 | 22.14 | 4.73 | 0.0 | 361 | 2.84 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP** Location ID: **46WW01**

Project No: **501032** Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear/ Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW01-190812 **DATE/TIME:** 8/12/19 / 0853 **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~27.87~~ 26.95

Screen Interval (ft): 17.00 - 27.00

Approximate depth of pump inlet*(ft): ~~19~~ NA

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / (N)

Pump Start Time: NA

2ND DEPTH TO WATER - DRY

APTIM

# Sample Collection Log



| Location ID: 46WW01 | | Sample No: 46WW01-1908_12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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Dry Well

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW19**

Sampler(s): Scott Bassinger

**FIELD CONDITIONS** clear/ sunny

**SAMPLING INFORMATION**

Sample No: LHSMW19-190812

DATE/TIME: 8/12/19 / 0958

Sample Interval: ~~29.70 - 29.95~~ 26.00

Edited by William Foss 20Mar2020

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/12/19 1005

Depth to Water - Initial (DTWi) (ft) 24.70

Purge End Date/Time: 8/12/19 1035

Depth to Well Bottom (ft) ~~33.16~~ 30.00

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 20.00 - 30.00

Discharge Tube Diameter: NA

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25~~ 26.00

Pump Start Time: 1005

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - 24.70

APTIM

# Sample Collection Log



| Location ID: LHSMW19 | | Sample No: LHSMW19-190812 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/12/19 | 1010 | 100 | .5 | 24.77 | 2.49 | 25.65 | 5.89 | 0.0 | 59 | .91 |
| | 1015 | 100 | 1.0 | 24.83 | 3.25 | 24.20 | 6.93 | 0.0 | 70 | .30 |
| | 1020 | 100 | 1.5 | 24.88 | 3.29 | 24.15 | 7.04 | 0.0 | 100 | 0.10 |
| | 1025 | 100 | 2.0 | 24.91 | 3.29 | 24.10 | 7.04 | 0.0 | 101 | 0.10 |
| | 1030 | 100 | 2.5 | 24.93 | 3.30 | 24.06 | 7.05 | 0.0 | 102 | 0.10 |
| ↓ | 1035 | 100 | 3.0 | 24.95 | 3.30 | 24.02 | 7.05 | 0.0 | 102 | 0.09 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW09**

Sampler(s): Scott Buesinger

**FIELD CONDITIONS** Clear/Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW09-190812

**DATE/TIME:** 8/12/19 / 1043

**Sample Interval:** ~~38.40 - 38.63~~ 39.50

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft) 38.40

Depth to Well Bottom (ft) ~~43.46~~ 43.32

Screen Interval (ft): 33.48 - 42.98

Approximate depth of pump inlet*(ft): ~~39.50~~ 39.50

Ferrous Iron (Required (Y) or N) 0.15 mg/L

Purging Method/Equipment: Low Flow Bladder Pump

Purge Start Date/Time: 8/12/19 1055

Purge End Date/Time: 8/12/19 1125

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Pump Start Time: 1055

2ND Depth to water - 38.40

APTIM

# Sample Collection Log



Location ID: 46WW09 Sample No: 46WW09-190812

| 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 |
| 8/12/19 | 1100 | 100 | .5 | 38.47 | 3.97 | 28.37 | 7.20 | 54.9 | 146 | 1.49 |
| | 1105 | 100 | 1.0 | 38.53 | 4.70 | 29.88 | 6.43 | 47.5 | 191 | 1.21 |
| | 1110 | 100 | 1.5 | 38.56 | 4.69 | 30.22 | 6.40 | 45.0 | 195 | 1.15 |
| | 1115 | 100 | 2.0 | 38.59 | 4.68 | 30.34 | 6.39 | 44.6 | 196 | 1.13 |
| | 1120 | 100 | 2.5 | 38.61 | 4.67 | 30.46 | 6.39 | 44.1 | 196 | 1.11 |
| ↓ | 1125 | 100 | 3.0 | 38.63 | 4.67 | 30.55 | 6.38 | 43.7 | 196 | 1.10 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW07**

Project No: **501032**

Sampler(s): Scott Beasinger

## FIELD CONDITIONS

Clear/Sunny

## SAMPLING INFORMATION

**Sample No:** 46WW07-190812

**DATE/TIME:** 8/12/19 / 1140

**Sample Interval:** ~~36.42 36.67~~ 46.25

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

## WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/12/19 1155

Depth to Water - Initial (DTWi) (ft) 36.42

Purge End Date/Time: 8/12/19 1225

Depth to Well Bottom (ft) ~~50.5~~ 51.67

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 41.50 - 51.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~40.25~~ 46.25

Pump Start Time: 1155

Ferrous Iron (Required Y or N) _____ mg/L

2ND Depth to water - 36.42

APTIM

# Sample Collection Log



| Location ID: 46WW07 | | Sample No: 46WW07-1908 12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/12/19 | 1200 | 100 | .5 | 36.50 | 1.63 | 25.82 | 6.81 | 0.0 | 185 | 0.94 |
| | 1205 | 100 | 1.0 | 36.55 | 1.53 | 23.00 | 6.68 | 0.0 | 172 | 0.56 |
| | 1210 | 100 | 1.5 | 36.59 | 1.50 | 22.59 | 6.65 | 0.0 | 164 | 0.40 |
| | 1215 | 100 | 2.0 | 36.61 | 1.50 | 22.49 | 6.64 | 0.0 | 163 | 0.39 |
| | 1220 | 100 | 2.5 | 36.63 | 1.49 | 22.38 | 6.64 | 0.0 | 163 | 0.38 |
| ↓ | 1225 | 100 | 3.0 | 36.64 | 1.49 | 22.33 | 6.64 | 0.0 | 162 | 0.38 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **LHSMW25**

Project No: **501032**

Sampler(s): Scott Buesinger

**FIELD CONDITIONS** Clear/ Sunny

**SAMPLING INFORMATION**

37.00

**Sample No:** LHSMW25-1908 12

**DATE/TIME:** 8/12/19 / 1235

**Sample Interval:** ~~29.85 - 30.07~~

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/12/19 1245

Depth to Water - Initial (DTWi) (ft) 29.85

Purge End Date/Time: 8/12/19 1315

Depth to Well Bottom (ft) ~~42.0~~ 42.60

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 32.00 - 42.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~38.0~~ 37.00

Pump Start Time: 1245

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 29.85

APTIM

# Sample Collection Log



| Location ID: LHSMW25 | | Sample No: LHSMW25-190812 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/12/19 | 1250 | 100 | .5 | 29.92 | 2.14 | 30.25 | 6.88 | 3.2 | 158 | 0.97 |
| | 1255 | 100 | 1.0 | 29.97 | 2.14 | 28.06 | 6.84 | 0.9 | 125 | 0.32 |
| | 1300 | 100 | 1.5 | 30.01 | 2.14 | 27.41 | 6.84 | 0.0 | 123 | 0.30 |
| | 1305 | 100 | 2.0 | 30.03 | 2.13 | 27.33 | 6.84 | 0.0 | 122 | 0.30 |
| | 1310 | 100 | 2.5 | 30.05 | 2.13 | 27.24 | 6.84 | 0.0 | 121 | 0.29 |
| ↓ | 1315 | 100 | 3.0 | 30.07 | 2.13 | 27.17 | 6.84 | 0.0 | 121 | [redacted] 0.29 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW11**

Project No: **501032**

Sampler(s): Scott Bressinger

## FIELD CONDITIONS

CLEAR/SUNNY

## SAMPLING INFORMATION

**Sample No:** 46WW11-1908 \2

**DATE/TIME:** 8/12/19 / 0855

**Sample Interval:** ~~24.62 24.86~~ 26.00

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

## WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/12/19 0905

Depth to Water - Initial (DTWi) (ft) 24.62

Purge End Date/Time: 8/12/19 0935

Depth to Well Bottom (ft) ~~35.85~~ 33.00

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 23.00-33.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28~~ 26.00

Pump Start Time: 0905

Ferrous Iron (Required (Y) or N) 0.30 mg/L

2ND DEPTH TO WATER- 24.62

APTIM

# Sample Collection Log



| Location ID: 46WW11 | | Sample No: 46WW11-1908 12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/12/19 | 0910 | 100 | .5 | 24.70 | 0.973 | 24.10 | 5.22 | 27.3 | 143 | 0.81 |
| ↓ | 0915 | 100 | 1.0 | 24.76 | 1.03 | 23.25 | 5.52 | 21.5 | 146 | 0.32 |
| | 0920 | 100 | 1.5 | 24.80 | 1.01 | 23.21 | 5.53 | 20.1 | 138 | 0.08 |
| | 0925 | 100 | 2.0 | 24.83 | 1.00 | 23.18 | 5.54 | 19.6 | 137 | 0.08 |
| | 0930 | 100 | 2.5 | 24.85 | 1.00 | 23.15 | 5.54 | 18.7 | 136 | 0.07 |
| ↓ | 0935 | 100 | 3.0 | 24.86 | 1.00 | 23.12 | 5.54 | 18.0 | 135 | 0.07 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW11**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW11-1908/2FD

**DATE/TIME:** 8/12/19 / 0855

**Sample Interval:** ~~24.62 - 24.62~~ 26.00

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** FD

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 2

Purge Start Date/Time: 8/12/19 0905

Depth to Water - Initial (DTWi) (ft) 24.62

Purge End Date/Time: 8/12/19 0935

Depth to Well Bottom (ft) ~~33.25~~ 33.00

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 23.00 - 33.00

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~28~~ 26.00

Pump Start Time: 0905

Ferrous Iron (Required (Y) or N) 0.30 mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW11 | | | | Sample No: 46WW11-1908 12 FD | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/12/19 | 0910 | 100 | .5 | 24.70 | 0.973 | 24.10 | 5.22 | 27.3 | 143 | 0.81 |
| | 0915 | 100 | 1.0 | 24.76 | 1.03 | 23.25 | 5.52 | 21.5 | 146 | 0.32 |
| | 0920 | 100 | 1.5 | 24.80 | 1.01 | 23.21 | 5.53 | 20.1 | 138 | 0.08 |
| | 0925 | 100 | 2.0 | 24.83 | 1.00 | 23.18 | 5.54 | 19.6 | 137 | 0.08 |
| | 0930 | 100 | 2.5 | 24.85 | 1.00 | 23.15 | 5.54 | 18.7 | 136 | 0.07 |
| ↓ | 0935 | 100 | 3.0 | 24.86 | 1.00 | 23.12 | 5.54 | 18.0 | 135 | 0.07 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW05**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear/Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW05-1908 13

**DATE/TIME:** 8/13/19 /

**Sample Interval** ~~38.45~~ - ~~38.45~~ 40.00

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/13/19 0740

Depth to Water - Initial (DTWi) (ft) 38.45

Purge End Date/Time: 8/13/19 0810

Depth to Well Bottom (ft) 45.42

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 35.65 - 45.35

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): 40.00

Pump Start Time: 0740

Ferrous Iron (Required) Y or N) 0.45 mg/L

2ND DEPTH TO WATER - 38.45

APTIM

# Sample Collection Log



Location ID: 46WW05 Sample No: 46WW05-190813

| 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 |
| 8/13/19 | 0745 | 100 | .5 | 38.52 | 6.01 | 24.24 | 5.40 | 45.9 | 208 | 0.92 |
| | 0750 | 100 | 1.0 | 38.56 | 6.14 | 22.50 | 4.92 | 42.6 | 231 | 0.21 |
| | 0755 | 100 | 1.5 | 38.59 | 6.14 | 22.44 | 4.75 | 39.7 | 247 | 0.08 |
| | 0800 | 100 | 2.0 | 38.62 | 6.15 | 22.39 | 4.74 | 39.1 | 248 | 0.08 |
| | 0805 | 100 | 2.5 | 38.64 | 6.15 | 22.33 | 4.74 | 38.6 | 248 | 0.07 |
| | 0810 | 100 | 3.0 | 38.66 | 6.15 | 22.29 | 4.74 | 38.0 | 249 | 0.07 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **LHSMW21**

Project No: **501032**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

Sample No: LHSMW21-190813

DATE/TIME: 8/13/19 / 0935

Sample Interval: ~~20.55 - 20.75~~ 24.61

Edited by William Foss 20Mar2020

Sampling Method:

Sample Purpose: REG

Sample Matrix: GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/13/19 0945

Depth to Water - Initial (DTWi) (ft) 20.55

Purge End Date/Time: 8/13/19 1015

Depth to Well Bottom (ft) ~~30.00~~ 29.70

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 19.61 - 29.61

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~25.00~~ 24.61

Pump Start Time: 0945

Ferrous Iron (Required (Y) or N) 1.17 mg/L

2ND DEPTH TO WATER - 20.55

APTIM

# Sample Collection Log



| Location ID: LHSMW21 | | Sample No: LHSMW21-190813 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/13/19 | 0950 | 100 | .5 | 20.62 | 2.37 | 25.66 | 7.66 | 16.5 | 48 | 1.08 |
| | 0955 | 100 | 1.0 | 20.67 | 2.33 | 24.73 | 7.24 | 19.1 | 49 | 0.35 |
| | 1000 | 100 | 1.5 | 20.70 | 2.32 | 24.64 | 7.22 | 19.0 | 50 | 0.08 |
| | 1005 | 100 | 2.0 | 20.72 | 2.32 | 24.56 | 7.22 | 18.9 | 51 | 0.08 |
| | 1010 | 100 | 2.5 | 20.74 | 2.32 | 24.49 | 7.22 | 18.8 | 52 | 0.07 |
| ↓ | 1015 | 100 | 3.0 | 20.75 | 2.32 | 24.43 | 7.22 | 18.7 | 53 | 0.07 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW06**

Project No: **501032**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** CLEAR/SUNNY

**SAMPLING INFORMATION**

45.50

**Sample No:** 46WW06-190813 **DATE/TIME:** 8/13/19 / 1128 **Sample Interval:** ~~[illegible] 40.04~~

Edited by William Foss 20Mar2020

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/13/19 1240

Depth to Water - Initial (DTWi) (ft) 39.80

Purge End Date/Time: 8/13/19 1310

Depth to Well Bottom (ft) ~~58.2~~ 52.38

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 42.68-52.38

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~45.5~~ 45.50

Pump Start Time: 1240

Ferrous Iron (Required Y or N) _____ mg/L

2ND DEPTH TO WATER - 39.80

APTIM

# Sample Collection Log



| Location ID: 46WW06 | | Sample No: 46WW06-190813 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/13/19 | 1245 | 100 | .5 | 39.87 | 1.76 | 26.45 | 6.67 | 48.7 | 53 | 0.97 |
| | 1250 | 100 | 1.0 | 39.93 | 1.69 | 23.98 | 6.55 | 44.3 | 64 | 0.30 |
| | 1255 | 100 | 1.5 | 39.97 | 1.70 | 23.69 | 6.48 | 41.8 | 61 | 0.09 |
| | 1300 | 100 | 2.0 | 40.00 | 1.71 | 23.60 | 6.48 | 41.4 | 60 | 0.09 |
| | 1305 | 100 | 2.5 | 40.02 | 1.71 | 23.53 | 6.47 | 40.7 | 59 | 0.08 |
| ↓ | 1310 | 100 | 3.0 | 40.04 | 1.71 | 23.47 | 6.47 | 40.1 | 59 | 0.08 |
| | | | | | | | | | | |
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| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW16**

Project No: **501032**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW16-190813

**DATE/TIME:** 8/13/19 / 0823

**Sample Interval:** ~~37.95 - 38.98~~ 46.75

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/13/19 0835

Depth to Water - Initial (DTWi) (ft) 37.95

Purge End Date/Time: 8/13/19 0910

Depth to Well Bottom (ft) ~~50.98~~ 51.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 42.00-51.50

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~45.51~~ 46.75

Pump Start Time: 0835

Ferrous Iron (Required) (Y or N) 0.66 mg/L

2ND DEPTH TO WATER - 37.95

APTIM

# Sample Collection Log



| Location ID: 46WW16 Sample No: 46WW16-1908 13 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/13/19 | 0840 | 100 | .5 | 38.03 | 2.91 | 23.36 | 6.65 | 17.6 | -84 | 0.91 |
| | 0845 | 100 | 1.0 | 38.08 | 2.87 | 22.54 | 7.00 | 13.0 | -96 | 0.40 |
| | 0850 | 100 | 1.5 | 38.12 | 2.85 | 22.45 | 7.08 | 4.3 | -100 | 0.21 |
| | 0855 | 100 | 2.0 | 38.15 | 2.85 | 22.37 | 7.10 | 2.1 | -96 | 0.05 |
| | 0900 | 100 | 2.5 | 38.17 | 2.85 | 22.29 | 7.11 | 0.9 | -95 | 0.05 |
| | 0905 | 100 | 3.0 | 38.18 | 2.85 | 22.24 | 7.11 | 0.0 | -94 | 0.05 |
| ↓ | 0910 | 100 | 3.5 | 38.18 | 2.85 | 22.18 | 7.11 | 0.0 | -93 | 0.04 |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW16**

Sampler(s): Scott Blessinger

**FIELD CONDITIONS** Clear/ Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW16-190813 MS

**DATE/TIME:** 8/13/19 / 0823

**Sample Interval:** ~~37.45 - 38.18~~ 46.75

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** MS

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/13/19 0835

Depth to Water - Initial (DTWi) (ft) 37.95

Purge End Date/Time: 8/13/19 0910

Depth to Well Bottom (ft) ~~50.99~~ 51.50

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 42.00 - 51.50

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~45.64~~ 46.75

Pump Start Time: NA

Ferrous Iron (Required (Y) or N) 0.66 mg/L

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP** Location ID: **46WW16**

Project No: **501032** Sampler(s): Scott Beginear

**FIELD CONDITIONS** CLEAR / SUNNY

**SAMPLING INFORMATION**

**Sample No:** 46WW16-190813 MSD **DATE/TIME:** 8/13/19 / 0823 **Sample Interval:** ~~37.95 38.12~~ 46.75

Edited by William Foss 20Mar2020

**Sampling Method:** **Sample Purpose: MSD** **Sample Matrix: GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing Purging Method/Equipment: Low flow / BLADDAR Pump

Casing ID (in.): 4 Purge Start Date/Time: 8/13/19 0835

Depth to Water - Initial (DTWi) (ft) 37.95 Purge End Date/Time: 8/13/19 0910

Depth to Well Bottom (ft) ~~51.92~~ 51.50 Discharge Tube Length: NA PID Reading: NA

Screen Interval (ft): 42.00 - 51.50 Discharge Tube Diameter: 1/4" Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~46.84~~ 46.75 Pump Start Time: 0835

Ferrous Iron (Required (Y) or N) 0.66 mg/L

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW08**

Project No: **501032**

Sampler(s): Scott Bessinger

**FIELD CONDITIONS** CLEAR/SUNNY

**SAMPLING INFORMATION**

40.50

**Sample No:** 46WW08-190813

**DATE/TIME:** 8/13/19 / 1030

**Sample Interval** ~~39.57 - 39.82~~

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/13/19 1045

Depth to Water - Initial (DTWi) (ft) 20.59

Purge End Date/Time: 8/13/19 1115

Depth to Well Bottom (ft) ~~47.44~~ 45.32

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 35.72 - 45.22

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~40.47~~ 40.50

Pump Start Time: 1045

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 20.59

APTIM

# Sample Collection Log



| Location ID: 46WW08 | | Sample No: 46WW08-1908 13 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 8/13/19 | 1050 | 100 | .5 | 20.67 | 4.38 | 24.59 | 7.21 | 8.3 | 33 | 0.89 |
| | 1055 | 100 | 1.0 | 20.73 | 5.48 | 23.08 | 6.52 | 3.9 | 39 | 0.25 |
| | 1100 | 100 | 1.5 | 20.77 | 5.46 | 23.05 | 6.50 | 3.7 | 36 | 0.05 |
| | 1105 | 100 | 2.0 | 20.79 | 5.45 | 23.01 | 6.49 | 3.5 | 36 | 0.05 |
| | 1110 | 100 | 2.5 | 20.81 | 5.44 | 23.99 | 6.49 | 3.3 | 35 | 0.04 |
| | 1115 | 100 | 3.0 | 20.82 | 5.44 | 22.97 | 6.49 | 3.1 | 35 | 0.04 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW08**

Project No: **501032**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

40.50

**Sample No:** 46WW08-190813 FD

**DATE/TIME:** 8/13/19 / 1030

**Sample Interval:** ~~20.59 - 20.82~~

Edited by William Foss 20Mar2020

**Sampling Method:**

**Sample Purpose:** FD

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4

Purge Start Date/Time: 8/13/19 1045

Depth to Water - Initial (DTWi) (ft) 20.59

Purge End Date/Time: 8/13/19 1115

Depth to Well Bottom (ft) ~~45.32~~ 45.32

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 35.72-45.22

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

Approximate depth of pump inlet*(ft): ~~40.50~~ 40.50

Pump Start Time: 1045

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW04**

Sampler(s): Scott Bessinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW04-190813

**DATE/TIME:** 8/13/19 / 1317

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

Depth to Water - Initial (DTWi) (ft): DRY

Depth to Well Bottom (ft): ~~29.92~~ 27.03

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~29~~ NA

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: 46WW04 | | | | Sample No: 46WW04-1908_13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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| | | | Dry Well | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW10**

Sampler(s): Scott BRESINORR

**FIELD CONDITIONS** CLEAR/SUNNY

**SAMPLING INFORMATION**

**Sample No:** 46WW10-190813 **DATE/TIME:** 8/13/19 / 1320 **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~25.98~~ 25.43

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~18.81~~ NA

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: 46WW10 | | Sample No: 46WW10-1908 13 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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| | | | DRY WELL | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW20**

Sampler(s): Scott Bussinger

**FIELD CONDITIONS** CLEAR / SUNNY

**SAMPLING INFORMATION**

**Sample No:** LHSMW20-1908 13

**DATE/TIME:** 8/13/19 / 1325

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | Anions in Water by 9056 | 1 x 250 mL HDPE | Cool 4C |
| | | ALSHT | Carbon Dioxide in Water by RSK175 | 3 x 40 mL Glass | Cool 4C |
| | | ALSHT | MEE in Water by RSK175 | 3 x 40 mL Glass | HCL<pH2 |
| | | ALSHT | TOC in Water by SM5310C | 2 x 40 mL Amber | H2SO4 |
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~24.08~~ 25.16

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~15.0~~ NA

Ferrous Iron (Required Y or N) ___ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: LHSMW20 | | Sample No: LHSMW20-1908_13 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW12**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear/Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW12-190813

**DATE/TIME:** 9/13/19 / 1328

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~30.81~~ 29.52

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~23.72~~ NA

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



Location ID: 46WW12 Sample No: 46WW12-190813

| 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 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | Dry | Well | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW22**

Sampler(s): Scott Baesinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

**Sample No:** LHSMW22-1908 13

**DATE/TIME:** 8/13/14 / 1330

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~31.68~~ 28.85

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~29.815~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: LHSMW22 | | | | Sample No: LHSMW22-190813 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | Dry Well | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46WW13**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

**Sample No:** 46WW13-190813

**DATE/TIME:** 8/13/19 / 1333

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~23.84~~ 31.73

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~20.15~~ NA

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA

PID Reading: NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: 46WW13 | | Sample No: 46WW13-1908 13 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | Dry Well | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **46WW15**

Project No: **501032**

Sampler(s): Scott Bassinger

**FIELD CONDITIONS** CLEAR / SUNNY

**SAMPLING INFORMATION**

**Sample No:** 46WW15-190813

**DATE/TIME:** 8/13/19 / 1336

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~61.9~~ 30.28'

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~25.2~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46WW15 | | | | | Sample No: 46WW15-1908 13 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | Dry Well | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW23**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / Sunny

**SAMPLING INFORMATION**

**Sample No:** LHSMW23-190813

**DATE/TIME:** 8/13/19 / 1339

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~45~~ 31.82

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~32-40~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: LHSMW23 | | | | Sample No: LHSMW23-190813 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | Dry Well | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW17**

Sampler(s): Scott Baesinger

**FIELD CONDITIONS** Clear | Sunny

**SAMPLING INFORMATION**

**Sample No:** LHSMW17-190813 **DATE/TIME:** 8/13/19 / 1343 **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) 27.10

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~18.6~~ NA

Ferrous Iron (Required Y or (N) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: LHSMW17 | | | | Sample No: LHSMW17-1908_13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | Dry Well | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **LHSMW18**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** CLEAR / SUNNY

**SAMPLING INFORMATION**

**Sample No:** LHSMW18-190813 **DATE/TIME:** 8/13/19 / 1346 **Sample Interval:** ___ - ___

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Casing ID (in.): 4

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

Depth to Well Bottom (ft) ~~27.92~~ 27.91

Screen Interval (ft): NA

Approximate depth of pump inlet*(ft): ~~21.35~~ NA

Ferrous Iron (Required Y or (N)) _____ mg/L

Purging Method/Equipment: NA

Purge Start Date/Time: NA

Purge End Date/Time: NA

Discharge Tube Length: NA PID Reading: NA

Discharge Tube Diameter: NA Immersible Layer: Y / N

Pump Start Time: NA

APTIM

# Sample Collection Log



| Location ID: LHSMW18 | | | | Sample No: LHSMW18-190813 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | Dry Well | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **LHSMW18**

Project No: **501032**

Sampler(s): Scott Blessinger

**FIELD CONDITIONS** Clear/ Sunny

**SAMPLING INFORMATION**

**Sample No:** LHSMW18-190813 FD

**DATE/TIME:** 8/13/19 / 1346

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** FD

**Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.): 4

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) ~~20.92~~ 27.91

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): ~~21.36~~ NA

Pump Start Time: NA

Ferrous Iron (Required Y or (N) _____ mg/L

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **46SW10**

Sampler(s): Scott Bassinger

**FIELD CONDITIONS** Clear/ Sunny

**SAMPLING INFORMATION**

**Sample No:** 46SW10-190813

**DATE/TIME:** 8/13/19 / 1350

**Sample Interval:** ___ - ___

**Sampling Method:**

**Sample Purpose:** REG

**Sample Matrix:** GW

**Appearance of Sample**

**Assoc. QC Samples**

**Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: NA

Casing ID (in.):

Purge Start Date/Time: NA

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

Purge End Date/Time: NA

Depth to Well Bottom (ft) NA

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): NA

Discharge Tube Diameter: NA

Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): Screen Interval Not Defined

Pump Start Time: NA

Ferrous Iron (Required Y or (N)) _____ mg/L

APTIM

# Sample Collection Log



| Location ID: 46SW10 | | Sample No: 46SW10-190813 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 Not Required | | | | | | | | |
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Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00971344

APTIM

# Drilling Log

Monitoring Well **LHSMW23R**



Project *Longhorn Army Ammunition Plant* Owner *U.S. Army*

Location *LHAAP-46* Proj. No. *501032*

Surface Elev. *NA* Total Hole Depth *40.0 ft.* North _____ East _____

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *8.25 in.*

Screen: Dia *4 in.* Length *20 ft.* Type/Size *SCH. 40 PVC/0.010 in.*

Casing: Dia *4 in.* Length *20 ft.* Type *SCH. 40 PVC*

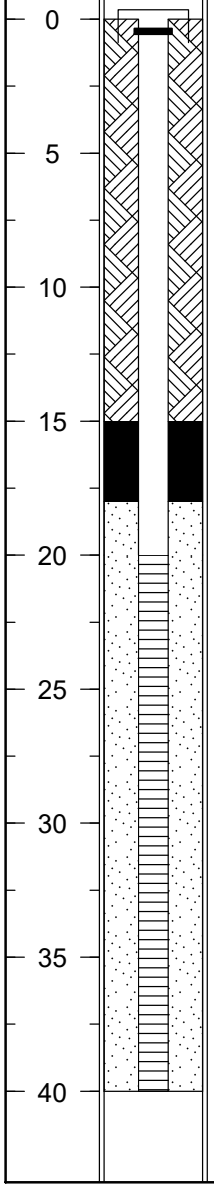
Fill Material *Filter Sand, Bentonite Chips, Cement Grout* Rig/Core *Dietrich B-50 Tracked Rig*

Drill Co. *ETTL* Method *Hollow-stem Auger*

Driller *Pedro Gonzales* Driller # *59385*

Log By *W. Foss* Date *8/27/19* License No. *290*

*COMMENTS*
*Replacement well for LHSMW23.*



| Depth (ft.) | Sample ID % Recovery | USCS Class. | Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS. |
|---|---|---|---|
| 0 | 100% | CL | **SANDY CLAY**; reddish brown, firm, moist, trace silt. |
| 5 | 100% | CL | **SANDY CLAY**; light yellowish brown, firm to stiff. moist, trace iron manganese (FeMnO) staining. |
| 10 | 80% | | |
| 15 | 100% | SC | **CLAYEY SAND**; orangeish brown, loose to medium dense, saturated. |
| 20 | 100% | CL | **SANDY CLAY**; light grayish brown, firm. moist, trace silt. |
| 25 | 80% | SC | **CLAYEY SAND**; grayish tan, medium dense, wet. trace silt. |
| 30 | 100% | CL | **SANDY CLAY**; brown with light gray mottles, firm to stiff, moist. |
| 35 | 100% | SC | **CLAYEY SAND**; light brown, loose, saturated, trace silt. |
| 40 | | CL | **SILTY CLAY**; dark gray to dark brown, stiff, moist. |
| | | | **END OF BORING AT 40 FEET.** |

7-11 Rev: 10/4/18 LHAAP-46 LHSMW23R.GPJ 3/25/20

# MONITORING WELL DEVELOPMENT FORM



| | | | | | |
|---|---|---|---|---|---|
| LOCATION | Site: 46 | | LocID: 46WW09 | Date: 2/8/19 | |
| | Project Name: Longhorn Army Ammunition Plant | | Project #: 501032 | Recorded By: BEESINGAR | Checked By: |
| EQUIPMENT | Water Quality Meter Type/ID #: U-52 HORIBA | | | Water Level Indicator Type/ID #: Solinist 101 | |
| | Equipment Group: NA | | | Equipment Group: NA | |
| | Development Equipment: HURRICANE Pump | | | Equipment Decon.: LIQUINOX & DI WATER | |
| WELL INFO | Casing I.D. (in) [a]: 4" | | Unit Casing Volume (gal/lin ft) [b]: 0.65 | Initial Depth to Water (ft) [c]: 39.03 | |
| | Total Well Depth (ft) [d]: 42.35 | | Water Column Thickness (ft) [d-c]: 3.32 | Well Volume (gal) [[d-c] x b]: 2.16 | |
| | Ground Condition of Well: [redacted] HARD BOTTOM | | | Remarks: | |

| CASING INFO | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Casing I.D. (in) [a]: | 1.5 | 2.0 | 2.2 | 3.0 | 4.0 | 4.3 | 5.0 | 6.0 | 7.0 | 8.0 |
| Unit Casing Volume (gal/lin ft) [b]: | 0.09 | 0.16 | 0.20 | 0.37 | 0.65 | 0.75 | 1.0 | 1.5 | 2.0 | 2.6 |

| Date | Time (24 hr) | Method (pump, surge, bail) | Water Level (FTOC) | Volume Removed (gal) | Pumping Rate (gpm) | Temp. (C) | pH | Conductivity (mS/cm) | DO (mg/L) | Turb. (NTU) | ORP (mv) | Radiation ( ) | Remarks (odor, clarity, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2/8/19 | 1010 | Pump | 40.05 | [redacted]10 | 1.0 | 10.96 | 6.42 | [redacted]5.13 | 0.43 | 210 | 392 | | |
| 2/8/19 | 1020 | Pump | 40.22 | 10 | 1.0 | 11.13 | 6.03 | 5.02 | 0.66 | 105 | 385 | | |
| 2/8/19 | 1030 | Pump | 40.40 | 10 | 1.0 | 11.20 | 5.93 | 4.95 | 0.55 | 66.3 | 370 | | |
| 2/8/19 | 1040 | Pump | 40.54 | 10 | 1.0 | 11.33 | 5.90 | 4.93 | 0.33 | 27.2 | 366 | | |
| 2/8/19 | 1050 | Pump | 40.75 | 10 | 1.0 | 11.40 | 5.87 | 4.91 | 0.30 | 19.8 | 362 | | |
| 2/8/19 | 1100 | Pump | 40.93 | 10 | 1.0 | 11.45 | 5.85 | 4.90 | 0.29 | 8.3 | 360 | | |
| 2/8/19 | 1110 | Pump | 40.99 | 10 | 1.0 | 11.50 | 5.83 | 4.89 | 0.27 | 6.3 | 359 | | |
| 2/8/19 | 1120 | Pump | 41.08 | 10 | 1.0 | 11.54 | 5.82 | 4.88 | 0.26 | 4.9 | 358 | | |
| | | | | | | | | | | | | | |
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**Development Criteria:** **1)** sediment <0.75 mL/L, **2)** turbidity within 10 NTU range for 30 minutes, **3)** +/- 0.5 C, +/- 0.1 pH, +/- 3 % conductivity, +/- 10% DO for 3 consecutive readings, **AND** **4)** remove water added during drilling and construction

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP** Location ID: **LHSMW23R**

Project No: **501032** Sampler(s): MBM

**FIELD CONDITIONS** Sunny 95°F

**SAMPLING INFORMATION**

**Sample No:** LHSMW23R-190903 **DATE/TIME:** 09-03-19 / 1543 **Sample Interval:** 39.47'

**Sampling Method:** LF/BP **Sample Purpose:** REG **Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| Clear / No odor | FieldQC-190903 TB1 (1445) | Liquinox / Rinse / Rinse |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing Purging Method/Equipment: LF/BP

Casing ID (in.): 4" Purge Start Date/Time: 09-03-19 / 1508

Depth to Water - Initial (DTWi) (ft) 35.80 Purge End Date/Time: 09-03-19 / 1545

Depth to Well Bottom (ft) 43.14 Discharge Tube Length: — PID Reading: 0.0

Screen Interval (ft): 20' / 23.14 Discharge Tube Diameter: 1/4" Immersible Layer: Y / N

Approximate depth of pump inlet*(ft): Screen Interval Not Defined Pump Start Time: 1508

Ferrous Iron (Required Y or N) 0.06 mg/L

APTIM

# Sample Collection Log



Location ID: LHSMW23R  Sample No: LHSMW23R-190903

| 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 |
| 09-03-19 | 1513 | 120 | 1.0 | 36.00 | 4.571 | 26.13 | 5.61 | 5.8 | 179.5 | 1.27 |
| 09-03-19 | 1518 | 120 | 1.6 | 36.00 | 4.557 | 25.53 | 5.56 | 5.5 | 162.2 | 0.85 |
| 09-03-19 | 1523 | 120 | 2.2 | 36.00 | 4.530 | 25.49 | 5.56 | 5.1 | 156.5 | 0.63 |
| 09-03-19 | 1528 | 120 | 2.8 | 36.00 | 4.539 | 25.56 | 5.56 | 5.1 | 155.2 | 0.58 |
| 09-03-19 | 1533 | 120 | 3.4 | 36.00 | 4.530 | 25.58 | 5.55 | 5.0 | 153.2 | 0.52 |
| 09-03-19 | 1538 | 120 | 4.0 | 36.00 | 4.528 | 25.58 | 5.54 | 4.9 | 149.1 | 0.49 |
| 09-03-19 | 1543 | 120 | 4.6 | 36.00 | 4.530 | 25.59 | 5.54 | 3.7 | 148.9 | 0.50 |
| 09-03-19 | See p16 | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: 09/03/19

QC'd by: _____ Date: _____

# 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
F: +1 281 530 5887

February 27, 2019

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19021151**

Laboratory Results for: **Longhorn Army Ammunition Plant**

Dear Susan,

ALS Environmental received 6 sample(s) on Feb 21, 2019 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 Houston, US** Date: 27-Feb-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:** HS19021151

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19021151-01 | LH18MW19-190220 | Groundwater | | 20-Feb-2019 09:40 | 21-Feb-2019 09:58 | ☐ |
| HS19021151-02 | 46WW03-190220 | Groundwater | | 20-Feb-2019 10:35 | 21-Feb-2019 09:58 | ☐ |
| HS19021151-03 | 46WW06-190220 | Groundwater | | 20-Feb-2019 12:15 | 21-Feb-2019 09:58 | ☐ |
| HS19021151-04 | 46WW08-190220 | Groundwater | | 20-Feb-2019 13:05 | 21-Feb-2019 09:58 | ☐ |
| HS19021151-05 | 46WW07-190220 | Groundwater | | 20-Feb-2019 13:55 | 21-Feb-2019 09:58 | ☐ |
| HS19021151-06 | Trip Blank | Water | | 20-Feb-2019 00:00 | 21-Feb-2019 09:58 | ☐ |

**ALS Houston, US** Date: 27-Feb-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:** HS19021151

**CASE NARRATIVE**

## GCMS Volatiles by Method SW8260

### Batch ID: R333582

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

**ALS Houston, US**

Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.

**ANALYTICAL REPORT**

Project: Longhorn Army Ammunition Plant

WorkOrder:HS19021151

Sample ID: LH18MW19-190220

Lab ID:HS19021151-01

Collection Date: 20-Feb-2019 09:40

Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| **cis-1,2-Dichloroethene** | **3.9** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 26-Feb-2019 22:55 |
| **Trichloroethene** | **16** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 26-Feb-2019 22:55 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 22:55 |
| *Surr: 1,2-Dichloroethane-d4* | *94.5* | | | **0** | *81-118* | *%REC* | *1* | *26-Feb-2019 22:55* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *26-Feb-2019 22:55* |
| *Surr: Dibromofluoromethane* | *93.2* | | | **0** | *80-119* | *%REC* | *1* | *26-Feb-2019 22:55* |
| *Surr: Toluene-d8* | *98.7* | | | **0** | *89-112* | *%REC* | *1* | *26-Feb-2019 22:55* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW03-190220
Collection Date: 20-Feb-2019 10:35

**ANALYTICAL REPORT**
WorkOrder:HS19021151
Lab ID:HS19021151-02
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 15:42 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 15:42 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 15:42 |
| *Surr: 1,2-Dichloroethane-d4* | *94.4* | | | **0** | *81-118* | *%REC* | *1* | *26-Feb-2019 15:42* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *26-Feb-2019 15:42* |
| *Surr: Dibromofluoromethane* | *94.5* | | | **0** | *80-119* | *%REC* | *1* | *26-Feb-2019 15:42* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *26-Feb-2019 15:42* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW06-190220
Collection Date: 20-Feb-2019 12:15

**ANALYTICAL REPORT**
WorkOrder:HS19021151
Lab ID:HS19021151-03
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 23:19 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 23:19 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 23:19 |
| *Surr: 1,2-Dichloroethane-d4* | *94.5* | | | **0** | *81-118* | *%REC* | *1* | *26-Feb-2019 23:19* |
| *Surr: 4-Bromofluorobenzene* | *102* | | | **0** | *85-114* | *%REC* | *1* | *26-Feb-2019 23:19* |
| *Surr: Dibromofluoromethane* | *93.1* | | | **0** | *80-119* | *%REC* | *1* | *26-Feb-2019 23:19* |
| *Surr: Toluene-d8* | *100* | | | **0** | *89-112* | *%REC* | *1* | *26-Feb-2019 23:19* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW08-190220
Collection Date: 20-Feb-2019 13:05

**ANALYTICAL REPORT**
WorkOrder:HS19021151
Lab ID:HS19021151-04
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 23:43 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 23:43 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 23:43 |
| *Surr: 1,2-Dichloroethane-d4* | *94.2* | | | **0** | *81-118* | *%REC* | *1* | *26-Feb-2019 23:43* |
| *Surr: 4-Bromofluorobenzene* | *100* | | | **0** | *85-114* | *%REC* | *1* | *26-Feb-2019 23:43* |
| *Surr: Dibromofluoromethane* | *92.8* | | | **0** | *80-119* | *%REC* | *1* | *26-Feb-2019 23:43* |
| *Surr: Toluene-d8* | *101* | | | **0** | *89-112* | *%REC* | *1* | *26-Feb-2019 23:43* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW07-190220
Collection Date: 20-Feb-2019 13:55

**ANALYTICAL REPORT**
WorkOrder:HS19021151
Lab ID:HS19021151-05
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 27-Feb-2019 00:07 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 27-Feb-2019 00:07 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 27-Feb-2019 00:07 |
| *Surr: 1,2-Dichloroethane-d4* | *94.6* | | | **0** | *81-118* | *%REC* | *1* | *27-Feb-2019 00:07* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *27-Feb-2019 00:07* |
| *Surr: Dibromofluoromethane* | *92.8* | | | **0** | *80-119* | *%REC* | *1* | *27-Feb-2019 00:07* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *27-Feb-2019 00:07* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 27-Feb-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 20-Feb-2019 00:00

**ANALYTICAL REPORT**
WorkOrder:HS19021151
Lab ID:HS19021151-06
Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 18:31 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 18:31 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 26-Feb-2019 18:31 |
| *Surr: 1,2-Dichloroethane-d4* | *95.1* | | | **0** | *81-118* | *%REC* | *1* | *26-Feb-2019 18:31* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *26-Feb-2019 18:31* |
| *Surr: Dibromofluoromethane* | *96.1* | | | **0** | *80-119* | *%REC* | *1* | *26-Feb-2019 18:31* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *26-Feb-2019 18:31* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 27-Feb-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021151

**DATES REPORT**

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID** R333582 | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | **Matrix:** Water | | |
| HS19021151-06 | Trip Blank | 20 Feb 2019 00:00 | | | 26 Feb 2019 18:31 | 1 |
| **Batch ID** R333582 | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | **Matrix:** Groundwater | | |
| HS19021151-01 | LH18MW19-190220 | 20 Feb 2019 09:40 | | | 26 Feb 2019 22:55 | 1 |
| HS19021151-02 | 46WW03-190220 | 20 Feb 2019 10:35 | | | 26 Feb 2019 15:42 | 1 |
| HS19021151-03 | 46WW06-190220 | 20 Feb 2019 12:15 | | | 26 Feb 2019 23:19 | 1 |
| HS19021151-04 | 46WW08-190220 | 20 Feb 2019 13:05 | | | 26 Feb 2019 23:43 | 1 |
| HS19021151-05 | 46WW07-190220 | 20 Feb 2019 13:55 | | | 27 Feb 2019 00:07 | 1 |

**ALS Houston, US** Date: 27-Feb-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021151

**QC BATCH REPORT**

**Batch ID: R333582** **Instrument: VOA6** **Method: SW8260**

**MBLK** Sample ID: **VBLKW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 15:18**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966671** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 0.50 | 1.0 | | | | | | | | U |
| Trichloroethene | 0.50 | 1.0 | | | | | | | | U |
| Vinyl chloride | 0.50 | 1.0 | | | | | | | | U |
| *Surr: 1,2-Dichloroethane-d4* | *47.21* | *1.0* | *50* | *0* | *94.4* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *49.9* | *1.0* | *50* | *0* | *99.8* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *46.61* | *1.0* | *50* | *0* | *93.2* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *50.67* | *1.0* | *50* | *0* | *101* | *89 - 112* | | | | |

**LCS** Sample ID: **VLCSW-190226** Units: **UG/L** Analysis Date: **26-Feb-2019 14:30**
Client ID: Run ID: **VOA6_333582** SeqNo: **4966670** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 19.2 | 1.0 | 20 | 0 | 96.0 | 78 - 123 | | | | |
| Trichloroethene | 19.21 | 1.0 | 20 | 0 | 96.0 | 79 - 123 | | | | |
| Vinyl chloride | 18.3 | 1.0 | 20 | 0 | 91.5 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *47.13* | *1.0* | *50* | *0* | *94.3* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *51.13* | *1.0* | *50* | *0* | *102* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *47.52* | *1.0* | *50* | *0* | *95.0* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *49.49* | *1.0* | *50* | *0* | *99.0* | *89 - 112* | | | | |

**MS** Sample ID: **HS19021151-02MS** Units: **UG/L** Analysis Date: **26-Feb-2019 16:30**
Client ID: **46WW03-190220** Run ID: **VOA6_333582** SeqNo: **4966674** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 21.78 | 1.0 | 20 | 0 | 109 | 78 - 123 | | | | |
| Trichloroethene | 22.91 | 1.0 | 20 | 0 | 115 | 79 - 123 | | | | |
| Vinyl chloride | 22.91 | 1.0 | 20 | 0 | 115 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *46.62* | *1.0* | *50* | *0* | *93.2* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *51.17* | *1.0* | *50* | *0* | *102* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *47.27* | *1.0* | *50* | *0* | *94.5* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *49.98* | *1.0* | *50* | *0* | *100.0* | *89 - 112* | | | | |

**ALS Houston, US** Date: 27-Feb-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021151

**QC BATCH REPORT**

**Batch ID: R333582** **Instrument: VOA6** **Method: SW8260**

**MSD** Sample ID: **HS19021151-02MSD** Units: **UG/L** Analysis Date: **26-Feb-2019 16:54**
Client ID: **46WW03-190220** Run ID: **VOA6_333582** SeqNo: **4966675** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 21.86 | 1.0 | 20 | 0 | 109 | 78 - 123 | 21.78 | 0.368 | 20 | |
| Trichloroethene | 23.01 | 1.0 | 20 | 0 | 115 | 79 - 123 | 22.91 | 0.461 | 20 | |
| Vinyl chloride | 22.48 | 1.0 | 20 | 0 | 112 | 58 - 137 | 22.91 | 1.89 | 20 | |
| *Surr: 1,2-Dichloroethane-d4* | *47.11* | *1.0* | *50* | *0* | *94.2* | *81 - 118* | *46.62* | *1.06* | *20* | |
| *Surr: 4-Bromofluorobenzene* | *52.05* | *1.0* | *50* | *0* | *104* | *85 - 114* | *51.17* | *1.71* | *20* | |
| *Surr: Dibromofluoromethane* | *47.49* | *1.0* | *50* | *0* | *95.0* | *80 - 119* | *47.27* | *0.462* | *20* | |
| *Surr: Toluene-d8* | *50.88* | *1.0* | *50* | *0* | *102* | *89 - 112* | *49.98* | *1.78* | *20* | |

**The following samples were analyzed in this batch:** HS19021151-01 HS19021151-02 HS19021151-03 HS19021151-04 HS19021151-05 HS19021151-06

**ALS Houston, US** Date: 27-Feb-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** **HS19021151**

**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 Houston, US** Date: 27-Feb-19

## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| 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 | ANAB L2231 | 20-Dec-2021 |
| Kentucky | 123043 - 2018 | 30-Apr-2019 |
| Kansas | E-10352 2018-2019 | 31-Jul-2019 |
| Oklahoma | 2018-156 | 31-Aug-2019 |
| North Carolina | 624-2019 | 31-Dec-2019 |
| California | 2919, 2018-2019 | 30-Apr-2019 |
| Maryland | 343, 2018-2019 | 30-Jun-2019 |

00971363

**ALS Houston, US** Date: 27-Feb-19

## Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19021151
Date/Time Received: **21-Feb-2019 09:58**
Received by: **SBM**

Checklist completed by: *Nilesh D. Ranchod* 22-Feb-2019
eSignature | Date

Reviewed by: *RJ Modashia* 22-Feb-2019
eSignature | Date

Matrices: **Water**
Carrier name: **Greyhound**

| | | | |
|---|---|---|---|
| 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 ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:LHAAP46-FEB2019-ALSHT-1902-20 |
| Samplers name present on COC? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☐ | No ☑ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| 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): | 2.1C/2.1C UC/C | IR # 25 |
| Cooler(s)/Kit(s): | 24608 | |
| Date/Time sample(s) sent to storage: | 02/21/2019 18:00 | |

| | | | |
|---|---|---|---|
| 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: | | | |

Login Notes: Sample label ids differ COC=LH18MW19-190220, Label = LHSMW19-190220

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

00971364

APTIM

COC ID: LHAAP46-FEB2019-ALSHT-1902-20 TURNAROUND TIME: normal RUSH: Page 1 of

| PROJECT/CLIENT INFO | | | | LABORATORY | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Facility Name | Longhorn AAP | | | Lab Name | ALS Laboratories | | | FedInvoices @aptim.com | |
| Project Number | 501032 | | | Lab Contact | RJ Modashia | | | | |
| | LHAAP-46 | | | Email | RJ.Modashia@alsglobal.com | | | Susan.Huang@aptim.com | |
| Address | 1203-B East Grand Avenue | | | Address | 10450 Stancliff Rd., Suite 210 | | | Susan Huang | |
| | PMB 202 | | | | | | | 4005 Port Chicago Hwy | |
| City | Marshall | State | TX | City | Houston | State | TX | Concord | State CA |
| Postal Code | 75670 | Country | USA | Postal Code | 77099 | Country | USA | 94520 | Country USA |
| Phone Number | 713.243.7264 | | | Phone Number | 281.575.2279 or 281.530.5656 | | | | |
| Project Manager | Praveen Srivastav | | | | | | | | |

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 (see VOC list below) | Anions (Nitrate, Sulfate, Chloride) by 9056 | Carbon Dioxide by RSK-175 | Dissolved Gases by RSK 175 | TOC by SM5310C | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Containers and Preservative | | 3x40 ml VOA, HCL | 1x250ml HPDE, Ice | 3x40 ml VOA, Ice | 3x40 ml VOA, HCL Ice | 2-40 ml Amber, H2SO4 | |
| LH18mw19-190220 | LHAAP46 | 25.55 | 25.79 | | WG | 2/20/19 | 0940 | 3 | | X | | | | | |
| 46ww03-190220 | LHAAP46 | 41.20 | 41.38 | | WG | 2/20/19 | 1035 | 3 | | X | | | | | |
| 46ww03-190220-MS | LHAAP46 | 41.20 | 41.38 | | WG | 2/20/19 | 1035 | 3 | | X | | | | | |
| 46ww03-190220-MSD | LHAAP46 | 41.20 | 41.38 | | WG | 2/20/19 | 1035 | 3 | | X | | | | | |
| 46ww06-190220 | LHAAP46 | 41.05 | 41.26 | | WG | 2/20/19 | 1215 | 3 | | X | | | | | |
| 46ww08-190220 | LHAAP46 | 22.00 | 22.24 | | WG | 2/20/19 | 1305 | 3 | | X | | | | | |
| 46ww07-190220 | LHAAP46 | 36.51 | 36.76 | | WG | 2/20/19 | 1355 | 3 | | X | | | | | |
| TRIP BLANK | LHAAP46 | | | | W | 2/20/19 | | 2 | | X | | | | | |

| ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME |
|---|---|---|---|---|
| Select list VOC's (TCE, cis-1,2-DCE, and VC) | Susan Huang /BHATE | 2/20/19 1530 | | |
| | | | SM | 02/21/19 09:55 |

Cooler #2466 Temp 2.1 VC m=25 CF 0.0

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant

HS19021151

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

24608

**CUSTODY SEAL**

Date: 2/20/19 Time: 1530
Name: Scott Biggins
Company: Bluhm

Seal Broken By:

Date: 2/21/19

24608 FEB 21 2019

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

April 05, 2019

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19021185**

Laboratory Results for: **Longhorn Army Ammunition Plant**

Dear Susan,

ALS Environmental received 4 sample(s) on Feb 22, 2019 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

**Generated By: JUMOKE.LAWAL**
RJ Modashia
Project Manager

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:** HS19021185

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19021185-01 | 46WW11-190221 | Groundwater | | 21-Feb-2019 08:25 | 22-Feb-2019 09:06 | ☐ |
| HS19021185-02 | 46WW02-190221 | Groundwater | | 21-Feb-2019 09:25 | 22-Feb-2019 09:06 | ☐ |
| HS19021185-03 | 46WW16-190221 | Groundwater | | 21-Feb-2019 10:25 | 22-Feb-2019 09:06 | ☐ |
| HS19021185-04 | Trip Blank | Water | | 21-Feb-2019 00:00 | 22-Feb-2019 09:06 | ☐ |

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:**

**CASE NARRATIVE**

## Work Order Comments

• Revised to add ALS Simi Valley Sub Data Package

The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

## Work Order Comments

• The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

## GCMS Volatiles by Method SW8260

### Batch ID: R334099

**Sample ID: 46WW11-190221 (HS19021185-01MS)**

• MS recovered below lower control limits for cis-1,2-Dichloroethene

## WetChemistry by Method SW9056

### Batch ID: R334216

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

### Batch ID: R333408

**Sample ID: 46WW11-190221 (HS19021185-01MS)**

• 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. (Chloride)

**ALS Houston, US** Date: 05-Apr-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW11-190221
Collection Date: 21-Feb-2019 08:25

**ANALYTICAL REPORT**
WorkOrder:HS19021185
Lab ID:HS19021185-01
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 23:18 |
| **Trichloroethene** | **13** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 05-Mar-2019 23:18 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 23:18 |
| *Surr: 1,2-Dichloroethane-d4* | *84.9* | | | **0** | *81-118* | *%REC* | *1* | *05-Mar-2019 23:18* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *05-Mar-2019 23:18* |
| *Surr: Dibromofluoromethane* | *84.3* | | | **0** | *80-119* | *%REC* | *1* | *05-Mar-2019 23:18* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *05-Mar-2019 23:18* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **239** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 07-Mar-2019 22:19 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 22-Feb-2019 19:16 |
| **Sulfate** | **222** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 07-Mar-2019 22:19 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 07-Mar-2019 11:33 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 14-Mar-2019 14:02 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Revision:** 1

**ALS Houston, US** Date: 05-Apr-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW02-190221
Collection Date: 21-Feb-2019 09:25

**ANALYTICAL REPORT**
WorkOrder:HS19021185
Lab ID:HS19021185-02
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| **cis-1,2-Dichloroethene** | **1.0** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 06-Mar-2019 01:18 |
| **Trichloroethene** | **16** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 06-Mar-2019 01:18 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 01:18 |
| *Surr: 1,2-Dichloroethane-d4* | *84.3* | | | **0** | *81-118* | *%REC* | *1* | *06-Mar-2019 01:18* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *06-Mar-2019 01:18* |
| *Surr: Dibromofluoromethane* | *83.7* | | | **0** | *80-119* | *%REC* | *1* | *06-Mar-2019 01:18* |
| *Surr: Toluene-d8* | *104* | | | **0** | *89-112* | *%REC* | *1* | *06-Mar-2019 01:18* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **26.1** | | **0.200** | **0.500** | **0.500** | **mg/L** | 1 | 22-Feb-2019 20:00 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 22-Feb-2019 20:00 |
| **Sulfate** | **153** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 07-Mar-2019 23:03 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 07-Mar-2019 11:33 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 14-Mar-2019 14:02 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Revision:** 1

**ALS Houston, US** Date: 05-Apr-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW16-190221
Collection Date: 21-Feb-2019 10:25

**ANALYTICAL REPORT**
WorkOrder:HS19021185
Lab ID:HS19021185-03
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 01:42 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 01:42 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 01:42 |
| *Surr: 1,2-Dichloroethane-d4* | *87.4* | | | **0** | *81-118* | *%REC* | *1* | *06-Mar-2019 01:42* |
| *Surr: 4-Bromofluorobenzene* | *96.4* | | | **0** | *85-114* | *%REC* | *1* | *06-Mar-2019 01:42* |
| *Surr: Dibromofluoromethane* | *86.2* | | | **0** | *80-119* | *%REC* | *1* | *06-Mar-2019 01:42* |
| *Surr: Toluene-d8* | *108* | | | **0** | *89-112* | *%REC* | *1* | *06-Mar-2019 01:42* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **279** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 07-Mar-2019 23:18 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 22-Feb-2019 20:14 |
| **Sulfate** | **661** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 07-Mar-2019 23:18 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 07-Mar-2019 11:33 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 14-Mar-2019 14:02 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Revision:** 1

**ALS Houston, US** Date: 05-Apr-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 21-Feb-2019 00:00

**ANALYTICAL REPORT**
WorkOrder:HS19021185
Lab ID:HS19021185-04
Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 21:42 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 21:42 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 21:42 |
| *Surr: 1,2-Dichloroethane-d4* | *81.7* | | | **0** | *81-118* | *%REC* | *1* | *05-Mar-2019 21:42* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *05-Mar-2019 21:42* |
| *Surr: Dibromofluoromethane* | *83.9* | | | **0** | *80-119* | *%REC* | *1* | *05-Mar-2019 21:42* |
| *Surr: Toluene-d8* | *105* | | | **0** | *89-112* | *%REC* | *1* | *05-Mar-2019 21:42* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Revision:** 1

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021185

**DATES REPORT**

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID** R333408 | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19021185-01 | 46WW11-190221 | 21 Feb 2019 08:25 | | | 22 Feb 2019 19:16 | 1 |
| HS19021185-02 | 46WW02-190221 | 21 Feb 2019 09:25 | | | 22 Feb 2019 20:00 | 1 |
| HS19021185-03 | 46WW16-190221 | 21 Feb 2019 10:25 | | | 22 Feb 2019 20:14 | 1 |
| **Batch ID** R334099 | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Water | |
| HS19021185-04 | Trip Blank | 21 Feb 2019 00:00 | | | 05 Mar 2019 21:42 | 1 |
| **Batch ID** R334099 | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Groundwater | |
| HS19021185-01 | 46WW11-190221 | 21 Feb 2019 08:25 | | | 05 Mar 2019 23:18 | 1 |
| HS19021185-02 | 46WW02-190221 | 21 Feb 2019 09:25 | | | 06 Mar 2019 01:18 | 1 |
| HS19021185-03 | 46WW16-190221 | 21 Feb 2019 10:25 | | | 06 Mar 2019 01:42 | 1 |
| **Batch ID** R334140 | **Test Name :** SUBCONTRACT ANALYSIS - RSK | | | | **Matrix:** Groundwater | |
| HS19021185-01 | 46WW11-190221 | 21 Feb 2019 08:25 | | | 07 Mar 2019 11:33 | 1 |
| HS19021185-02 | 46WW02-190221 | 21 Feb 2019 09:25 | | | 07 Mar 2019 11:33 | 1 |
| HS19021185-03 | 46WW16-190221 | 21 Feb 2019 10:25 | | | 07 Mar 2019 11:33 | 1 |
| **Batch ID** R334216 | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19021185-01 | 46WW11-190221 | 21 Feb 2019 08:25 | | | 07 Mar 2019 22:19 | 10 |
| HS19021185-02 | 46WW02-190221 | 21 Feb 2019 09:25 | | | 07 Mar 2019 23:03 | 10 |
| HS19021185-03 | 46WW16-190221 | 21 Feb 2019 10:25 | | | 07 Mar 2019 23:18 | 10 |
| **Batch ID** R334558 | **Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS | | | | **Matrix:** Groundwater | |
| HS19021185-01 | 46WW11-190221 | 21 Feb 2019 08:25 | | | 14 Mar 2019 14:02 | 1 |
| HS19021185-02 | 46WW02-190221 | 21 Feb 2019 09:25 | | | 14 Mar 2019 14:02 | 1 |
| HS19021185-03 | 46WW16-190221 | 21 Feb 2019 10:25 | | | 14 Mar 2019 14:02 | 1 |

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021185

**QC BATCH REPORT NEW**

**Batch ID: R334099 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**MBLK** Sample ID: **VBLKW-190305** Units: **UG/L** Analysis Date: **05-Mar-2019 19:18**
Client ID: Run ID: **VOA6_334099** SeqNo: **4977030** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 0.50 | 1.0 | | | | | | | | U |
| Trichloroethene | 0.50 | 1.0 | | | | | | | | U |
| Vinyl chloride | 0.50 | 1.0 | | | | | | | | U |
| *Surr: 1,2-Dichloroethane-d4* | *40.72* | *1.0* | *50* | *0* | *81.4* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *50.56* | *1.0* | *50* | *0* | *101* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *42.1* | *1.0* | *50* | *0* | *84.2* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *53.5* | *1.0* | *50* | *0* | *107* | *89 - 112* | | | | |

**LCS** Sample ID: **VLCSW-190305** Units: **UG/L** Analysis Date: **05-Mar-2019 18:05**
Client ID: Run ID: **VOA6_334099** SeqNo: **4977029** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 18.62 | 1.0 | 20 | 0 | 93.1 | 78 - 123 | | | | |
| Trichloroethene | 19.04 | 1.0 | 20 | 0 | 95.2 | 79 - 123 | | | | |
| Vinyl chloride | 17.04 | 1.0 | 20 | 0 | 85.2 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *52.42* | *1.0* | *50* | *0* | *105* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *52.66* | *1.0* | *50* | *0* | *105* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *51.95* | *1.0* | *50* | *0* | *104* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *49.26* | *1.0* | *50* | *0* | *98.5* | *89 - 112* | | | | |

**MS** Sample ID: **HS19021185-01MS** Units: **UG/L** Analysis Date: **06-Mar-2019 00:06**
Client ID: **46WW11-190221** Run ID: **VOA6_334099** SeqNo: **4977037** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 15.51 | 1.0 | 20 | 0 | 77.6 | 78 - 123 | | | | S |
| Trichloroethene | 31.05 | 1.0 | 20 | 13.06 | 90.0 | 79 - 123 | | | | |
| Vinyl chloride | 14.49 | 1.0 | 20 | 0 | 72.4 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *42.2* | *1.0* | *50* | *0* | *84.4* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *50.35* | *1.0* | *50* | *0* | *101* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *42.74* | *1.0* | *50* | *0* | *85.5* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *52.15* | *1.0* | *50* | *0* | *104* | *89 - 112* | | | | |

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021185

**QC BATCH REPORT NEW**

**Batch ID:** R334099 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19021185-01MSD** Units: **UG/L** Analysis Date: **06-Mar-2019 00:30**
Client ID: **46WW11-190221** Run ID: **VOA6_334099** SeqNo: **4977038** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 18.3 | 1.0 | 20 | 0 | 91.5 | 78 - 123 | 15.51 | 16.5 | 20 | |
| Trichloroethene | 36.16 | 1.0 | 20 | 13.06 | 115 | 79 - 123 | 31.05 | 15.2 | 20 | |
| Vinyl chloride | 16.23 | 1.0 | 20 | 0 | 81.1 | 58 - 137 | 14.49 | 11.3 | 20 | |
| *Surr: 1,2-Dichloroethane-d4* | *41.82* | *1.0* | *50* | *0* | *83.6* | *81 - 118* | *42.2* | *0.909* | *20* | |
| *Surr: 4-Bromofluorobenzene* | *51.21* | *1.0* | *50* | *0* | *102* | *85 - 114* | *50.35* | *1.7* | *20* | |
| *Surr: Dibromofluoromethane* | *42.43* | *1.0* | *50* | *0* | *84.9* | *80 - 119* | *42.74* | *0.725* | *20* | |
| *Surr: Toluene-d8* | *51.03* | *1.0* | *50* | *0* | *102* | *89 - 112* | *52.15* | *2.17* | *20* | |

**The following samples were analyzed in this batch:** HS19021185-01 HS19021185-02 HS19021185-03 HS19021185-04

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021185

**QC BATCH REPORT NEW**

**Batch ID: R333408 ( 0 )** **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

**MBLK** Sample ID: **WBLKW2-022219** Units: **mg/L** Analysis Date: **22-Feb-2019 18:03**
Client ID: Run ID: **ICS2100_333408** SeqNo: **4962040** 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 |

**LCS** Sample ID: **WLCSW2-022219** Units: **mg/L** Analysis Date: **22-Feb-2019 18:18**
Client ID: Run ID: **ICS2100_333408** SeqNo: **4962041** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 19.2 | 0.500 | 20 | 0 | 96.0 | 80 - 120 | | | | |
| Nitrogen, Nitrate (As N) | 3.749 | 0.100 | 4 | 0 | 93.7 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW2-022219** Units: **mg/L** Analysis Date: **22-Feb-2019 18:32**
Client ID: Run ID: **ICS2100_333408** SeqNo: **4962042** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 19.03 | 0.500 | 20 | 0 | 95.1 | 80 - 120 | 19.2 | 0.889 | 20 | |
| Nitrogen, Nitrate (As N) | 3.711 | 0.100 | 4 | 0 | 92.8 | 80 - 120 | 3.749 | 1.02 | 20 | |

**MS** Sample ID: **HS19021185-01MS** Units: **mg/L** Analysis Date: **22-Feb-2019 19:31**
Client ID: **46WW11-190221** Run ID: **ICS2100_333408** SeqNo: **4962044** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 247.4 | 0.500 | 10 | 234.6 | 128 | 80 - 120 | | | | SEO |
| Nitrogen, Nitrate (As N) | 2.236 | 0.100 | 2 | 0 | 112 | 80 - 120 | | | | |

**MSD** Sample ID: **HS19021185-01MSD** Units: **mg/L** Analysis Date: **22-Feb-2019 19:45**
Client ID: **46WW11-190221** Run ID: **ICS2100_333408** SeqNo: **4962045** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 244.8 | 0.500 | 10 | 234.6 | 101 | 80 - 120 | 247.4 | 1.08 | 20 | EO |
| Nitrogen, Nitrate (As N) | 2.199 | 0.100 | 2 | 0 | 110 | 80 - 120 | 2.236 | 1.67 | 20 | |

**The following samples were analyzed in this batch:** HS19021185-01 HS19021185-02 HS19021185-03

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021185

**QC BATCH REPORT NEW**

**Batch ID: R334216 ( 0 )** **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

**MBLK** Sample ID: **WBLKW1-030719** Units: **mg/L** Analysis Date: **07-Mar-2019 16:22**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979622** 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 |
| Sulfate | 0.500 | 0.500 | | | | | | | | U |

**LCS** Sample ID: **WLCSW1-030719** Units: **mg/L** Analysis Date: **07-Mar-2019 16:37**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979623** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 21.43 | 0.500 | 20 | 0 | 107 | 80 - 120 | | | | |
| Sulfate | 20.79 | 0.500 | 20 | 0 | 104 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW1-030719** Units: **mg/L** Analysis Date: **07-Mar-2019 16:51**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979624** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.62 | 0.500 | 20 | 0 | 103 | 80 - 120 | 21.43 | 3.84 | 20 | |
| Sulfate | 20 | 0.500 | 20 | 0 | 100.0 | 80 - 120 | 20.79 | 3.91 | 20 | |

**MS** Sample ID: **HS19030301-01MS** Units: **mg/L** Analysis Date: **08-Mar-2019 00:31**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979646** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 412.7 | 5.00 | 100 | 312 | 101 | 80 - 120 | | | | |
| Sulfate | 107.6 | 5.00 | 100 | 13.91 | 93.7 | 80 - 120 | | | | |

**MS** Sample ID: **HS19030293-01MS** Units: **mg/L** Analysis Date: **07-Mar-2019 19:04**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979627** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 23.07 | 0.500 | 10 | 13.61 | 94.6 | 80 - 120 | | | | |
| Sulfate | 33.83 | 0.500 | 10 | 24.5 | 93.3 | 80 - 120 | | | | |

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021185

**QC BATCH REPORT NEW**

**Batch ID: R334216 ( 0 )** **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

**MSD** Sample ID: **HS19030301-01MSD** Units: **mg/L** Analysis Date: **08-Mar-2019 00:46**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979647** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 396.8 | 5.00 | 100 | 312 | 84.8 | 80 - 120 | 412.7 | 3.93 | 20 | |
| Sulfate | 103 | 5.00 | 100 | 13.91 | 89.1 | 80 - 120 | 107.6 | 4.34 | 20 | |

**MSD** Sample ID: **HS19030293-01MSD** Units: **mg/L** Analysis Date: **07-Mar-2019 19:19**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979628** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 23.2 | 0.500 | 10 | 13.61 | 95.9 | 80 - 120 | 23.07 | 0.553 | 20 | |
| Sulfate | 33.85 | 0.500 | 10 | 24.5 | 93.5 | 80 - 120 | 33.83 | 0.0621 | 20 | |

**The following samples were analyzed in this batch:** HS19021185-01 HS19021185-02 HS19021185-03

**ALS Houston, US** Date: 05-Apr-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** **HS19021185**

**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 Houston, US** Date: 05-Apr-19

## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| 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 | ANAB L2231 | 20-Dec-2021 |
| Kentucky | 123043 - 2018 | 30-Apr-2019 |
| Kansas | E-10352 2018-2019 | 31-Jul-2019 |
| Oklahoma | 2018-156 | 31-Aug-2019 |
| North Carolina | 624-2019 | 31-Dec-2019 |
| California | 2919, 2018-2019 | 30-Apr-2019 |
| Maryland | 343, 2018-2019 | 30-Jun-2019 |
| Arkansas | 19-028-0 | 27-Mar-2020 |

00971381

**ALS Houston, US** Date: 05-Apr-19

## Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19021185
Date/Time Received: **22-Feb-2019 09:06**
Received by: **RPG**

Checklist completed by: *Nilesh D. Ranchod* eSignature — 22-Feb-2019 Date
Reviewed by: *RJ Modashia* eSignature — 22-Feb-2019 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 ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:LHAAP46-FEB2019-ALSHT-1902-21 |
| Samplers name present on COC? | Yes ☐ | No ☑ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| 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): | 3.3C/3.3C UC/C | IR # 25 | |
| Cooler(s)/Kit(s): | 43081 | | |
| Date/Time sample(s) sent to storage: | 02/22/2019 4:00PM | | |
| 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: LHAAP46-FEB2019-ALSHT-19022-1 | TURNAROUND TIME: normal | RUSH: | Page 1 of

| PROJECT/CLIENT INFO | | | | LABORATORY | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Facility Name | Longhorn AAP | | | Lab Name | ALS Laboratories | | | | FedInvoices @aptim.com |
| Project Number | 501032 | | | Lab Contact | RJ Modashia | | | | |
| | LHAAP-46 | | | Email | RJ.Modashia@alsglobal.com | | | | Susan.Huang@aptim.com |
| Address | 1203-B East Grand Avenue | | | Address | 10450 Stanchiff Rd., Suite 210 | | | | Susan Huang |
| | PMB 202 | | | | | | | | 4005 Port Chicago Hwy |
| City | Marshall | State | TX | City | Houston | State | TX | | Concord | State | CA |
| Postal Code | 75670 | Country | USA | Postal Code | 77099 | Country | USA | | 94520 | Country | USA |
| Phone Number | 713.243.7264 | | | Phone Number | 281.575.2279 or 281.530.5656 | | | | | | |
| Project Manager | Praveen Srivastav | | | | | | | | | | |

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 (see VOC list below) | Anions (Nitrate, Sulfate, Chloride) by 9056 | Carbon Dioxide by RSK-175 | Dissolved Gases by RSK 175 | TOC by SM5310C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Containers and Preservative | | 3x40 ml VOA, HCL | 1x250ml HPDE, Ice | 3x40 ml VOA, Ice | 3x40 ml VOA, HCL, Ice | 2x40 ml Amber, H2SO4 |
| 46WW11-190221 | LHAAP 46 | 25.81 | 26.06 | | WG | 2/21/19 | 0825 | 12 | | X | X | X | X | X |
| 46WW02-190221 | LHAAP 46 | 38.28 | 38.48 | | WG | 2/21/19 | 0925 | 12 | | X | X | X | X | X |
| 46NW16-190221 | LHAAP 46 | 38.03 | 38.20 | | WG | 2/21/19 | 1025 | 12 | | X | X | X | X | X |
| TRIP BLANK | LHAAP 46 | | | | W | 2/21/19 | | 2 | | X | | | | |

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant

HS19021185

| ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME |
|---|---|---|---|---|
| Select list VOC's (TCE, cis-1,2-DCE, and VC) | Sam Basuyn / BHATE | 2/21/19 1400 | | |
| | | | RLK 02/22/19 | 02/22/19 0417:06 |

Cooler # 3081 Temp 3.3 [illegible] 25 °F/C

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

43081

**CUSTODY SEAL**

Date: 2/21/19 Time: 1400
Name: Scott Beesinger
Company: BHMP

Seal Broken By: SBN
Date: 02/22/19

43081 FEB 2 2 2019

**Must Deliver Next Business Day**
**Time and Tempature Sensitive!**

43081

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM ENVIRONMENTAL & INFRASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 28JAN19
ACTWGT: 1.00 LB MAN
CAD: 3001307CAFE3211
DIMS: 19x16x13 IN

TO **CLIENT SERVICES**
**ALS LABORATORY GROUP**
**10450 STANCLIFF ROAD**
**SUITE 210**
**HOUSTON TX 77099**
(281) 530-5656
REF: LHAAP-37/16-BO 63589-RJ

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7830 4817

FRI - 22 FEB 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

FTC 162705 21FEB19 G66A 553C2/BC3D/BC8A

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
**T:** +1 805 526 7161
www.alsglobal.com

# LABORATORY REPORT

March 7, 2019

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

**RE: HS19021185**

Dear RJ:

Enclosed are the results of the sample submitted to our laboratory on February 23, 2019. For your reference, this analysis has been assigned our service request number P1900934.

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 Hayden Akers at 9:13, March 07, 2019*

Hayden Akers
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
**T:** +1 805 526 7161
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS19021185

Service Request No: P1900934

---

## CASE NARRATIVE

The sample was received intact under chain of custody on February 23, 2019 and was 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 sample at the time of sample receipt.

Carbon Dioxide Analysis

The sample was 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 sample was 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.

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Client: ALS Laboratory Group
Project: HS19021185

Service Request No: P1900934

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

| Sample Identification(s) | Analyte(s) |
|---|---|
| P1900934-003 | Methane |

*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 |
|---|---|---|
| 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 | 2018027 |
| Minnesota DOH (NELAP) | http://www.health.state.mn.us/accreditation | 1521096 |
| 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 | 4068-006 |
| 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: HS19021185

Service Request: P1900934

Date Received: 2/23/2019
Time Received: 11:10

| Client Sample ID | Lab Code | Matrix | Date Collected | Time Collected | RSK 175 - CO2 | RSK 175 - Gases |
|---|---|---|---|---|---|---|
| 46WW11-190221 | P1900934-001 | Water | 2/21/2019 | 08:25 | X | X |
| 46WW02-190221 | P1900934-002 | Water | 2/21/2019 | 09:25 | X | X |
| 46WW16-190221 | P1900934-003 | Water | 2/21/2019 | 10:25 | X | X |

P1960934

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: 10815**

**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:** | HS19021185 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| **1.** | **HS19021185-01** | **46WW11-190221** | **Groundwater** | **21 Feb 2019 08:25** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 08 Mar 2019 |
| **2.** | **HS19021185-02** | **46WW02-190221** | **Groundwater** | **21 Feb 2019 09:25** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 08 Mar 2019 |
| **3.** | **HS19021185-03** | **46WW16-190221** | **Groundwater** | **21 Feb 2019 10:25** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 08 Mar 2019 |

**Comments:** Please analyze for the analysis listed above.
Send report to the emails shown above.

Neat & HCL vials for MEE + CO2

**QC Level:** DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 2/22/19 1800.

Received By: Kate Kaneko ALS Date/Time: 2/20/19 1110

Cooler ID(s): _____ Temperature(s): 1.4 c wet ice

# ALS Environmental
## Sample Acceptance Check Form

Client: ALS Laboratory Group  Work order: P1900934
Project: HS19021185
Sample(s) received on: 2/23/19  Date opened: 2/23/19  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: 1.4° C  Blank Temperature: ° C  Thermometer ID CO907034581  Wet Ic | | | |
| 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 |
|---|---|---|---|---|---|---|
| P1900934-001.01 | 40mL VOA NP | | 7 | | A | MR 03/04/19 |
| P1900934-001.02 | 40mL VOA NP | | | | A | |
| P1900934-001.03 | 40mL VOA NP | | | | A | |
| P1900934-001.04 | 40ml VOA HCL | | 1 | | A | MR 02/28/19 |
| P1900934-001.05 | 40ml VOA HCL | | | | A | |
| P1900934-001.06 | 40ml VOA HCL | | | | A | |
| P1900934-002.01 | 40mL VOA NP | | 6 | | A | MR 03/04/19 |
| P1900934-002.02 | 40mL VOA NP | | | | A | |
| P1900934-002.03 | 40mL VOA NP | | | | A | |
| P1900934-002.04 | 40ml VOA HCL | | 1 | | A | MR 02/28/19 |
| P1900934-002.05 | 40ml VOA HCL | | | | A | |
| P1900934-002.06 | 40ml VOA HCL | | | | A | |
| P1900934-003.01 | 40mL VOA NP | | 7 | | A | MR 03/04/19 |
| P1900934-003.02 | 40mL VOA NP | | | | A | |
| P1900934-003.03 | 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: P1900934

Project: HS19021185

Sample(s) received on: 2/23/19  Date opened: 2/23/19  by: ADAVID

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P1900934-003.04 | 40ml VOA HCL | | 1 | | A | MR 02/28/19 |
| P1900934-003.05 | 40ml VOA HCL | | | | A | |
| P1900934-003.06 | 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:** **HS19021185** ALS Project ID: P1900934

## Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 2/21/19
Analyst: Magaly Rodriguez Date Received: 2/23/19
Matrix: Water Date Analyzed: 3/4/19
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 |
|---|---|---|---|---|---|---|---|
| 46WW11-190221 | P1900934-001 | 0.050 | **680,000** | 2,000 | 1,700 | 740 | |
| 46WW02-190221 | P1900934-002 | 0.050 | **760,000** | 2,000 | 1,700 | 740 | |
| 46WW16-190221 | P1900934-003 | 0.050 | **580,000** | 2,000 | 1,700 | 740 | |
| Method Control Sample | P190304-MB | 0.10 | 860 | 1,000 | 860 | 370 | **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: P1900934
**Client Project ID:** **HS19021185** ALS Sample ID: P190304-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 3/04/19
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 | 19,300 | 20,000 | **84** | **87** | 80-122 | 4 | 12 | |

[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:** **46WW11-190221**
**Client Project ID:** **HS19021185**

ALS Project ID: P1900934
ALS Sample ID: P1900934-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/21/19
Date Received: 2/23/19
Date Analyzed: 2/28/19
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 | **56** | 1.3 | 1.0 | 0.51 | **B** |
| 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.
B = Analyte detected in both the sample and associated method blank.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS



**Client:** **ALS Laboratory Group**
**Client Sample ID:** **46WW02-190221**
**Client Project ID:** **HS19021185**

ALS Project ID: P1900934
ALS Sample ID: P1900934-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/21/19
Date Received: 2/23/19
Date Analyzed: 2/28/19
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

Page 1 of 1

**Client:** **ALS Laboratory Group**
**Client Sample ID:** **46WW16-190221**
**Client Project ID:** **HS19021185**

ALS Project ID: P1900934
ALS Sample ID: P1900934-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/21/19
Date Received: 2/23/19
Date Analyzed: 2/28/19
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 | **1.5** | 1.3 | 1.0 | 0.51 | **B** |
| 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.
B = Analyte detected in both the sample and associated method blank.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS



**Client:** **ALS Laboratory Group**
**Client Sample ID:** **Method Control Sample** ALS Project ID: P1900934
**Client Project ID:** **HS19021185** ALS Sample ID: P190228-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 2/28/19
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 | **0.54** | 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:** **HS19021185**

ALS Project ID: P1900934
ALS Sample ID: P190228-LCS
P190228-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 2/28/19
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 | 2.51 | 2.36 | **100** | **94** | 73-125 | 6 | 26 | |
| 74-85-1 | Ethene | 4.37 | 4.53 | 4.62 | **104** | **106** | 72-133 | 2 | 11 | |
| 74-84-0 | Ethane | 4.69 | 4.74 | 4.80 | **101** | **102** | 74-131 | 1 | 10 | |

$_1$ = 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\2019_03\04\
Data File : 03041906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 14:05:23
Operator : MR
Sample : P1900934-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 14:14:07 2019
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 | 1.986f | 172190 | 0.036 | ppm |
| 2) | Carbon monoxide | 1.986f | 172190 | N.D. | ppm |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm |
| 4) | Carbon dioxide | 6.024 | 3670267 | 15636.176 | ppm |
| 6) | Methane (FID) | 1.115 | 121327 | 12.842 | 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 |

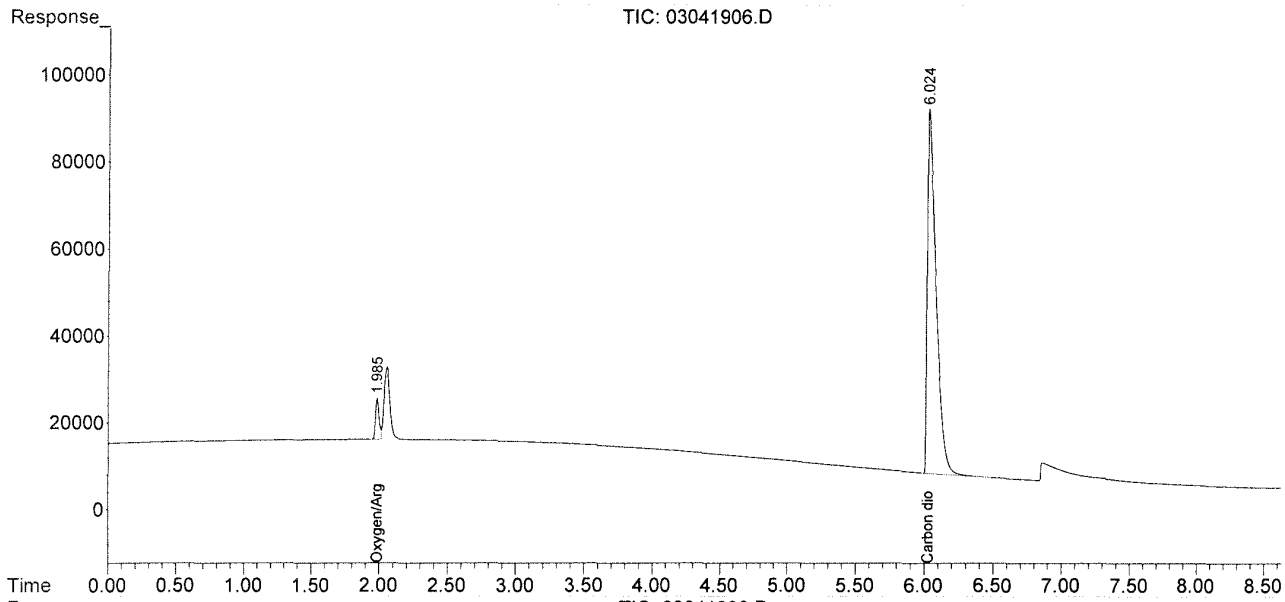
(f)=RT Delta > 1/2 Window (m)=manual int.

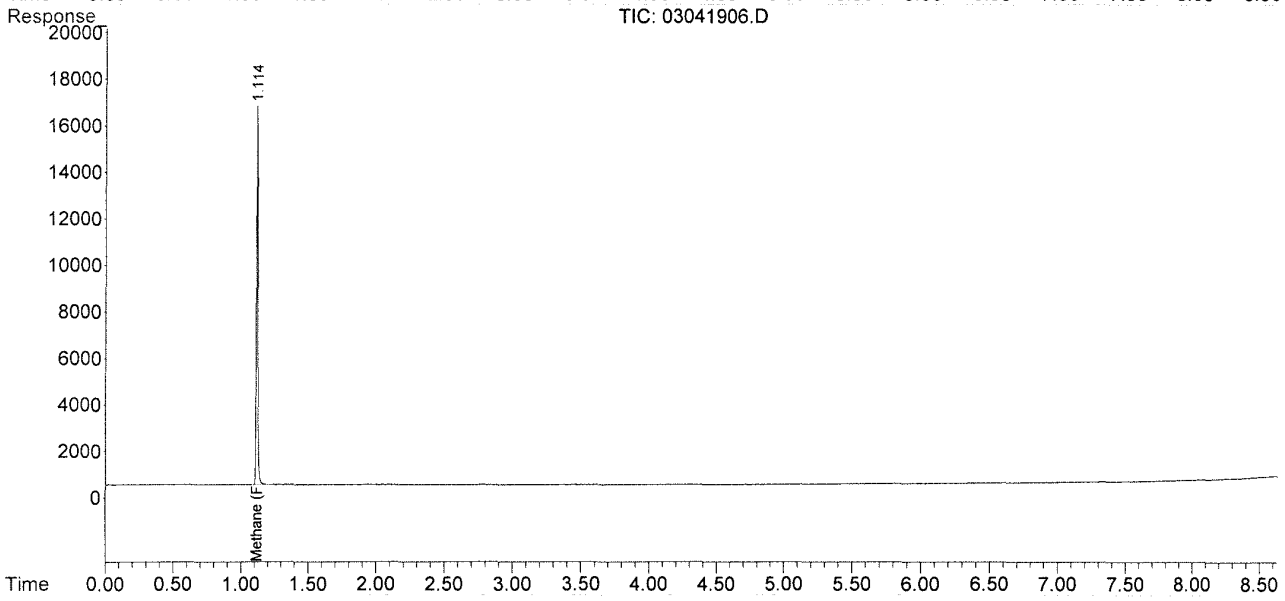
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 14:05:23
Operator : MR
Sample : P1900934-001 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 14:14:07 2019
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\2019_03\04\
Data File : 03041907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 14:23:26
Operator : MR
Sample : P1900934-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 14:31:21 2019
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 | 1.984f | 155505 | 0.033 | ppm |
| 2) | Carbon monoxide | 1.984f | 155505 | N.D. | ppm |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm |
| 4) | Carbon dioxide | 6.018 | 4062999 | 17309.306 | 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 |

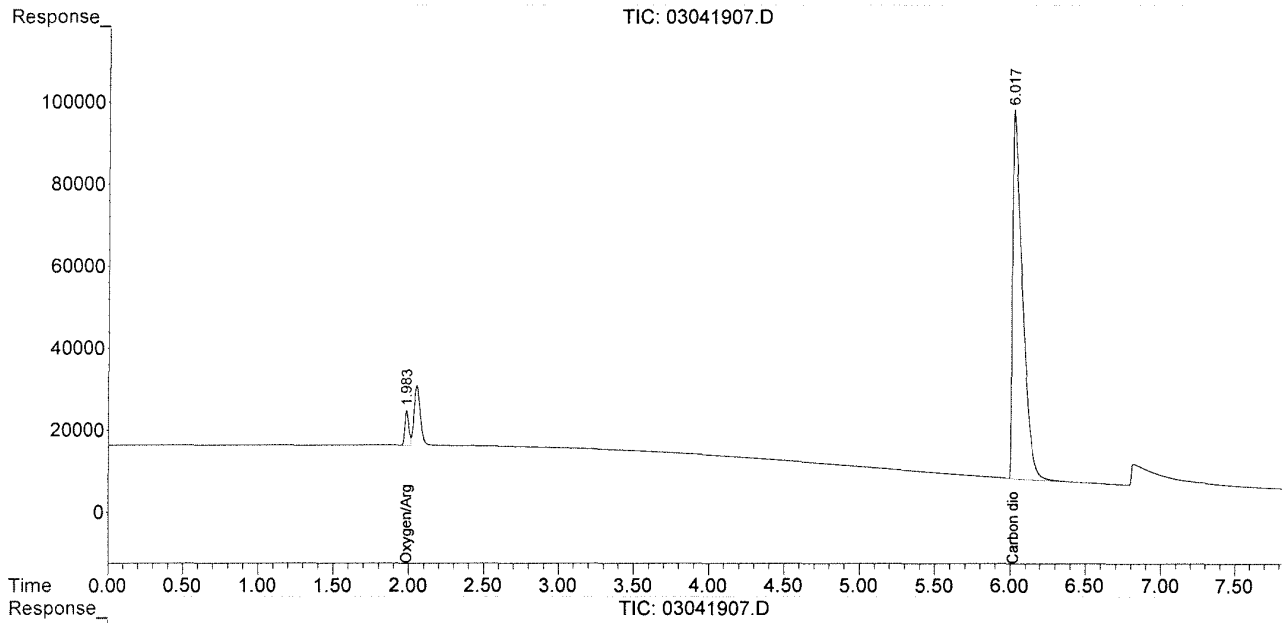
(f)=RT Delta > 1/2 Window (m)=manual int.

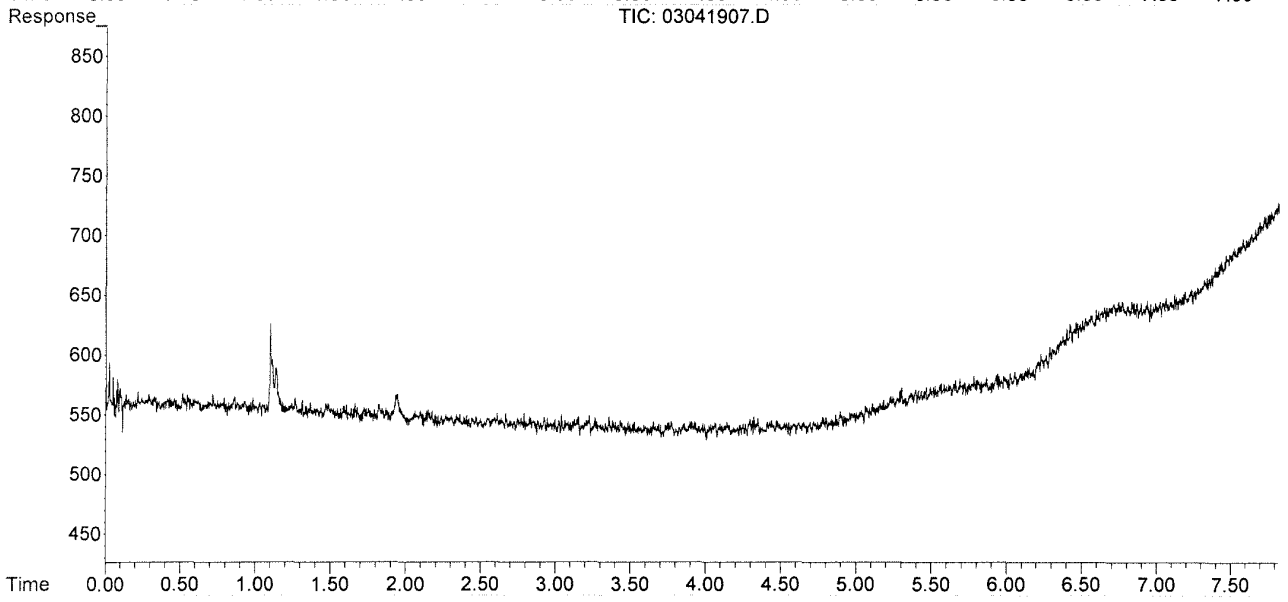
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 14:23:26
Operator : MR
Sample : P1900934-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 14:31:21 2019
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\2019_03\04\
Data File : 03041908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 14:34:25
Operator : MR
Sample : P1900934-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 14:52:29 2019
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 | 1.985f | 156669 | 0.033 | ppm |
| 2) | Carbon monoxide | 1.985f | 156669 | N.D. | ppm |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm |
| 4) | Carbon dioxide | 6.029 | 3123157 | 13305.361 | ppm |
| 6) | Methane (FID) | 1.115 | 3930 | 0.416 | 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 |

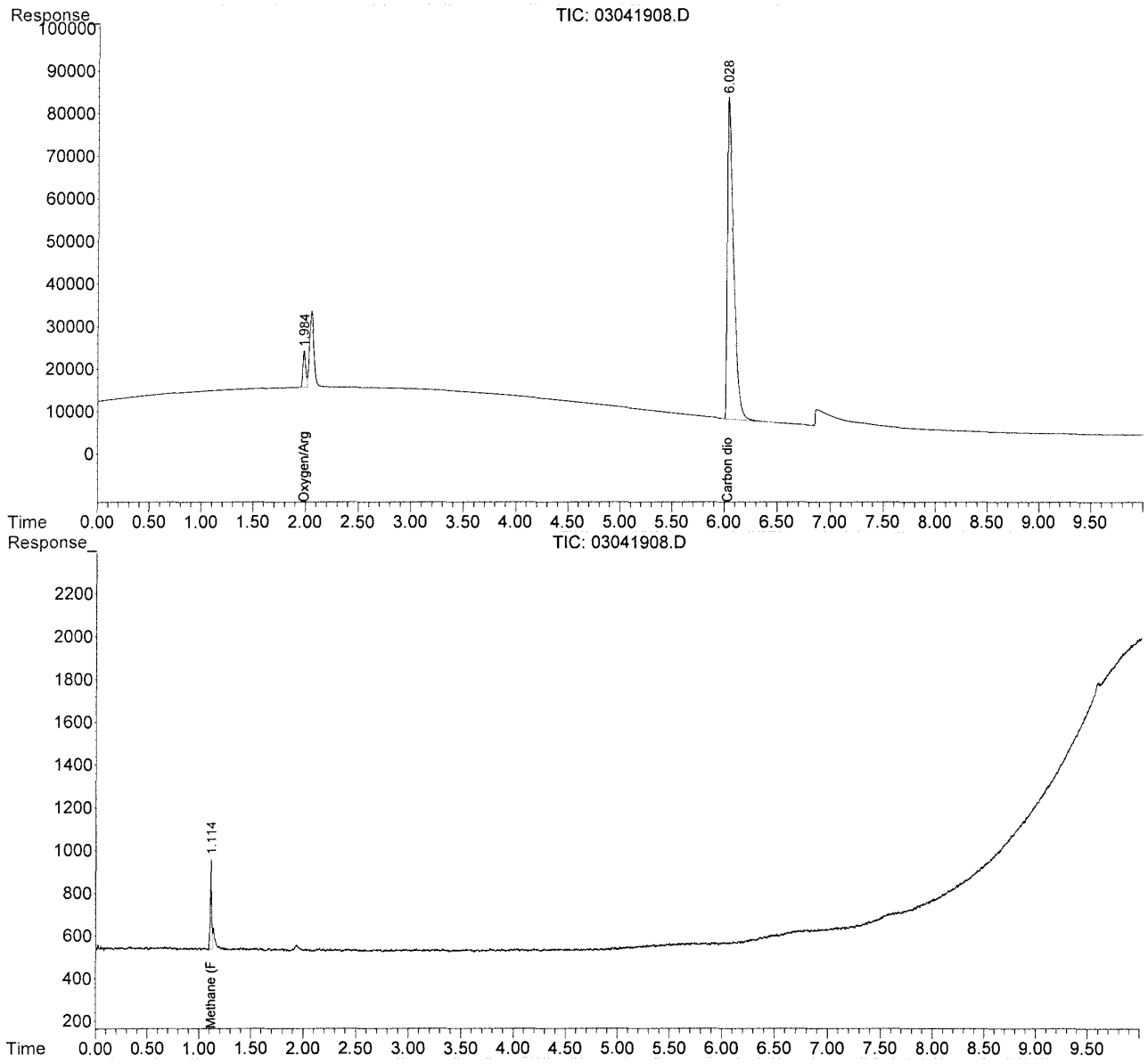
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 14:34:25
Operator : MR
Sample : P1900934-003 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 14:52:29 2019
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\2019_03\04\
Data File : 03041903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:29:41
Operator : MR
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: Mar 05 11:47:45 2019
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 | 551175 | 0.116 | ppm |
| 2) | Carbon monoxide | 1.964f | 551175 | N.D. | ppm |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm |
| 4) | Carbon dioxide | 0.000 | 0 | N.D. | ppm |
| 6) | Methane (FID) | 1.105 | 3139 | 0.332 | 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 |

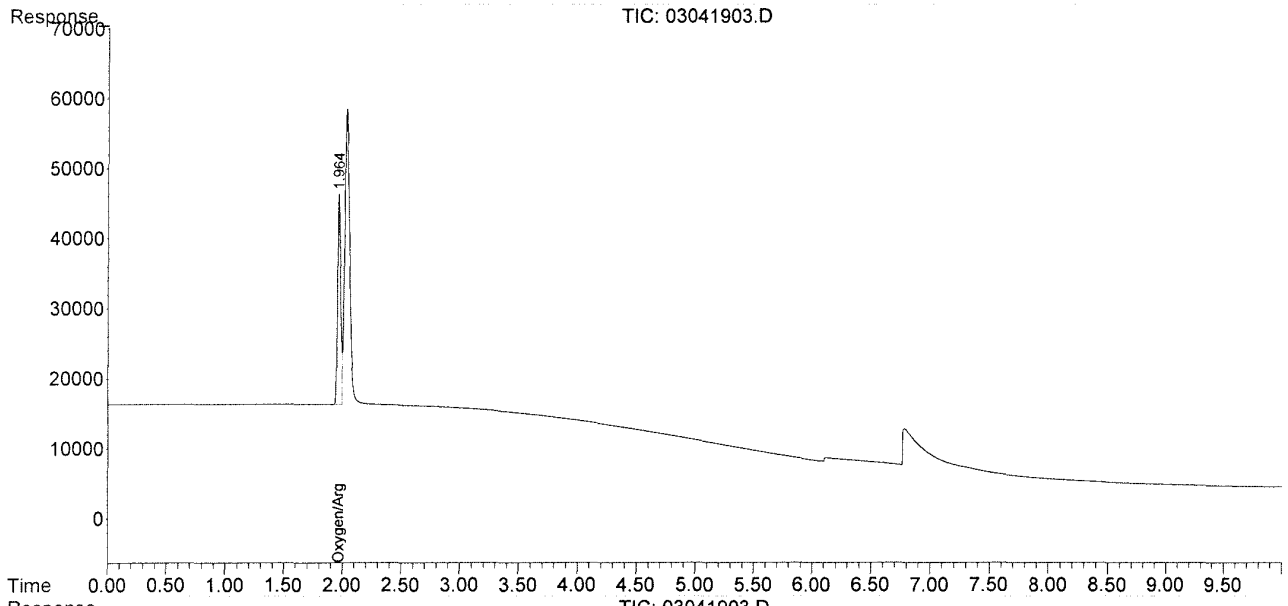
(f)=RT Delta > 1/2 Window (m)=manual int.

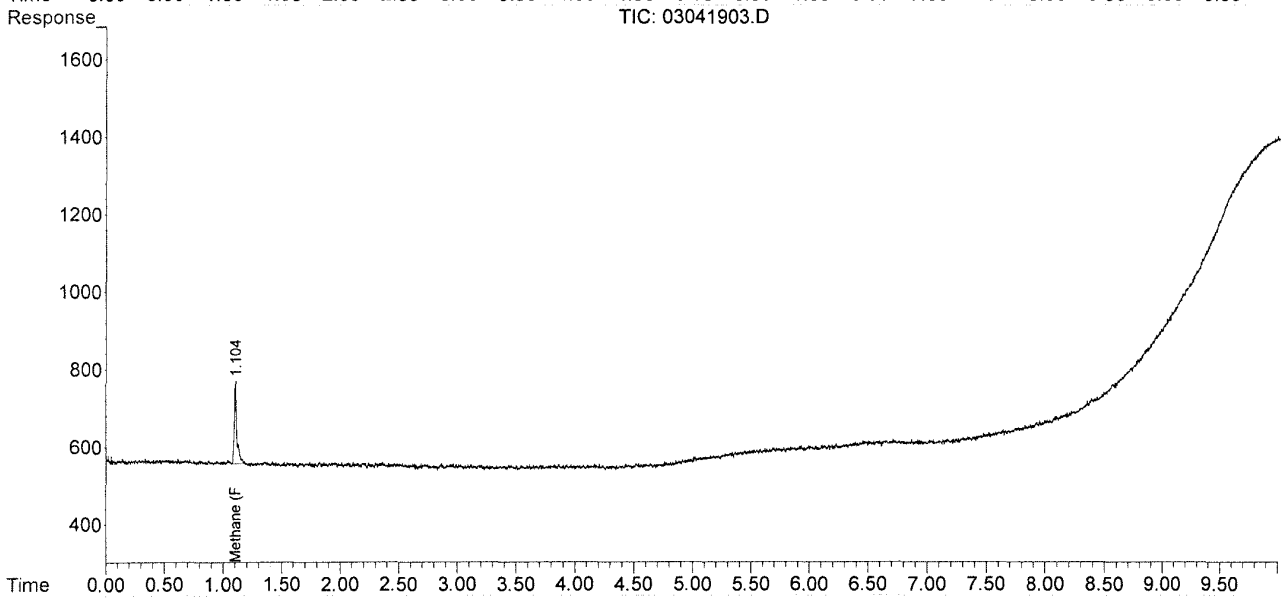
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:29:41
Operator : MR
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: Mar 05 11:47:45 2019
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\2019_03\04\
Data File : 03041904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:43:02
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:16 2019
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 | 1.962f | 1186596 | 0.249 | ppm | |
| 2) | Carbon monoxide | 1.962f | 1186596 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.080 | 207590 | 884.381 | ppm | m |
| 6) | Methane (FID) | 1.107 | 32236368 | 3412.045 | 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 | |

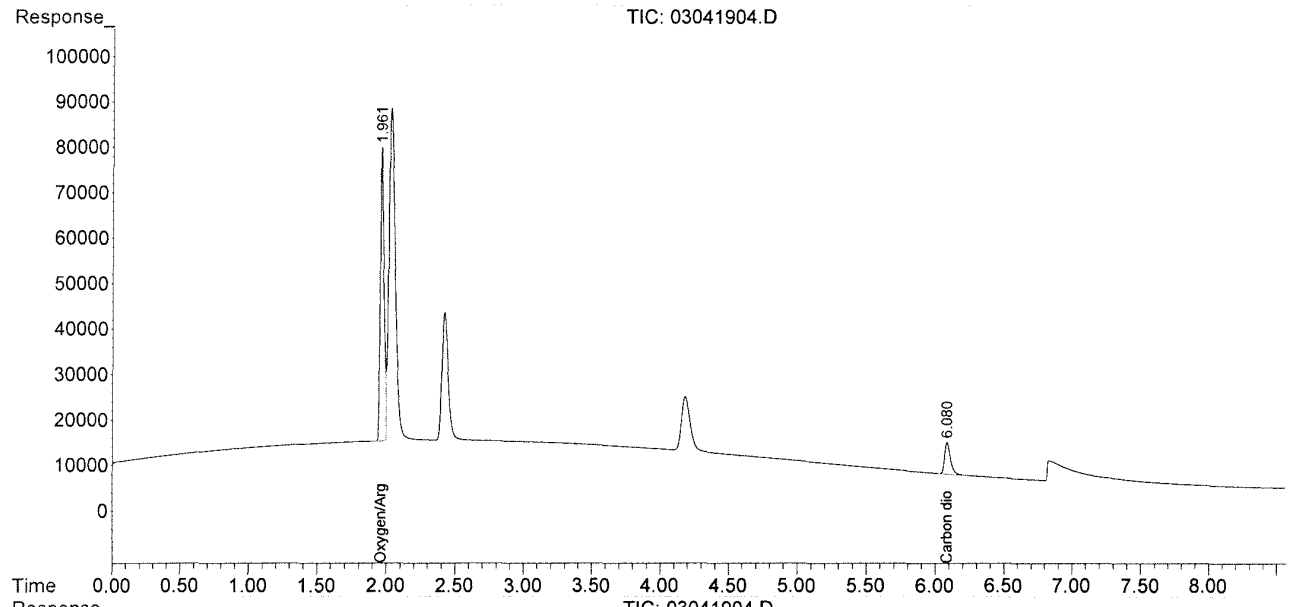
(f)=RT Delta > 1/2 Window (m)=manual int.

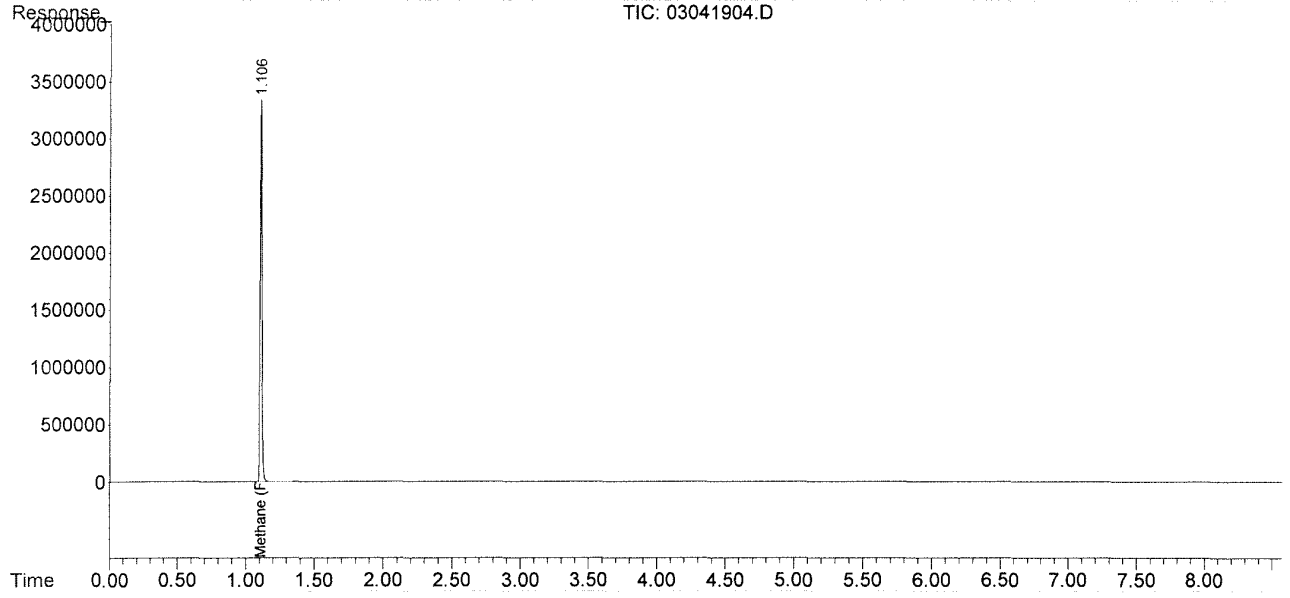
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:43:02
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:16 2019
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 :



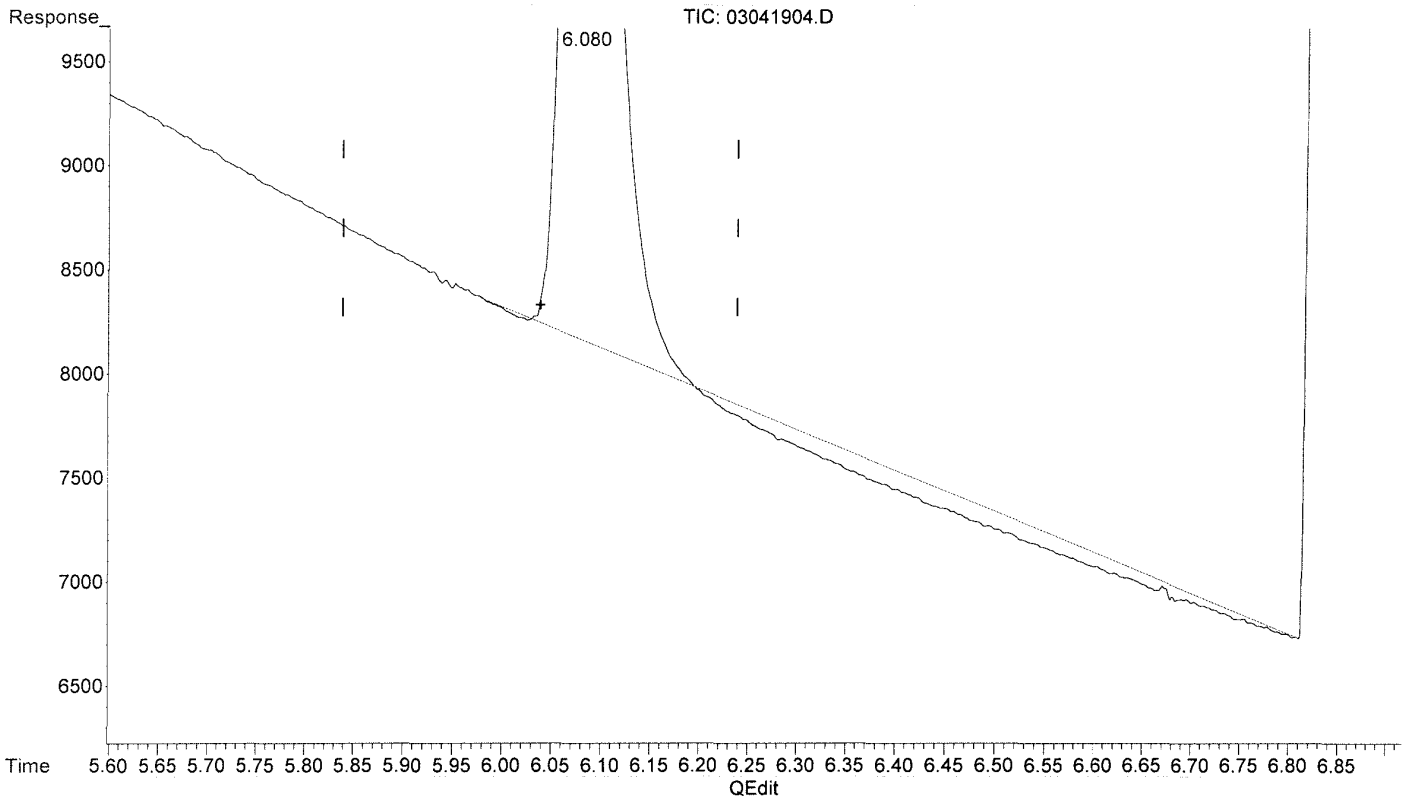



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041904.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:43:02
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:16 2019
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 :




(4) Carbon dioxide

6.081min 771.286 ppm

response 181043

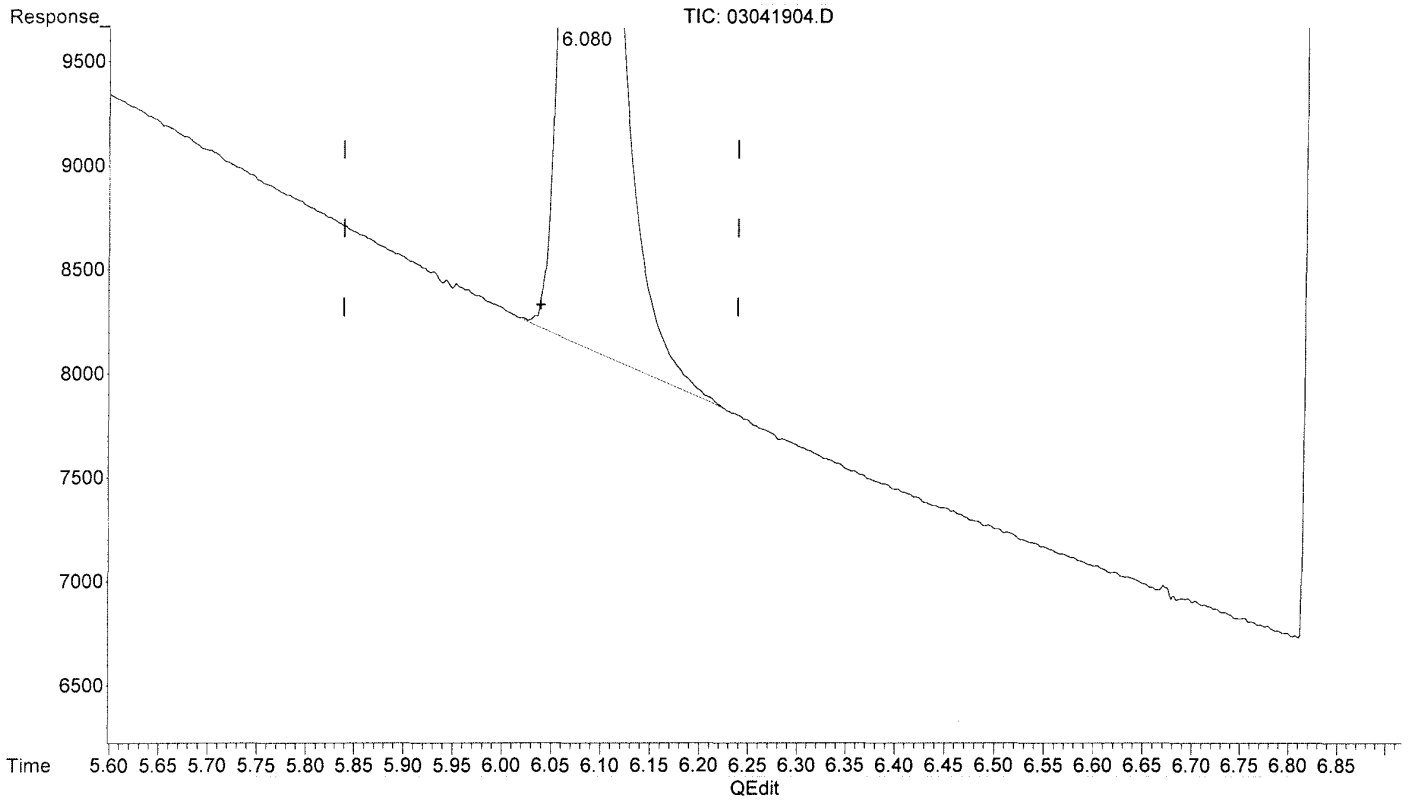
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041904.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:43:02
Operator : MR
Sample : tcd lcs s32-10081801
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:16 2019
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 :




(4) Carbon dioxide

6.080min 884.381 ppm m

response 207590

MR 3/5/19
BLC 3/5/19

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:54:41
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:51 2019
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 | 1.961f | 2055225 | 0.432 | ppm | |
| 2) | Carbon monoxide | 1.961f | 2055225 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.080 | 215157 | 916.617 | ppm | m |
| 6) | Methane (FID) | 1.108 | 32276848 | 3416.329 | 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 | |

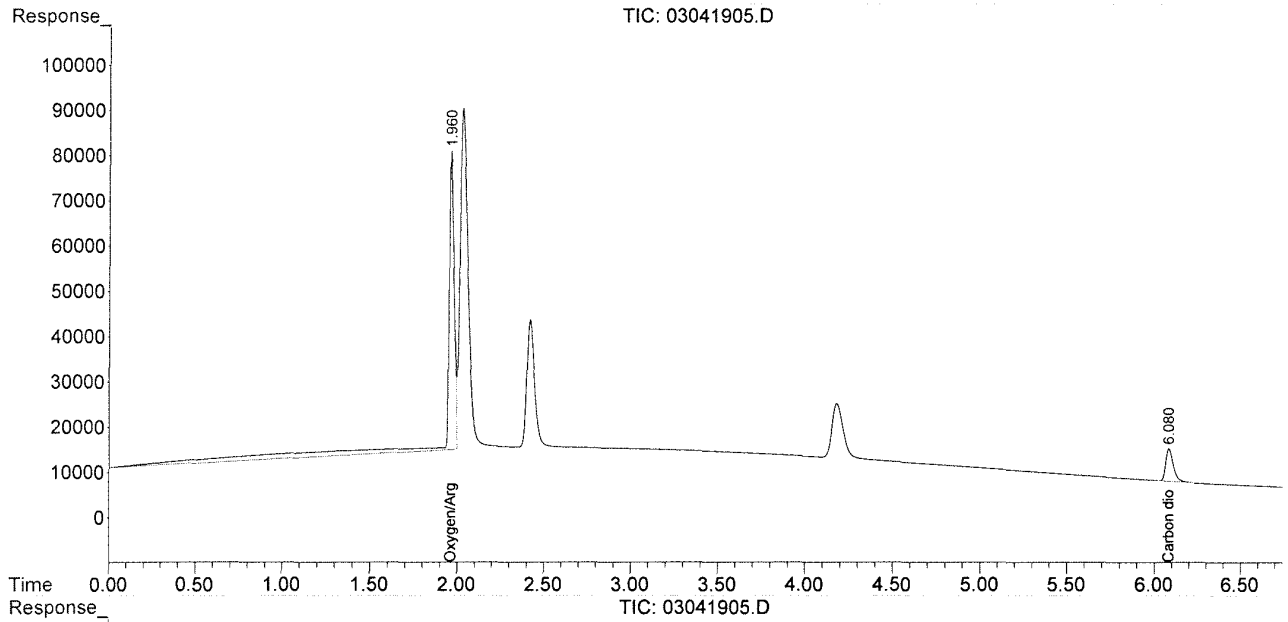
(f)=RT Delta > 1/2 Window (m)=manual int.

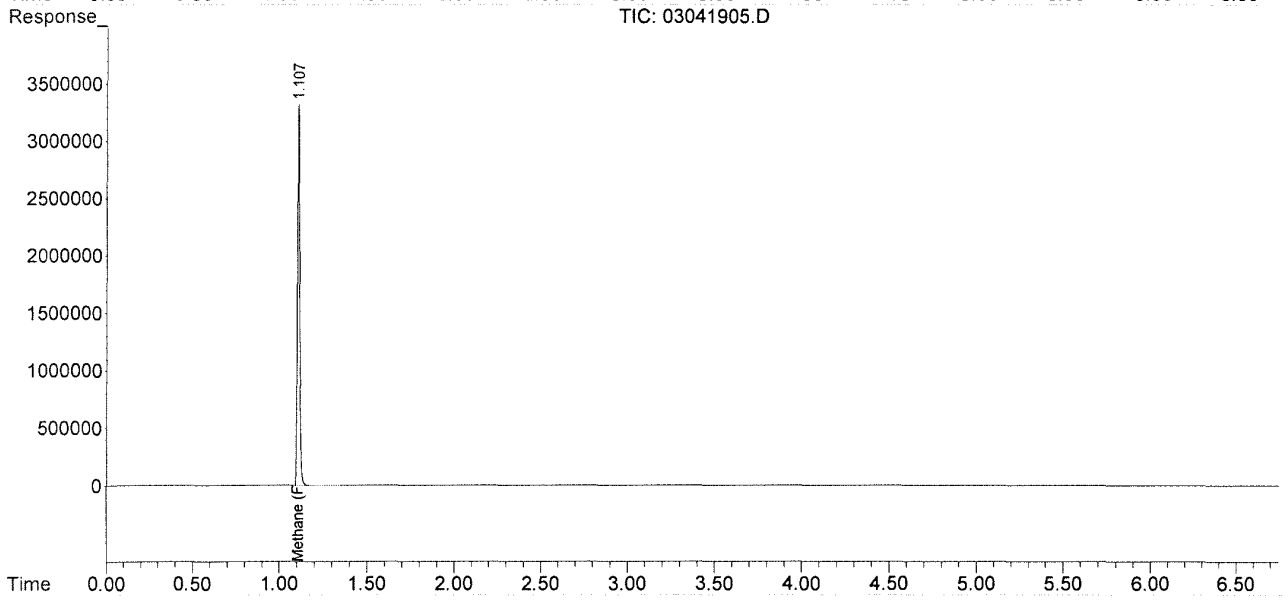
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:54:41
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:51 2019
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 :



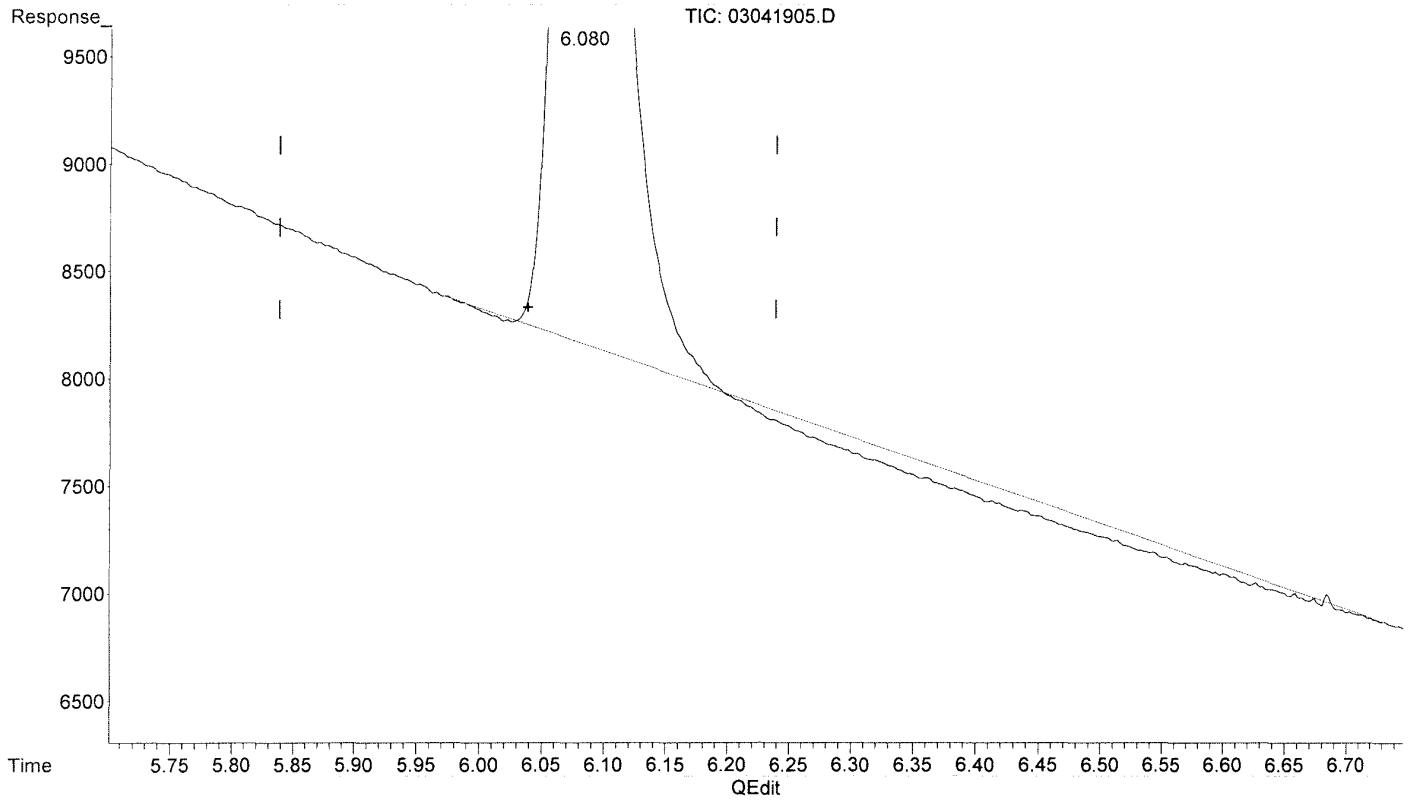



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041905.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:54:41
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:51 2019
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 :




(4) Carbon dioxide

6.081min 823.890 ppm

response 193391

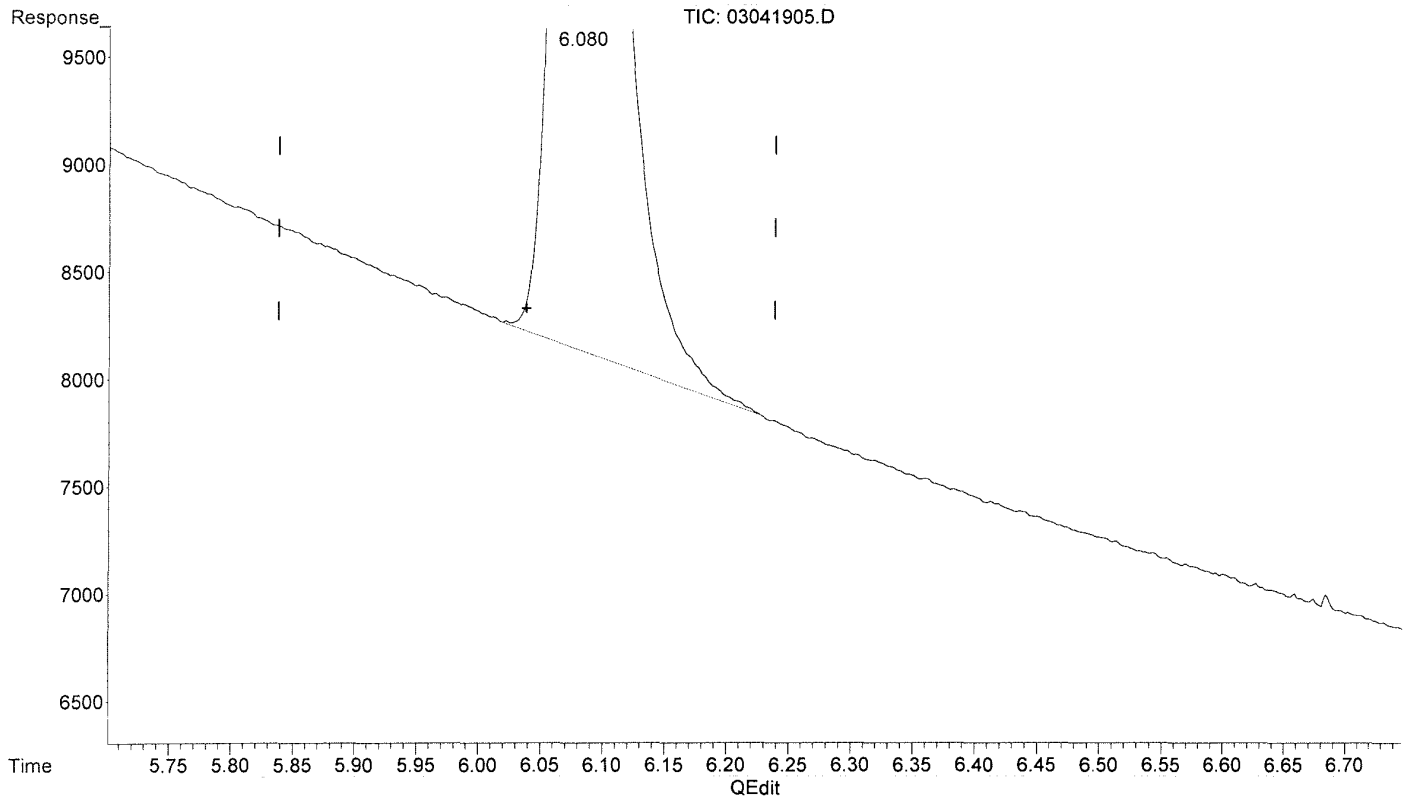
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041905.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 13:54:41
Operator : MR
Sample : tcd lcsd s32-10081801
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:48:51 2019
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 :




(4) Carbon dioxide

6.080min 916.617 ppm m

response 215157

MR 3/5/19

BLC 3/5/19

(+) = Expected Retention Time

# 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

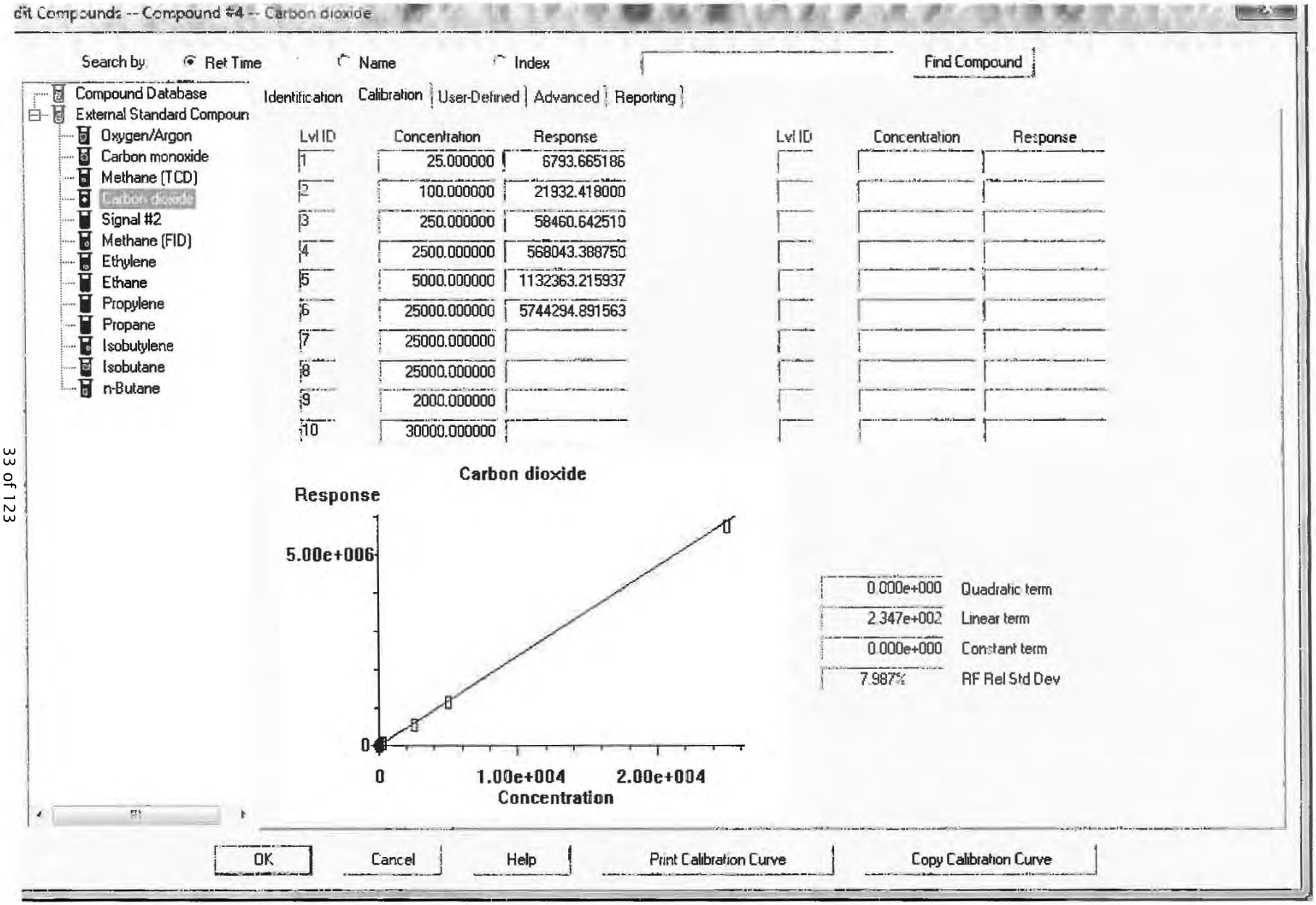
| | Compound | 1 | 2 | 3 | 4 | 5 | 6 | Avg | | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | Oxygen/Argon | 4.760 | | | | | | 4.760 | E6 | 0.00 |
| 2) | Carbon monoxide | 2.775 | | 1.066 | 0.043 | 0.033 | 0.027 | 0.657 | E6 | 170.12 |
| 3) | Methane (TCD) | | | | | | | 9.457 | | 0.00 |
| 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
Rel 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
Carbon dioxide
Response
5.00e+006
0
0
1.00e+004
2.00e+004
Concentration
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



00971416

# 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

Quantitation Report (QT Reviewed)

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 | |

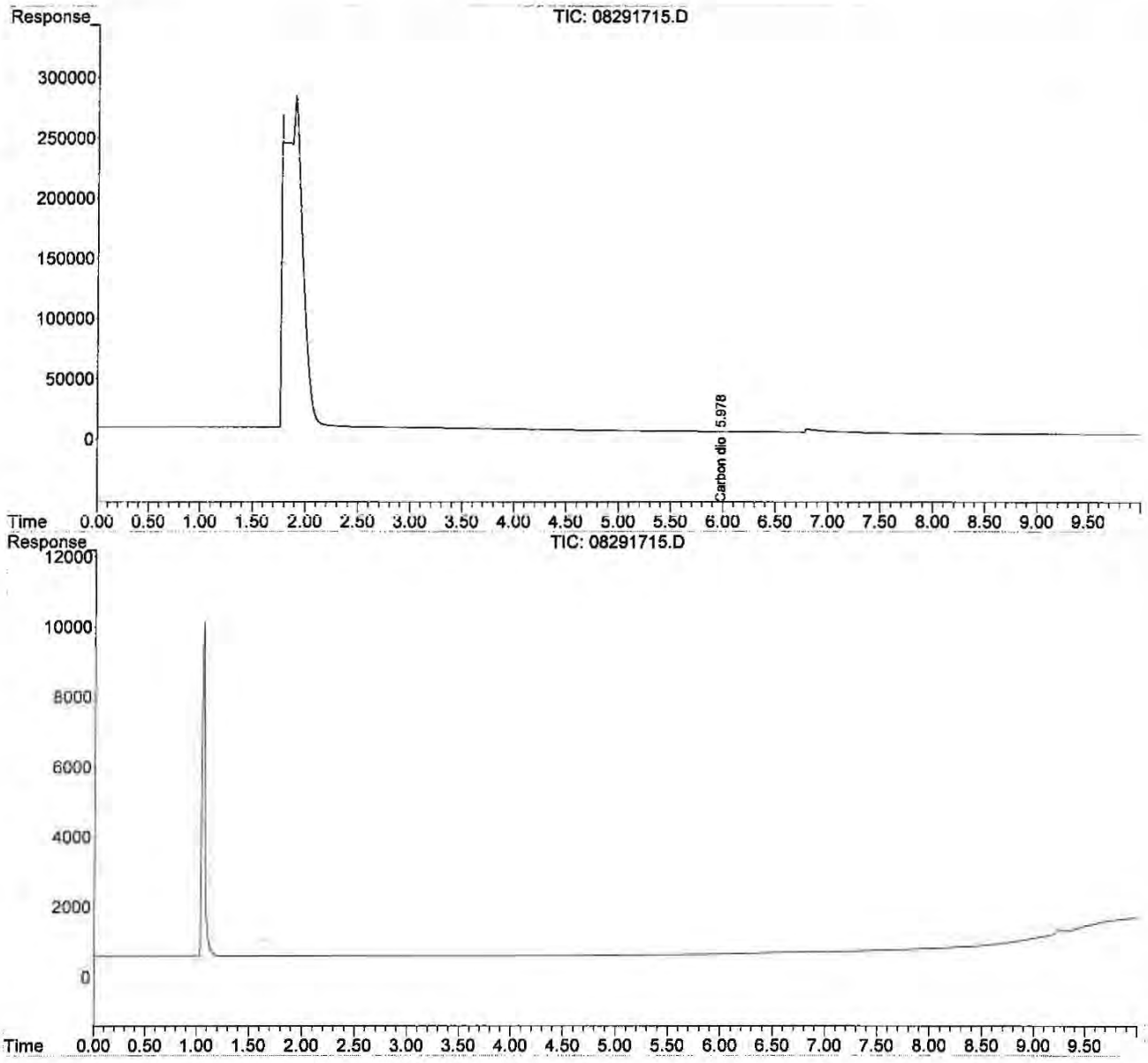
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :

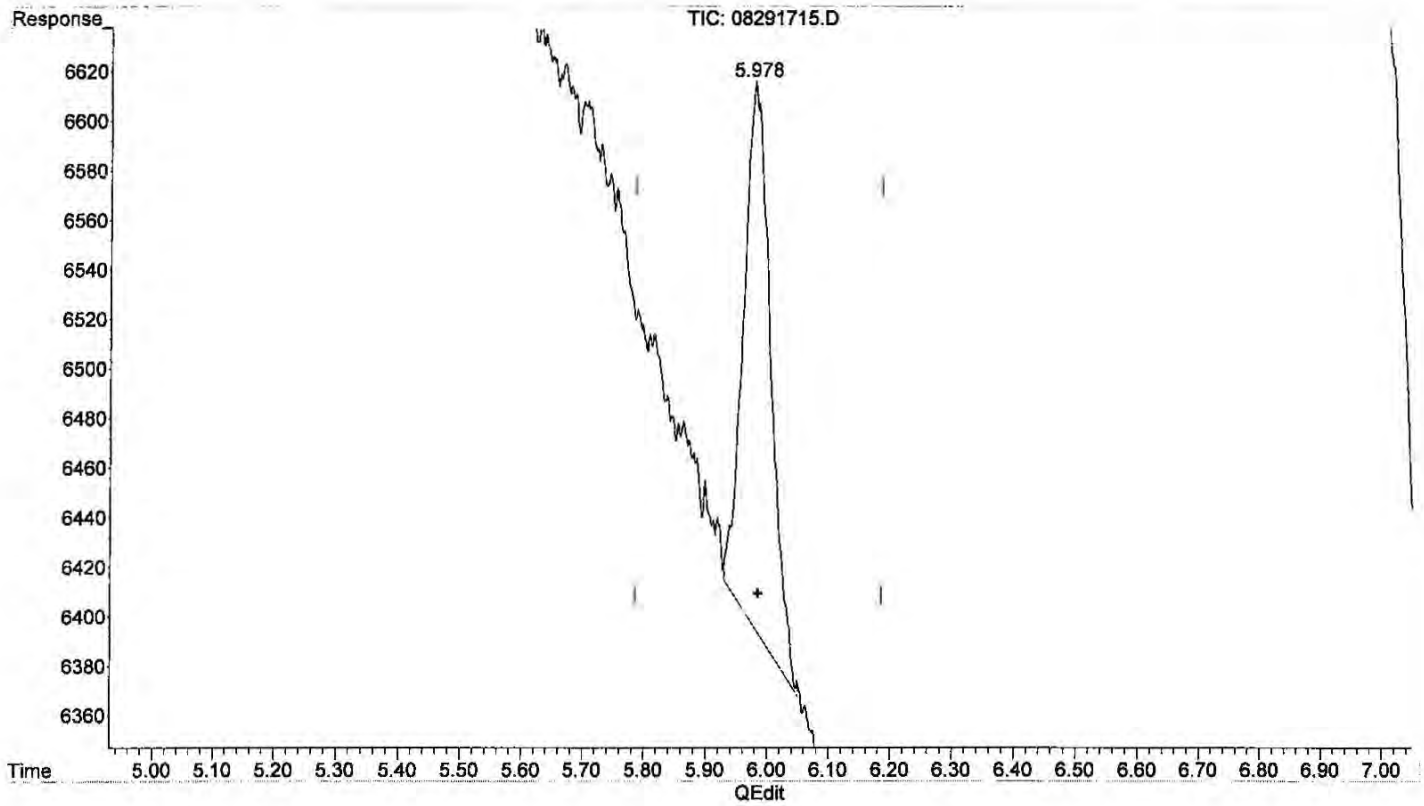


Quantitation Report (Qedit)

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 #1 Info :
Signal #2 Phase:
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

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 :

| | 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 | |

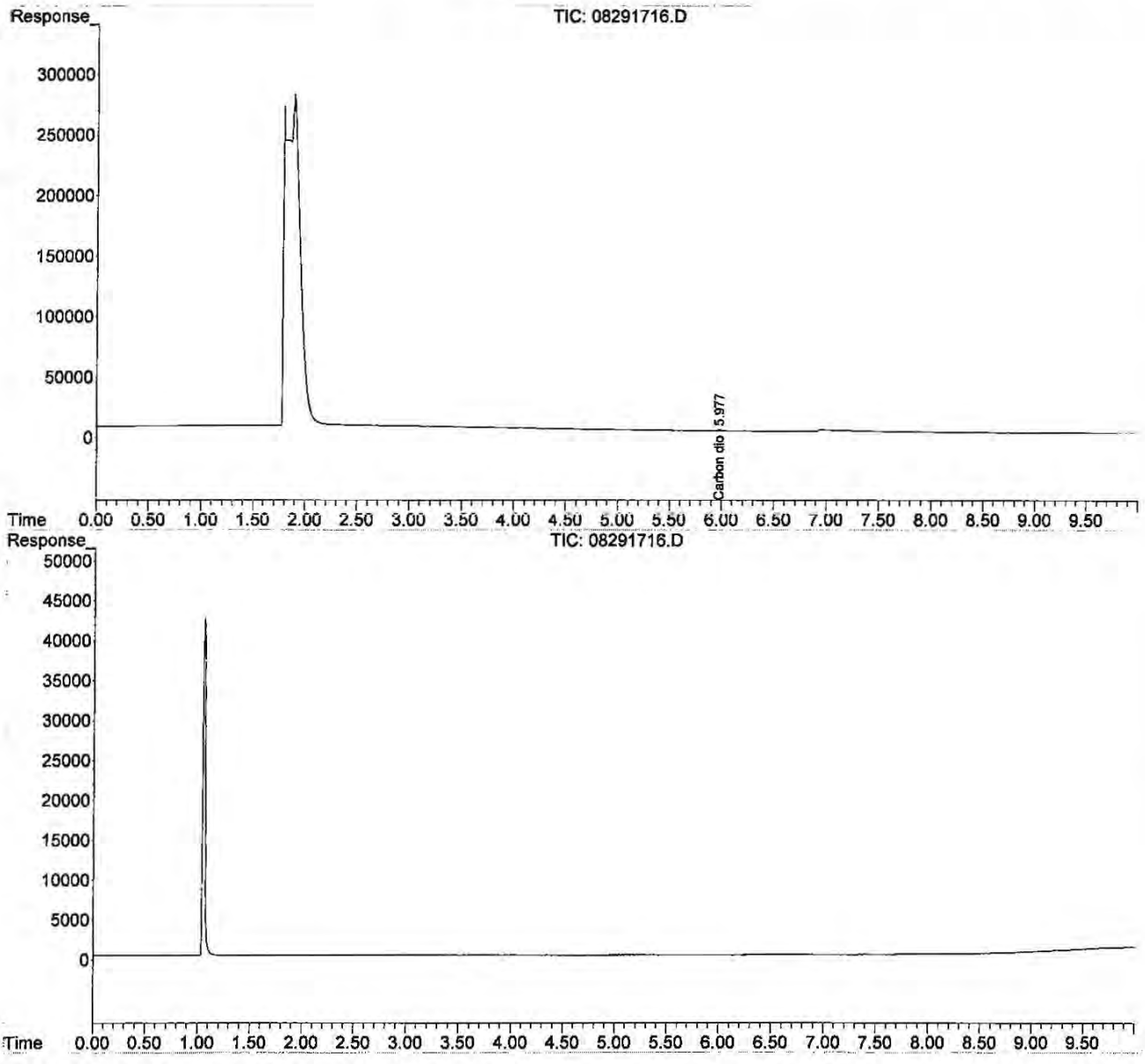
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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 :

| | 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 | |

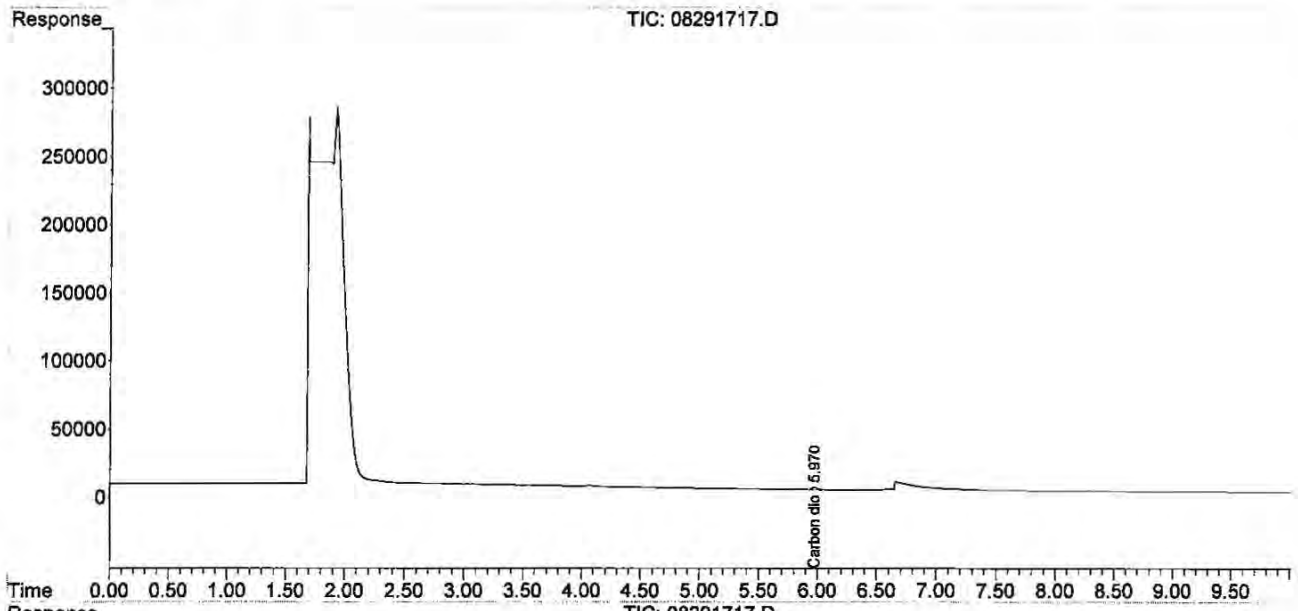
(f)=RT Delta > 1/2 Window (m)=manual int.

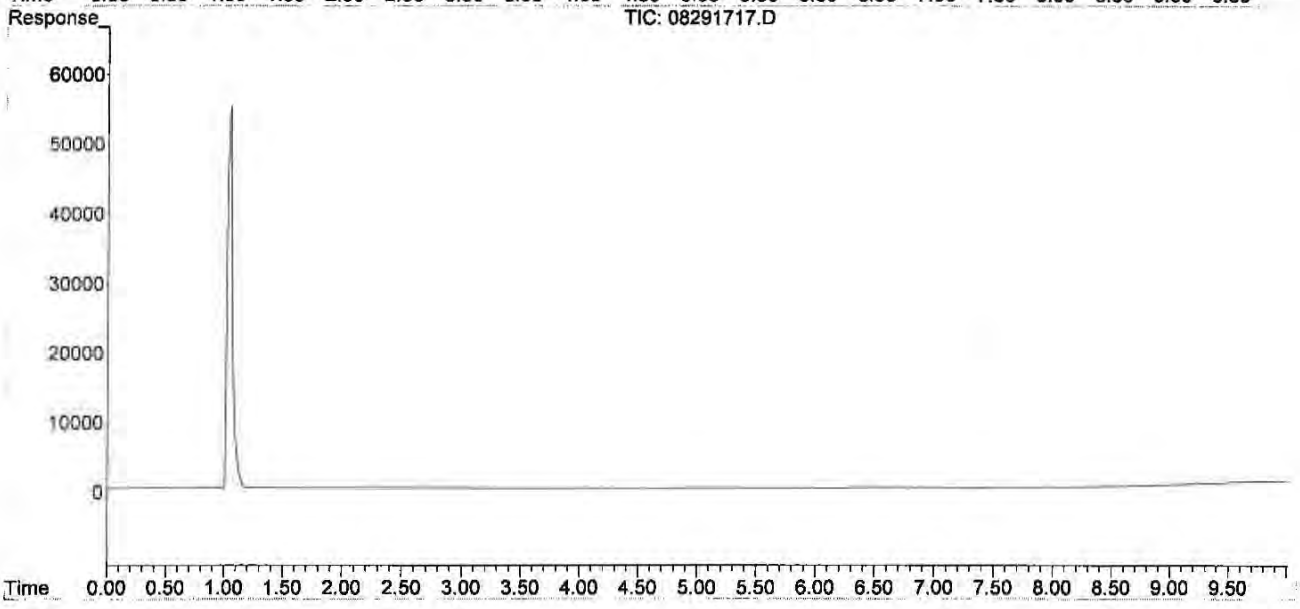
Quantitation Report (QT Reviewed)

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 :



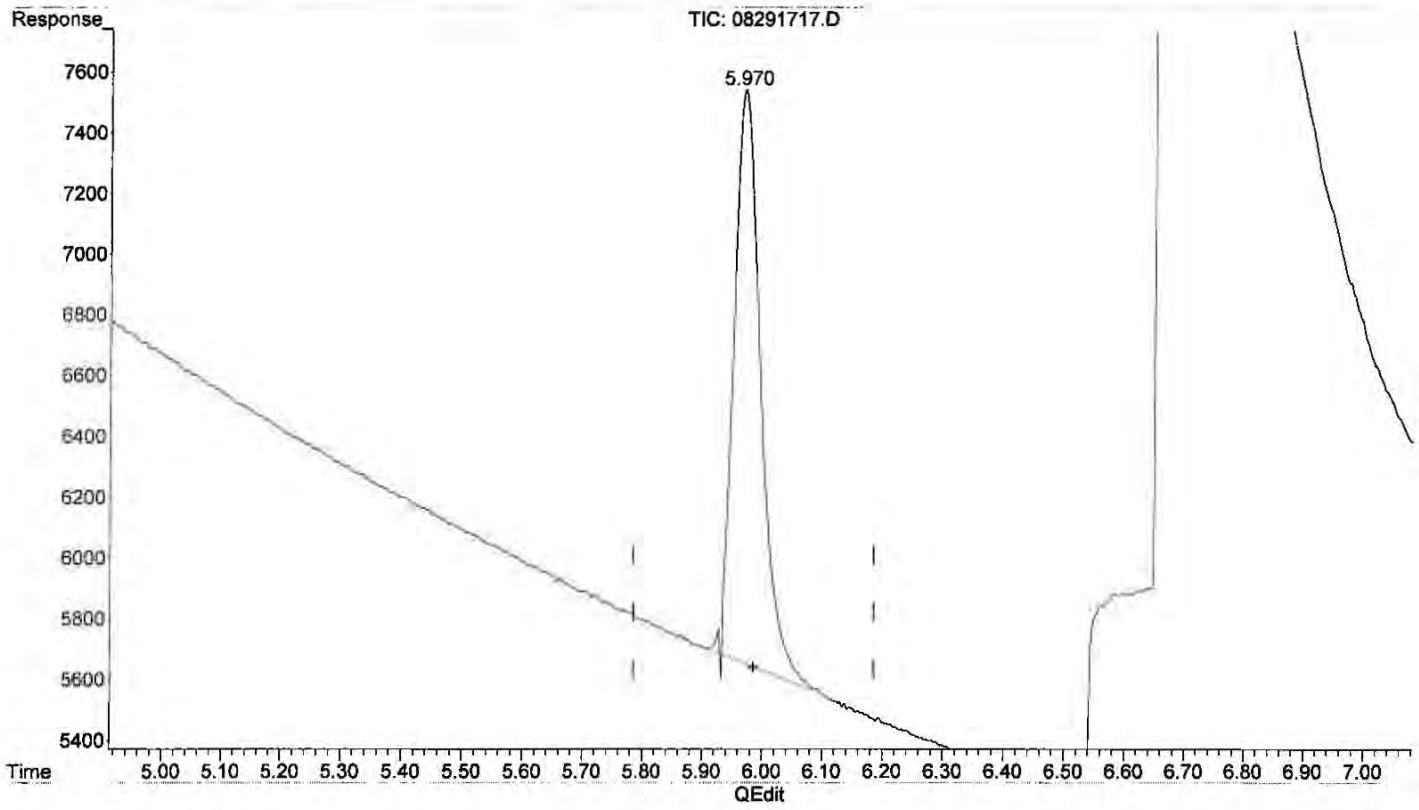



Quantitation Report (Qedit)

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
RS082817_CO2.M Wed Aug 30 13:19:20 2017

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 | |

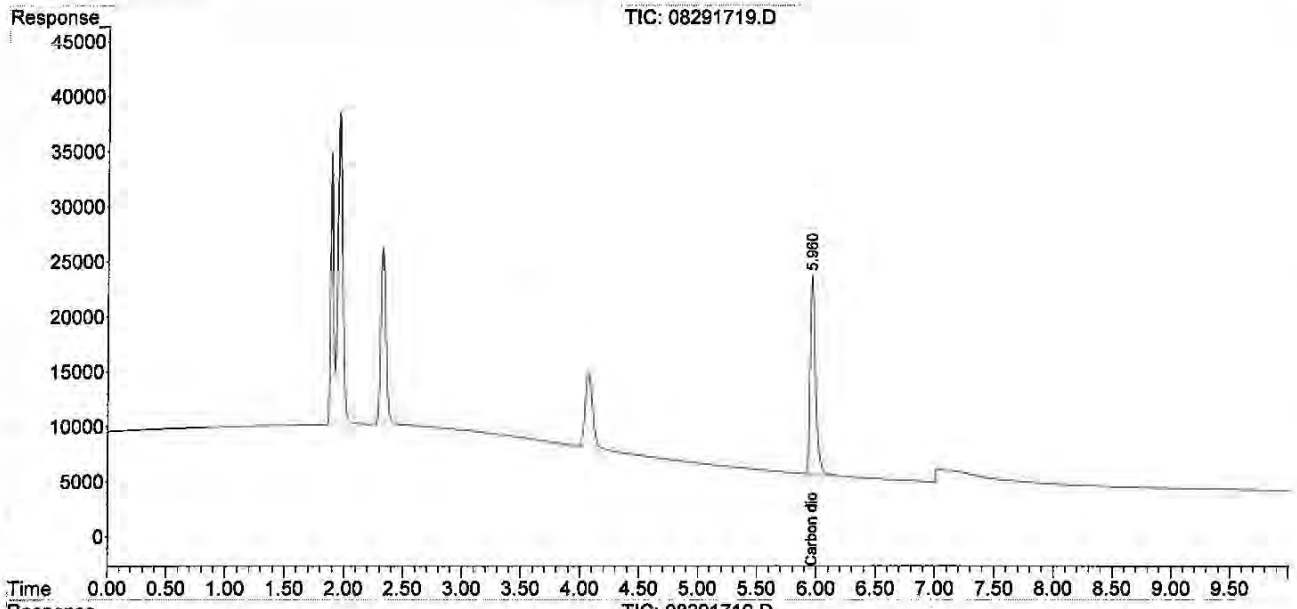
(f)=RT Delta > 1/2 Window (m)=manual int.

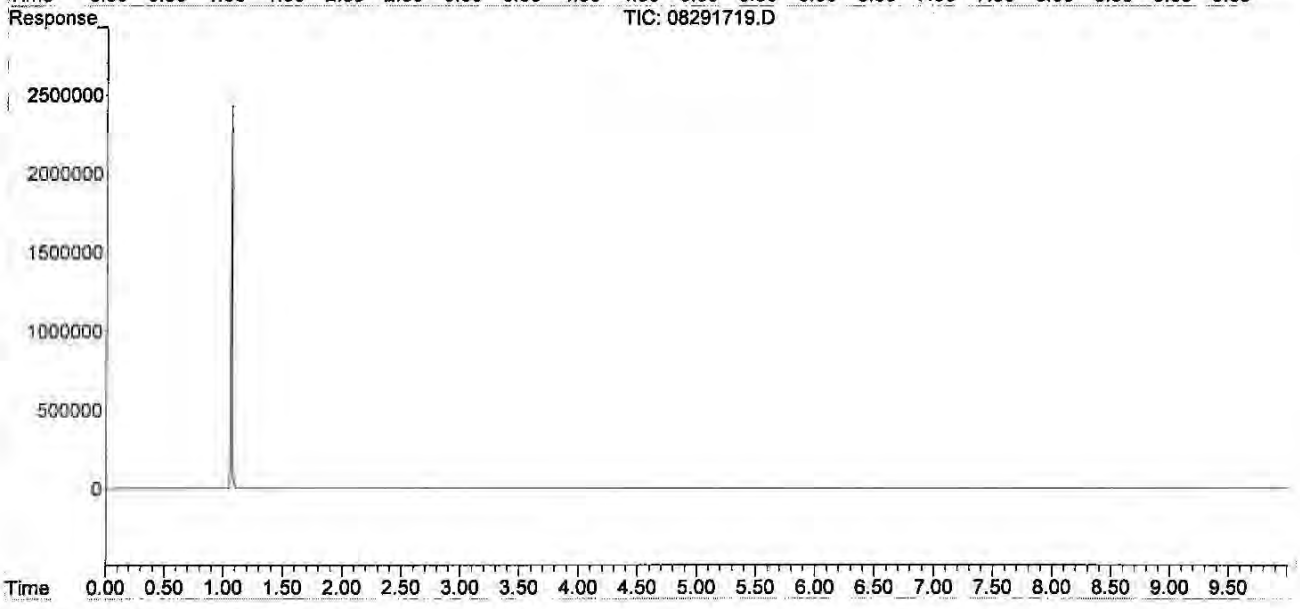
Quantitation Report (QT Reviewed)

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 :



Quantitation Report (QT Reviewed)

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 | |

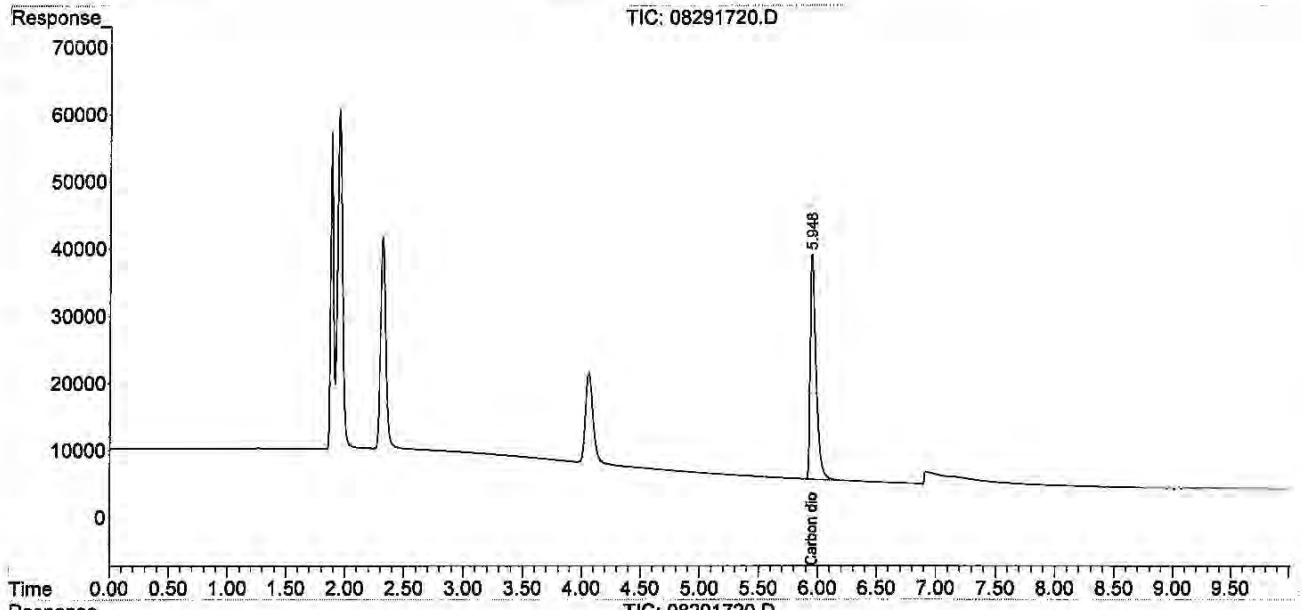
(f)=RT Delta > 1/2 Window (m)=manual int.

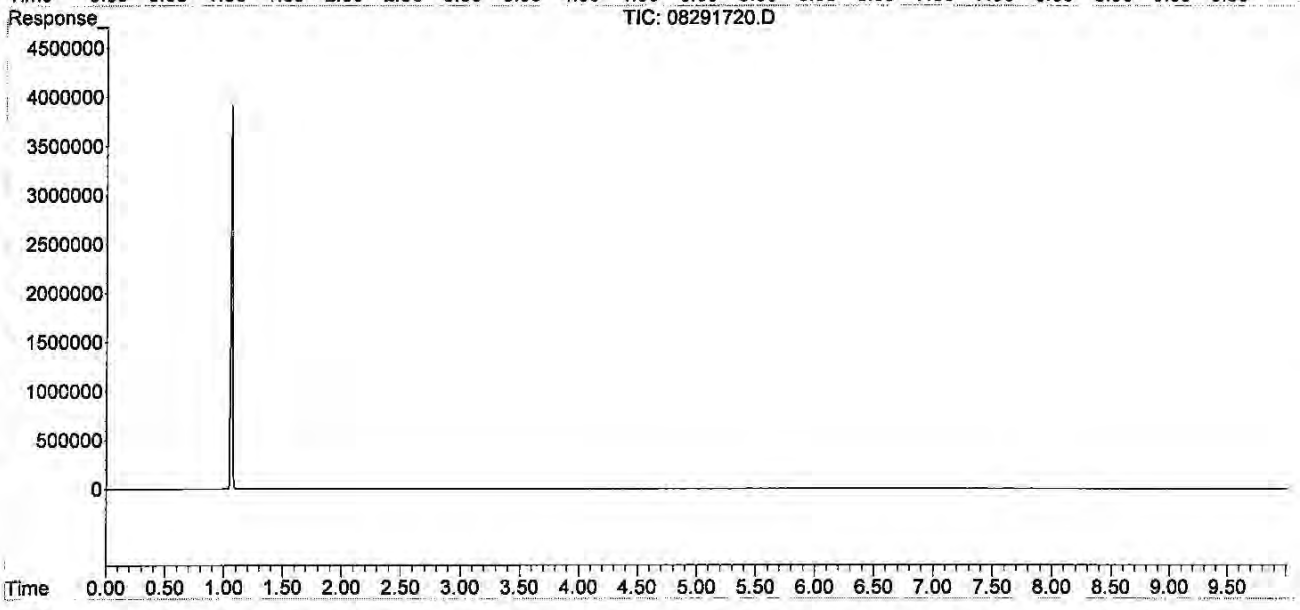
Quantitation Report (QT Reviewed)

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 | |

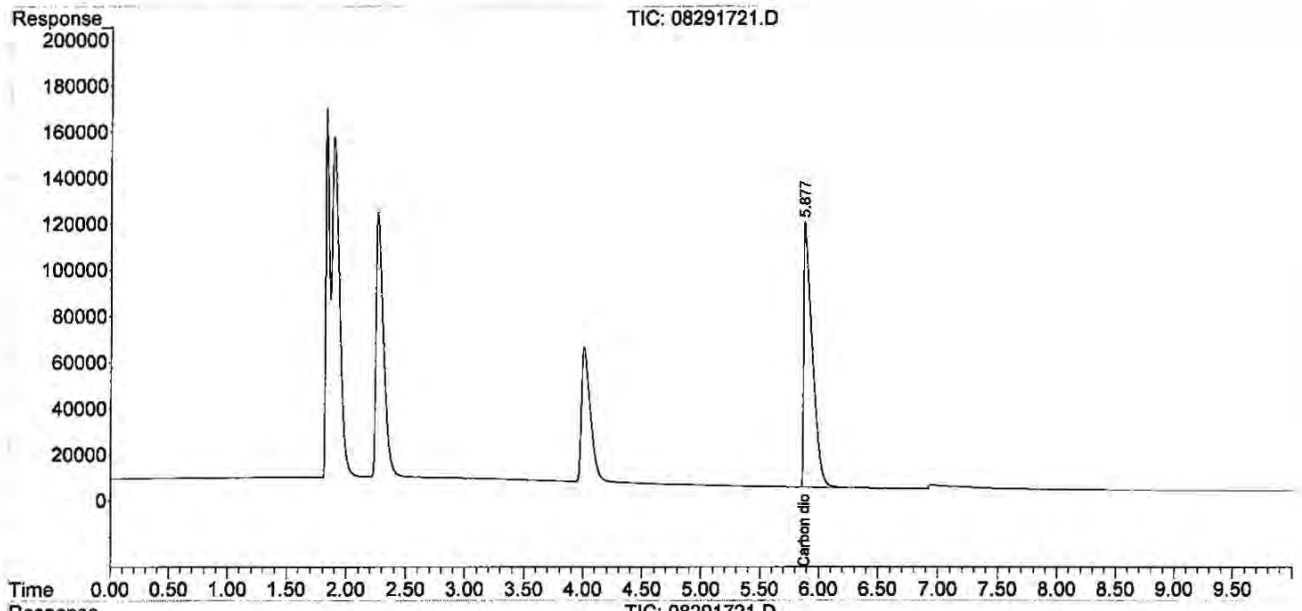
(f)=RT Delta > 1/2 Window (m)=manual int.

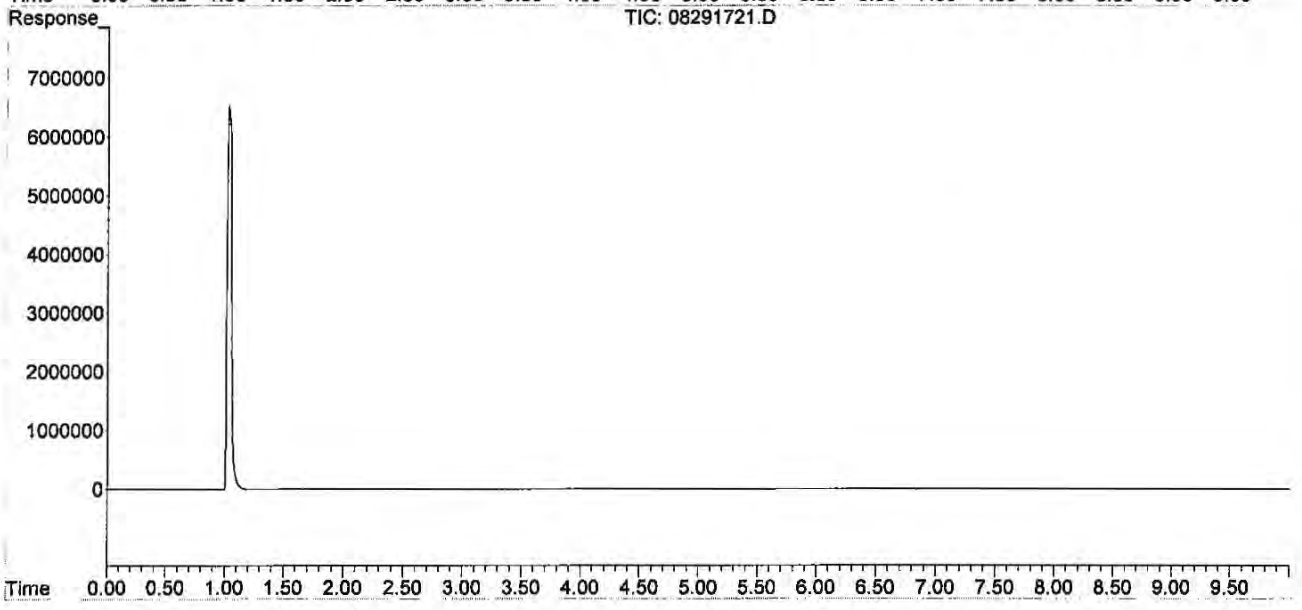
Quantitation Report (QT Reviewed)

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.

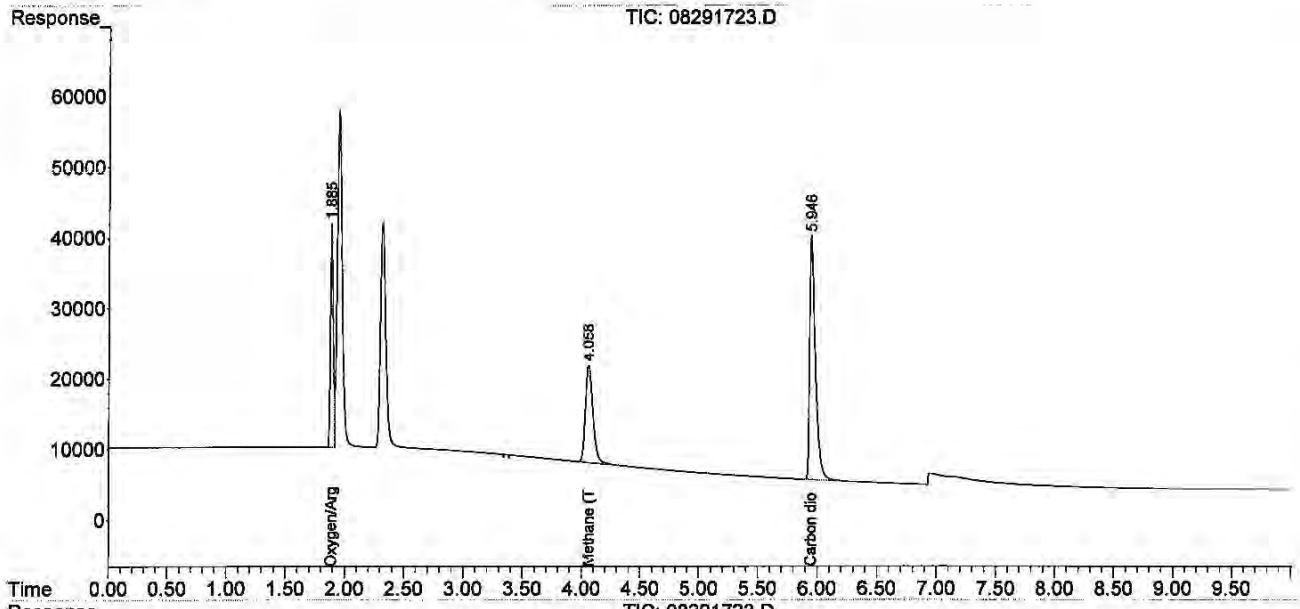
9/4/17

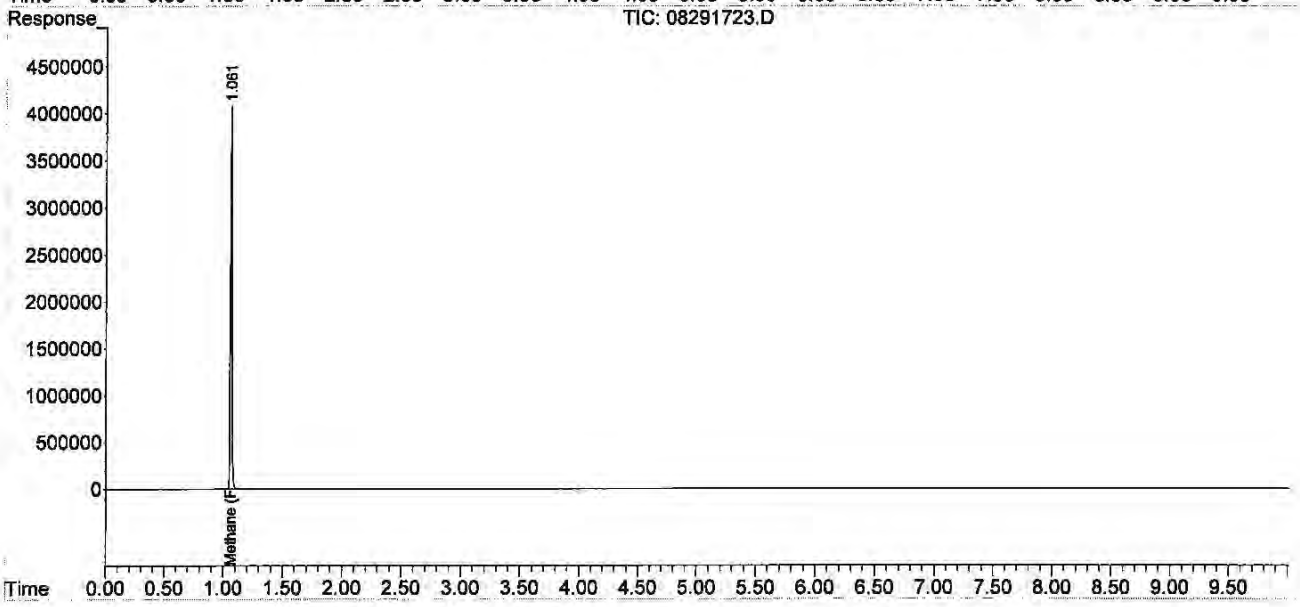
Quantitation Report (QT Reviewed)

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 :



## *ALS Environmental*

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1900934
Sample Vol. (ml) : 32.00 ml
Analyst : MR
Date Analysis : 03/04/19
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 | Inj. Vol. | Carbon Dioxide |
|---|---|---|
| std s32-01311901 | 0.100 | 4975.601 |
| ACTUAL | | 5000.00 |
| %Difference | | 0.5% |
| mcs 0.1ml | 0.100 | 0.000 |
| rb 0.1ml | 0.100 | 0.000 |
| tcd lcs s32-10081801 | 0.100 | 884.381 |
| tcd lcsd s32-10081801 | 0.100 | 916.617 |
| P1900934-001 50ul | 0.050 | 15636.18 |
| P1900934-002 50ul | 0.050 | 17309.31 |
| P1900934-003 50ul | 0.050 | 13305.36 |

### FINAL HEAD SPACE RESULT (ppm)

| | Carbon Dioxide |
|---|---|
| **WWt.** | 44.10 |
| **HENRY'S CONSTANT** | 1.42E+03 |
| **RL** | 100.00 |
| mcs 0.1ml | 0.000 |
| tcd lcs s32-10081801 | 8843.810 |
| tcd lcsd s32-10081801 | 9166.170 |
| P1900934-001 50ul | 312723.52 |
| P1900934-002 50ul | 346186.12 |
| P1900934-003 50ul | 266107.22 |

| | |
|---|---|
| std s32-01311901 | 4941.240 |
| ACTUAL | 5000.00 |
| %Difference | 1.2% |





00971434

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 12:24:41
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:47:03 2019
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 | 1.967f | 592447 | 0.124 | ppm | |
| 2) | Carbon monoxide | 1.967f | 592447 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.058 | 1167919 | 4975.601 | ppm | m |
| 6) | Methane (FID) | 1.105 | 36854181 | 3900.815 | 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 | |

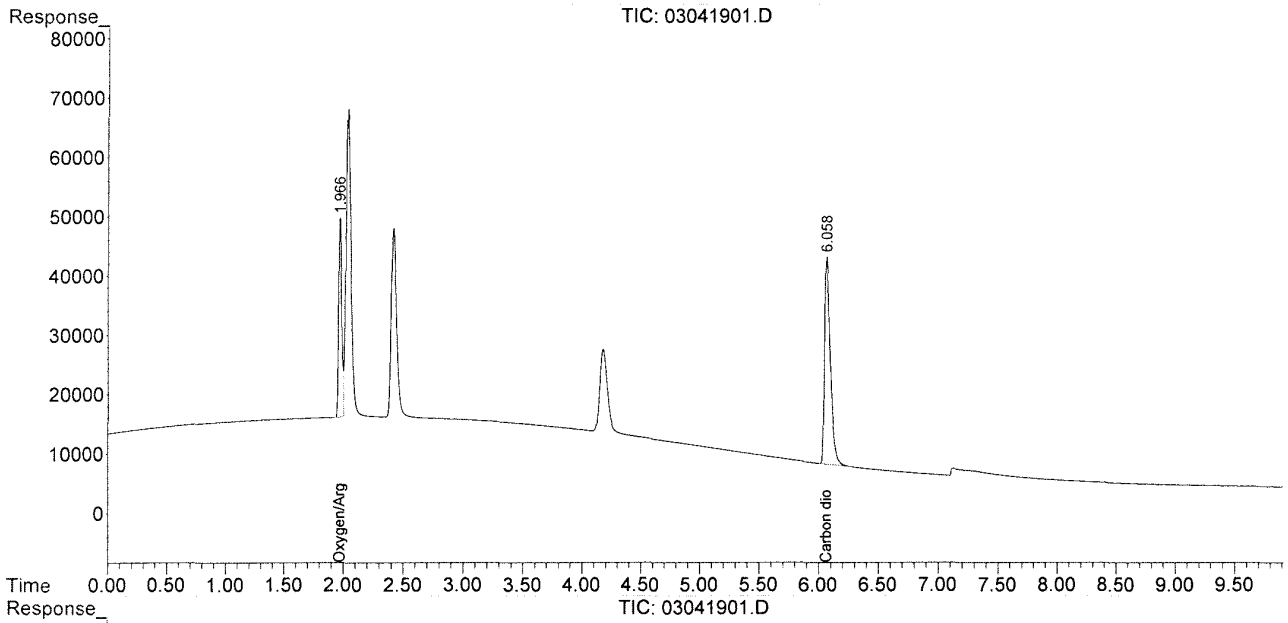
(f)=RT Delta > 1/2 Window (m)=manual int.

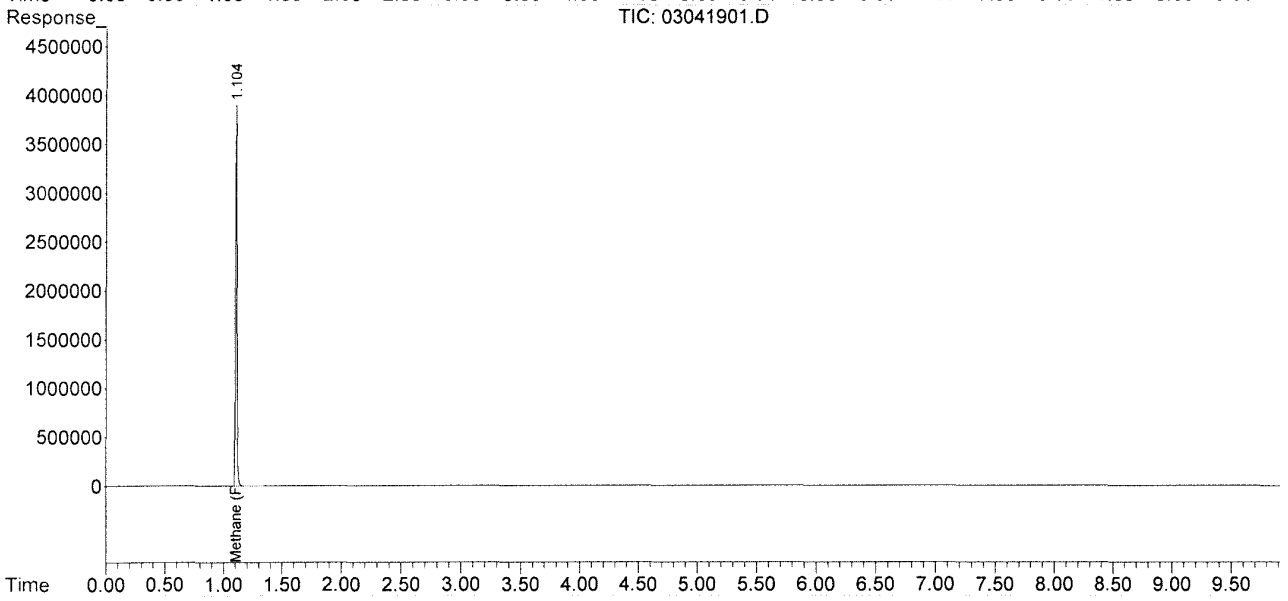
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 12:24:41
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:47:03 2019
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 :



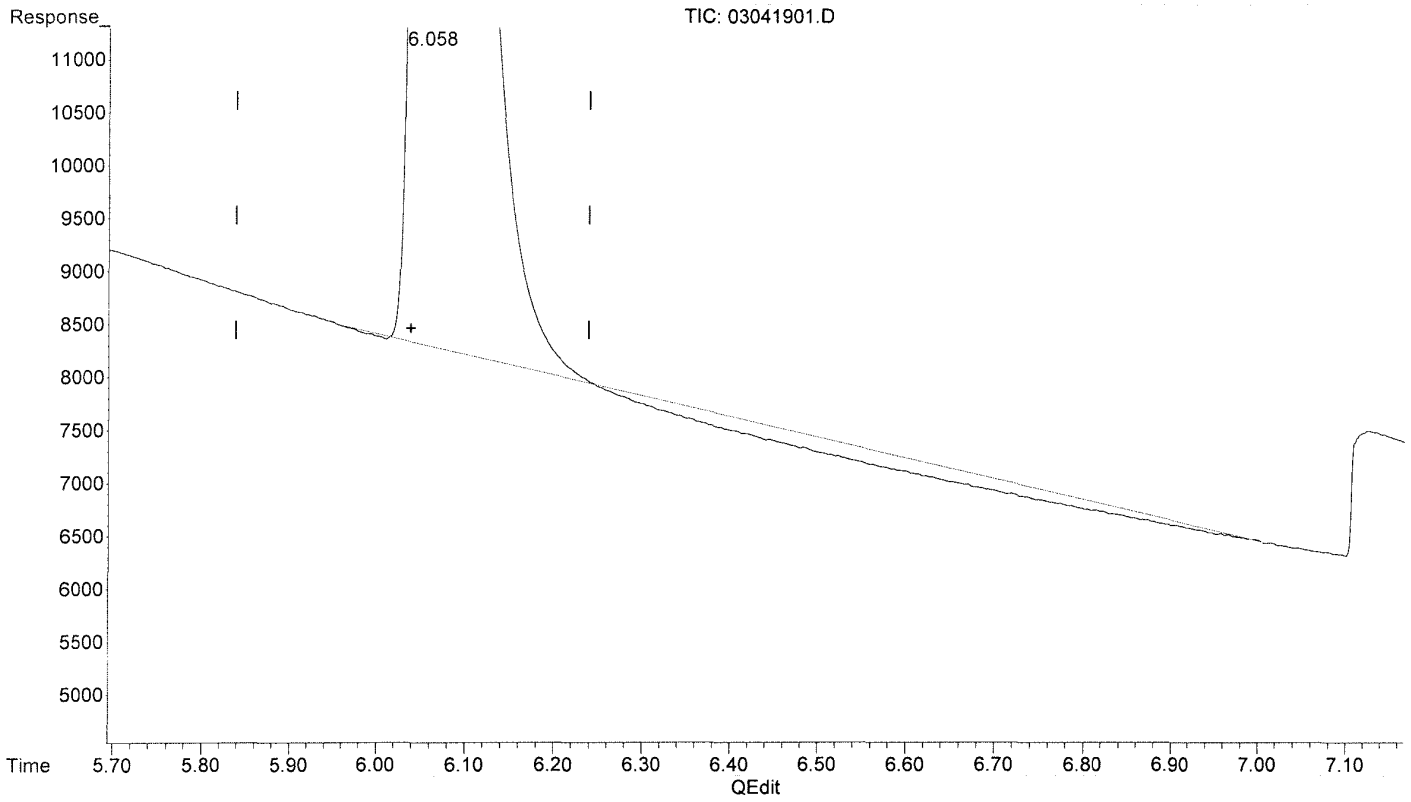



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041901.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 12:24:41
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:47:03 2019
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 :




(4) Carbon dioxide

6.059min 4770.144 ppm

response 1119692

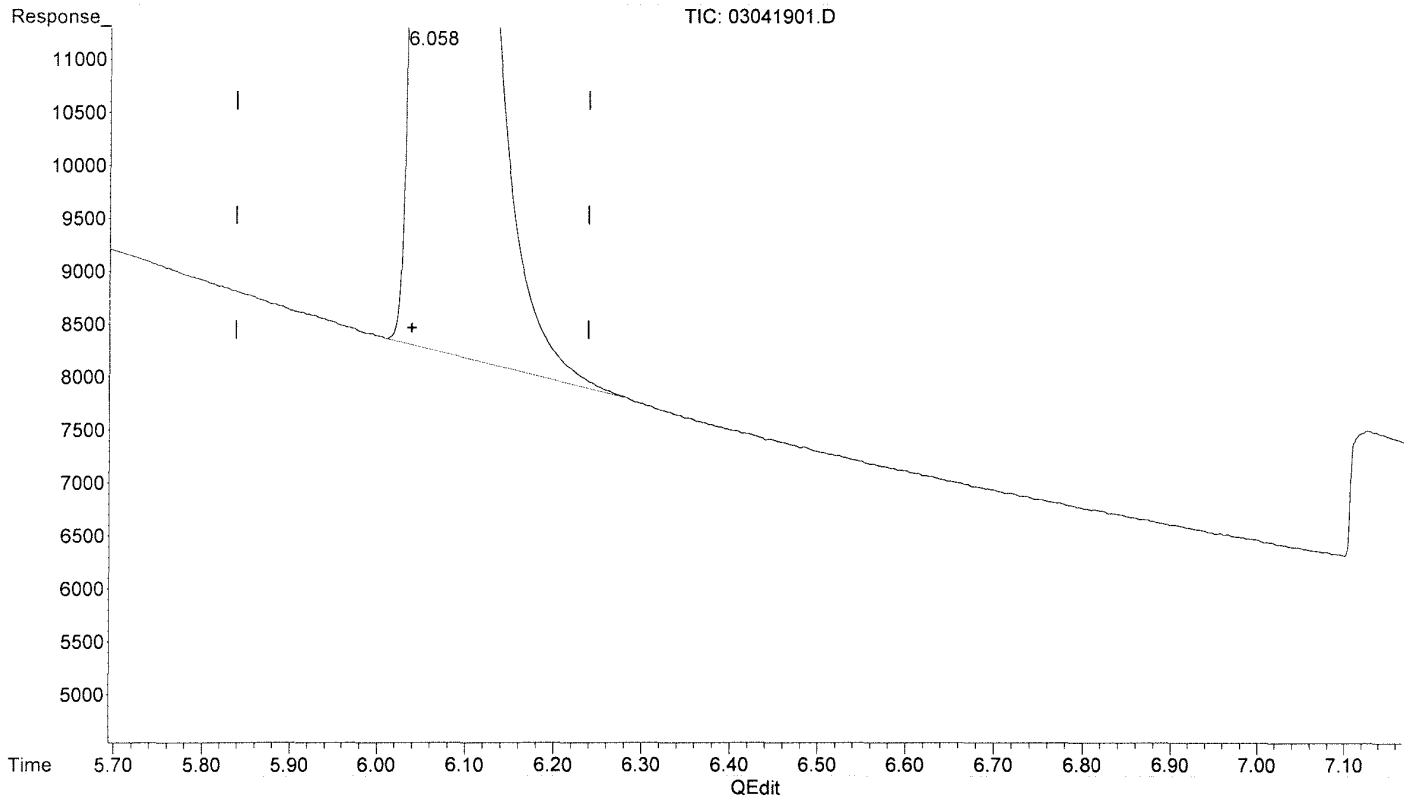
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041901.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 12:24:41
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:47:03 2019
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 :




(4) Carbon dioxide

6.058min 4975.601 ppm m

response 1167919

MR 3/5/19
BLC

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 15:56:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:50:18 2019
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 | 1.973f | 1483750 | 0.312 | ppm | |
| 2) | Carbon monoxide | 1.973f | 1483750 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.061 | 1159853 | 4941.240 | ppm | m |
| 6) | Methane (FID) | 1.105 | 35463703 | 3753.641 | 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 | |

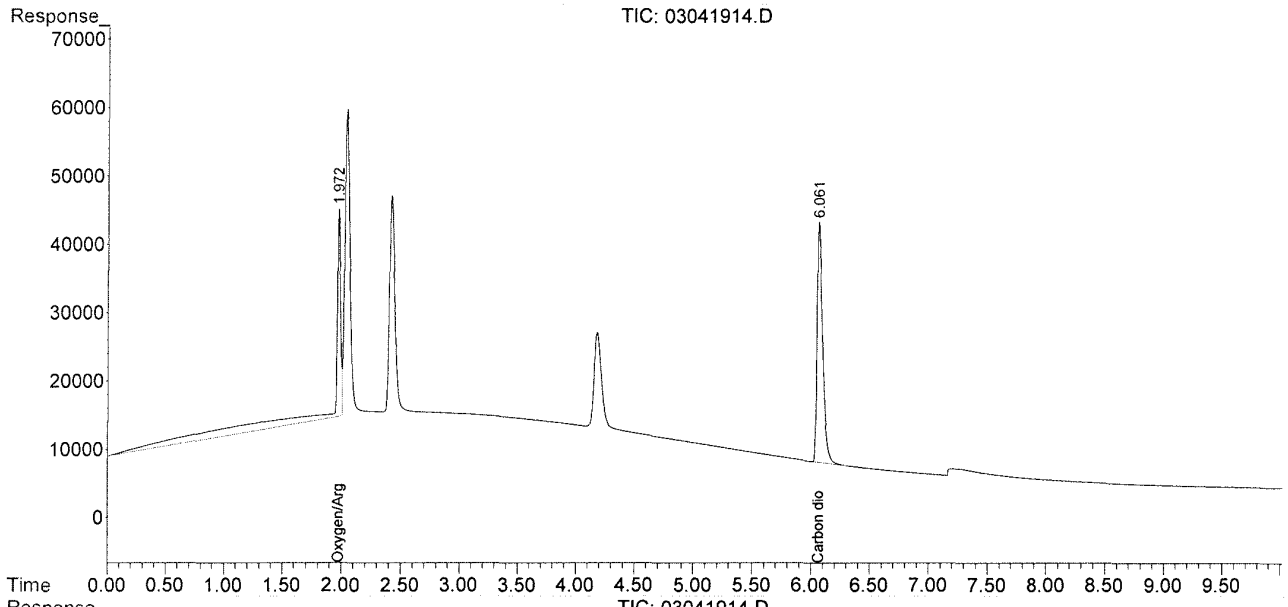
(f)=RT Delta > 1/2 Window (m)=manual int.

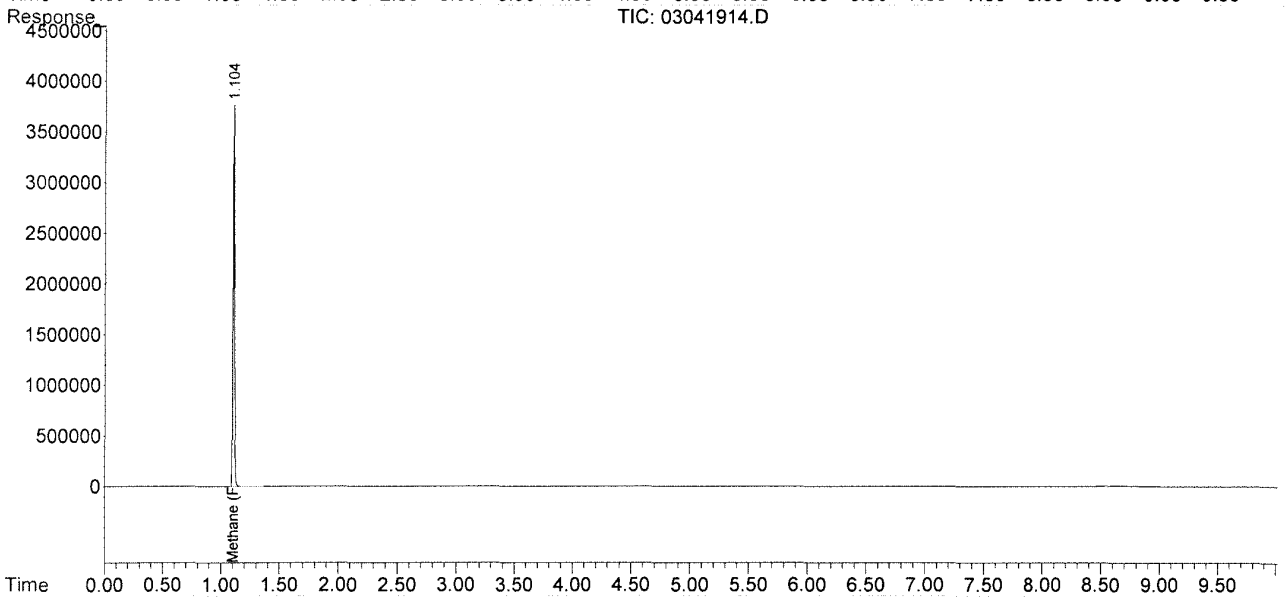
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 15:56:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:50:18 2019
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 :



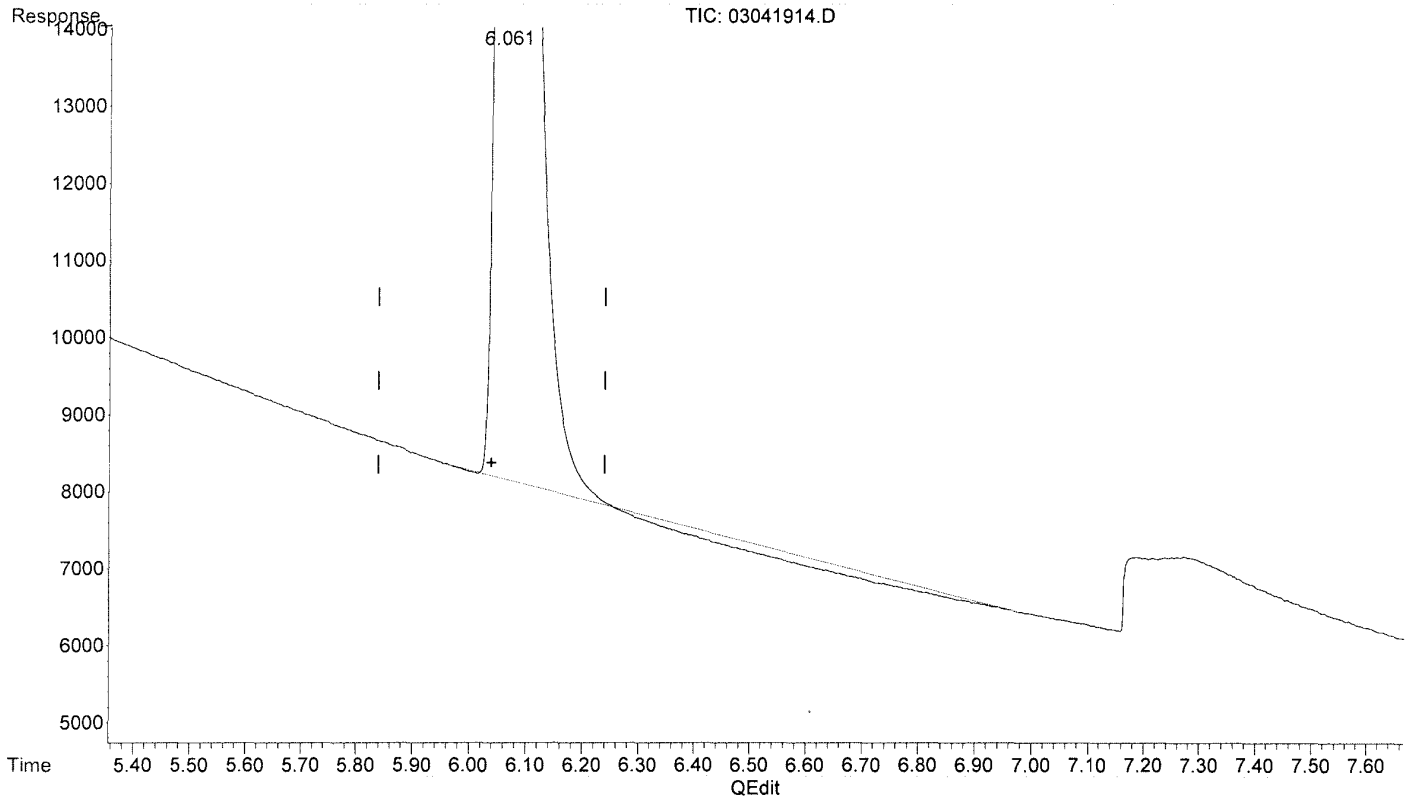



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041914.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 15:56:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:50:18 2019
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 :




(4) Carbon dioxide

6.062min 4777.058 ppm

response 1121315

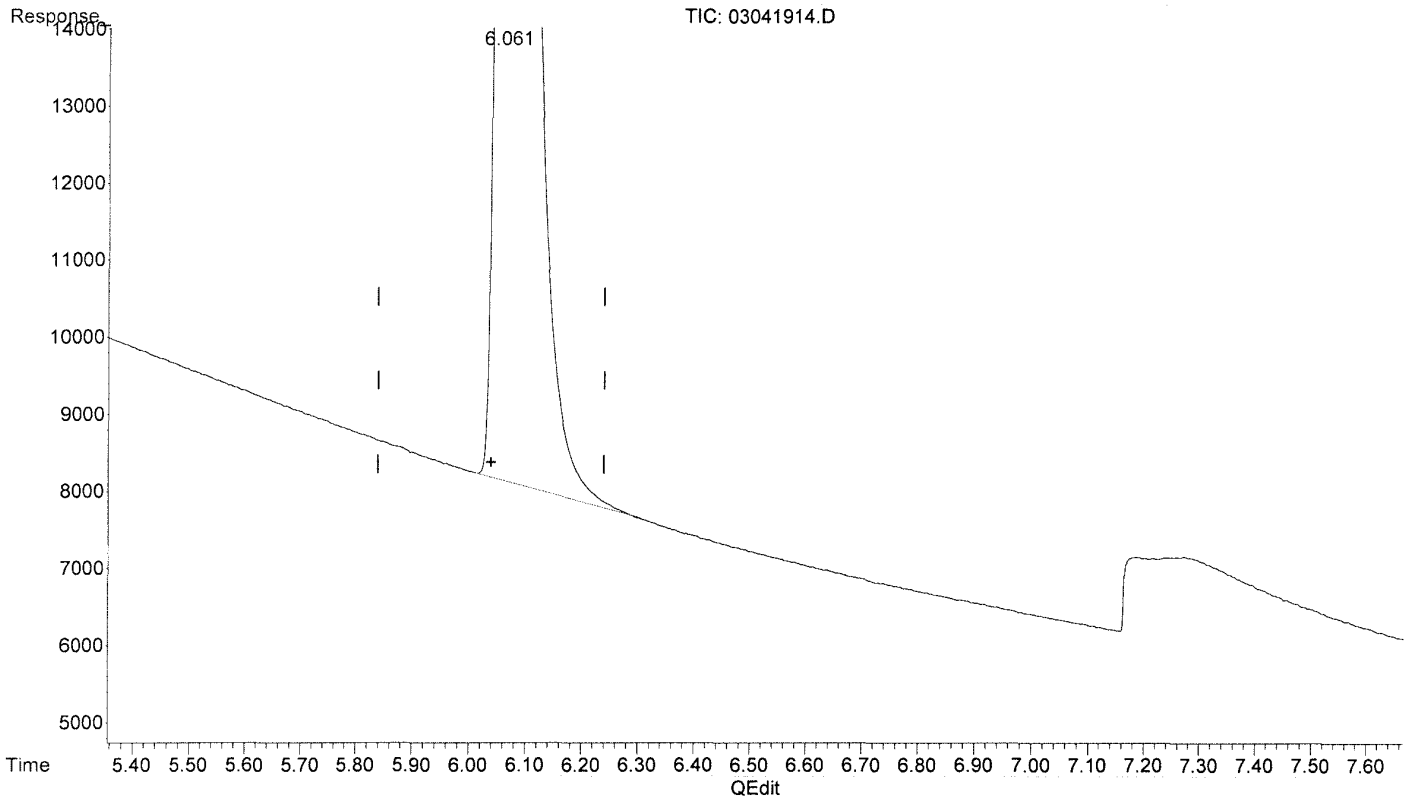
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_03\04\
Data File : 03041914.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 04-Mar-2019, 15:56:37
Operator : MR
Sample : std s32-01311901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 05 11:50:18 2019
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 :




(4) Carbon dioxide

6.061min 4941.240 ppm m

response 1159853

MR 3/5/19
DLC

3/5/19

(+) = Expected Retention Time
RS082817_CO2.M Tue Mar 05 11:50:37 2019

# Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 29-Aug-17, 07:58:00 | 08291701.D | std s30-06161601 | | MC | RSKBOTH.M | Pass |
| 2 | 29-Aug-17, 08:11:02 | 08291702.D | mb 0.5ml | | MC | RSKBOTH.M | Pass |
| 3 | 29-Aug-17, 08:24:13 | 08291703.D | 4089-001 0.5ml | | MC | RSKBOTH.M | |
| 4 | 29-Aug-17, 08:39:29 | 08291704.D | 4089-002 0.5ml | | MC | RSKBOTH.M | |
| 5 | 29-Aug-17, 08:53:38 | 08291705.D | 4089-003 0.5ml | | MC | RSKBOTH.M | |
| 6 | 29-Aug-17, 09:33:52 | 08291706.D | 4089-004 0.5ml | | MC | RSKBOTH.M | |
| 7 | 29-Aug-17, 09:50:51 | 08291707.D | 4089-005 0.5ml | | MC | RSKBOTH.M | |
| 8 | 29-Aug-17, 10:07:54 | 08291708.D | 4089-006 0.5ml | | MC | RSKBOTH.M | |
| 9 | 29-Aug-17, 10:42:34 | 08291709.D | 4089-007 0.5ml | | MC | RSKBOTH.M | |
| 10 | 29-Aug-17, 11:06:01 | 08291710.D | 4089-008 0.5ml | | MC | RSKBOTH.M | |
| 11 | 29-Aug-17, 11:23:53 | 08291711.D | 4089-009 0.5ml | | MC | RSKBOTH.M | |
| 12 | 29-Aug-17, 11:37:17 | 08291712.D | lcs s30-05241604 | | MC | RSKBOTH.M | Pass |
| 13 | 29-Aug-17, 11:50:31 | 08291713.D | lcs s30-05241604 | | MC | RSKBOTH.M | Pass |
| 14 | 29-Aug-17, 12:29:45 | 08291714.D | std s30-06161601 | | MC | RSKBOTH.M | Pass |
| 15 | 29-Aug-17, 14:07:01 | 08291715.D | 25ppm s32-08291701 0.25ml | | MC | RSKBOTH.M | Curve |
| 16 | 29-Aug-17, 14:22:12 | 08291716.D | 100ppm s32-08291702 0.2ml | | MC | RSKBOTH.M | Curve |
| 17 | 29-Aug-17, 14:53:00 | 08291717.D | 250ppm s32-08291702 0.5ml | | MC | RSKBOTH.M | Curve |
| 18 | 29-Aug-17, 15:07:43 | 08291718.D | mis inject | | MC | RSKBOTH.M | |
| 19 | 29-Aug-17, 15:23:21 | 08291719.D | 2500ppm s32-08231701 50ul | | MC | RSKBOTH.M | Curve |
| 20 | 29-Aug-17, 15:44:54 | 08291720.D | 5000ppm s32-08231701 0.1ml | | MC | RSKBOTH.M | Curve |
| 21 | 29-Aug-17, 16:00:09 | 08291721.D | 25000ppm s32-08231701 0.5ml | | MC | RSKBOTH.M | Curve |
| 22 | 29-Aug-17, 16:15:43 | 08291722.D | mb 0.1ml | | MC | RSKBOTH.M | Pass |
| 23 | 29-Aug-17, 16:35:37 | 08291723.D | icv s30-07071701 | | MC | RSKBOTH.M | Pass |

# Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_03\04\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 04-Mar-19, 12:24:41 | 03041901.D | std s32-01311901 | | MR | RSKBOTH.M | pass |
| 2 | 04-Mar-19, 12:43:44 | 03041902.D | rb 0.1ml | | MR | RSKBOTH.M | pass |
| 3 | 04-Mar-19, 13:29:41 | 03041903.D | mcs 0.1ml | | MR | RSKBOTH.M | pass |
| 4 | 04-Mar-19, 13:43:02 | 03041904.D | tcd lcs s32-10081801 | | MR | RSKBOTH.M | pass |
| 5 | 04-Mar-19, 13:54:41 | 03041905.D | tcd lcsd s32-10081801 | | MR | RSKBOTH.M | pass |
| 6 | 04-Mar-19, 14:05:23 | 03041906.D | P1900934-001 50ul | | MR | RSKBOTH.M | |
| 7 | 04-Mar-19, 14:23:26 | 03041907.D | P1900934-002 50ul | | MR | RSKBOTH.M | |
| 8 | 04-Mar-19, 14:34:25 | 03041908.D | P1900934-003 50ul | | MR | RSKBOTH.M | |
| 9 | 04-Mar-19, 14:48:55 | 03041909.D | J1901054-003 0.1 | | MR | RSKBOTH.M | |
| 10 | 04-Mar-19, 14:57:56 | 03041910.D | J1901054-006 0.1 | | MR | RSKBOTH.M | |
| 11 | 04-Mar-19, 15:20:03 | 03041911.D | J1901054-007 0.1 | | MR | RSKBOTH.M | |
| 12 | 04-Mar-19, 15:30:45 | 03041912.D | J1901054-009 0.1 | | MR | RSKBOTH.M | |
| 13 | 04-Mar-19, 15:43:47 | 03041913.D | J1901054-010 0.1 | | MR | RSKBOTH.M | |
| 14 | 04-Mar-19, 15:56:37 | 03041914.D | std s32-01311901 | | MR | RSKBOTH.M | pass |
| 15 | 04-Mar-19, 16:20:48 | 03041915.D | P1901011-001 50ul | | MR | RSKBOTH.M | |
| 16 | 04-Mar-19, 16:32:46 | 03041916.D | P1901011-002 50ul | | MR | RSKBOTH.M | |
| 17 | 04-Mar-19, 16:45:49 | 03041917.D | P1901011-003 50ul | | MR | RSKBOTH.M | |
| 18 | 04-Mar-19, 17:06:21 | 03041918.D | P1901011-004 50ul | | MR | RSKBOTH.M | |
| 19 | 04-Mar-19, 17:24:43 | 03041919.D | std s32-01311901 | | MR | RSKBOTH.M | pass |

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281923.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:29:33
Operator : MR
Sample : P1900934-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:36:46 2019
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 | 266782 | 29.412 | 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 |

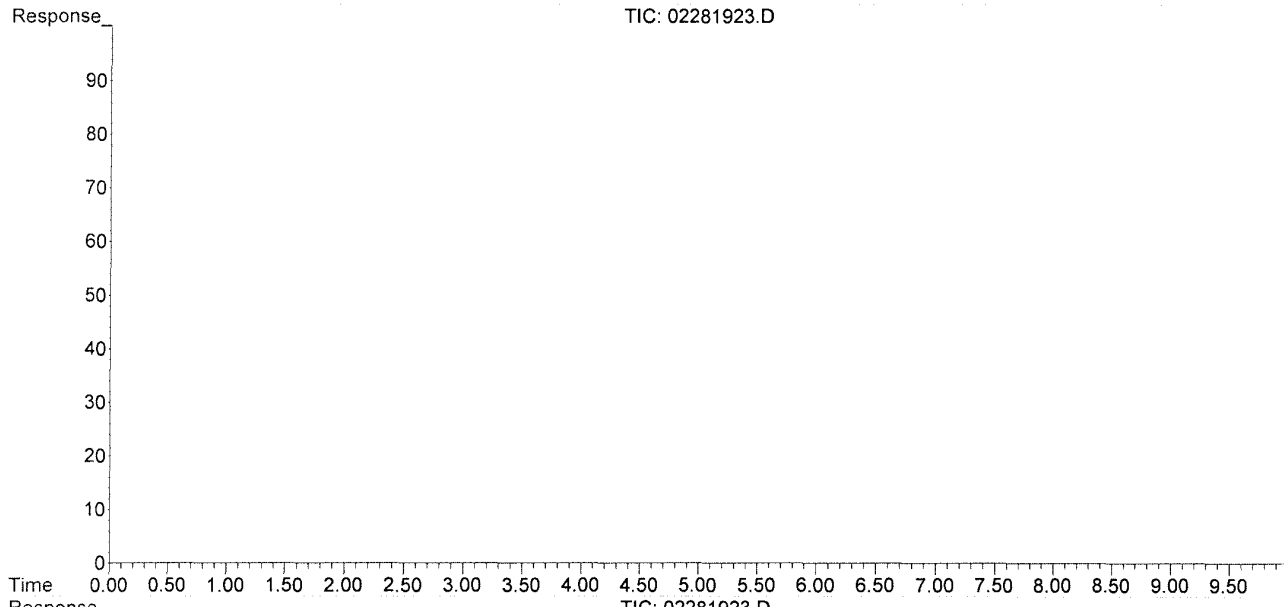
(f)=RT Delta > 1/2 Window (m)=manual int.

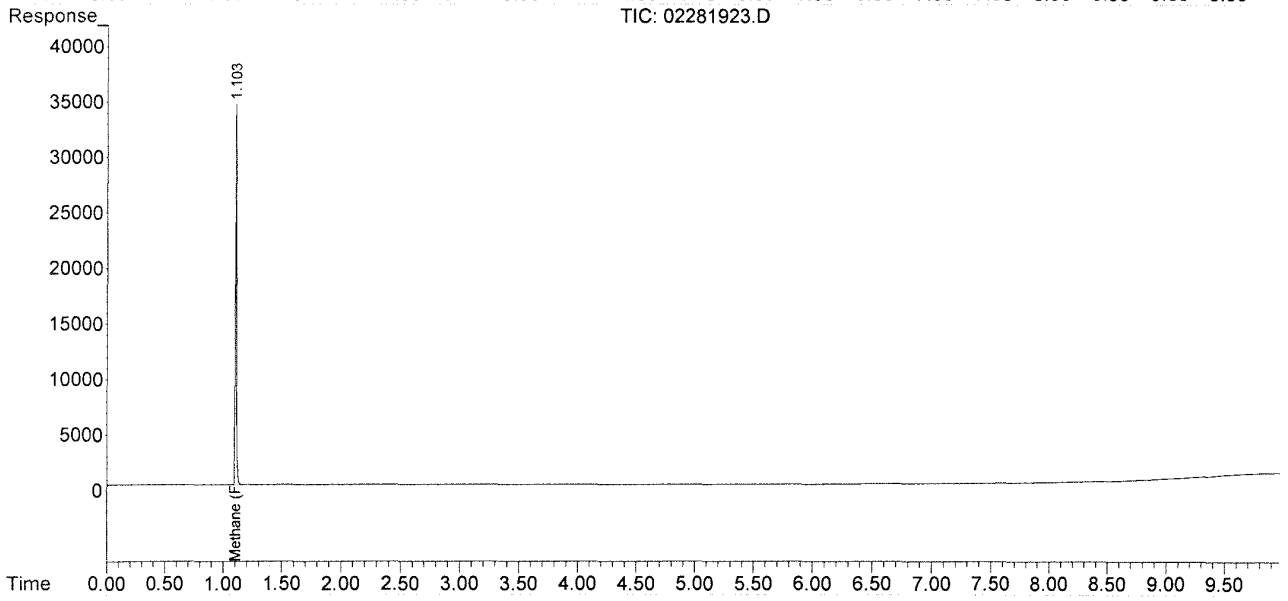
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281923.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:29:33
Operator : MR
Sample : P1900934-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:36:46 2019
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\2019_02\28\
Data File : 02281924.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:43:37
Operator : MR
Sample : P1900934-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:16 2019
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) | 1.093 | 1087 | 0.120 | 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 | |

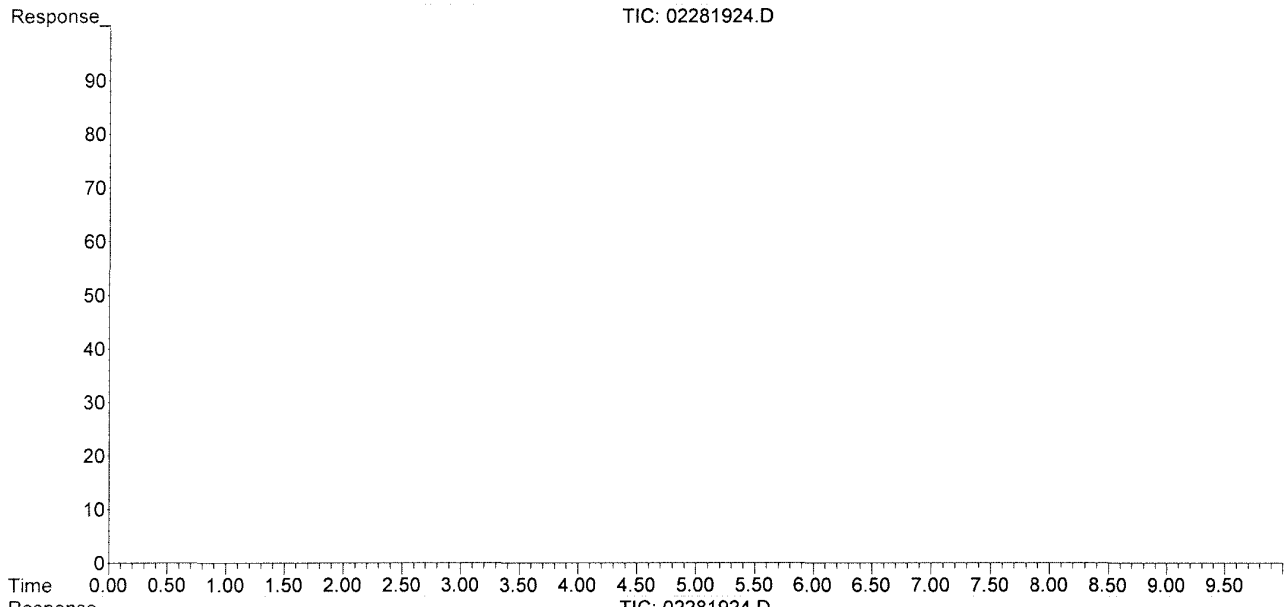
(f)=RT Delta > 1/2 Window (m)=manual int.

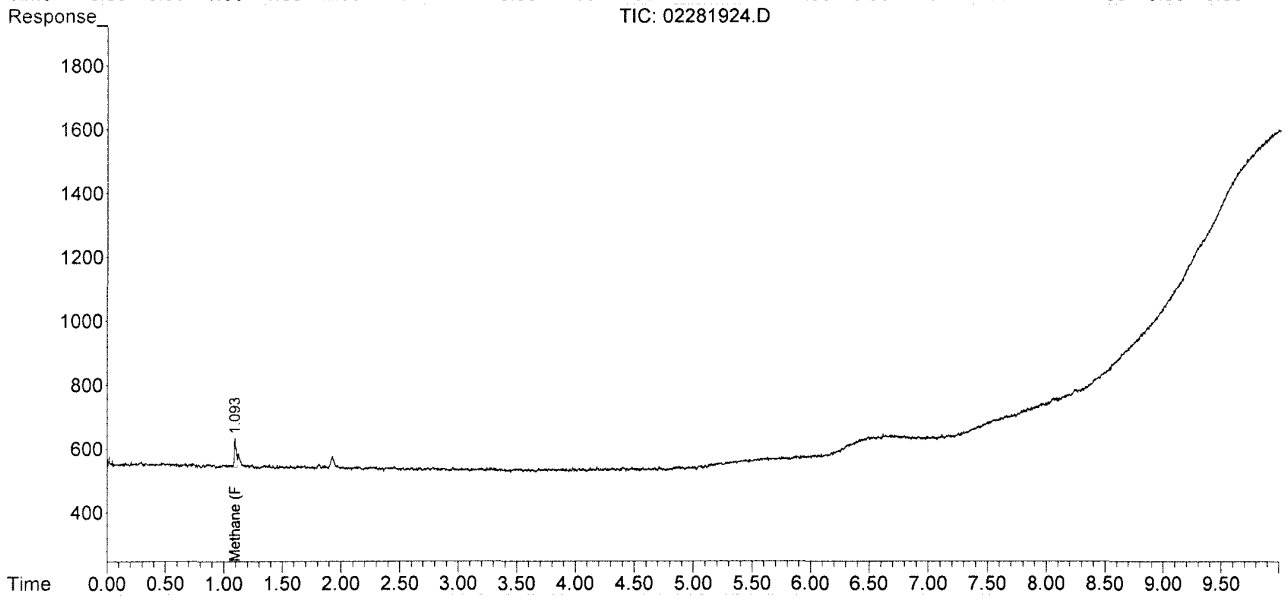
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281924.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:43:37
Operator : MR
Sample : P1900934-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:16 2019
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 :



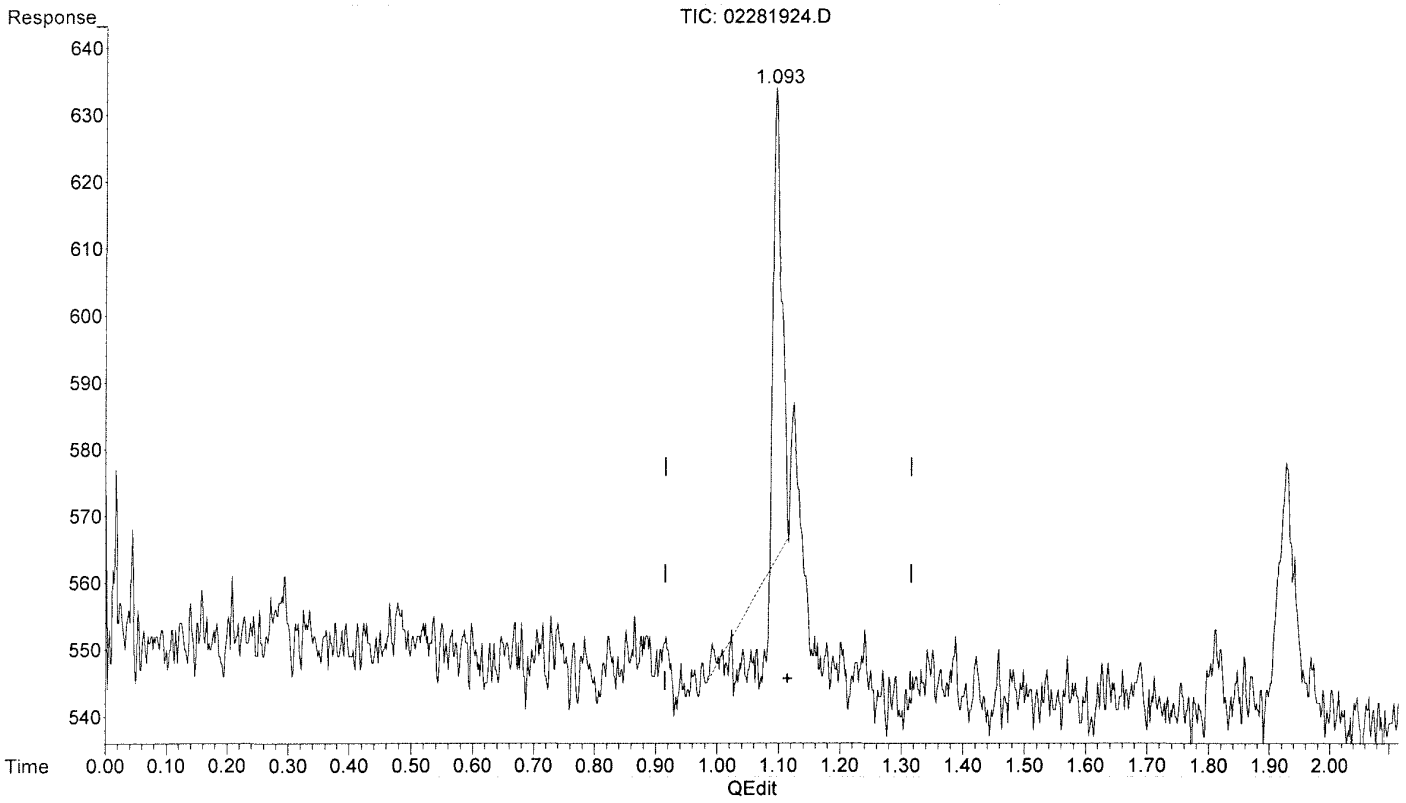



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281924.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:43:37
Operator : MR
Sample : P1900934-002 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:16 2019
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)

1.094min 0.032 ppm

response 287

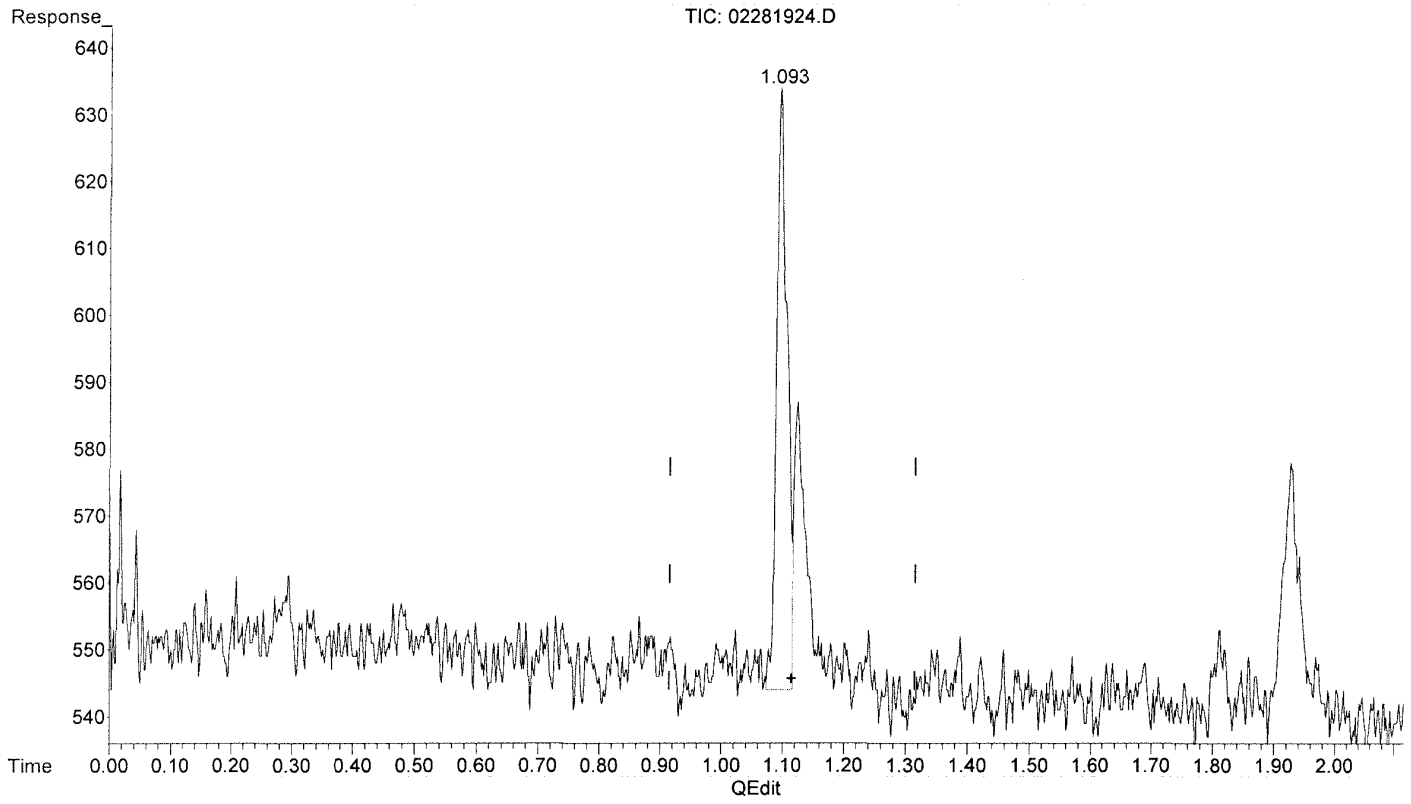
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281924.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:43:37
Operator : MR
Sample : P1900934-002 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:16 2019
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)

1.093min 0.120 ppm m

response 1087

MR 3/4/19
BLC

3/4/19

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281925.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:58:36
Operator : MR
Sample : P1900934-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:57 2019
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) | 1.109 | 7262 | 0.801 | 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 | |

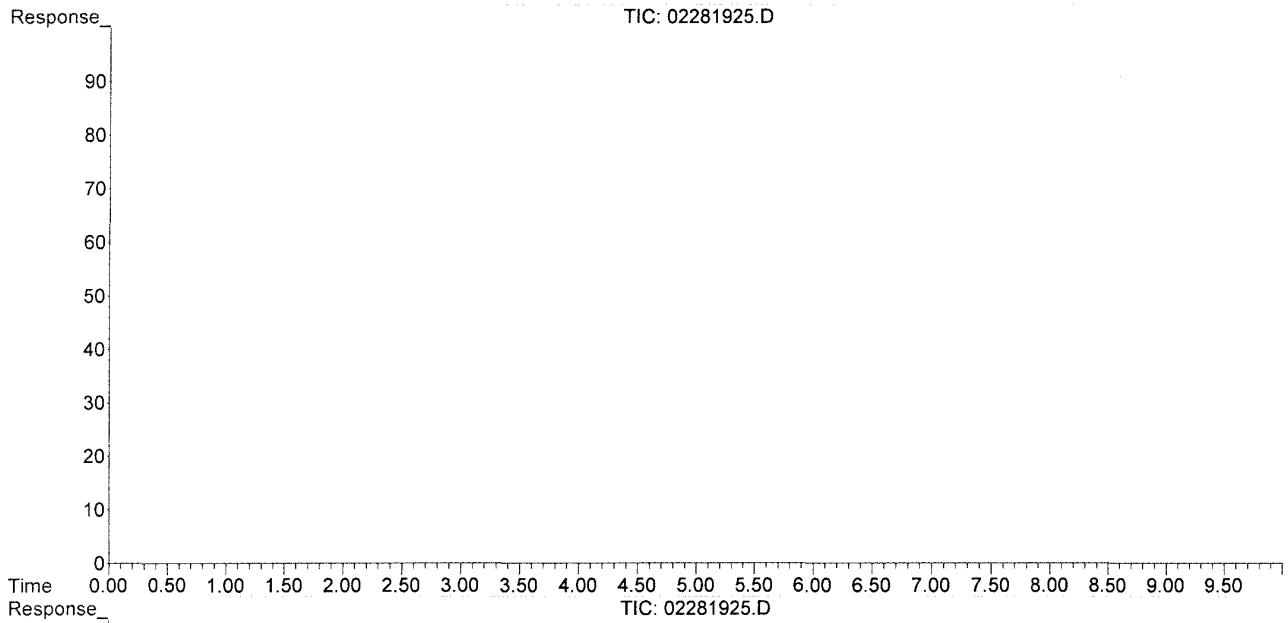
(f)=RT Delta > 1/2 Window (m)=manual int.

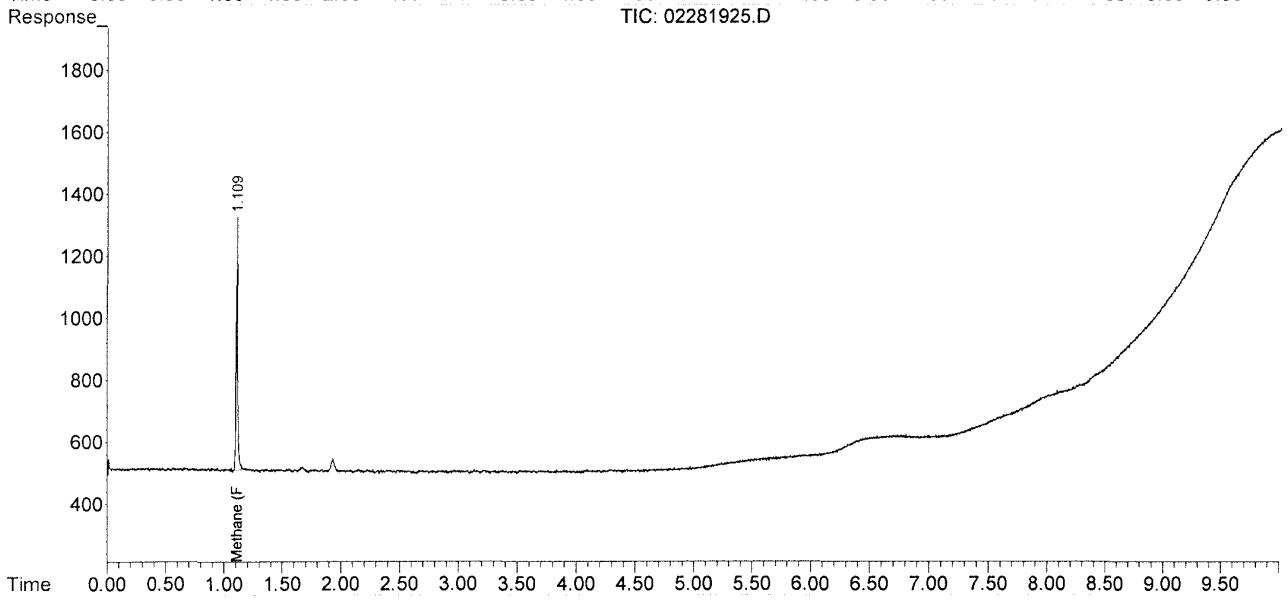
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281925.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:58:36
Operator : MR
Sample : P1900934-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:57 2019
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 :



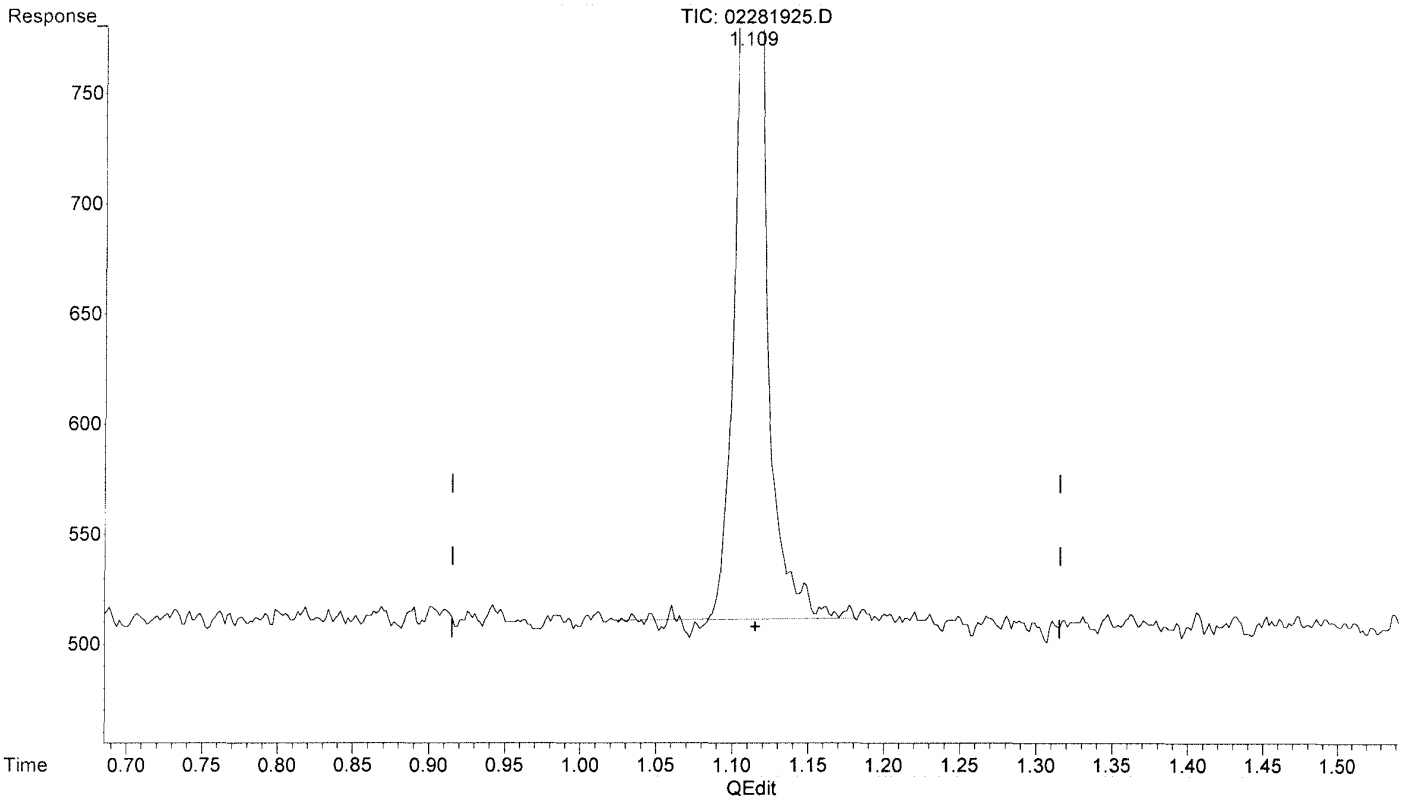



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281925.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:58:36
Operator : MR
Sample : P1900934-003 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:57 2019
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)

1.110min 0.797 ppm

response 7231

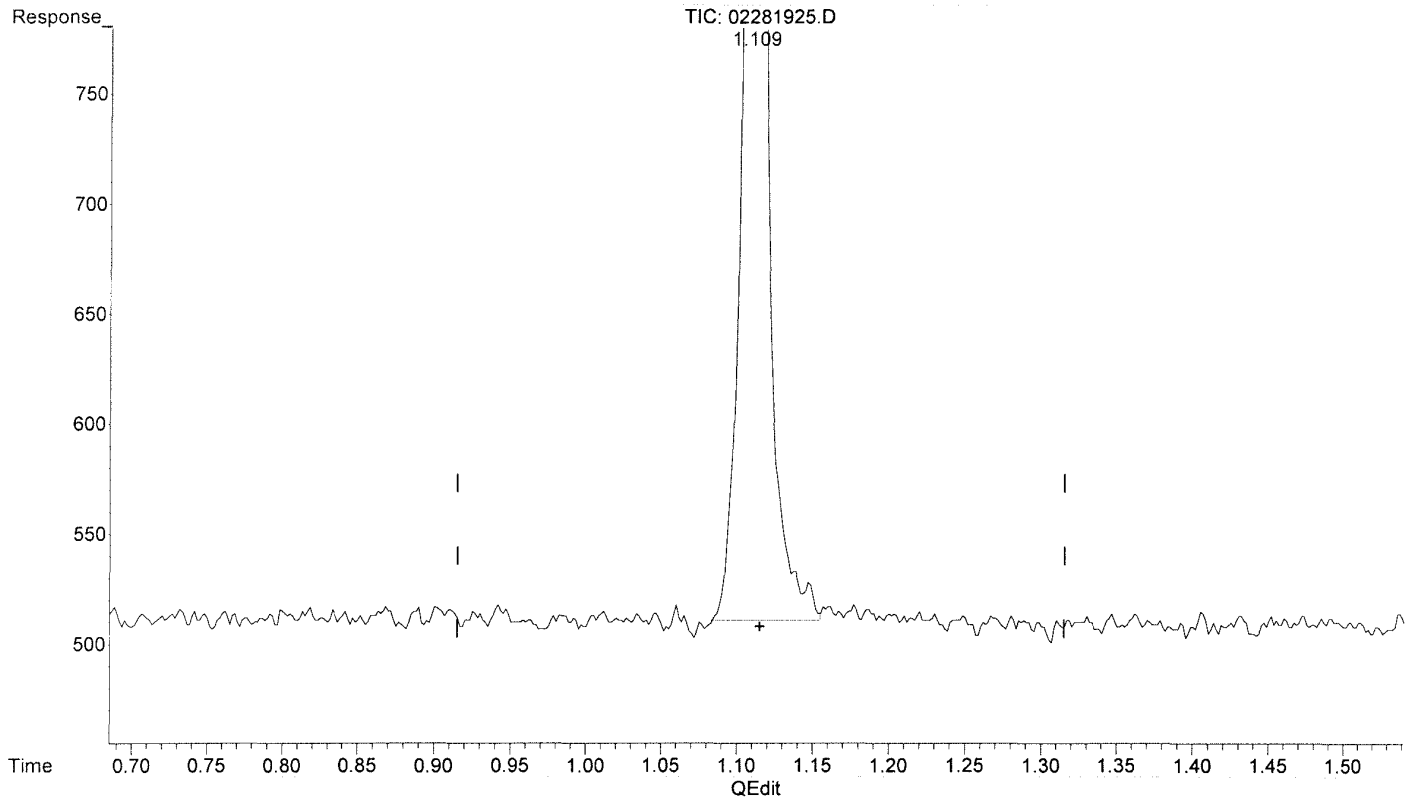
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281925.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 15:58:36
Operator : MR
Sample : P1900934-003 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Mar 04 15:37:57 2019
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)

1.109min 0.801 ppm m

response 7262

MR 3/4/19
BLC

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:48:14
Operator : MR
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: Mar 04 15:39:41 2019
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) | 1.114 | 2573 | 0.284 | 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 | |

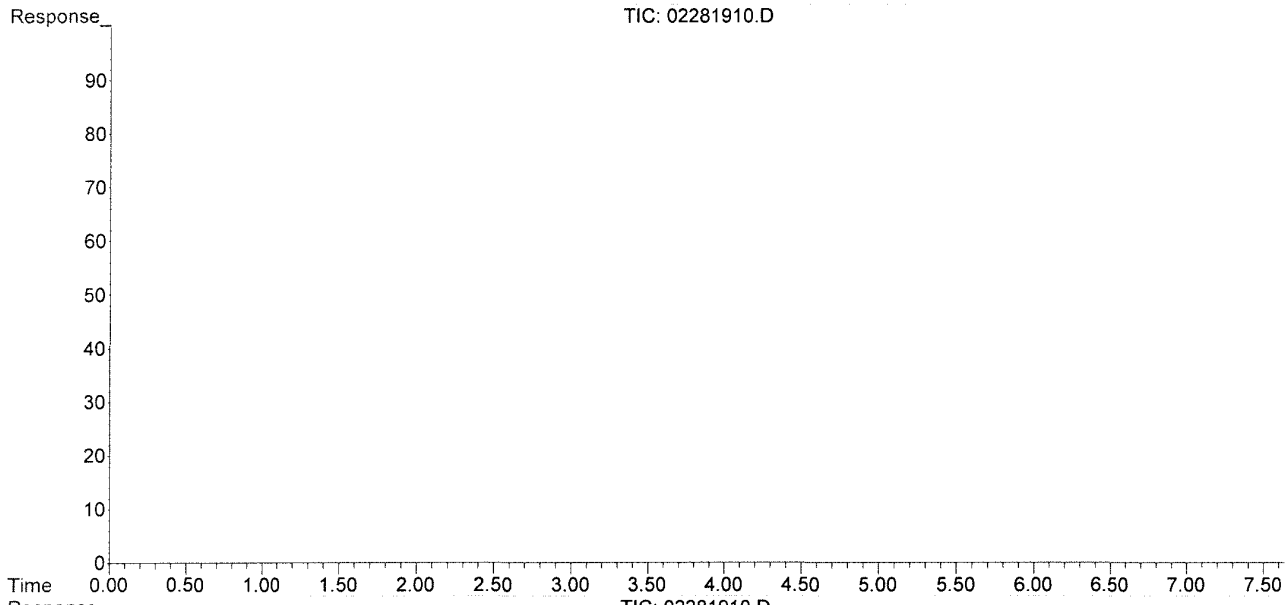
(f)=RT Delta > 1/2 Window (m)=manual int.

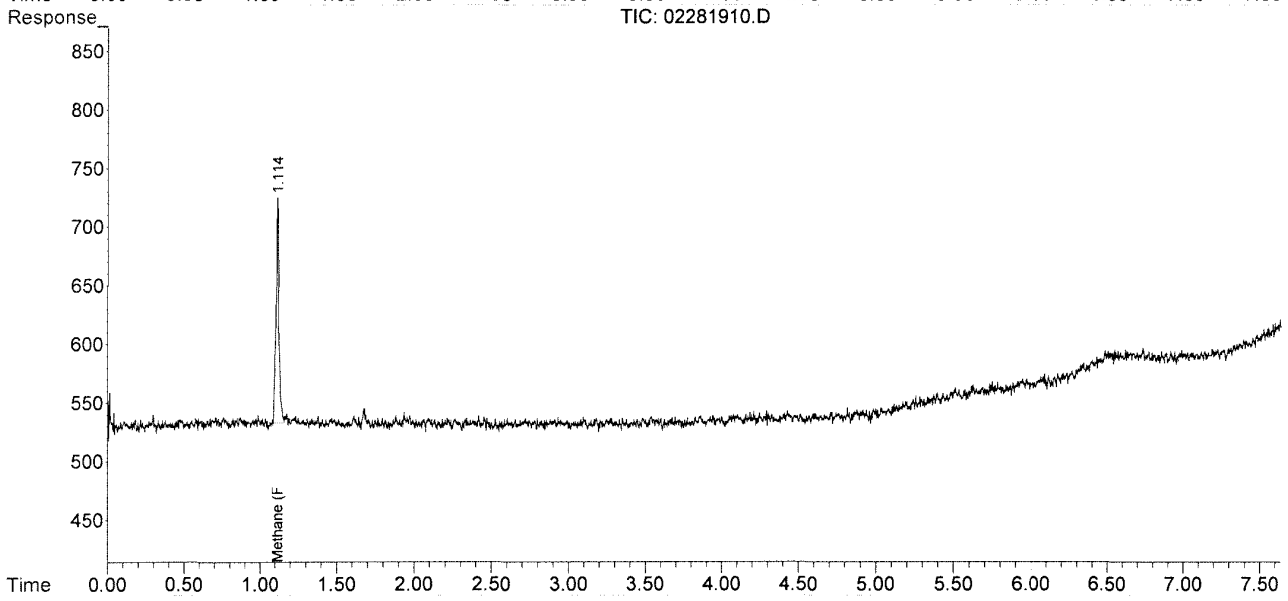
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:48:14
Operator : MR
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: Mar 04 15:39:41 2019
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 :



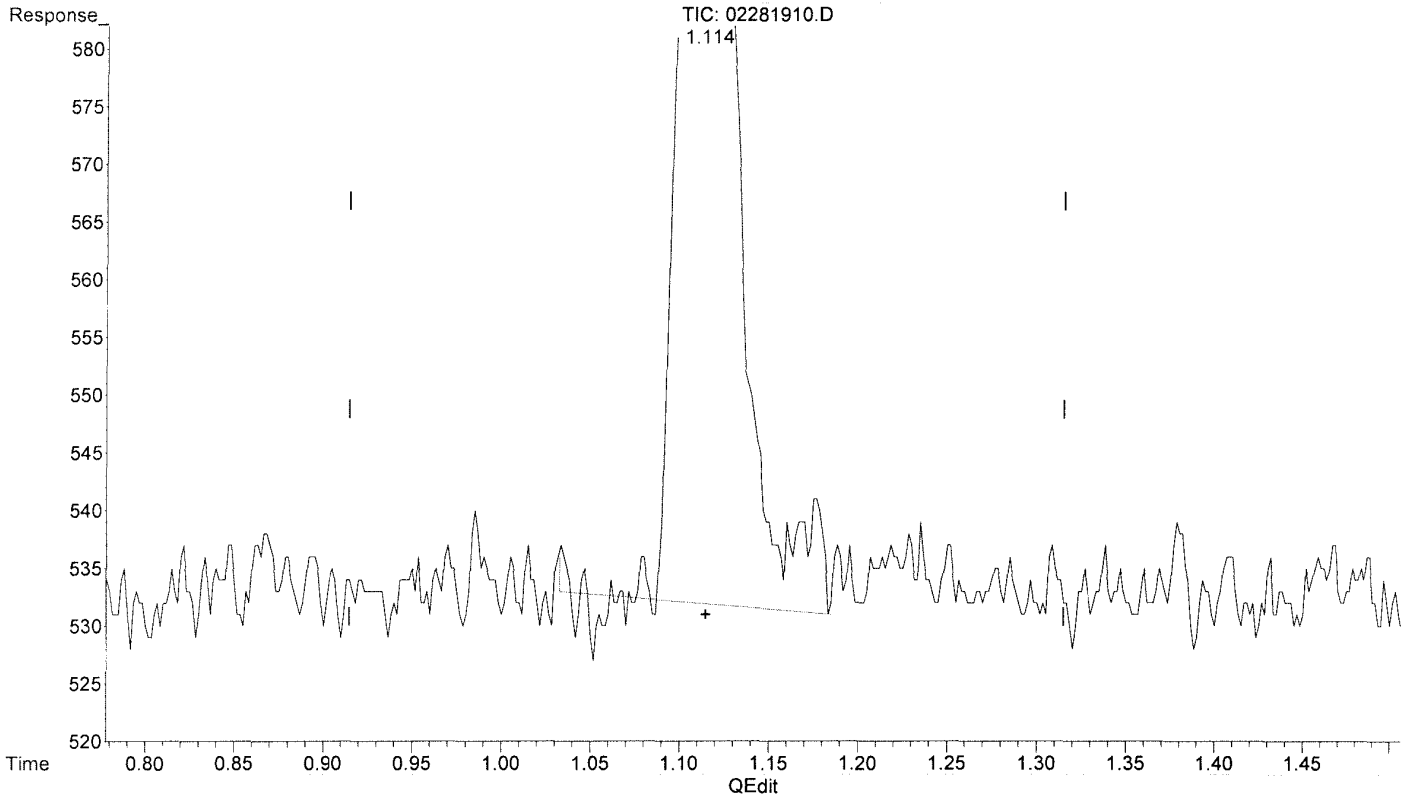



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281910.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:48:14
Operator : MR
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: Mar 04 15:39:41 2019
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)

1.114min 0.298 ppm

response 2704

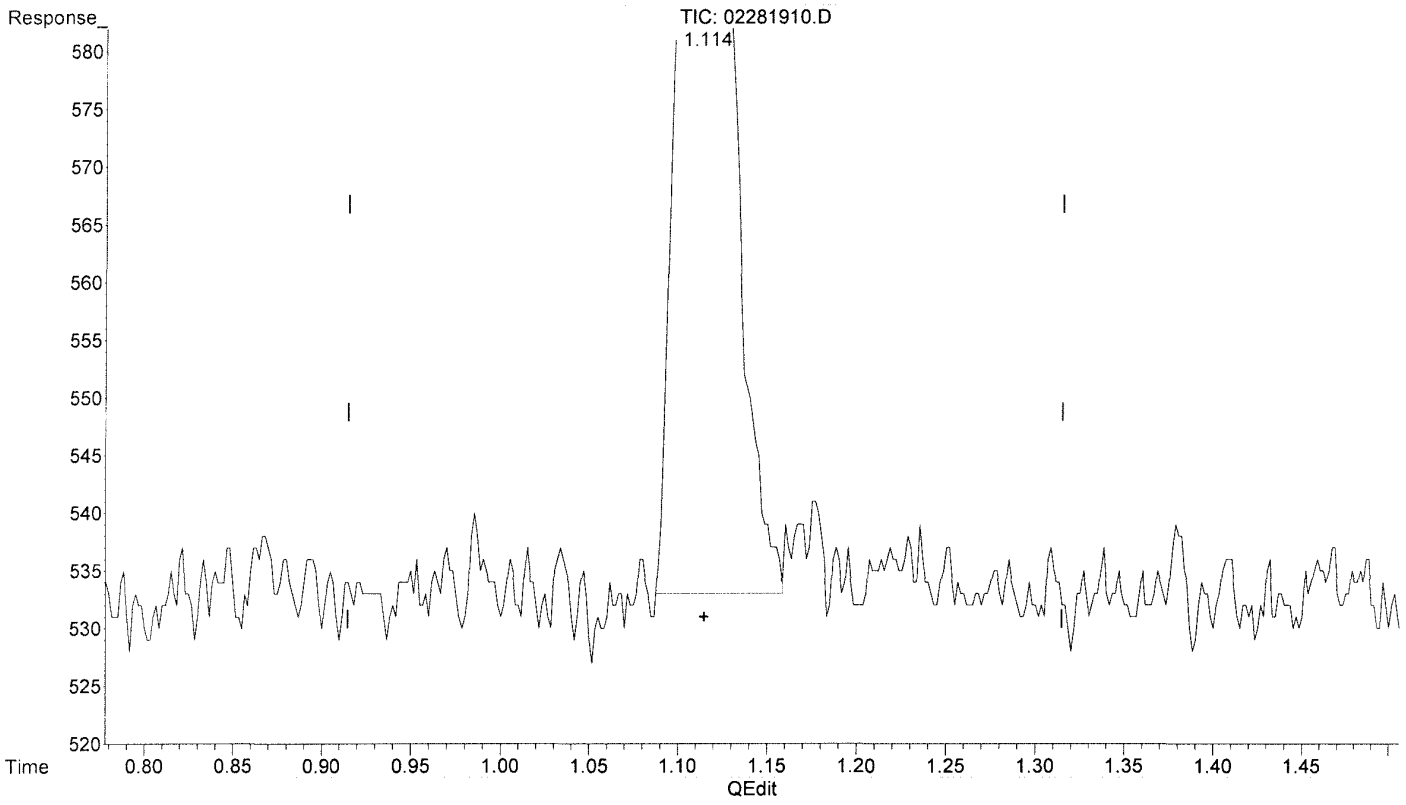
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281910.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:48:14
Operator : MR
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: Mar 04 15:39:41 2019
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)

1.114min 0.284 ppm m

response 2573

MR 3/4/19
BLC

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:58:21
Operator : MR
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: Feb 28 12:19:34 2019
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) | 1.113 | 14533 | 1.602 | ppm |
| 7) | Ethylene | 1.672 | 17073 | 1.020 | ppm |
| 8) | Ethane | 1.933 | 21381 | 1.261 | ppm |
| 9) | Propylene | 4.306 | 23425 | 1.000 | ppm |
| 10) | Propane | 4.429 | 33094 | 1.330 | ppm |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm |
| 12) | Isobutane | 6.649 | 44422 | 1.669 | ppm |
| 13) | n-Butane | 6.649 | 44422 | 1.669 | ppm |

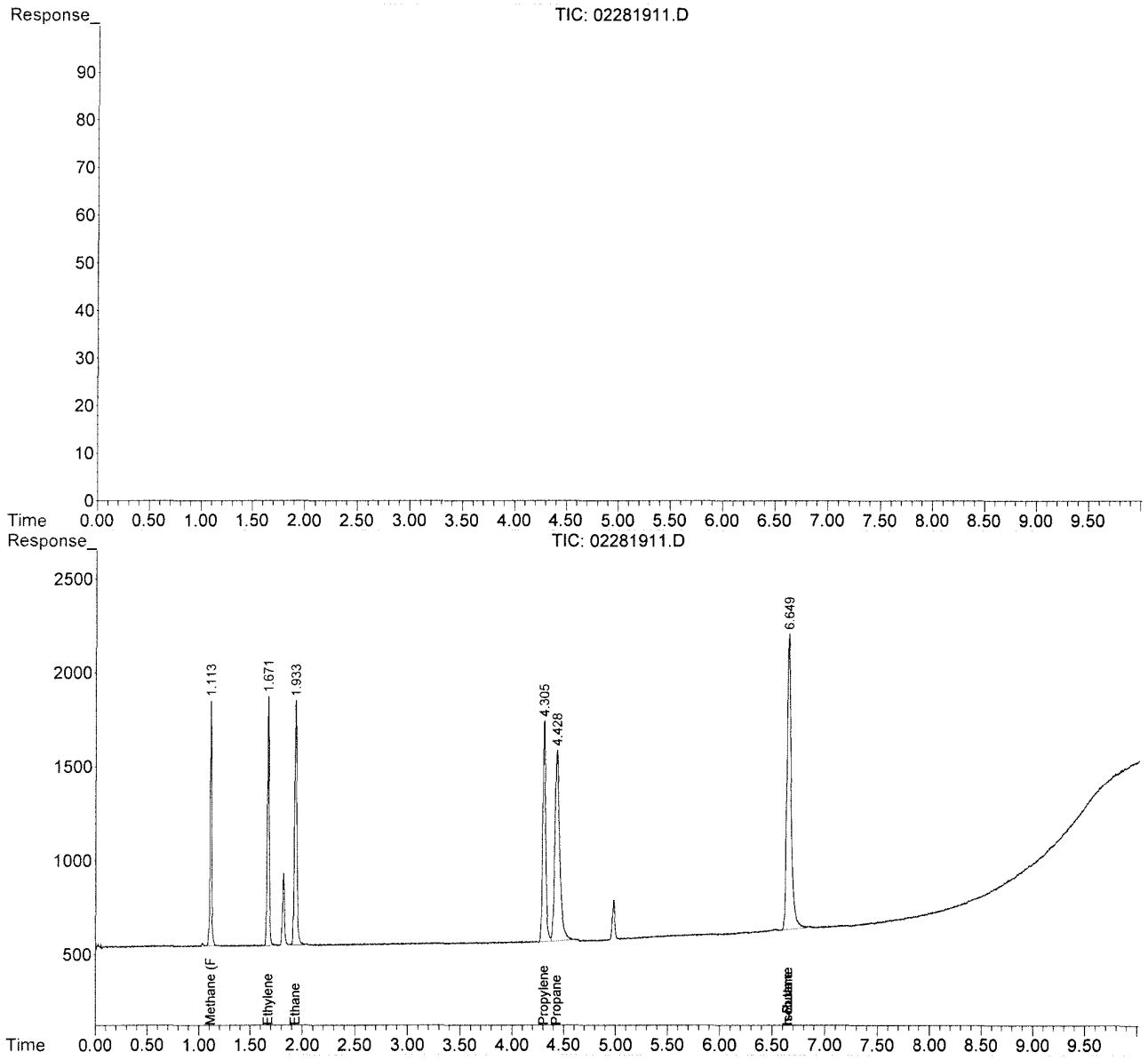
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:58:21
Operator : MR
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: Feb 28 12:19:34 2019
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\2019_02\28\
Data File : 02281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 12:12:41
Operator : MR
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: Mar 04 15:40:38 2019
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) | 1.111 | 13826 | 1.524 | ppm | m |
| 7) | Ethylene | 1.674 | 17404 | 1.040 | ppm | |
| 8) | Ethane | 1.937 | 21666 | 1.278 | ppm | m |
| 9) | Propylene | 4.310 | 24317 | 1.038 | ppm | |
| 10) | Propane | 4.432 | 34889 | 1.402 | ppm | |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm | |
| 12) | Isobutane | 6.650 | 46402 | 1.743 | ppm | |
| 13) | n-Butane | 6.650 | 46402 | 1.743 | ppm | |

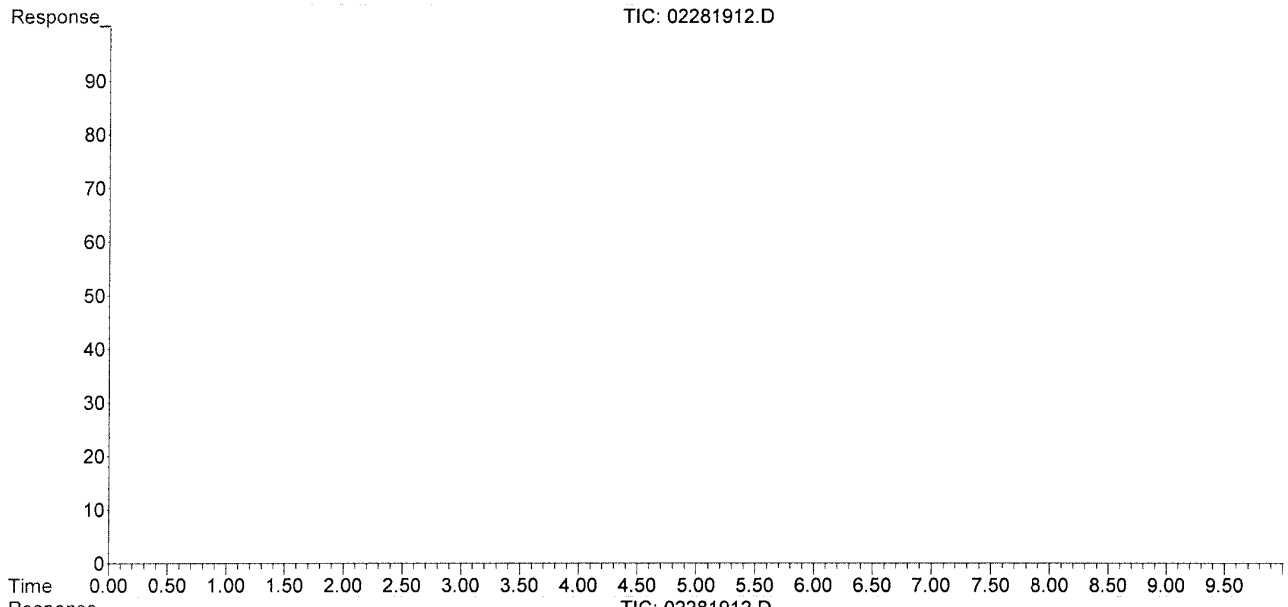
(f)=RT Delta > 1/2 Window (m)=manual int.

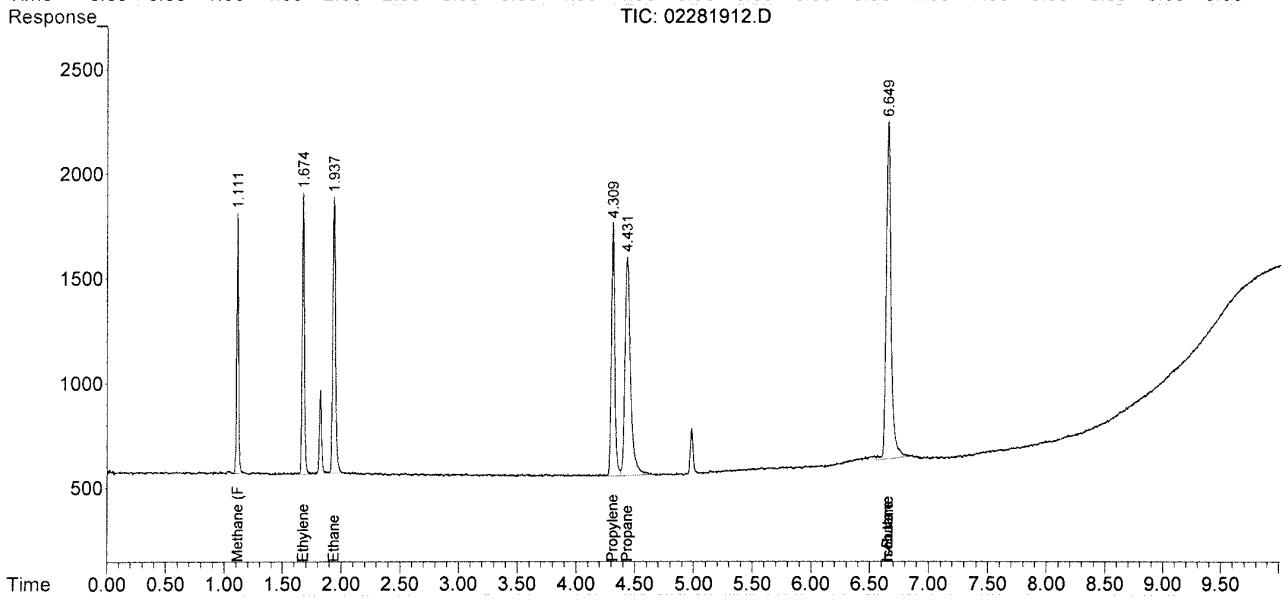
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 12:12:41
Operator : MR
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: Mar 04 15:40:38 2019
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 :



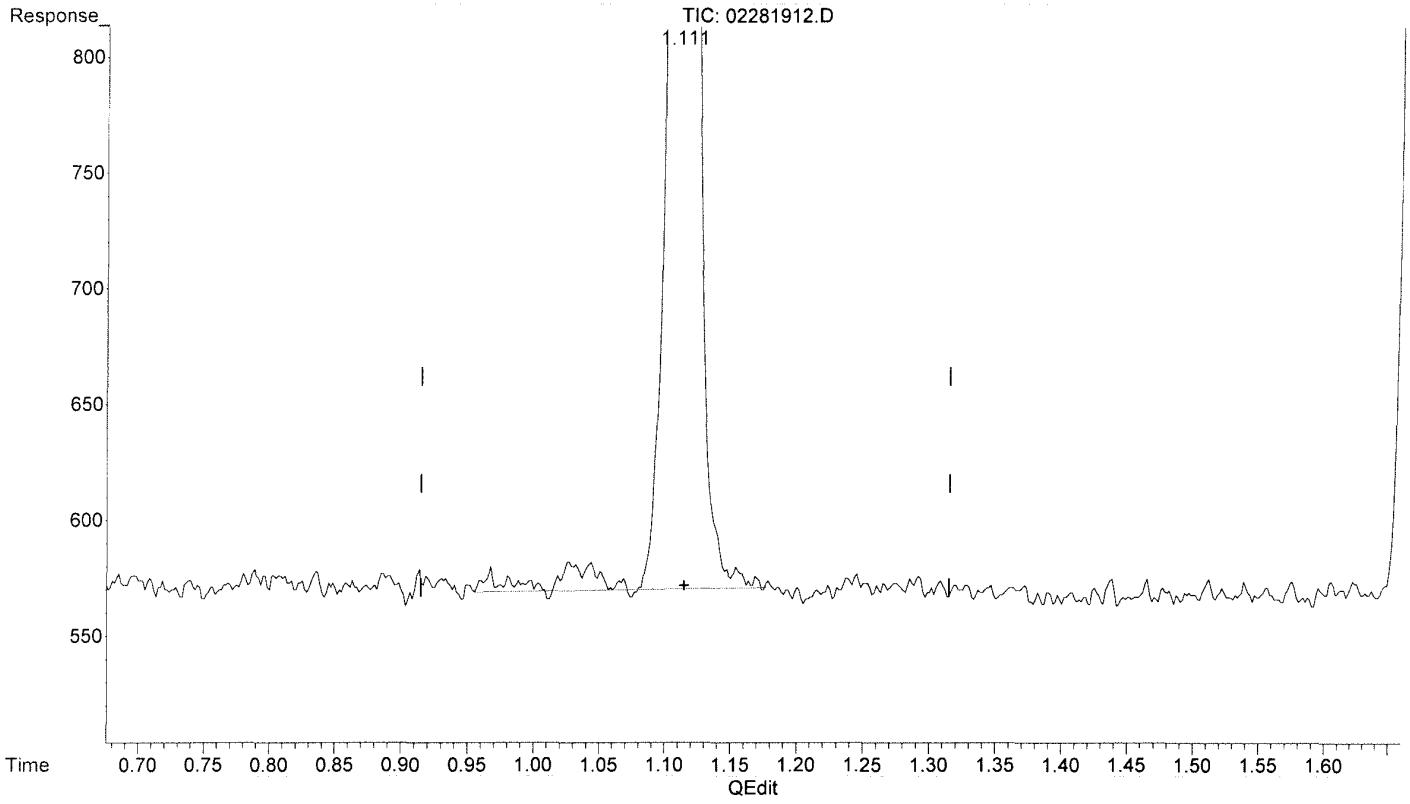



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281912.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 12:12:41
Operator : MR
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: Mar 04 15:40:38 2019
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)

1.112min 1.556 ppm

response 14115

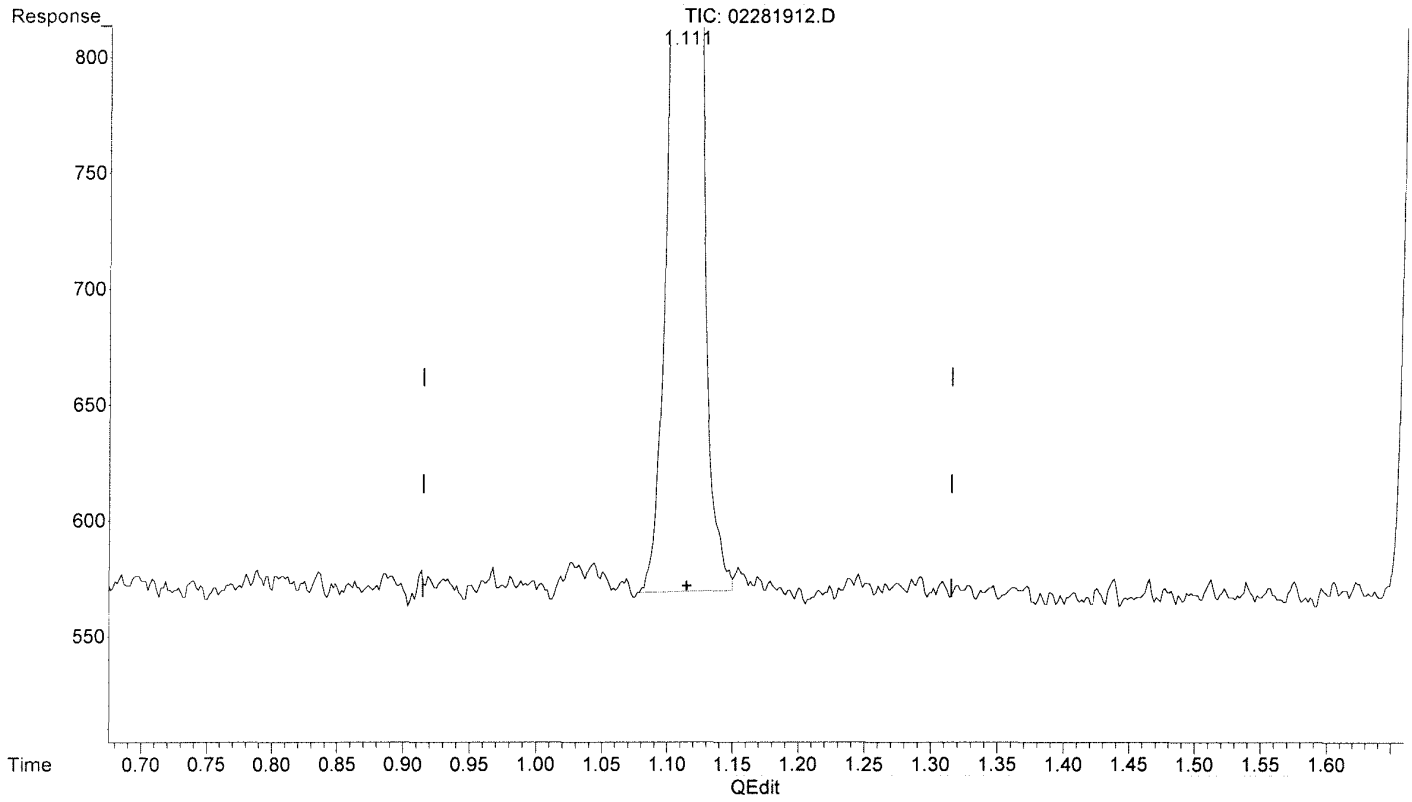
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281912.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 12:12:41
Operator : MR
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: Mar 04 15:40:38 2019
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)

1.111min 1.524 ppm m

response 13826

MR 3/4/19
BLC

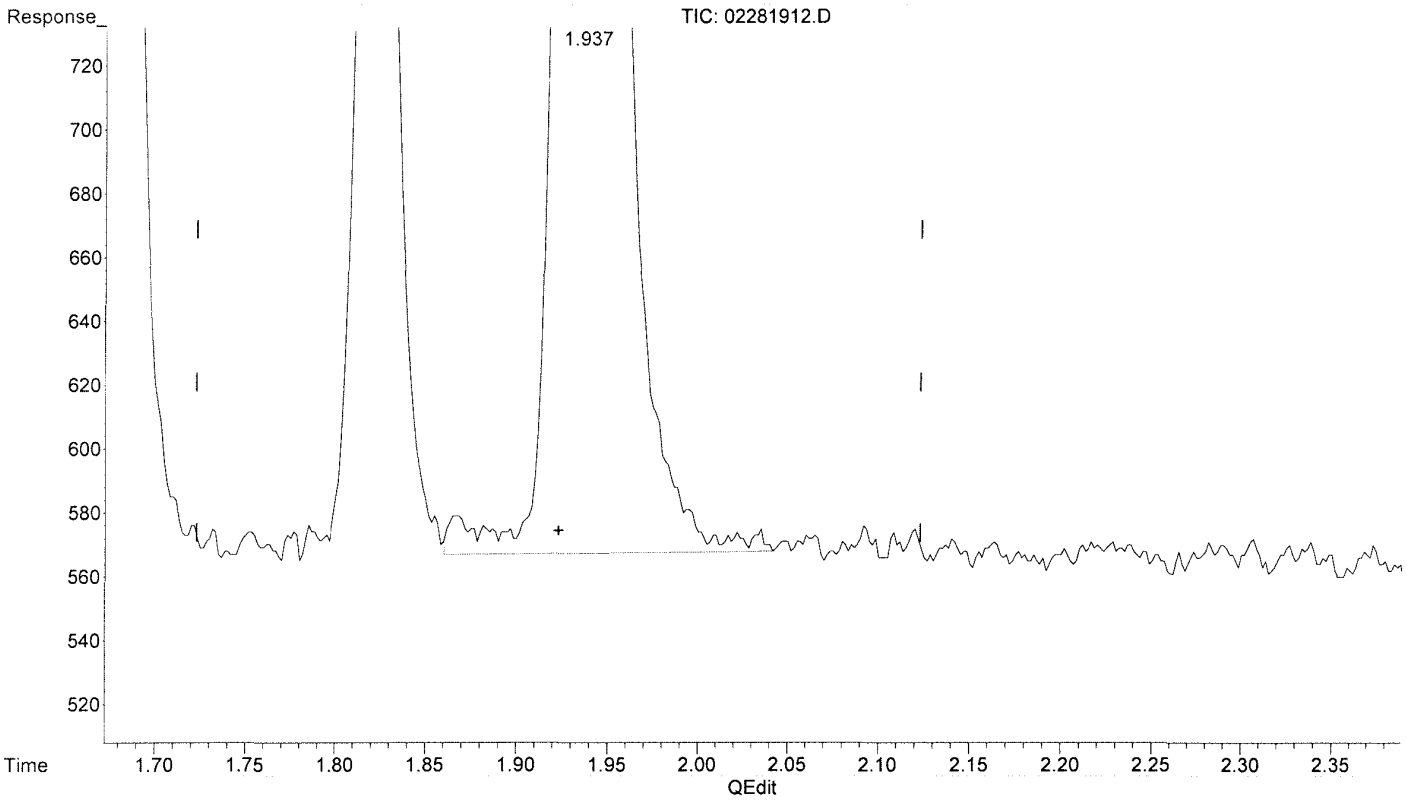
(+) = Expected Retention Time
RS091217_R.M Mon Mar 04 15:40:54 2019

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281912.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 12:12:41
Operator : MR
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: Mar 04 15:40:38 2019
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 :




(8) Ethane

1.937min 1.303 ppm

response 22079

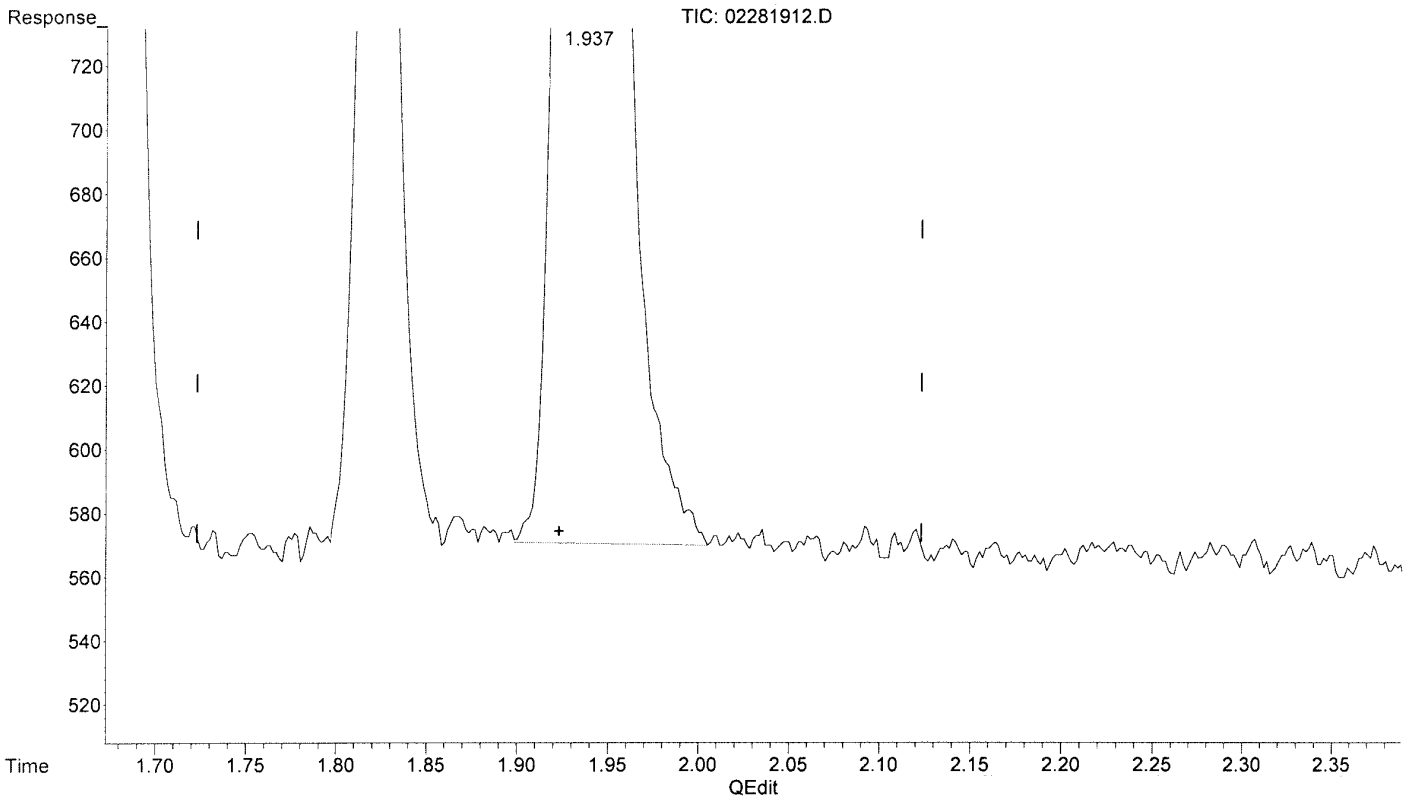
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281912.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 12:12:41
Operator : MR
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: Mar 04 15:40:38 2019
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 :




(8) Ethane
1.937min 1.278 ppm m
response 21666

MR 3/4/19
BLC

3/4/19

(+) = Expected Retention Time
RS091217_R.M Mon Mar 04 15:41:07 2019

# 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

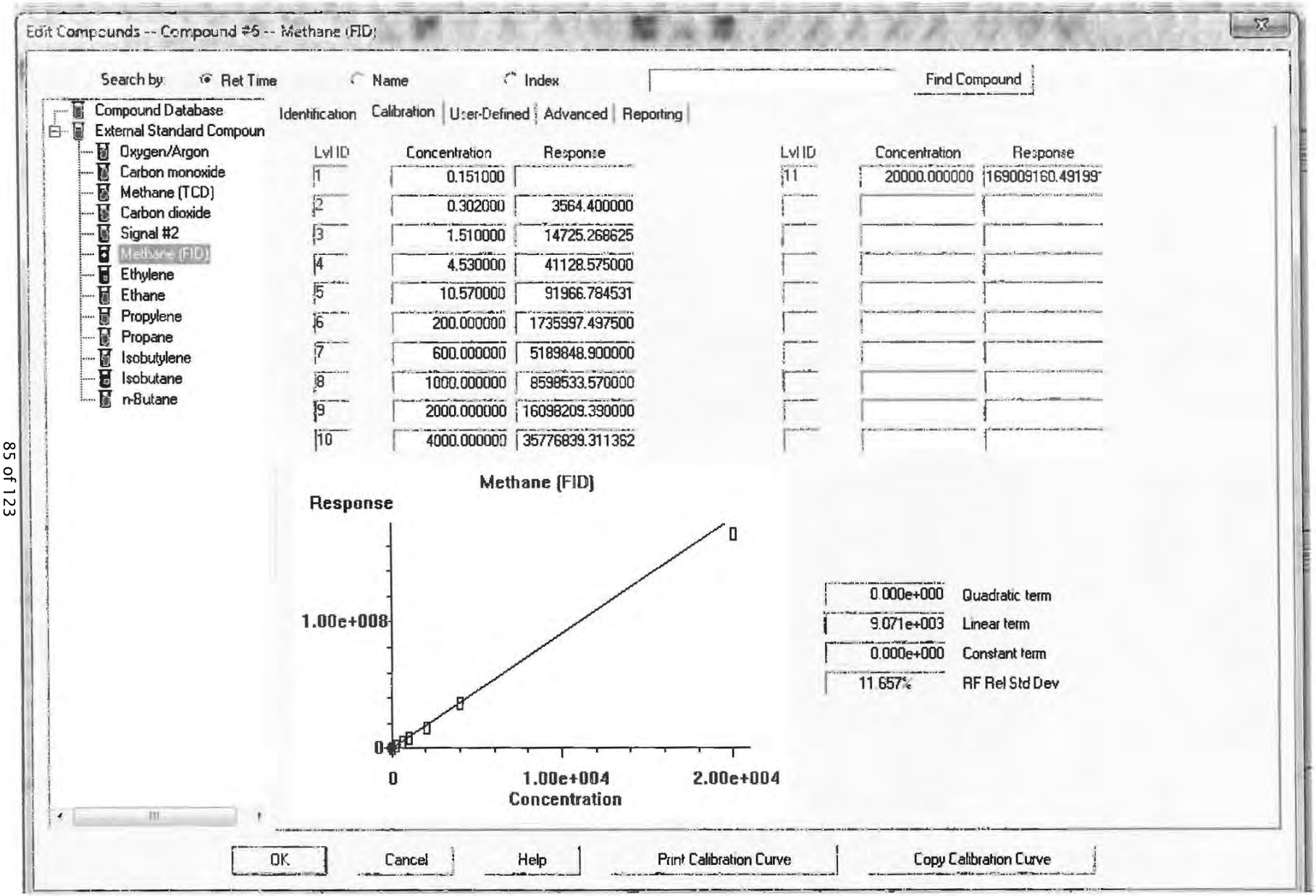
| | Compound | 1 | 2 | 3 | 4 | 5 | 6 | Avg | | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | Oxygen/Argon | 3.739 | | 1.014 | | | 0.001 | 0.793 | E6 | 189.17 |
| 2) | Carbon monoxide | 3.739 | | 1.014 | | | 0.001 | 0.594 | E6 | 221.92 |
| 3) | Methane (TCD) | | | | | | 2.161 | 0.951 | E2 | 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
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

Edit Compounds -- Compound #7 -- Ethylene

Search by: Ret Time | Name | Index | Find Compound

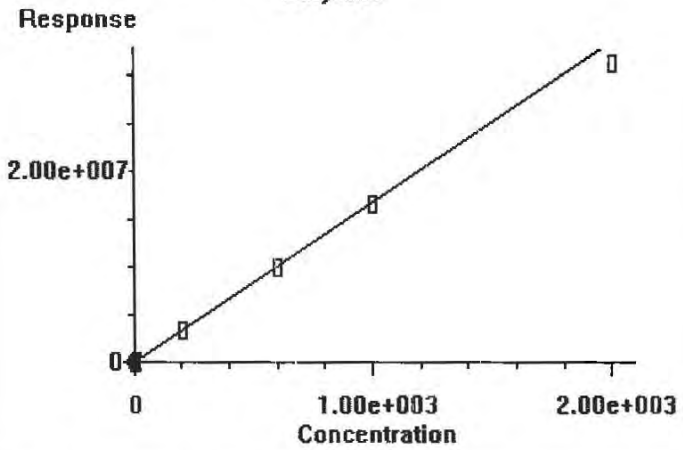
- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

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 | |

Ethylene




| | |
|---|---|
| 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

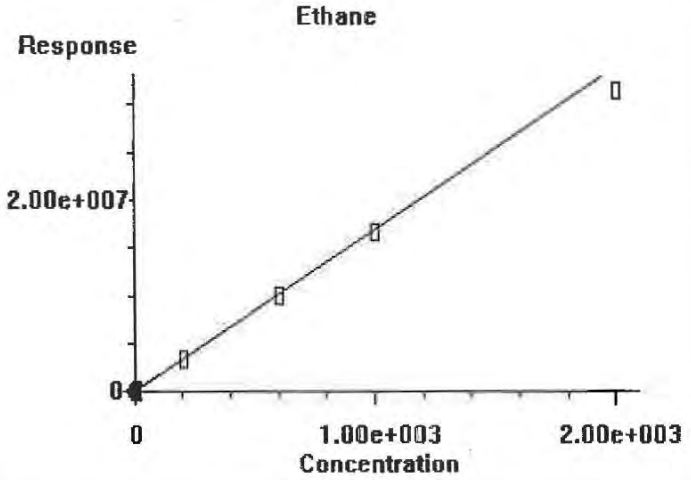
Search by: Ret Time | Name | Index — Find Compound

- 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

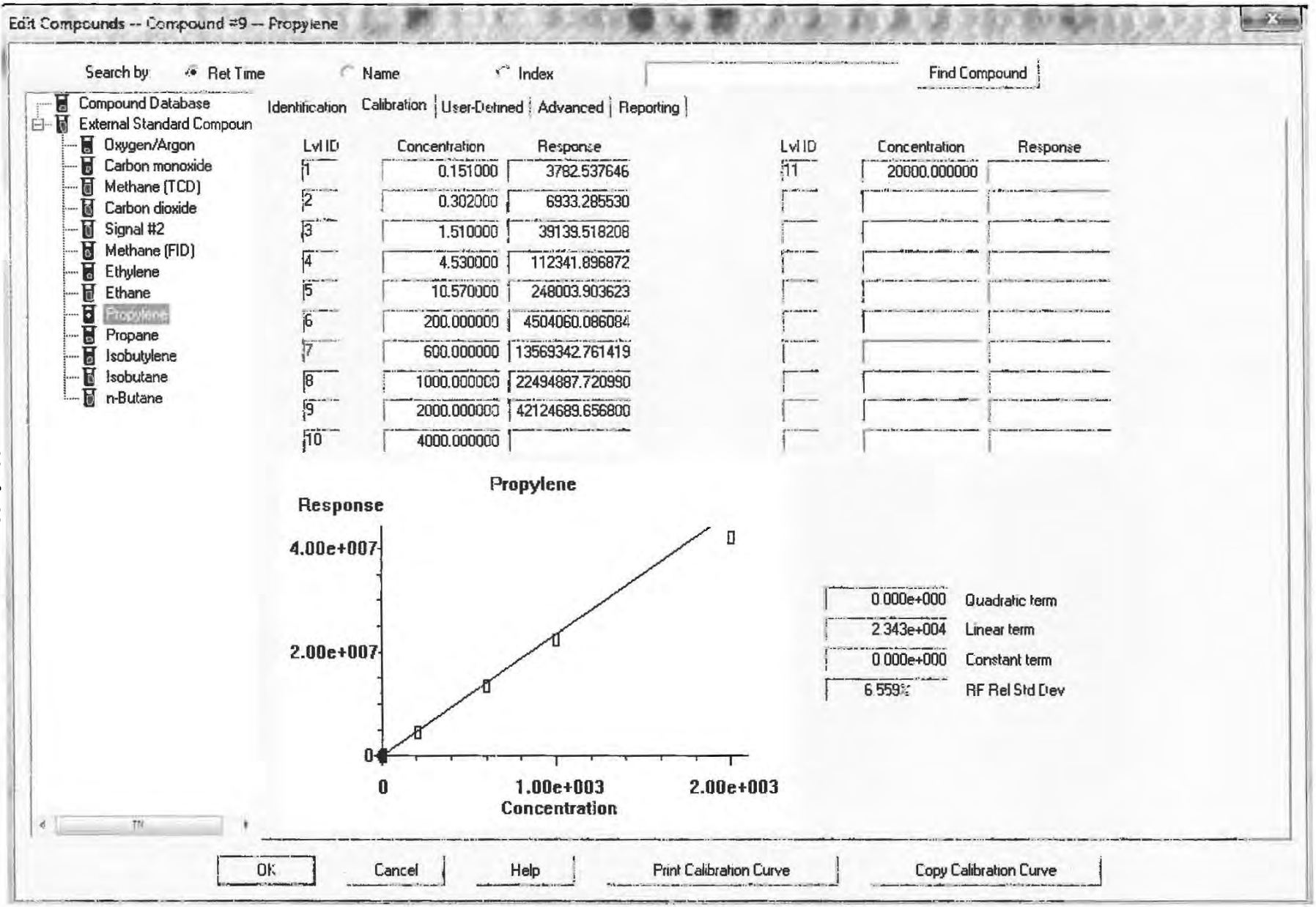
| Lvl ID | Concentration | Response |
|---|---|---|
| 1 | 0.151000 | 2689.928008 |
| 2 | 0.302000 | 5060.331943 |
| 3 | 1.510000 | 26943.667500 |
| 4 | 4.530000 | 78353.525045 |
| 5 | 10.570000 | 178840.731148 |
| 6 | 200.000000 | 3350442.319129 |
| 7 | 600.000000 | 10048964.218029 |
| 8 | 1000.000000 | 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
11 20000.000000
Propylene
Response
4.00e+007
2.00e+007
0
0
1.00e+003
2.00e+003
Concentration
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

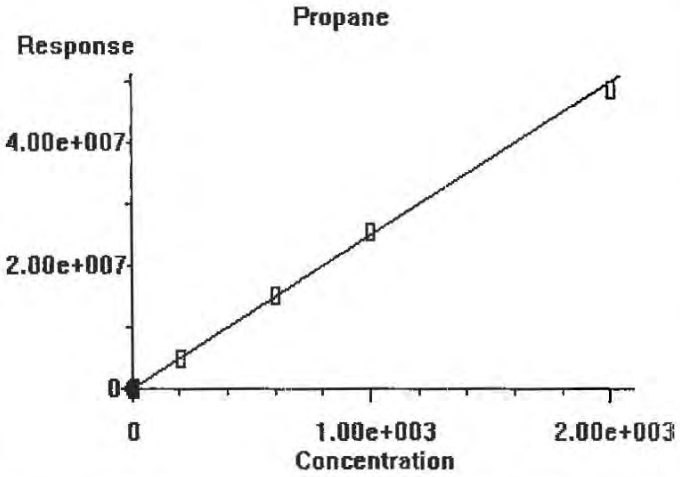
Search by: Ret Time | Name | Index — Find Compound

- 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.

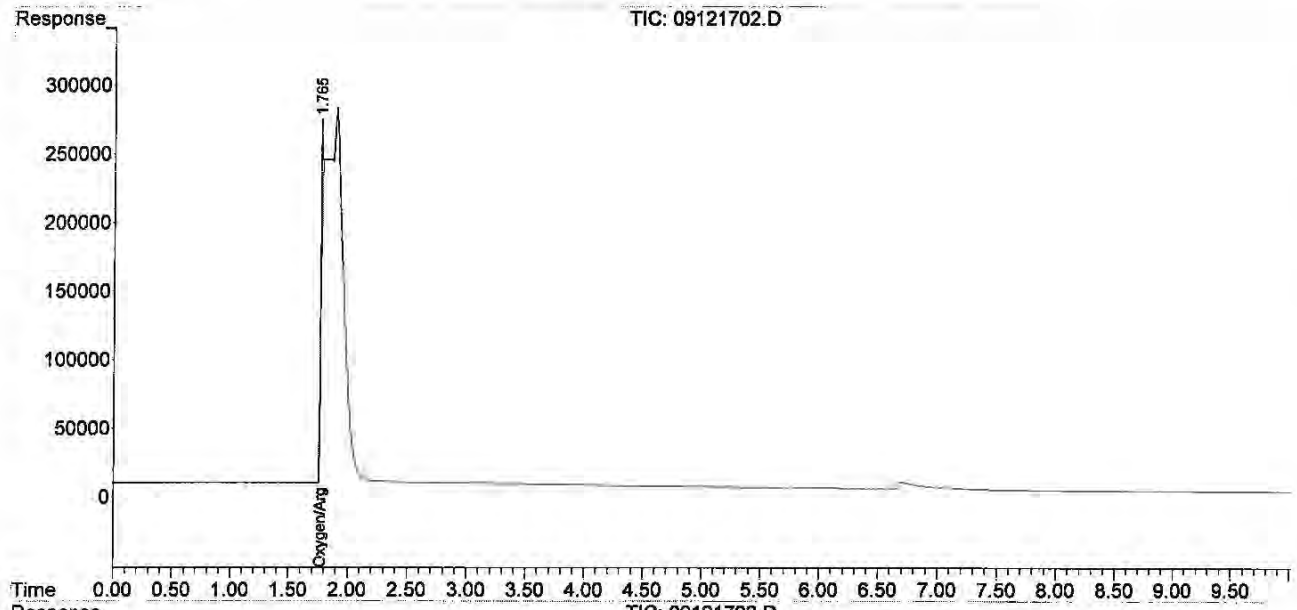
9/13/17

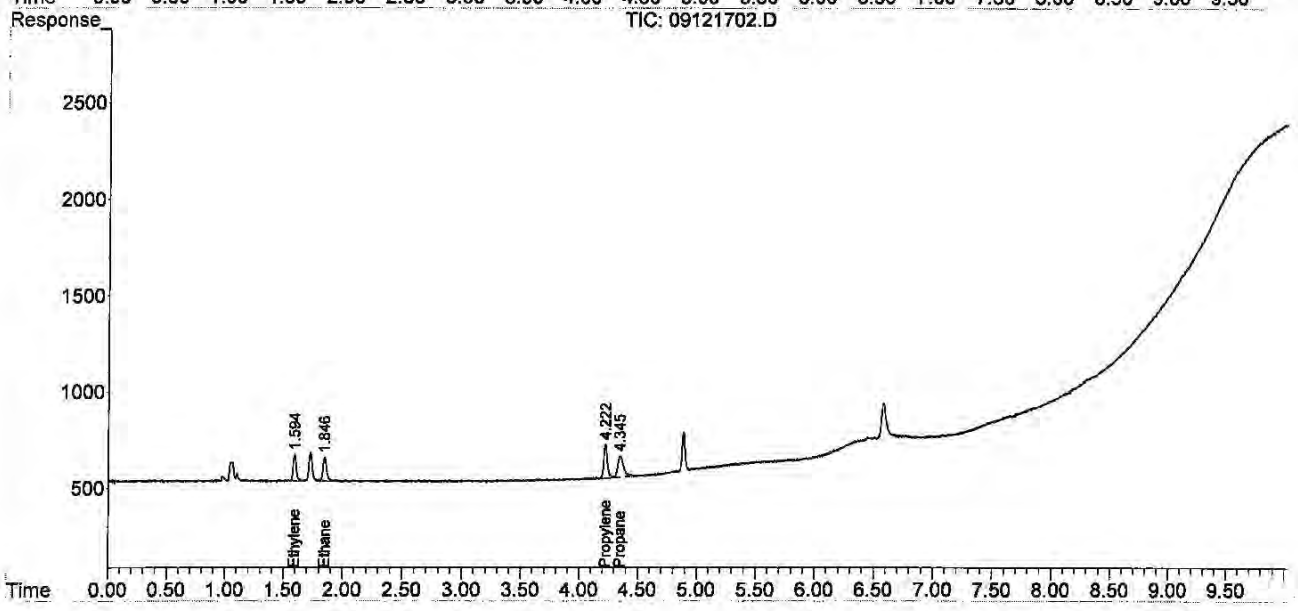
Quantitation Report (QT Reviewed)

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 :



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 | |

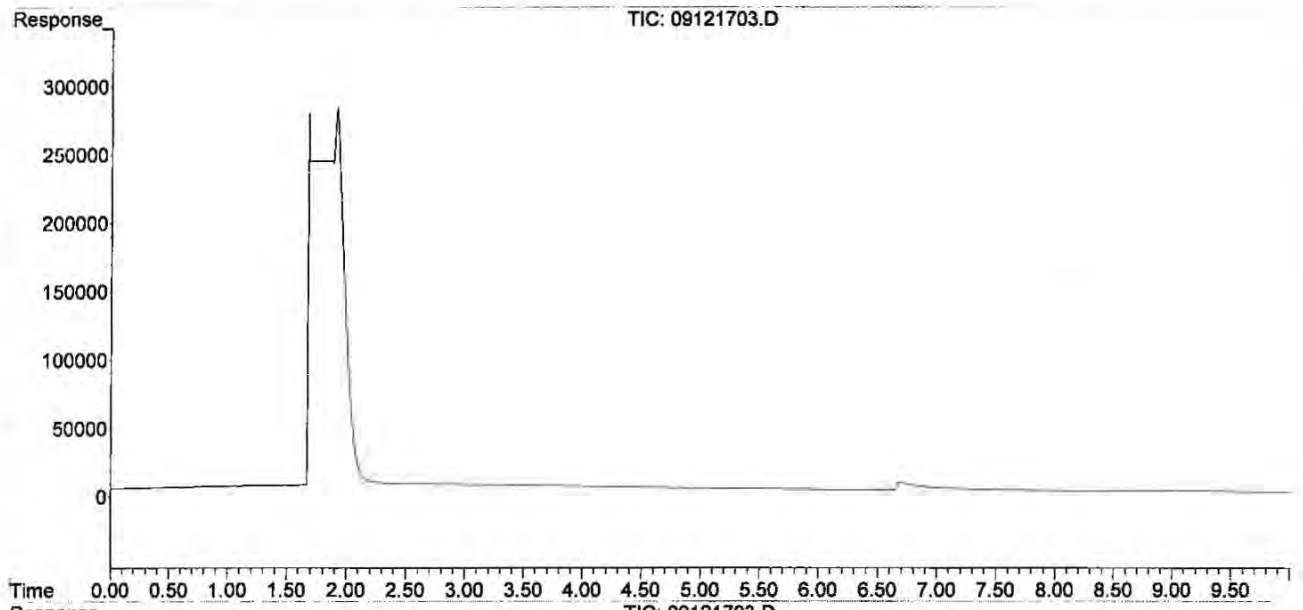
(f)=RT Delta > 1/2 Window (m)=manual int.

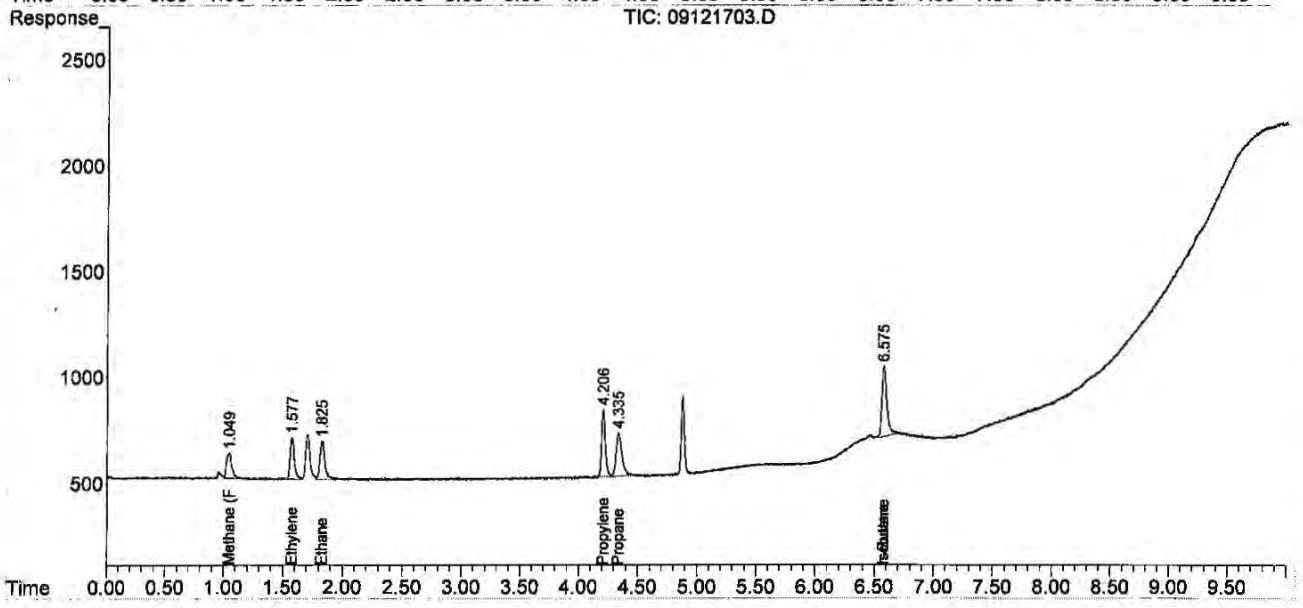
Quantitation Report (QT Reviewed)

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 :



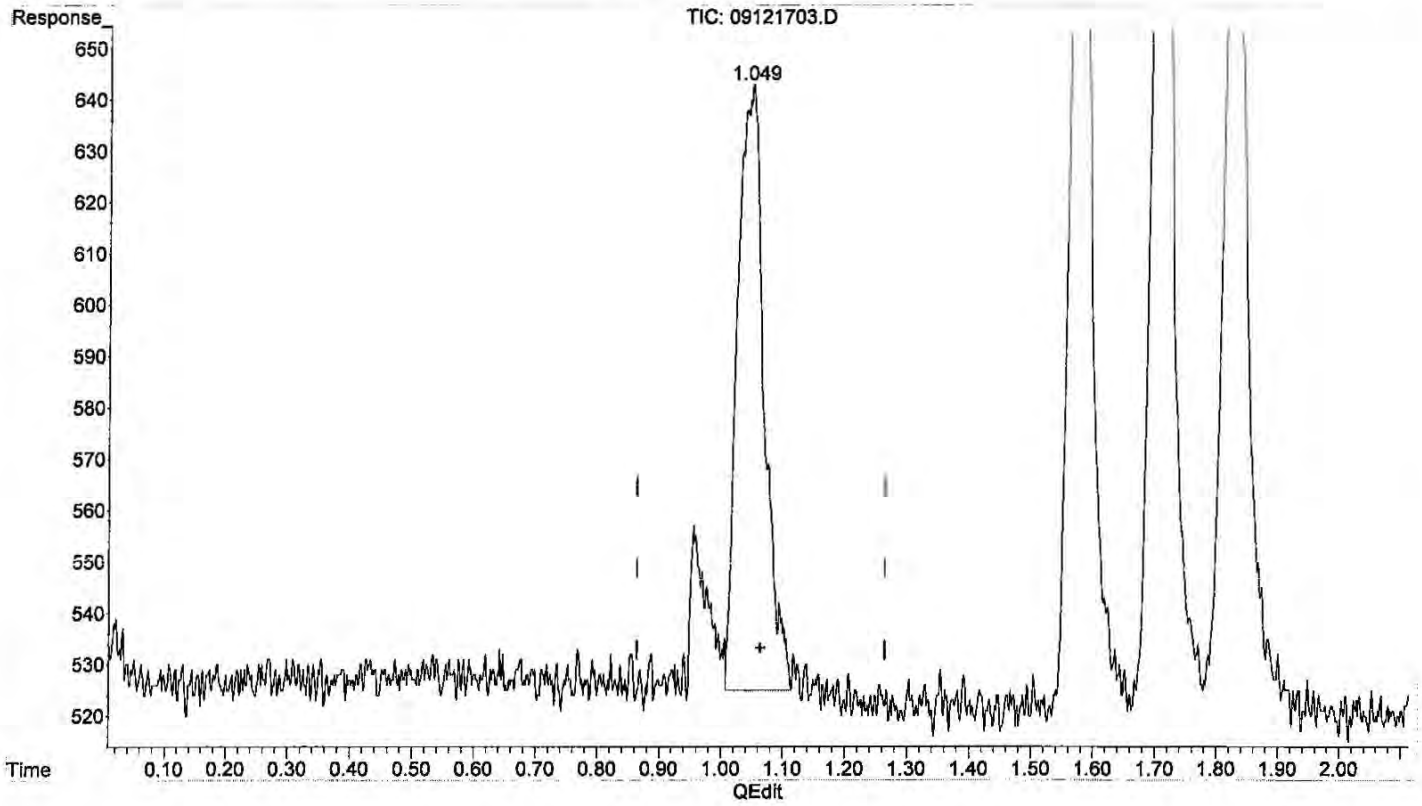



Quantitation Report (Qedit)

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 #1 Info :
Signal #2 Phase:
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 |

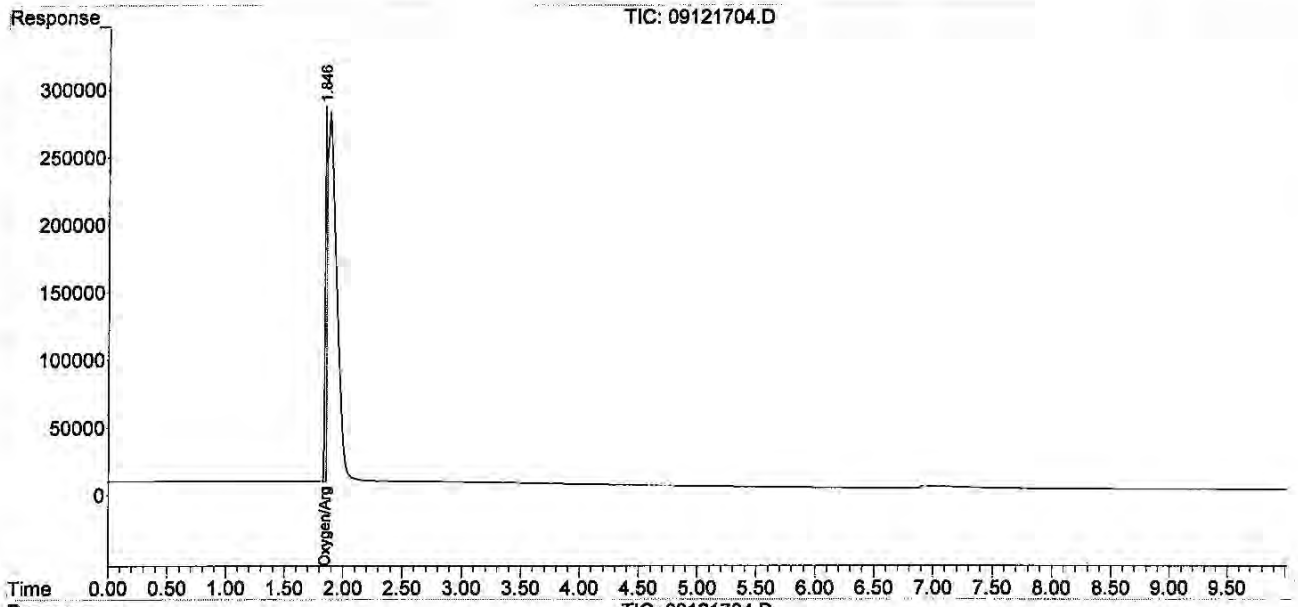
(f)=RT Delta > 1/2 Window (m)=manual int.

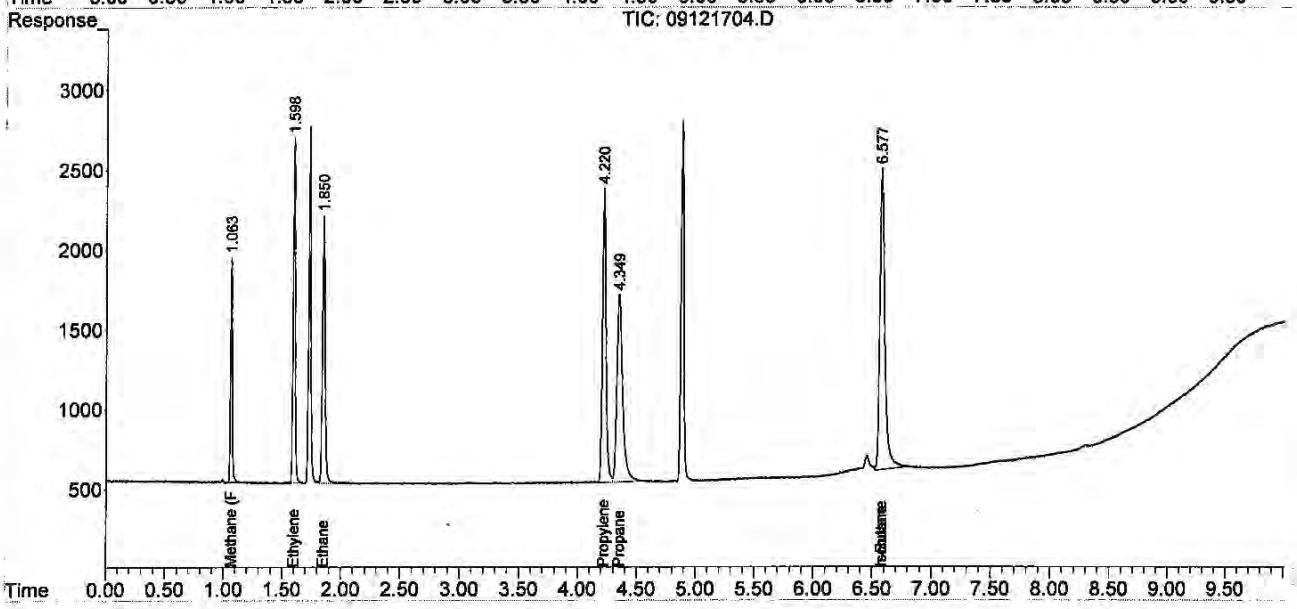
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

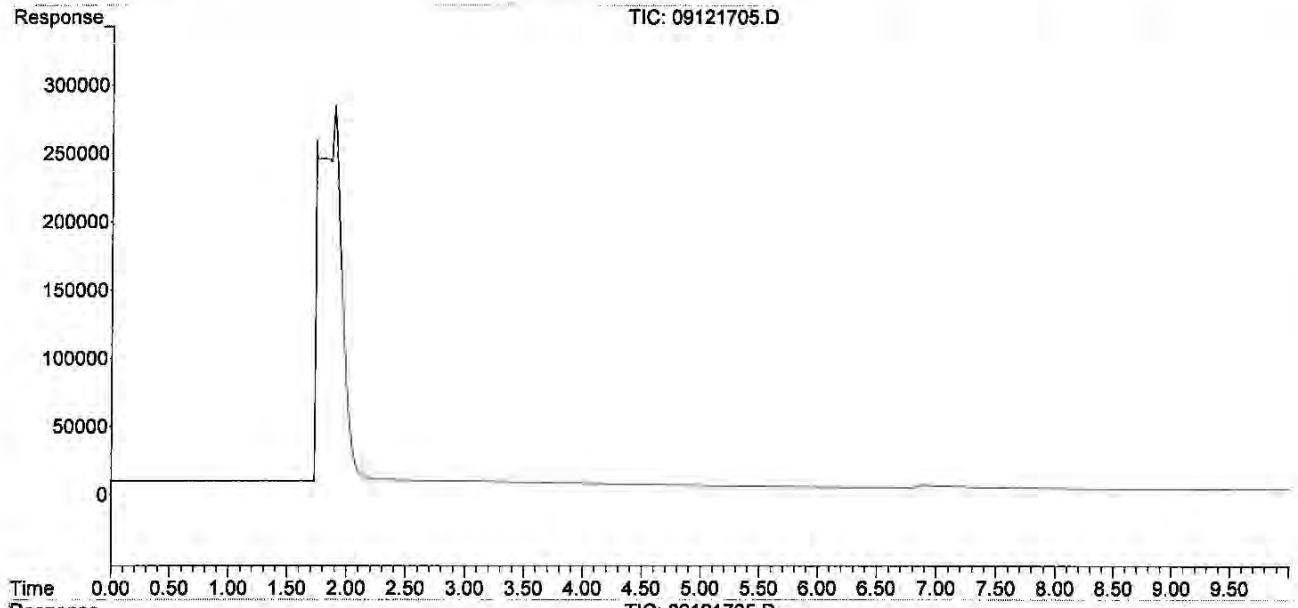
(f)=RT Delta > 1/2 Window (m)=manual int.

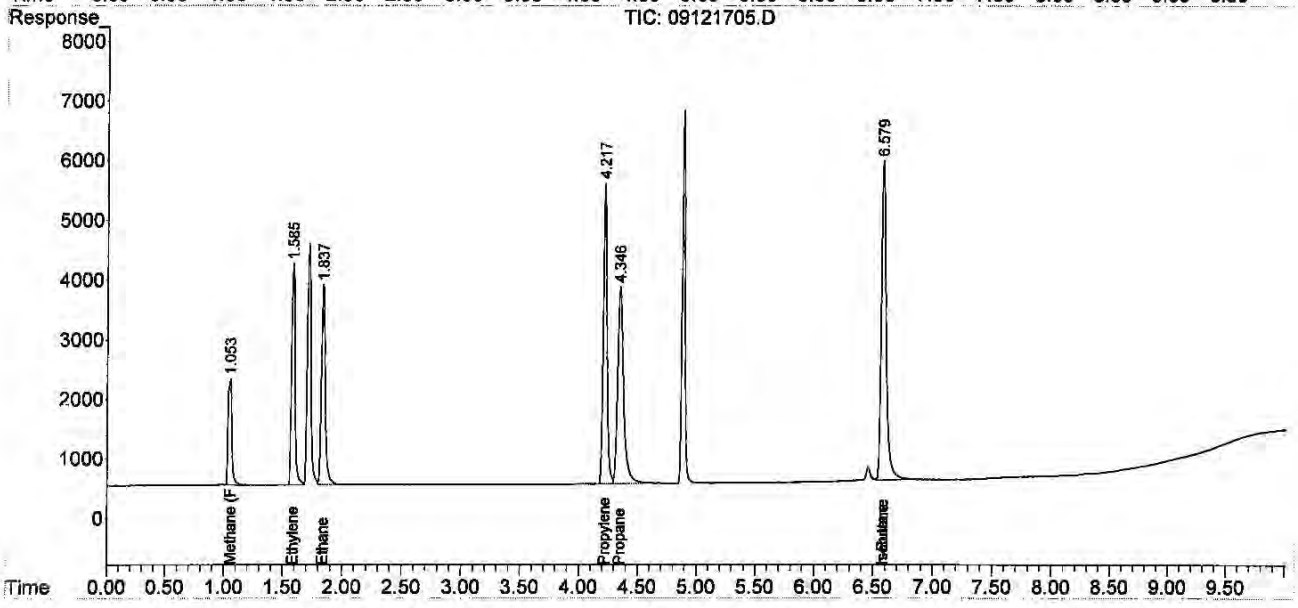
Quantitation Report (QT Reviewed)

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 |

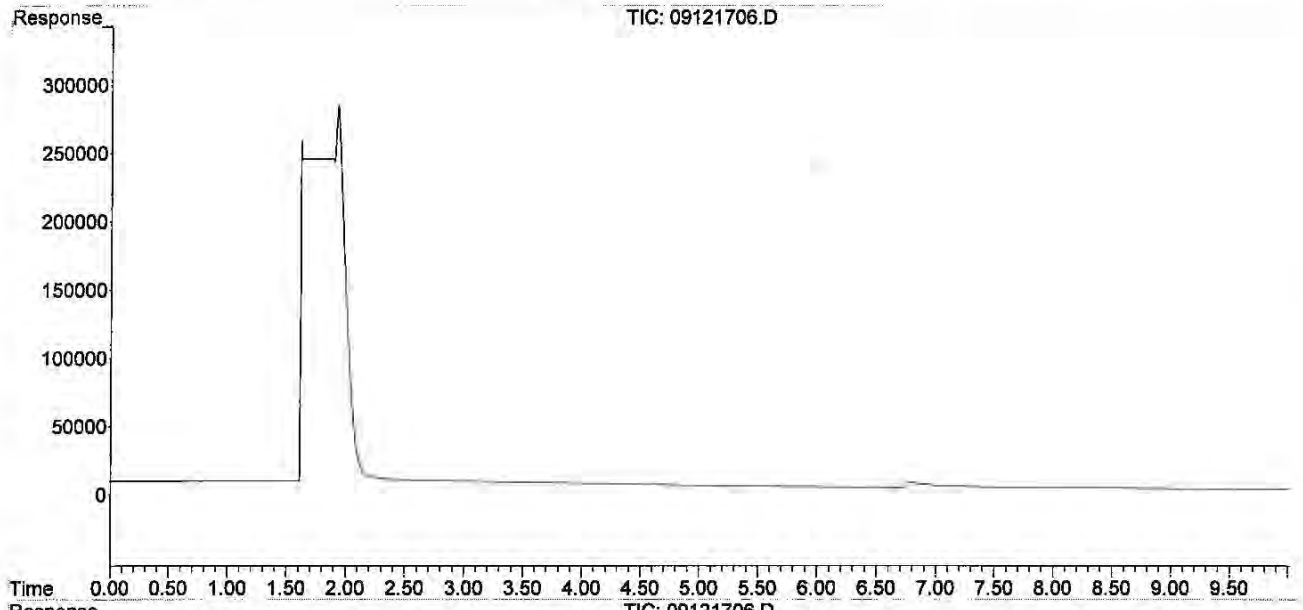
(f)=RT Delta > 1/2 Window (m)=manual int.

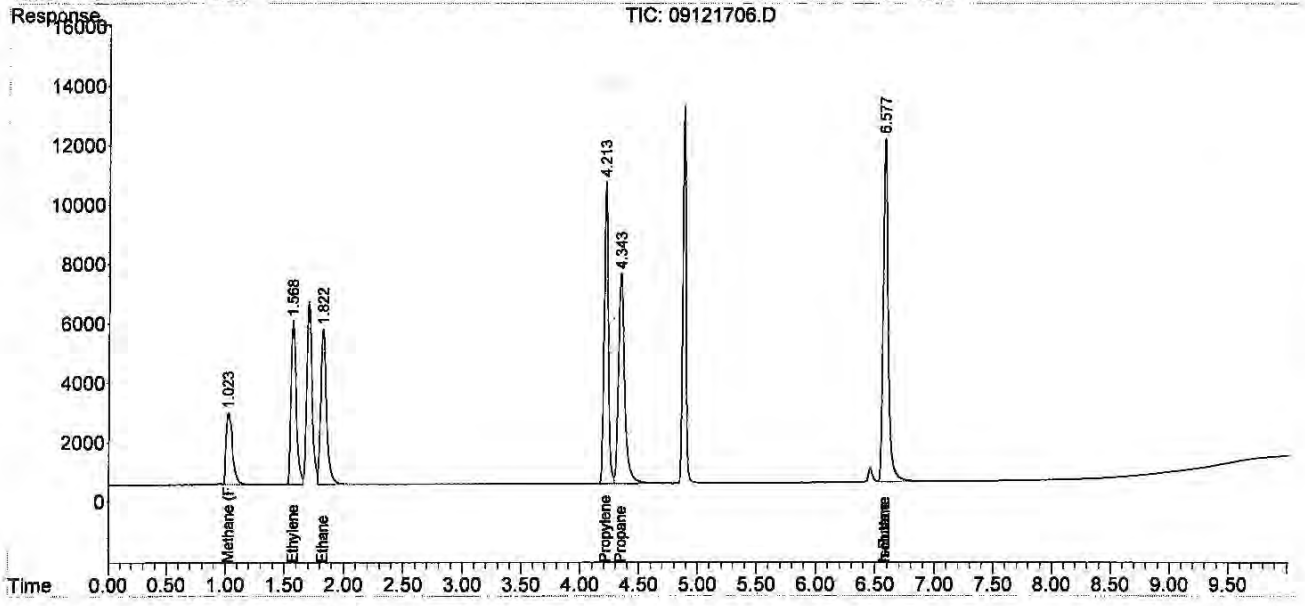
Quantitation Report (QT Reviewed)

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 |

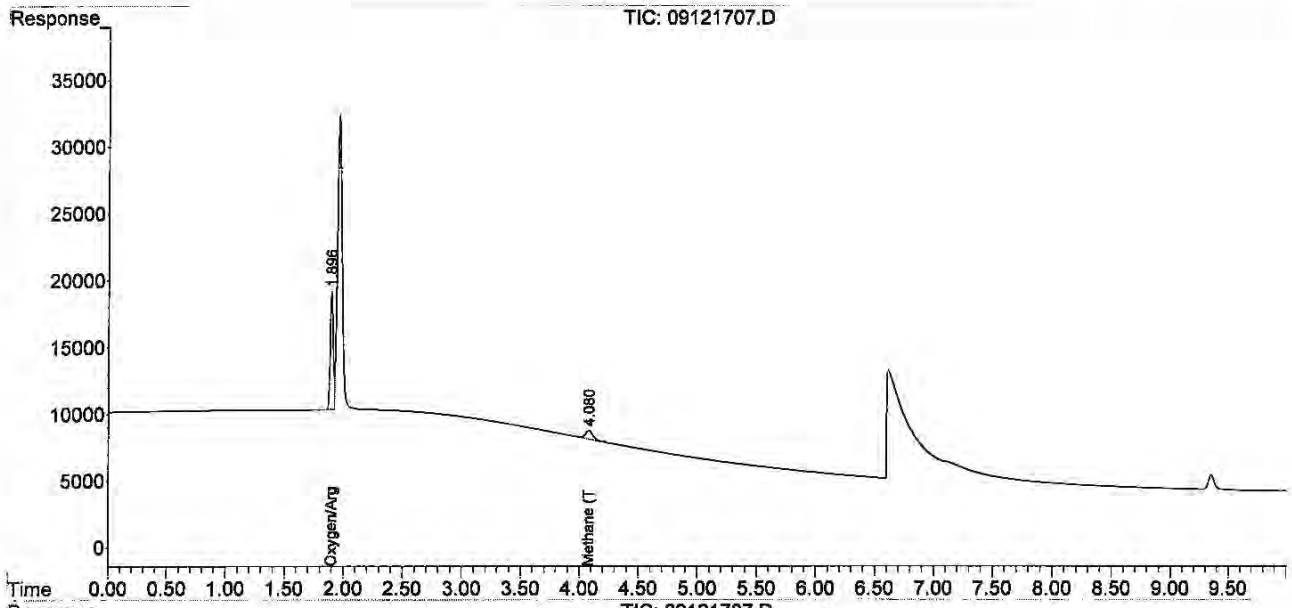
(f)=RT Delta > 1/2 Window (m)=manual int.

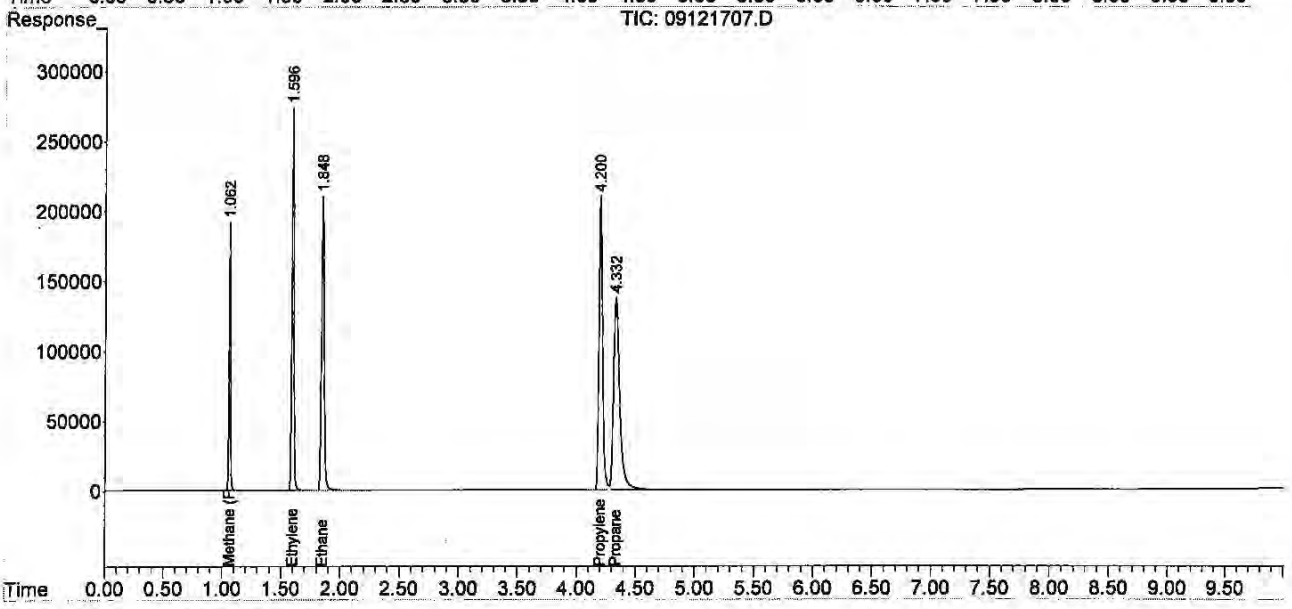
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

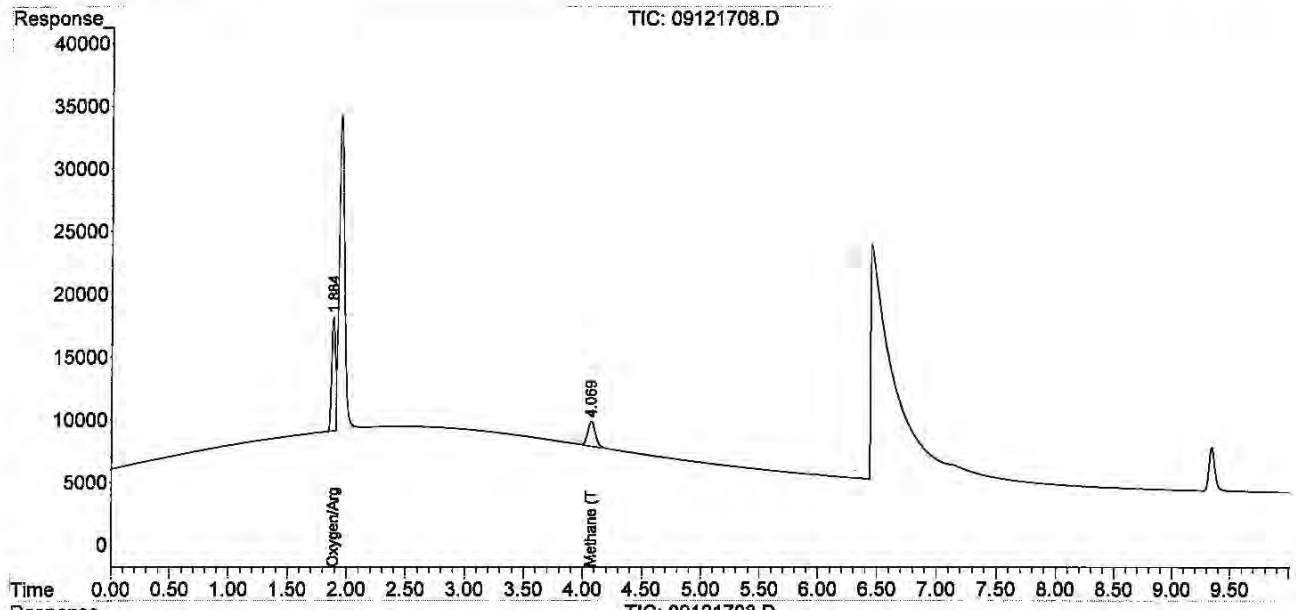
(f)=RT Delta > 1/2 Window (m)=manual int.

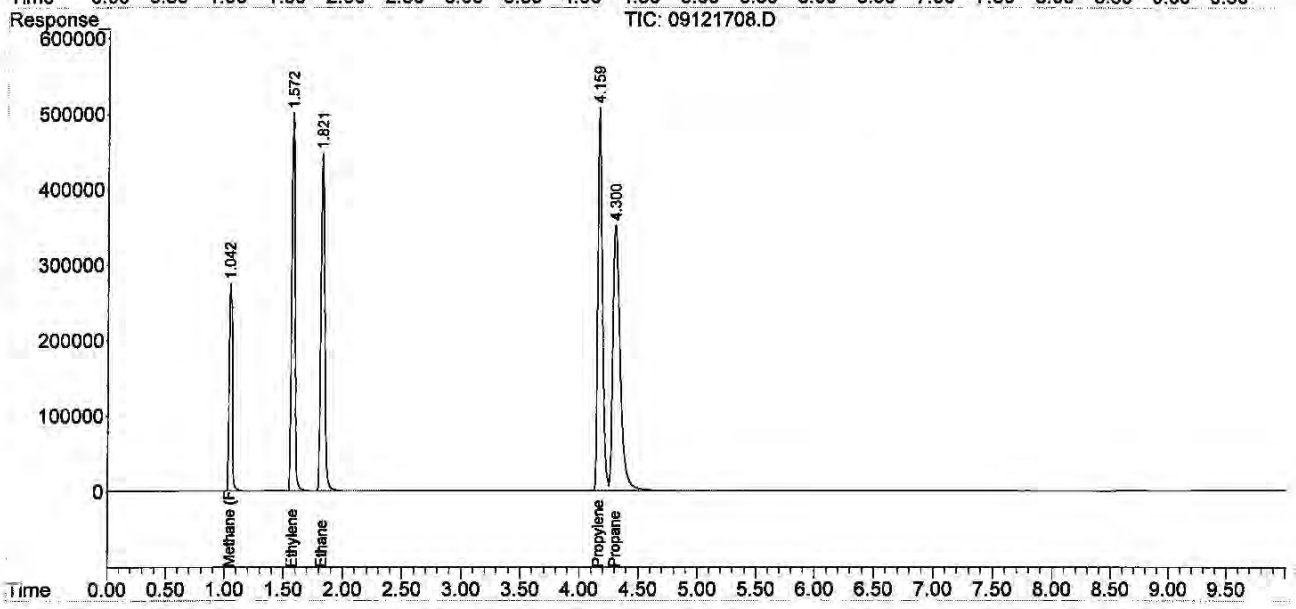
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

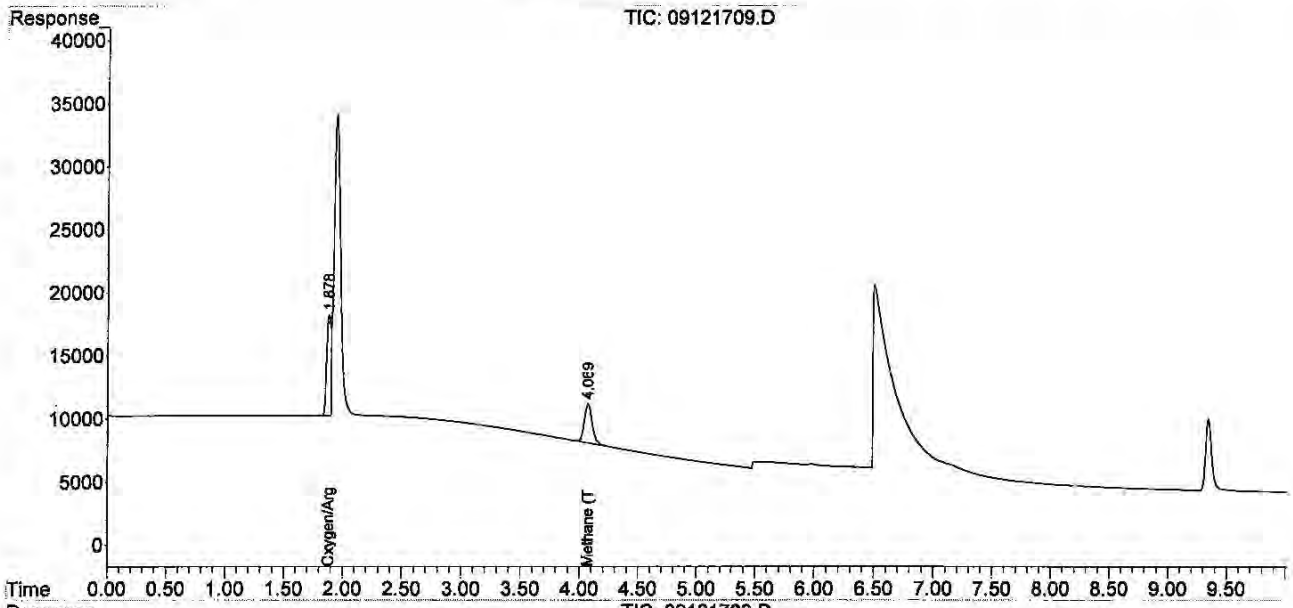
(f)=RT Delta > 1/2 Window (m)=manual int.

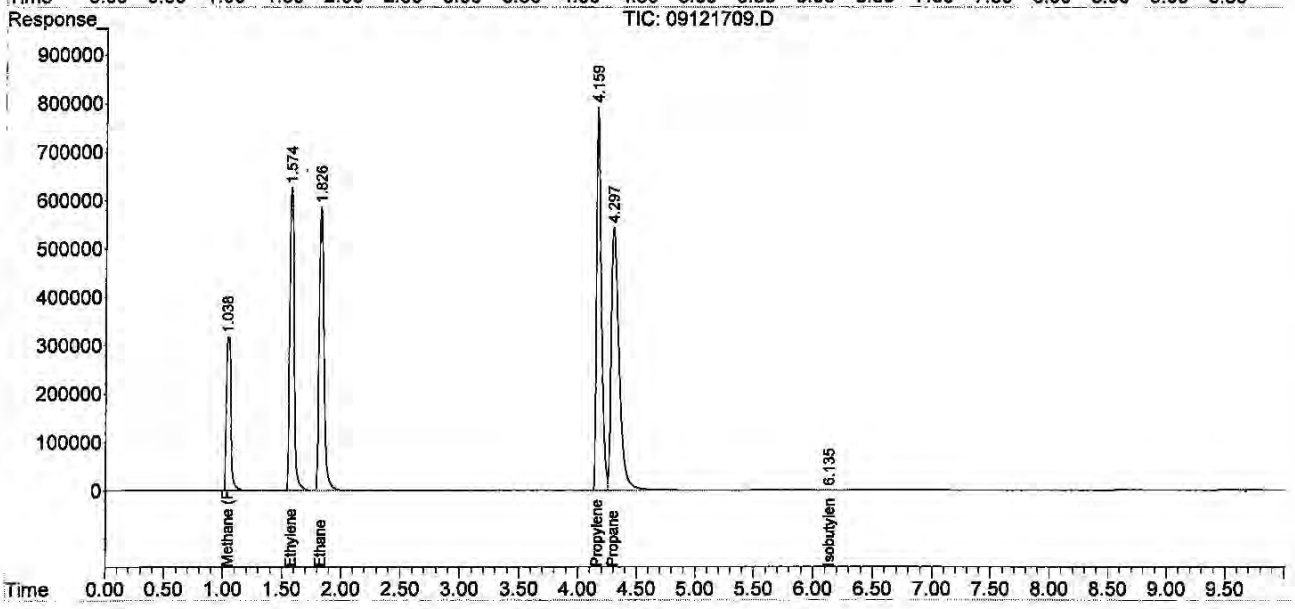
Quantitation Report (QT Reviewed)

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 | |

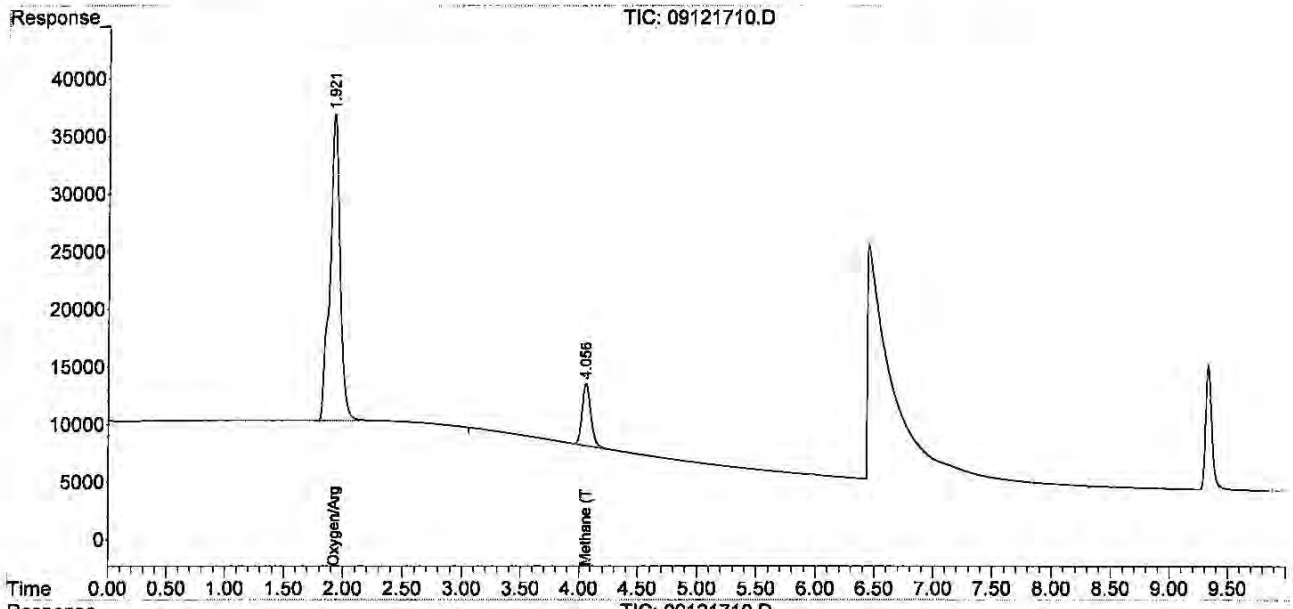
(f)=RT Delta > 1/2 Window (m)=manual int.

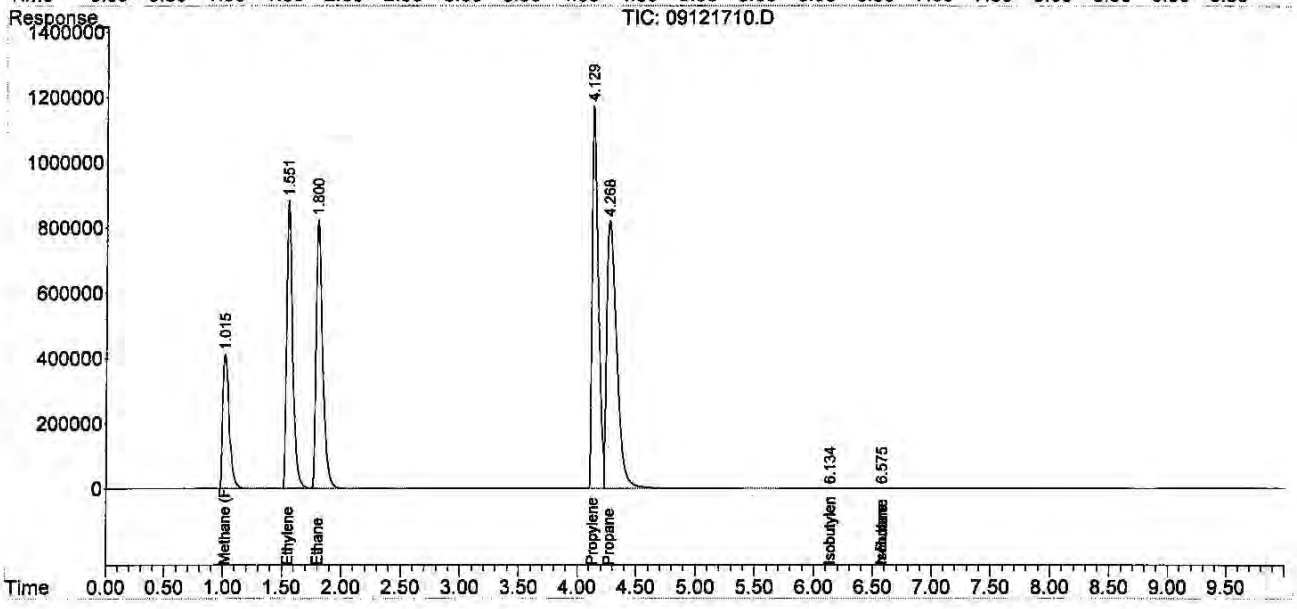
Quantitation Report (QT Reviewed)

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 :



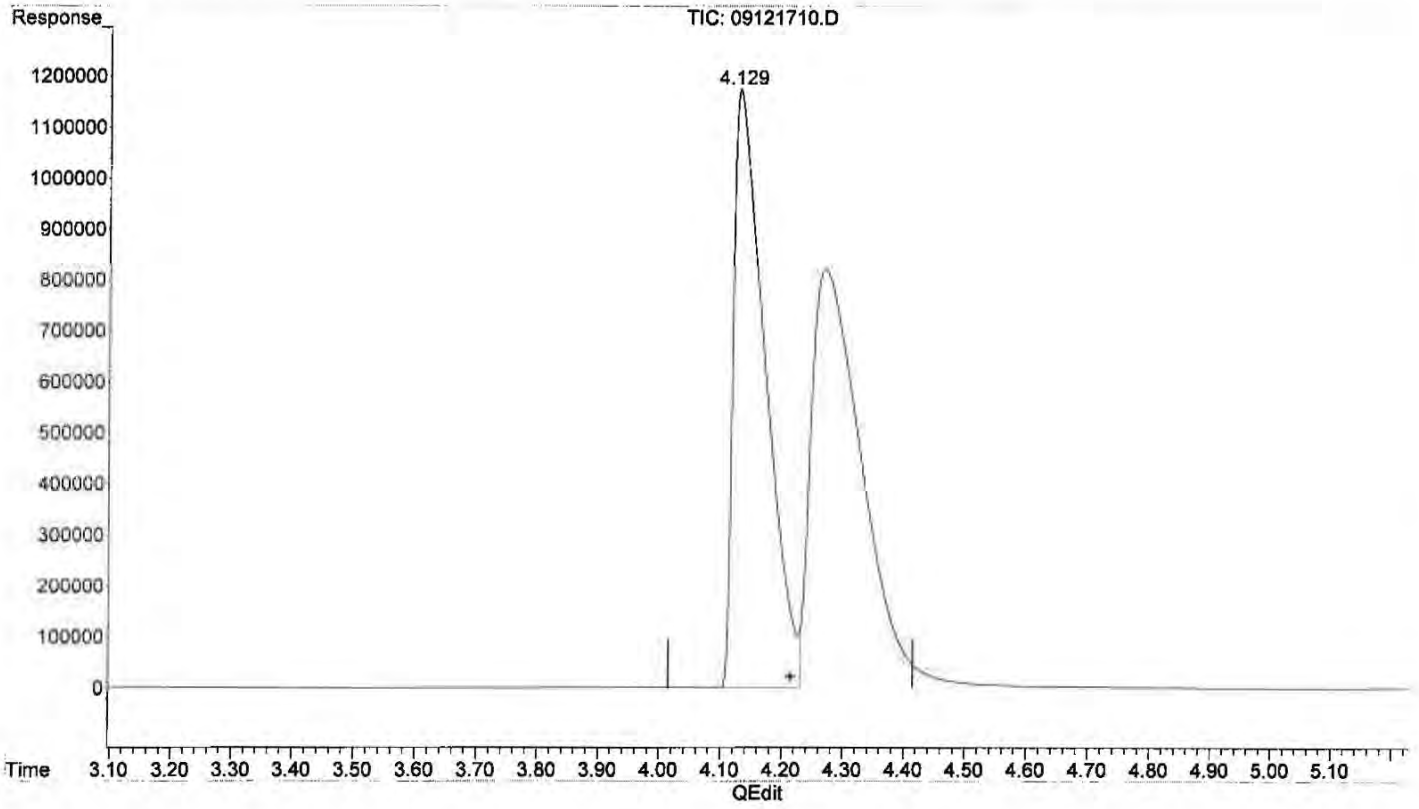



Quantitation Report (Qedit)

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 | |

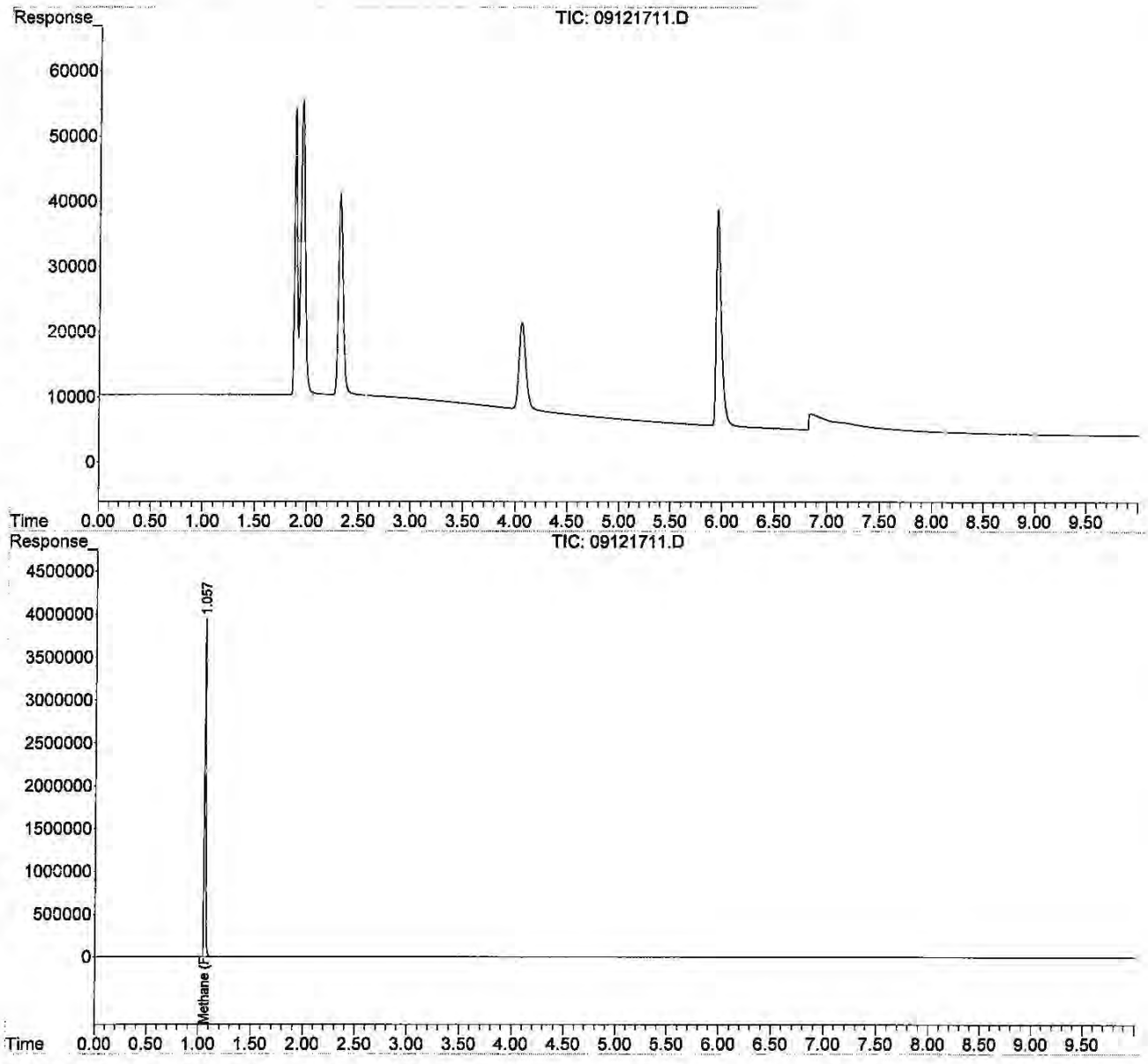
(f)=RT Delta > 1/2 Window (m)=manual int.

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



Quantitation Report (QT Reviewed)

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 | |

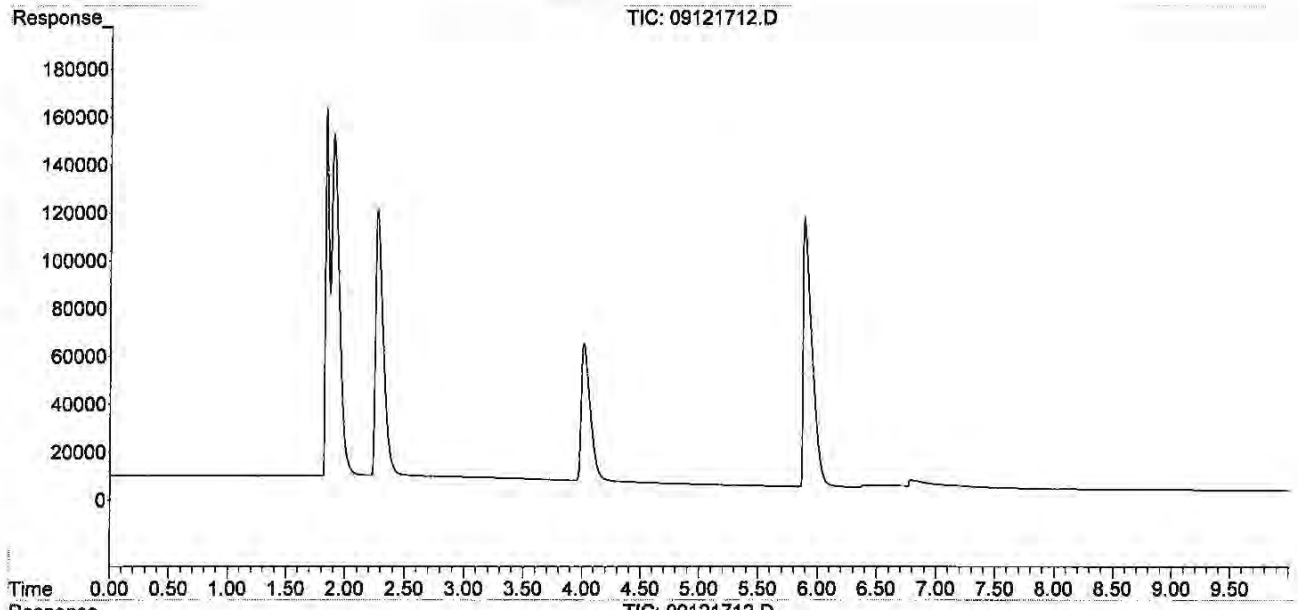
(f)=RT Delta > 1/2 Window (m)=manual int.

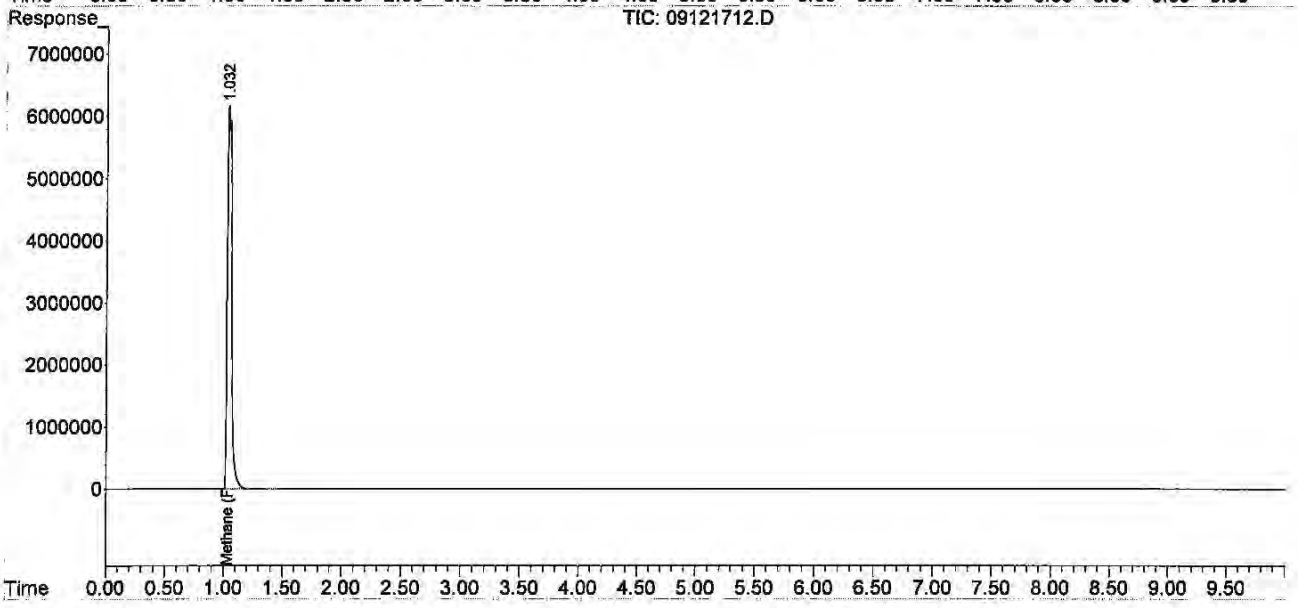
Quantitation Report (QT Reviewed)

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 | ~~1.510~~ 1.50 101.1 |
| 7) | Ethylene | 1.598 | 24153 | 1.443 | ppm | ~~1.490~~ 1.50 96.2 |
| 8) | Ethane | 1.850 | 24488 | 1.445 | ppm | ~~1.510~~ 1.50 96.3 |
| 9) | Propylene | 4.221 | 36004 | 1.537 | ppm | ~~1.490~~ 1.50 102.5 |
| 10) | Propane | 4.350 | 37738 | 1.517 | ppm | ~~1.511~~ 1.51 100.5 |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm | |
| 12) | Isobutane | 6.579f | 48019 | 1.804 | ppm | 9/14/17 |
| 13) | n-Butane | 6.579f | 48019 | 1.804 | ppm | |

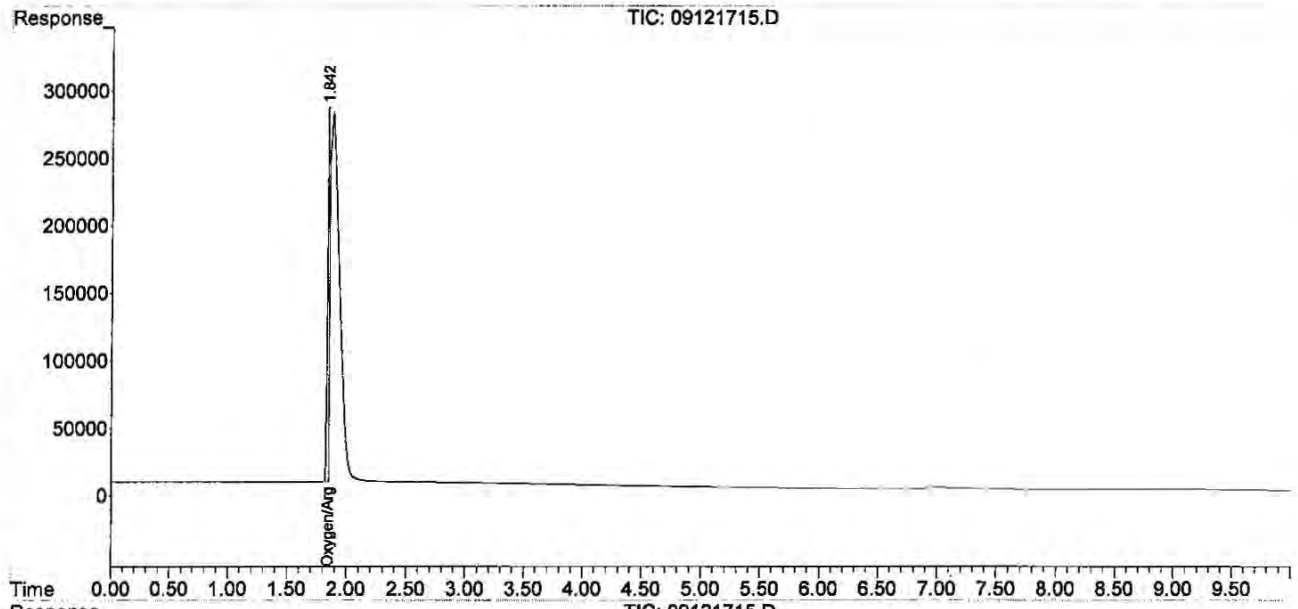
(f)=RT Delta > 1/2 Window (m)=manual int.

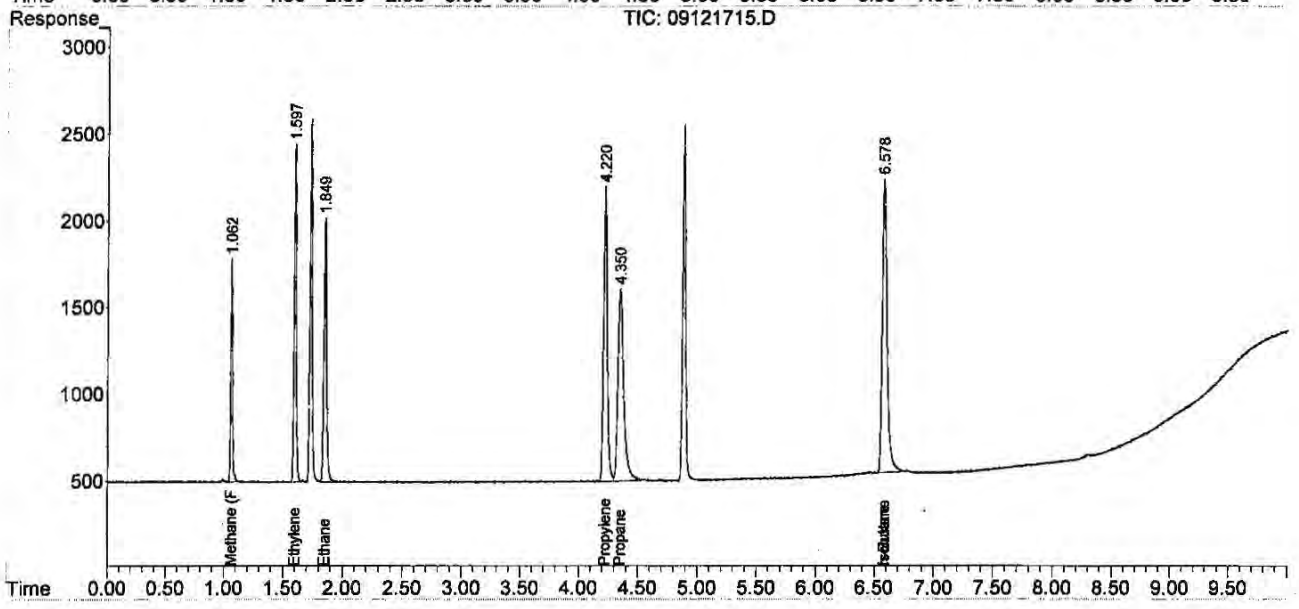
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 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 :



## *ALS Environmental*

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1900934
Sample Vol. (ml) : 32.00 ml
Analyst : MR
Date Analysis : 02/28/19
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 | Inj. Vol. | Methane | Ethylene | Ethane |
|---|---|---|---|---|
| std s32-07231801 | 0.100 | 1.701 | 1.644 | 1.627 |
| ACTUAL | | 1.51 | 1.51 | 1.51 |
| %Difference | | 12.6% | 8.9% | 7.7% |
| mcs 0.1ml | 0.100 | 0.284 | 0.000 | 0.000 |
| rb 0.1ml | 0.100 | 0.000 | 0.000 | 0.000 |
| fid lcs s30-05241604 | 0.100 | 1.602 | 1.020 | 1.261 |
| fid lcsd s30-05241604 | 0.100 | 1.524 | 1.040 | 1.278 |
| P1900934-001 0.1ml | 0.100 | 29.412 | 0.000 | 0.000 |
| P1900934-002 0.1ml | 0.100 | 0.120 | 0.000 | 0.000 |
| P1900934-003 0.1ml | 0.100 | 0.801 | 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 | 2.840 | 0.000 | 0.000 |
| fid lcs s30-05241604 | 16.020 | 10.200 | 12.610 |
| fid lcsd s30-05241604 | 15.240 | 10.400 | 12.780 |
| P1900934-001 0.1ml | 294.120 | 0.000 | 0.000 |
| P1900934-002 0.1ml | 1.200 | 0.000 | 0.000 |
| P1900934-003 0.1ml | 8.010 | 0.000 | 0.000 |

| | | | |
|---|---|---|---|
| std s32-07231801 | 1.580 | 1.637 | 1.615 |
| ACTUAL | 1.51 | 1.51 | 1.51 |
| %Difference | 4.6% | 8.4% | 7.0% |





00971500

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:10:42
Operator : MR
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: Mar 04 11:09:39 2019
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) | 1.113 | 15430 | 1.701 | ppm |
| 7) | Ethylene | 1.677 | 27517 | 1.644 | ppm |
| 8) | Ethane | 1.940 | 27574 | 1.627 | ppm |
| 9) | Propylene | 4.317 | 39489 | 1.685 | ppm |
| 10) | Propane | 4.441 | 40985 | 1.647 | ppm |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm |
| 12) | Isobutane | 6.652 | 53392 | 2.006 | ppm |
| 13) | n-Butane | 6.652 | 53392 | 2.006 | ppm |

(f)=RT Delta > 1/2 Window (m)=manual int.

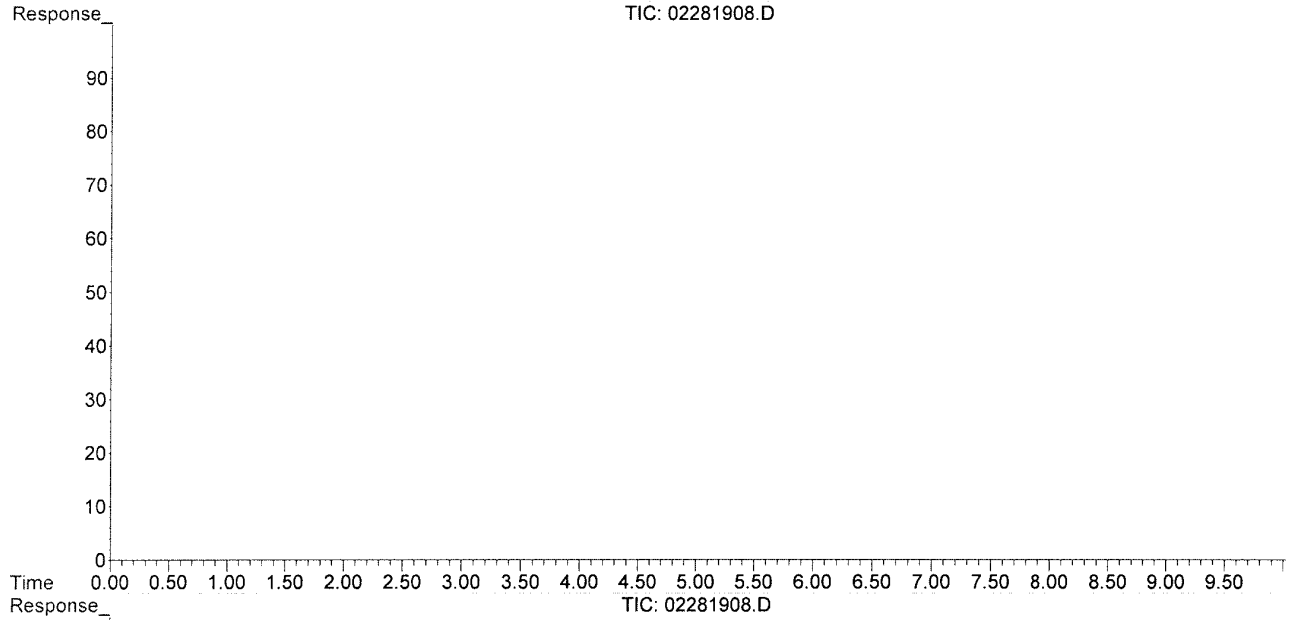
MR 3/4/19

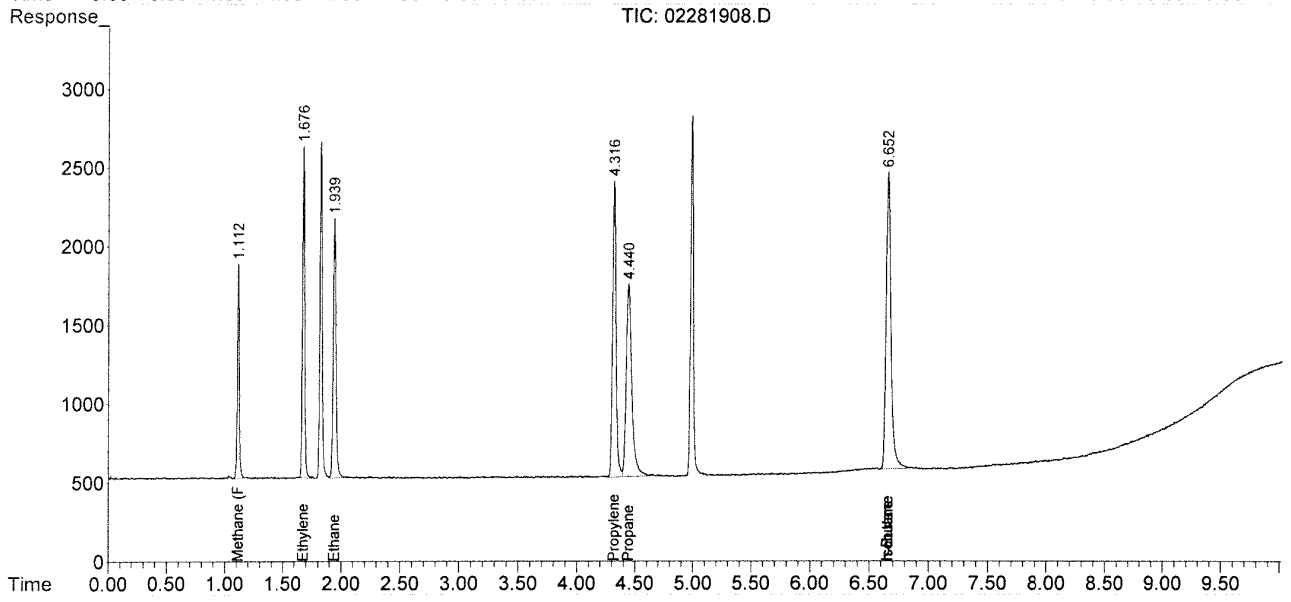
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 11:10:42
Operator : MR
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: Mar 04 11:09:39 2019
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\2019_02\28\
Data File : 02281928.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 16:36:59
Operator : MR
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: Feb 28 16:50:21 2019
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) | 1.099 | 14328 | 1.580 | ppm |
| 7) | Ethylene | 1.657 | 27386 | 1.637 | ppm |
| 8) | Ethane | 1.919 | 27373 | 1.615 | ppm |
| 9) | Propylene | 4.301 | 39498 | 1.686 | ppm |
| 10) | Propane | 4.425 | 40883 | 1.643 | ppm |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm |
| 12) | Isobutane | 6.642f | 52939 | 1.989 | ppm |
| 13) | n-Butane | 6.642f | 52939 | 1.989 | ppm |

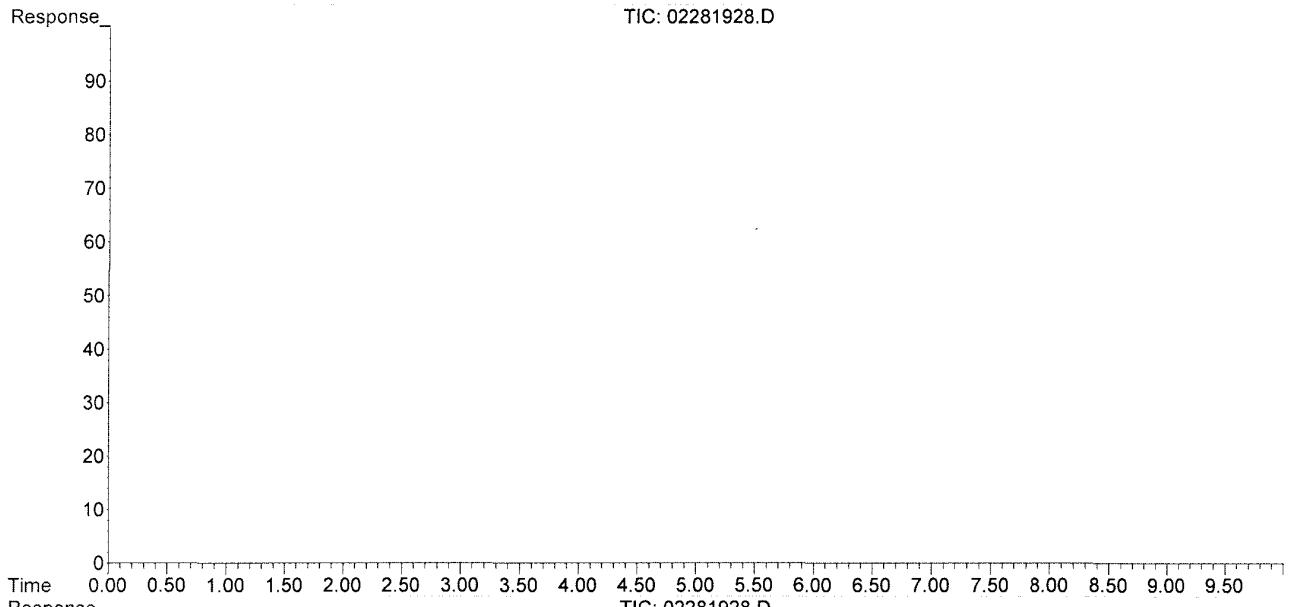
(f)=RT Delta > 1/2 Window (m)=manual int.

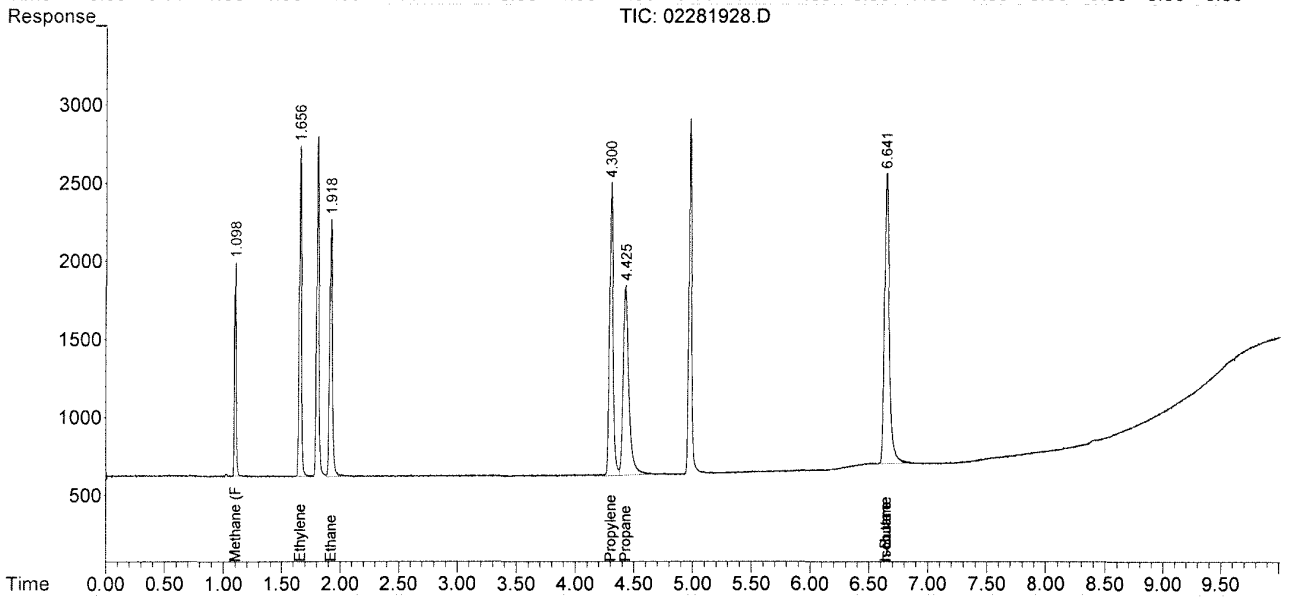
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_02\28\
Data File : 02281928.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 28-Feb-2019, 16:36:59
Operator : MR
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: Feb 28 16:50:21 2019
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 :



# 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\2019_02\28\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 28-Feb-19, 09:15:06 | 02281901.D | mdl m | | MR | RSKBOTH.M | |
| 2 | 28-Feb-19, 09:33:55 | 02281902.D | mdl m | | MR | RSKBOTH.M | |
| 3 | 28-Feb-19, 09:47:01 | 02281903.D | mdl m | | MR | RSKBOTH.M | |
| 4 | 28-Feb-19, 10:05:49 | 02281904.D | mdl eepp | | MR | RSKBOTH.M | |
| 5 | 28-Feb-19, 10:19:53 | 02281905.D | mdl eepp | | MR | RSKBOTH.M | |
| 6 | 28-Feb-19, 10:39:45 | 02281906.D | mdl eepp | | MR | RSKBOTH.M | |
| 7 | 28-Feb-19, 10:56:12 | 02281907.D | Prime | | MR | RSKBOTH.M | |
| 8 | 28-Feb-19, 11:10:42 | 02281908.D | std s32-07231801 | | MR | RSKBOTH.M | pass |
| 9 | 28-Feb-19, 11:34:23 | 02281909.D | rb 0.1ml | | MR | RSKBOTH.M | pass |
| 10 | 28-Feb-19, 11:48:14 | 02281910.D | mcs 0.1ml | | MR | RSKBOTH.M | pass |
| 11 | 28-Feb-19, 11:58:21 | 02281911.D | fid lcs s30-05241604 | | MR | RSKBOTH.M | pass |
| 12 | 28-Feb-19, 12:12:41 | 02281912.D | fid lcsd s30-05241604 | | MR | RSKBOTH.M | pass |
| 13 | 28-Feb-19, 12:28:59 | 02281913.D | K1901556-014 0.1ml | | MR | RSKBOTH.M | |
| 14 | 28-Feb-19, 13:06:13 | 02281914.D | K1901556-015 0.1ml | | MR | RSKBOTH.M | |
| 15 | 28-Feb-19, 13:23:06 | 02281915.D | K1901556-016 0.1ml | | MR | RSKBOTH.M | |
| 16 | 28-Feb-19, 13:32:52 | 02281916.D | K1901556-017 0.1ml | | MR | RSKBOTH.M | |
| 17 | 28-Feb-19, 14:01:28 | 02281917.D | K1901556-018 0.1ml | | MR | RSKBOTH.M | |
| 18 | 28-Feb-19, 14:14:52 | 02281918.D | K1901556-020 0.1ml | | MR | RSKBOTH.M | |
| 19 | 28-Feb-19, 14:29:51 | 02281919.D | K1901556-021 0.1ml | | MR | RSKBOTH.M | |
| 20 | 28-Feb-19, 14:42:31 | 02281920.D | K1901556-022 0.1ml | | MR | RSKBOTH.M | |
| 21 | 28-Feb-19, 14:58:18 | 02281921.D | K1901556-024 0.1ml | | MR | RSKBOTH.M | |
| 22 | 28-Feb-19, 15:18:02 | 02281922.D | std s32-07231801 | | MR | RSKBOTH.M | pass |
| 23 | 28-Feb-19, 15:29:33 | 02281923.D | P1900934-001 0.1ml | | MR | RSKBOTH.M | |
| 24 | 28-Feb-19, 15:43:37 | 02281924.D | P1900934-002 0.1ml | | MR | RSKBOTH.M | |
| 25 | 28-Feb-19, 15:58:36 | 02281925.D | P1900934-003 0.1ml | | MR | RSKBOTH.M | |
| 26 | 28-Feb-19, 16:11:42 | 02281926.D | XXstd s32-07231801 | | MR | RSKBOTH.M | |
| 27 | 28-Feb-19, 16:23:28 | 02281927.D | std s32-07231801 | | MR | RSKBOTH.M | pass |
| 28 | 28-Feb-19, 16:36:59 | 02281928.D | std s32-07231801 | | MR | RSKBOTH.M | pass |
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**www.alsglobal.com**

March 13, 2019 **Analytical Report for Service Request No:** K1901638

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

**RE: HS19021185 / HS19021185**

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory February 23, 2019
For your reference, these analyses have been assigned our service request number **K1901638.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Kelley Lovejoy

Kelley Lovejoy
Project Manager

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## Acronyms

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| A2LA | American Association for Laboratory Accreditation |
| CARB | California Air Resources Board |
| CAS Number | Chemical Abstract Service registry Number |
| CFC | Chlorofluorocarbon |
| CFU | Colony-Forming Unit |
| DEC | Department of Environmental Conservation |
| DEQ | Department of Environmental Quality |
| DHS | Department of Health Services |
| DOE | Department of Ecology |
| DOH | Department of Health |
| EPA | U. S. Environmental Protection Agency |
| ELAP | Environmental Laboratory Accreditation Program |
| GC | Gas Chromatography |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| LUFT | Leaking Underground Fuel Tank |
| M | Modified |
| MCL | Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA. |
| MDL | Method Detection Limit |
| MPN | Most Probable Number |
| MRL | Method Reporting Limit |
| NA | Not Applicable |
| NC | Not Calculated |
| NCASI | National Council of the Paper Industry for Air and Stream Improvement |
| ND | Not Detected |
| NIOSH | National Institute for Occupational Safety and Health |
| PQL | Practical Quantitation Limit |
| RCRA | Resource Conservation and Recovery Act |
| SIM | Selected Ion Monitoring |
| TPH | Total Petroleum Hydrocarbons |
| tr | Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL. |

## Inorganic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| E | The result is an estimate amount because the value exceeded the instrument calibration range. |
| J | The result is an estimated value. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |
| H | The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory. |

## Metals Data Qualifiers

| | |
|---|---|
| # | The control limit criteria is not applicable. See case narrative. |
| J | The result is an estimated value. |
| E | The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample. |
| M | The duplicate injection precision was not met. |
| N | The Matrix Spike sample recovery is not within control limits. See case narrative. |
| S | The reported value was determined by the Method of Standard Additions (MSA). |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| W | The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| + | The correlation coefficient for the MSA is less than 0.995. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Organic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| A | A tentatively identified compound, a suspected aldol-condensation product. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| C | The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data. |
| D | The reported result is from a dilution. |
| E | The result is an estimated value. |
| J | The result is an estimated value. |
| N | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| P | The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Additional Petroleum Hydrocarbon Specific Qualifiers

| | |
|---|---|
| F | The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard. |
| L | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard. |
| H | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard. |
| O | The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard. |
| Y | The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard. |
| Z | The chromatographic fingerprint does not resemble a petroleum product. |

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso**
**State Certifications, Accreditations, and Licenses**

| Agency | Web Site | Number |
|---|---|---|
| Alaska DEH | http://dec.alaska.gov/eh/lab/cs/csapproval.htm | UST-040 |
| Arizona DHS | http://www.azdhs.gov/lab/license/env.htm | AZ0339 |
| Arkansas - DEQ | http://www.adeq.state.ar.us/techsvs/labcert.htm | 88-0637 |
| California DHS (ELAP) | http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx | 2795 |
| DOD ELAP | http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm | L16-58-R4 |
| Florida DOH | http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm | E87412 |
| Hawaii DOH | http://health.hawaii.gov/ | - |
| ISO 17025 | http://www.pjlabs.com/ | L16-57 |
| Louisiana DEQ | http://www.deq.louisiana.gov/page/la-lab-accreditation | 03016 |
| Maine DHS | http://www.maine.gov/dhhs/ | WA01276 |
| Minnesota DOH | http://www.health.state.mn.us/accreditation | 053-999-457 |
| Nevada DEP | http://ndep.nv.gov/bsdw/labservice.htm | WA01276 |
| New Jersey DEP | http://www.nj.gov/dep/enforcement/oqa.html | WA005 |
| New York - DOH | https://www.wadsworth.org/regulatory/elap | 12060 |
| North Carolina DEQ | https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification | 605 |
| Oklahoma DEQ | http://www.deq.state.ok.us/CSDnew/labcert.htm | 9801 |
| Oregon – DEQ (NELAP) | http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx | WA100010 |
| South Carolina DHEC | http://www.scdhec.gov/environment/EnvironmentalLabCertification/ | 61002 |
| Texas CEQ | http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html | T104704427 |
| Washington DOE | http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html | C544 |
| Wyoming (EPA Region 8) | https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water- | - |
| Kelso Laboratory Website | www.alsglobal.com | NA |

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

# Case Narrative

**ALS Environmental—Kelso Laboratory**
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

**Client:** ALS Environmental - US
**Project:** HS19021185
**Sample Matrix:** Ground Water

**Service Request:** K1901638
**Date Received:** 02/23/2019

## CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

**Sample Receipt:**

Three ground water samples were received for analysis at ALS Environmental on 02/23/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. The sample was stored in a refrigerator at 4ºC upon receipt at the laboratory.

**General Chemistry:**

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 03/13/2019

# Chain of Custody

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
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K190 1638

10450 Stancliff Rd, Ste 210
Houston, TX 77099
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**F:** +1 281 530 5887
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# Subcontract Chain of Custody

**COC ID: 10816**

**SUBCONTRACT TO:**

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

**Phone:** +1 360 501 3312

**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:** | HS19021185 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| **1.** | **HS19021185-01** | **46WW11-190221** | **Groundwater** | **21 Feb 2019 08:25** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 08 Mar 2019 |
| **2.** | **HS19021185-02** | **46WW02-190221** | **Groundwater** | **21 Feb 2019 09:25** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 08 Mar 2019 |
| **3.** | **HS19021185-03** | **46WW16-190221** | **Groundwater** | **21 Feb 2019 10:25** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 08 Mar 2019 |

**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: 2/22/19 1800.

Received By: _____ Date/Time: 2-23-19 11:30

Cooler ID(s): _____ Temperature(s): _____

ALS

PC KL

## Cooler Receipt and Preservation Form

Client ALS-Houston Service Request K19 01638

Received: 2-23-19 Opened: 2-23-19 By: KP Unloaded: 2-23-19 By: KP

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Top Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

| Raw Cooler Temp | Corrected Cooler Temp | Raw Temp Blank | Corrected Temp Blank | Corr. Factor | Thermometer ID | Cooler/COC ID (NA) | Tracking Number NA | Filed |
|---|---|---|---|---|---|---|---|---|
| 4.4 | 4.2 | 1.4 | 1.2 | -0.2 | 329 | | 4809 7831 0617 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

| Sample ID on Bottle | Sample ID on COC | Identified by: |
|---|---|---|
| | | |
| | | |
| | | |

| Sample ID | Bottle Count Bottle Type | Out of Temp | Head-space | Broke | pH | Reagent | Volume added | Reagent Lot Number | Initials | Time |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
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*Notes, Discrepancies, & Resolutions:* _____

# General Chemistry

**ALS Environmental—Kelso Laboratory**
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www.alsglobal.com

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901638 |
| **Project:** | HS19021185/HS19021185 | **Date Collected:** | 02/21/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 02/23/19 |
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |

**Carbon, Total Organic**

| Sample Name | Lab Code | Result | LOQ | LOD | MDL | Dil. | Date Analyzed | Q |
|---|---|---|---|---|---|---|---|---|
| HS19021185-01 | K1901638-001 | **2.65** | 0.50 | 0.20 | 0.07 | 1 | 03/06/19 22:30 | |
| HS19021185-02 | K1901638-002 | **11.2** | 0.50 | 0.20 | 0.07 | 1 | 03/06/19 22:58 | |
| HS19021185-03 | K1901638-003 | **4.88** | 0.50 | 0.20 | 0.07 | 1 | 03/06/19 23:26 | |
| Method Blank | K1901638-MB2 | ND U | 0.50 | 0.20 | 0.07 | 1 | 03/06/19 15:18 | |
| Method Blank | K1901638-MB3 | ND U | 0.50 | 0.20 | 0.07 | 1 | 03/07/19 00:39 | |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901638 |
| **Project** | HS19021185/HS19021185 | **Date Collected:** | 02/21/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 02/23/19 |
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |

**Replicate Sample Summary**
**Carbon, Total Organic**

| Sample Name: | Lab Code: | LOQ | LOD | MDL | Sample Result | Duplicate Result | Average | RPD | RPD Limit | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| Batch QC | K1901602-003DUP | 2.0 | 0.8 | 0.3 | 65.7 | 66.0 | 65.8 | <1 | 10 | 03/06/19 |
| HS19021185-01 | K1901638-001DUP2 | 0.50 | 0.20 | 0.07 | 2.65 | 2.55 | 2.60 | 4 | 10 | 03/06/19 |
| HS19021185-02 | K1901638-002DUP2 | 0.50 | 0.20 | 0.07 | 11.2 | 11.0 | 11.1 | 2 | 10 | 03/06/19 |
| HS19021185-03 | K1901638-003DUP2 | 0.50 | 0.20 | 0.07 | 4.88 | 4.80 | 4.84 | 1 | 10 | 03/06/19 |

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

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901638 |
| **Project:** | HS19021185/HS19021185 | **Date Collected:** | N/A |
| **Sample Matrix:** | Ground Water | **Date Received:** | N/A |
| | | **Date Analyzed:** | 03/6/19 |
| | | **Date Extracted:** | NA |

**Matrix Spike Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Sample Name:** | Batch QC | **Units:** | mg/L |
| **Lab Code:** | K1901602-003 | **Basis:** | NA |
| **Analysis Method:** | SM 5310 C | | |
| **Prep Method:** | None | | |

**Matrix Spike**
K1901602-003MS

| Analyte Name | Sample Result | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Carbon, Total Organic | 65.7 | 173 | 100 | 107 | 83-117 |

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

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901638 |
| **Project:** | HS19021185/HS19021185 | **Date Analyzed:** | 03/06/19 |
| **Sample Matrix:** | Ground Water | **Date Extracted:** | NA |

**Lab Control Sample Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |
| | | **Analysis Lot:** | 627457 |

| Sample Name | Lab Code | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Lab Control Sample | K1901638-LCS2 | 27.5 | 25.0 | 110 | 83-117 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901638 |
| **Project:** | HS19021185/HS19021185 | **Date Analyzed:** | 03/07/19 |
| **Sample Matrix:** | Ground Water | **Date Extracted:** | NA |

**Lab Control Sample Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |
| | | **Analysis Lot:** | 627458 |

| Sample Name | Lab Code | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Lab Control Sample | K1901638-LCS3 | 27.6 | 25.0 | 110 | 83-117 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:** K1901638
**Project:** HS19021185/HS19021185

## Continuing Calibration Verification (CCV) Summary

### Carbon, Total Organic

**Analysis Method:** SM 5310 C **Units:** mg/L

| | Analysis Lot | Lab Code | Date Analyzed | True Value | Measured Value | Percent Recovery | Acceptance Limits |
|---|---|---|---|---|---|---|---|
| CCV1 | 627457 | KQ1902968-06 | 03/06/19 14:44 | 25.0 | 26.2 | 105 | 90-110 |
| CCV2 | 627457 | KQ1902968-07 | 03/06/19 18:45 | 25.0 | 25.8 | 103 | 90-110 |
| CCV3 | 627457 | KQ1902968-08 | 03/07/19 00:09 | 25.0 | 26.1 | 104 | 90-110 |
| CCV4 | 627457 | KQ1902968-09 | 03/07/19 04:52 | 25.0 | 26.3 | 105 | 90-110 |
| CCV5 | 627457 | KQ1902968-10 | 03/07/19 10:17 | 25.0 | 25.7 | 103 | 90-110 |
| CCV6 | 627458 | KQ1902969-05 | 03/07/19 04:52 | 25.0 | 26.3 | 105 | 90-110 |
| CCV7 | 627458 | KQ1902969-06 | 03/07/19 10:17 | 25.0 | 25.7 | 103 | 90-110 |
| CCV8 | 627458 | KQ1902969-07 | 03/07/19 15:00 | 25.0 | 25.9 | 103 | 90-110 |
| CCV9 | 627458 | KQ1902969-08 | 03/07/19 19:43 | 25.0 | 25.8 | 103 | 90-110 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:**K1901638
**Project:** HS19021185/HS19021185

## Continuing Calibration Blank (CCB) Summary
### Carbon, Total Organic

**Analysis Method:** SM 5310 C **Units:**mg/L

| | Analysis Lot | Lab Code | Date Analyzed | LOQ | LOD | MDL | Result | Q |
|---|---|---|---|---|---|---|---|---|
| CCB1 | 627457 | KQ1902968-01 | 03/06/19 15:01 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB2 | 627457 | KQ1902968-02 | 03/06/19 18:59 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB3 | 627457 | KQ1902968-03 | 03/07/19 00:24 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB4 | 627457 | KQ1902968-04 | 03/07/19 05:07 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB5 | 627457 | KQ1902968-05 | 03/07/19 10:31 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB6 | 627458 | KQ1902969-01 | 03/07/19 05:07 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB7 | 627458 | KQ1902969-02 | 03/07/19 10:31 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB8 | 627458 | KQ1902969-03 | 03/07/19 15:15 | 0.50 | 0.20 | 0.07 | 0.17 | J |
| CCB9 | 627458 | KQ1902969-04 | 03/07/19 19:58 | 0.50 | 0.20 | 0.07 | ND | U |

# Raw Data

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

# General Chemistry

**ALS Environmental—Kelso Laboratory**
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Work Request # Original ( ) KP1005S0, 1484, 1559, 1564, 1602, 1612, 1637, 1638, 1651, 1594, 1674, 1676, 1706, 1897, 1853, 1203, 1865

Tier: I II II IV II II IV IV II II II II II

Date Analyzed: 3/6/19

Analyst: BCD

Run # DOC;627459

Analysis: TOC

TOC;627457, 627458,

## DATA QUALITY REPORT
## INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

| | | |
|---|---|---|
| 1. | Is the method name and number correct and appropriate? | yes/no/NA |
| 2. | Holding times met for all analyses and for all samples? | yes/no/NA |
| 3. | Are calculations correct? | yes/no/NA |
| 4. | Is the reporting basis correct? (Dry Weight) | yes/no/NA |
| 5. | All quality control criteria met? | yes/no |
| 6. | Is the calibration curve correlation coefficient ≥ 0.995? | yes/no/NA |
| 7. | MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? | yes/no/NA |
| 8. | Are ICVs, CCVs, and CCBs all within acceptance limits? | yes/no/NA |
| 9. | Are results for methods blanks all ND? | yes/no/NA |
| 10. | Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) | yes/no/NA |
| 11. | Are all exceptions explained? | yes/no/NA |
| 12. | Have all applicable service requests been reviewed? | yes/no/NA |
| 13. | Are all samples labeled correctly? | yes/no/NA |
| 14. | Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V) | yes/no/NA |
| 15. | Are detection limits and units reported correctly? | yes/no/NA |
| 16. | Is the unused space on the benchsheet crossed out? | yes/no/NA |
| 17. | Was analysis turned in by the due date? (n-2) (If not record SR#) | yes/no/NA |

**COMMENTS:** KP1901612-1/2 sent for RA for additional dilutions.
KP1901728-2 Needed large dilution due to dirty/oily sample.
KP1901559-2/3, 1676-1, 1594-4 have a high %RSD, but are less than 5x the MRL.
KP1901674-3, 1676-3, 1706-1/2/3 have a high %RSD, but these are dirty, non-homogenous samples.

Final Approved by: [signature] Date: 03/08/19

DQREPORT

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627457 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1900530-026 | Carbon, Total Organic | N/A | | Water | 0.43 mg/L | 10 mL | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 16:23:00 | N | I |
| K1901484-001 | Carbon, Total Organic | N/A | | Water | 8.93 mg/L | 10 ml | 893 mg/L | 100 | 7 | 50 | | | 3/7/19 01:08 | N | II |
| K1901484-004 | Carbon, Total Organic | N/A | | Water | 7.41 mg/L | 10 ml | 741 mg/L | 100 | 7 | 50 | | | 3/7/19 01:36 | N | II |
| K1901559-001 | Carbon, Total Organic | N/A | | Ground Water | 1.04 mg/L | 10 ml | 1.04 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 05:22 | N | II |
| K1901564-002 | Carbon, Total Organic | N/A | | Water | 4.27 mg/L | 10 ml | 4.27 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 17:48 | N | IV |
| K1901564-003 | Carbon, Total Organic | N/A | | Water | 3.26 mg/L | 10 ml | 3.26 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 18:16 | N | IV |
| K1901564-019 | Carbon, Total Organic | N/A | | Water | 20.14 mg/L | 10 ml | 80.6 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 19:14 | N | IV |
| K1901564-020 | Carbon, Total Organic | N/A | | Water | 16.24 mg/L | 10 ml | 65.0 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 19:42 | N | IV |
| K1901602-003 | Carbon, Total Organic | N/A | | Water | 16.41 mg/L | 10 ml | 65.7 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 16:38 | N | II |
| K1901612-001 | Carbon, Total Organic | N/A | | Water | 111.94 mg/L | 10 ml | 1120 mg/L | 10 | 0.7 | 5.0 | | | 3/6/19 20:10 | N | II |
| K1901612-002 | Carbon, Total Organic | N/A | | Water | 111.76 mg/L | 10 ml | 447 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 20:38 | N | II |
| K1901637-001 | Carbon, Total Organic | N/A | | Water | 8.40 mg/L | 10 ml | 8.40 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 22:02 | N | IV |
| K1901638-001 | Carbon, Total Organic | N/A | | Ground Water | 2.65 mg/L | 10 ml | 2.65 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 22:30 | N | IV |
| K1901638-002 | Carbon, Total Organic | N/A | | Ground Water | 11.19 mg/L | 10 ml | 11.2 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 22:58 | N | IV |
| K1901638-003 | Carbon, Total Organic | N/A | | Ground Water | 4.88 mg/L | 10 ml | 4.88 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 23:26 | N | IV |
| K1901651-001 | Carbon, Total Organic | N/A | | Water | 9.25 mg/L | 10 ml | 925 mg/L | 100 | 7 | 50 | | | 3/7/19 02:04 | N | II |
| K1901651-002 | Carbon, Total Organic | N/A | | Water | 8.89 mg/L | 10 ml | 889 mg/L | 100 | 7 | 50 | | | 3/7/19 02:32 | N | II |
| K1901651-003 | Carbon, Total Organic | N/A | | Water | 6.58 mg/L | 10 ml | 658 mg/L | 100 | 7 | 50 | | | 3/7/19 03:00 | N | II |
| K1901651-004 | Carbon, Total Organic | N/A | | Water | 7.90 mg/L | 10 ml | 790 mg/L | 100 | 7 | 50 | | | 3/7/19 03:28 | N | II |
| K1901651-005 | Carbon, Total Organic | N/A | | Water | 7.24 mg/L | 10 ml | 724 mg/L | 100 | 7 | 50 | | | 3/7/19 03:56 | N | II |
| KQ1902968-01 | Carbon, Total Organic | CCB | | Water | 0.01 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 15:01 | N | I |
| KQ1902968-02 | Carbon, Total Organic | CCB | | Water | 2.19999999999998E-02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 18:59 | N | I |
| KQ1902968-03 | Carbon, Total Organic | CCB | | Water | 3.40000000000001E-02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 00:24 | N | I |
| KQ1902968-04 | Carbon, Total Organic | CCB | | Water | -0.01 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 05:07 | N | I |
| KQ1902968-05 | Carbon, Total Organic | CCB | | Water | -0.23 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 10:31 | N | I |
| KQ1902968-06 | Carbon, Total Organic | CCV | | Water | 26.22 mg/L | 10 ml | 26.2 mg/L | 1 | | | 105 | | 3/6/19 14:44 | N | I |
| KQ1902968-07 | Carbon, Total Organic | CCV | | Water | 25.78 mg/L | 10 ml | 25.8 mg/L | 1 | | | 103 | | 3/6/19 18:45 | N | I |
| KQ1902968-08 | Carbon, Total Organic | CCV | | Water | 26.12 mg/L | 10 ml | 26.1 mg/L | 1 | | | 104 | | 3/7/19 00:09 | N | I |
| KQ1902968-09 | Carbon, Total Organic | CCV | | Water | 26.35 mg/L | 10 ml | 26.3 mg/L | 1 | | | 105 | | 3/7/19 04:52 | N | I |
| KQ1902968-10 | Carbon, Total Organic | CCV | | Water | 25.73 mg/L | 10 ml | 25.7 mg/L | 1 | | | 103 | | 3/7/19 10:17 | N | I |
| KQ1902968-11 | Carbon, Total Organic | MB | | Water | -0.02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 15:18 | N | I |
| KQ1902968-12 | Carbon, Total Organic | LCS | | Water | 27.50 mg/L | 10 ml | 27.5 mg/L | 1 | 0.07 | 0.50 | 110 | | 3/6/19 15:39 | N | I |
| KQ1902968-13 | Carbon, Total Organic | LODV | | Water | 0.14 mg/L | 10 mL | 0.14 mg/L J | 1 | 0.07 | 0.50 | | | 3/6/19 16:09:00 | N | I |
| KQ1902968-14 | Carbon, Total Organic | LOQV | | Water | 0.43 mg/L | 10 mL | 0.43 mg/L J | 1 | 0.07 | 0.50 | | | 3/6/19 16:23:00 | N | I |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

03/08/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627457 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1902968-17 | Carbon, Total Organic | DUP | K1901602-003 | Water | 16.49 mg/L | 10 ml | 66.0 mg/L | 4 | 0.3 | 2.0 | | <1 | 3/6/19 16:38 | N | II |
| KQ1902968-18 | Carbon, Total Organic | DUP | K1901564-002 | Water | 4.23 mg/L | 10 ml | 4.23 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/6/19 17:48 | N | IV |
| KQ1902968-19 | Carbon, Total Organic | DUP | K1901564-003 | Water | 3.10 mg/L | 10 ml | 3.10 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/6/19 18:16 | N | IV |
| KQ1902968-20 | Carbon, Total Organic | DUP | K1901564-019 | Water | 20.70 mg/L | 10 ml | 82.8 mg/L | 4 | 0.3 | 2.0 | | 3 | 3/6/19 19:14 | N | IV |
| KQ1902968-21 | Carbon, Total Organic | DUP | K1901564-020 | Water | 16.48 mg/L | 10 ml | 65.9 mg/L | 4 | 0.3 | 2.0 | | 1 | 3/6/19 19:42 | N | IV |
| KQ1902968-22 | Carbon, Total Organic | DUP | K1901612-001 | Water | 112.46 mg/L | 10 ml | 1120 mg/L | 10 | 0.7 | 5.0 | | <1 | 3/6/19 20:10 | N | II |
| KQ1902968-23 | Carbon, Total Organic | DUP | K1901612-002 | Water | 119.75 mg/L | 10 ml | 479 mg/L | 4 | 0.3 | 2.0 | | 7 | 3/6/19 20:38 | N | II |
| KQ1902968-24 | Carbon, Total Organic | DUP | K1901637-001 | Water | 8.29 mg/L | 10 ml | 8.29 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/6/19 22:02 | N | IV |
| KQ1902968-25 | Carbon, Total Organic | DUP | K1901638-001 | Ground Water | 2.55 mg/L | 10 ml | 2.55 mg/L | 1 | 0.07 | 0.50 | | 4 | 3/6/19 22:30 | N | IV |
| KQ1902968-26 | Carbon, Total Organic | DUP | K1901638-002 | Ground Water | 10.99 mg/L | 10 ml | 11.0 mg/L | 1 | 0.07 | 0.50 | | 2 | 3/6/19 22:58 | N | IV |
| KQ1902968-27 | Carbon, Total Organic | DUP | K1901638-003 | Ground Water | 4.80 mg/L | 10 ml | 4.80 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/6/19 23:26 | N | IV |
| KQ1902968-28 | Carbon, Total Organic | DUP | K1901484-001 | Water | 8.99 mg/L | 10 ml | 899 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 01:08 | N | II |
| KQ1902968-29 | Carbon, Total Organic | DUP | K1901484-004 | Water | 7.54 mg/L | 10 ml | 754 mg/L | 100 | 7 | 50 | | 2 | 3/7/19 01:36 | N | II |
| KQ1902968-30 | Carbon, Total Organic | DUP | K1901651-001 | Water | 9.26 mg/L | 10 ml | 926 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 02:04 | N | II |
| KQ1902968-31 | Carbon, Total Organic | DUP | K1901651-002 | Water | 8.91 mg/L | 10 ml | 891 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 02:32 | N | II |
| KQ1902968-32 | Carbon, Total Organic | DUP | K1901651-003 | Water | 6.44 mg/L | 10 ml | 644 mg/L | 100 | 7 | 50 | | 2 | 3/7/19 03:00 | N | II |
| KQ1902968-33 | Carbon, Total Organic | DUP | K1901651-004 | Water | 7.88 mg/L | 10 ml | 788 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 03:28 | N | II |
| KQ1902968-34 | Carbon, Total Organic | DUP | K1901651-005 | Water | 7.21 mg/L | 10 ml | 721 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 03:56 | N | II |
| KQ1902968-35 | Carbon, Total Organic | DUP | K1901559-001 | Ground Water | 1.00 mg/L | 10 ml | 1.00 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/7/19 05:22 | N | II |
| KQ1902968-36 | Carbon, Total Organic | MS | K1901602-003 | Water | 43.16 mg/L | 10 ml | 173 mg/L | 4 | 0.3 | 2.0 | 107 | | 3/6/19 17:06 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627458 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1901559-002 | Carbon, Total Organic | N/A | | Ground Water | 0.53 mg/L | 10 ml | 0.53 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 05:50 | N | II |
| K1901559-003 | Carbon, Total Organic | N/A | | Ground Water | 1.09 mg/L | 10 ml | 1.09 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 06:18 | N | II |
| K1901594-001 | Carbon, Total Organic | N/A | | Water | 1.52 mg/L | 10 ml | 1.52 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 15:58 | N | II |
| K1901594-002 | Carbon, Total Organic | N/A | | Water | 29.13 mg/L | 10 ml | 29.1 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 16:26 | N | II |
| K1901594-003 | Carbon, Total Organic | N/A | | Water | 31.09 mg/L | 10 ml | 31.1 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 16:54 | N | II |
| K1901594-004 | Carbon, Total Organic | N/A | | Water | 1.34 mg/L | 10 ml | 1.34 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 17:22 | N | II |
| K1901594-005 | Carbon, Total Organic | N/A | | Water | 1.87 mg/L | 10 ml | 1.87 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 17:50 | N | II |
| K1901674-001 | Carbon, Total Organic | N/A | | Water | 3.39 mg/L | 10 ml | 169 mg/L | 50 | 4 | 25 | | | 3/7/19 06:46 | Y | II |
| K1901674-002 | Carbon, Total Organic | N/A | | Water | 0.96 mg/L | 10 ml | 9.6 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 07:57 | N | II |
| K1901674-003 | Carbon, Total Organic | N/A | | Water | 4.90 mg/L | 10 ml | 49.0 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 08:25 | N | II |
| K1901674-004 | Carbon, Total Organic | N/A | | Water | 3.94 mg/L | 10 ml | 39.4 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 08:53 | N | II |
| K1901676-001 | Carbon, Total Organic | N/A | | Water | 2.10 mg/L | 10 ml | 2.10 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 11:15 | N | II |
| K1901676-002 | Carbon, Total Organic | N/A | | Water | 17.93 mg/L | 10 ml | 179 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 11:43 | N | II |
| K1901676-003 | Carbon, Total Organic | N/A | | Water | 1.20 mg/L | 10 ml | 60 mg/L | 50 | 4 | 25 | | | 3/7/19 12:11 | N | II |
| K1901676-004 | Carbon, Total Organic | N/A | | Water | 2.53 mg/L | 10 ml | 2.53 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 12:39 | N | II |
| K1901706-001 | Carbon, Total Organic | N/A | | Ground Water | 3.15 mg/L | 10 ml | 3.15 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 13:36 | N | IV |
| K1901706-002 | Carbon, Total Organic | N/A | | Ground Water | 14.68 mg/L | 10 ml | 14.7 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 14:04 | N | IV |
| K1901706-003 | Carbon, Total Organic | N/A | | Ground Water | 9.39 mg/L | 10 ml | 9.39 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 14:32 | N | IV |
| K1901706-004 | Carbon, Total Organic | N/A | | Ground Water | 6.28 mg/L | 10 ml | 6.28 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 15:30 | N | IV |
| K1901897-001 | Carbon, Total Organic | N/A | | Water | 5.41 mg/L | 10 ml | 5.41 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 18:18 | N | II |
| KQ1902969-01 | Carbon, Total Organic | CCB | | Ground Water | -0.01 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 05:07 | N | II |
| KQ1902969-02 | Carbon, Total Organic | CCB | | Ground Water | -0.23 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 10:31 | N | II |
| KQ1902969-03 | Carbon, Total Organic | CCB | | Ground Water | 0.17 mg/L | 10 ml | 0.17 mg/L J | 1 | 0.07 | 0.50 | | | 3/7/19 15:15 | N | II |
| KQ1902969-04 | Carbon, Total Organic | CCB | | Ground Water | -0.22 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 19:58 | N | II |
| KQ1902969-05 | Carbon, Total Organic | CCV | | Ground Water | 26.35 mg/L | 10 ml | 26.3 mg/L | 1 | | | 105 | | 3/7/19 04:52 | N | II |
| KQ1902969-06 | Carbon, Total Organic | CCV | | Ground Water | 25.73 mg/L | 10 ml | 25.7 mg/L | 1 | | | 103 | | 3/7/19 10:17 | N | II |
| KQ1902969-07 | Carbon, Total Organic | CCV | | Ground Water | 25.85 mg/L | 10 ml | 25.9 mg/L | 1 | | | 104 | | 3/7/19 15:00 | N | II |
| KQ1902969-08 | Carbon, Total Organic | CCV | | Ground Water | 25.81 mg/L | 10 ml | 25.8 mg/L | 1 | | | 103 | | 3/7/19 19:43 | N | II |
| KQ1902969-09 | Carbon, Total Organic | MS | K1901674-001 | Water | 31.30 mg/L | 10 ml | 1570 mg/L | 50 | 4 | 25 | 112 | | 3/7/19 07:14 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627458 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1902969-10 | Carbon, Total Organic | DUP | K1901559-002 | Ground Water | 0.42 mg/L | 10 ml | 0.42 mg/L J | 1 | 0.07 | 0.50 | | 24* | 3/7/19 05:50 | N | II |
| KQ1902969-11 | Carbon, Total Organic | DUP | K1901559-003 | Ground Water | 0.96 mg/L | 10 ml | 0.96 mg/L | 1 | 0.07 | 0.50 | | 13* | 3/7/19 06:18 | N | II |
| KQ1902969-12 | Carbon, Total Organic | DUP | K1901674-001 | Water | 3.33 mg/L | 10 ml | 166 mg/L | 50 | 4 | 25 | | 2 | 3/7/19 06:46 | N | II |
| KQ1902969-13 | Carbon, Total Organic | DUP | K1901674-002 | Water | 0.91 mg/L | 10 ml | 9.1 mg/L | 10 | 0.7 | 5.0 | | 5 | 3/7/19 07:57 | N | II |
| KQ1902969-14 | Carbon, Total Organic | DUP | K1901674-003 | Water | 4.35 mg/L | 10 ml | 43.5 mg/L | 10 | 0.7 | 5.0 | | 12* | 3/7/19 08:25 | N | II |
| KQ1902969-15 | Carbon, Total Organic | DUP | K1901674-004 | Water | 3.80 mg/L | 10 ml | 38.0 mg/L | 10 | 0.7 | 5.0 | | 3 | 3/7/19 08:53 | N | II |
| KQ1902969-16 | Carbon, Total Organic | DUP | K1901676-001 | Water | 1.75 mg/L | 10 mL | 1.75 mg/L | 1 | 0.07 | 0.50 | | 18* | 3/7/19 11:15:00 | N | II |
| KQ1902969-17 | Carbon, Total Organic | DUP | K1901676-002 | Water | 18.02 mg/L | 10 ml | 180 mg/L | 10 | 0.7 | 5.0 | | <1 | 3/7/19 11:43 | N | II |
| KQ1902969-18 | Carbon, Total Organic | DUP | K1901676-003 | Water | 0.66 mg/L | 10 ml | 33 mg/L | 50 | 4 | 25 | | 58* | 3/7/19 12:11 | N | II |
| KQ1902969-19 | Carbon, Total Organic | DUP | K1901676-004 | Water | 2.40 mg/L | 10 ml | 2.40 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/7/19 12:39 | N | II |
| KQ1902969-20 | Carbon, Total Organic | DUP | K1901706-001 | Ground Water | 3.56 mg/L | 10 ml | 3.56 mg/L | 1 | 0.07 | 0.50 | | 12* | 3/7/19 13:36 | N | IV |
| KQ1902969-21 | Carbon, Total Organic | DUP | K1901706-002 | Ground Water | 12.07 mg/L | 10 ml | 12.1 mg/L | 1 | 0.07 | 0.50 | | 19* | 3/7/19 14:04 | N | IV |
| KQ1902969-22 | Carbon, Total Organic | DUP | K1901706-003 | Ground Water | 7.15 mg/L | 10 ml | 7.15 mg/L | 1 | 0.07 | 0.50 | | 27* | 3/7/19 14:32 | N | IV |
| KQ1902969-23 | Carbon, Total Organic | DUP | K1901706-004 | Ground Water | 6.10 mg/L | 10 ml | 6.10 mg/L | 1 | 0.07 | 0.50 | | 3 | 3/7/19 15:30 | N | IV |
| KQ1902969-24 | Carbon, Total Organic | DUP | K1901594-001 | Water | 1.42 mg/L | 10 ml | 1.42 mg/L | 1 | 0.07 | 0.50 | | 7 | 3/7/19 15:58 | N | II |
| KQ1902969-25 | Carbon, Total Organic | DUP | K1901594-002 | Water | 29.44 mg/L | 10 ml | 29.4 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/7/19 16:26 | N | II |
| KQ1902969-26 | Carbon, Total Organic | DUP | K1901594-003 | Water | 31.30 mg/L | 10 ml | 31.3 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 16:54 | N | II |
| KQ1902969-27 | Carbon, Total Organic | DUP | K1901594-004 | Water | 1.20 mg/L | 10 ml | 1.20 mg/L | 1 | 0.07 | 0.50 | | 11* | 3/7/19 17:22 | N | II |
| KQ1902969-28 | Carbon, Total Organic | DUP | K1901594-005 | Water | 1.80 mg/L | 10 ml | 1.80 mg/L | 1 | 0.07 | 0.50 | | 4 | 3/7/19 17:50 | N | II |
| KQ1902969-29 | Carbon, Total Organic | DUP | K1901897-001 | Water | 5.36 mg/L | 10 ml | 5.36 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 18:18 | N | II |
| KQ1902969-30 | Carbon, Total Organic | LCS | | Ground Water | 27.56 mg/L | 10 ml | 27.6 mg/L | 1 | 0.07 | 0.50 | 110 | | 3/7/19 00:53 | N | II |
| KQ1902969-31 | Carbon, Total Organic | MB | | Ground Water | 0.02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 00:39 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627459 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1901553-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.55 mg/L | 10 ml | 15.1 mg/L | 2 | 0.2 | 1.0 | | | 3/7/19 23:01 | N | I |
| K1901553-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 3.06 mg/L | 10 ml | 3.06 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 23:29 | N | I |
| K1901703-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 1.99 mg/L | 10 ml | 1.99 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 18:46 | N | II |
| K1901703-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 1.83 mg/L | 10 ml | 1.83 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 20:13 | N | II |
| K1901703-003 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 3.41 mg/L | 10 ml | 3.41 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 20:41 | N | II |
| K1901703-004 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 6.14 mg/L | 10 ml | 6.14 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 21:09 | N | II |
| K1901703-005 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.31 mg/L | 10 ml | 7.31 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 21:37 | N | II |
| K1901703-006 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.26 mg/L | 10 ml | 7.26 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 22:05 | N | II |
| K1901703-007 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.69 mg/L | 10 ml | 0.69 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 22:33 | N | II |
| K1901728-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 1.43 mg/L | 10 ml | 1.43 mg/L | 1 | 0.07 | 0.50 | | | 3/8/19 02:19 | N | I |
| K1901728-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.25 mg/L | 10 ml | 25 mg/L J | 100 | 7 | 50 | | | 3/8/19 02:47 | N | I |
| K1901865-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 5.58 mg/L | 10 ml | 5.58 mg/L | 1 | 0.07 | 0.50 | | | 3/8/19 00:27 | N | II |
| K1901865-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 2.46 mg/L | 10 ml | 2.46 mg/L | 1 | 0.07 | 0.50 | | | 3/8/19 00:55 | N | II |
| KQ1902970-01 | Carbon, Dissolved Organic (DOC) | CCB | | Water | 0.17 mg/L | 10 ml | 0.17 mg/L J | 1 | 0.07 | 0.50 | | | 3/7/19 15:15 | N | II |
| KQ1902970-02 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.22 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 19:58 | N | II |
| KQ1902970-03 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.29 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/8/19 00:12 | N | II |
| KQ1902970-04 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.32 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/8/19 03:30 | N | II |
| KQ1902970-05 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 25.85 mg/L | 10 ml | 25.9 mg/L | 1 | | | 104 | | 3/7/19 15:00 | N | II |
| KQ1902970-06 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 25.81 mg/L | 10 ml | 25.8 mg/L | 1 | | | 103 | | 3/7/19 19:43 | N | II |
| KQ1902970-07 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 25.44 mg/L | 10 ml | 25.4 mg/L | 1 | | | 102 | | 3/7/19 23:57 | N | II |
| KQ1902970-08 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 24.94 mg/L | 10 ml | 24.9 mg/L | 1 | | | 100 | | 3/8/19 03:15 | N | II |
| KQ1902970-09 | Carbon, Dissolved Organic (DOC) | MB | | Water | -0.26 mg/L | 10 mL | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 10:46:00 | N | II |
| KQ1902970-10 | Carbon, Dissolved Organic (DOC) | LCS | | Water | 26.60 mg/L | 10 mL | 26.6 mg/L | 1 | 0.07 | 0.50 | 106 | | 3/7/19 11:01:00 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

03/05/19

Printed 3/8/19 10:46

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627459 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1902970-11 | Carbon, Dissolved Organic (DOC) | MS | K1901703-001 | Water | 30.19 mg/L | 10 ml | 30.2 mg/L | 1 | 0.07 | 0.50 | 113 | | 3/7/19 19:14 | N | II |
| KQ1902970-12 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-001 | Water | 1.86 mg/L | 10 ml | 1.86 mg/L | 1 | 0.07 | 0.50 | | 7 | 3/7/19 18:46 | N | II |
| KQ1902970-13 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-002 | Water | 1.85 mg/L | 10 ml | 1.85 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 20:13 | N | II |
| KQ1902970-14 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-003 | Water | 3.35 mg/L | 10 ml | 3.35 mg/L | 1 | 0.07 | 0.50 | | 2 | 3/7/19 20:41 | N | II |
| KQ1902970-15 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-004 | Water | 6.18 mg/L | 10 ml | 6.18 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 21:09 | N | II |
| KQ1902970-16 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-005 | Water | 7.26 mg/L | 10 ml | 7.26 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 21:37 | N | II |
| KQ1902970-17 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-006 | Water | 7.29 mg/L | 10 ml | 7.29 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 22:05 | N | II |
| KQ1902970-18 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-007 | Water | 0.67 mg/L | 10 ml | 0.67 mg/L | 1 | 0.07 | 0.50 | | 4 | 3/7/19 22:33 | N | II |
| KQ1902970-19 | Carbon, Dissolved Organic (DOC) | DUP | K1901553-001 | Water | 7.64 mg/L | 10 ml | 15.3 mg/L | 2 | 0.2 | 1.0 | | 1 | 3/7/19 23:01 | N | I |
| KQ1902970-20 | Carbon, Dissolved Organic (DOC) | DUP | K1901553-002 | Water | 2.92 mg/L | 10 ml | 2.92 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/7/19 23:29 | N | I |
| KQ1902970-21 | Carbon, Dissolved Organic (DOC) | DUP | K1901865-001 | Water | 5.66 mg/L | 10 ml | 5.66 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/8/19 00:27 | N | II |
| KQ1902970-22 | Carbon, Dissolved Organic (DOC) | DUP | K1901865-002 | Water | 2.48 mg/L | 10 ml | 2.48 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/8/19 00:55 | N | II |
| KQ1902970-23 | Carbon, Dissolved Organic (DOC) | DUP | K1901728-001 | Water | 1.45 mg/L | 10 ml | 1.45 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/8/19 02:19 | N | I |
| KQ1902970-24 | Carbon, Dissolved Organic (DOC) | DUP | K1901728-002 | Water | 0.22 mg/L | 10 ml | 22 mg/L J | 100 | 7 | 50 | | 14* | 3/8/19 02:47 | N | I |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC: 627457
627458
DOC: 627459

# Schedule: Daily Run Method 010711

**Version:** 67
**Instrument:** Fusion1
**Last Saved by:** Fusion1 (Fusion1)
**Last Saved on:** 2019/03/06 16:23 - Wednesday

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Blank) | Blank | Reagent/Acid Blank | | 1 | True | Ready |
| D | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 1 | Sample | MB1 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 2 | Sample | ICS | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 3 | Sample | LOD | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 4 | Sample | LOQ | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 5 | Sample | K1901602-003.01 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 6 | Sample | K1901602-003.01 ms 4x | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 7 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 8 | Sample | K1901564-002.11 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 9 | Sample | K1901564-003.11 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 10 | Sample | K1901564-019.11 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 11 | Sample | K1901564-020.11 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 12 | Sample | K1901612-001.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 13 | Sample | K1901612-002.01 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 14 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 4 | True | Ready |
| 15 | Sample | K1901637-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 16 | Sample | K1901638-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 17 | Sample | K1901638-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 18 | Sample | K1901638-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 19 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 20 | Sample | MB2 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 21 | Sample | K1901484-001.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 22 | Sample | K1901484-004.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 23 | Sample | K1901651-001.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 24 | Sample | K1901651-002.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 25 | Sample | K1901651-003.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 26 | Sample | K1901651-004.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 27 | Sample | K1901651-005.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 28 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 29 | Sample | K1901559-001.09 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 30 | Sample | K1901559-002.09 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 31 | Sample | K1901559-003.09 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 32 | Sample | K1901674-001.01 50x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 33 | Sample | K1901674-001.01 ms 50x | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 34 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 35 | Sample | K1901674-002.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 36 | Sample | K1901674-003.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 37 | Sample | K1901674-004.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 38 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 4 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |

# Schedule: Daily Run Method 010711

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 39 | Sample | MB3 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 40 | Sample | K1901676-001.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 41 | Sample | K1901676-002.02 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 42 | Sample | K1901676-003.02 50x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 43 | Sample | K1901676-004.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 44 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 45 | Sample | K1901706-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 46 | Sample | K1901706-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 47 | Sample | K1901706-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 48 | Sample | K1901706-004.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 49 | Sample | K1901594-001.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 50 | Sample | K1901594-002.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 51 | Sample | K1901594-003.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 52 | Sample | K1901594-004.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 53 | Sample | K1901594-005.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 54 | Sample | K1901897-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 55 | Sample | K1901703-001.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 56 | Sample | K1901703-001.01 ms doc | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 57 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 58 | Sample | MB4 | CAS_salt_010711 (CAS_salt_010711) | 1 | False | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | False | Ready |
| 59 | Sample | K1901703-002.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 60 | Sample | K1901703-003.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 61 | Sample | K1901703-004.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 62 | Sample | K1901703-005.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 63 | Sample | K1901703-006.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 64 | Sample | K1901703-007.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 65 | Sample | K1901553-001.06 doc 2x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 66 | Sample | K1901553-002.05 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 67 | Sample | K1901865-001.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 68 | Sample | K1901865-002.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 69 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 70 | Sample | FB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 71 | Sample | K1901728-001.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 72 | Sample | K1901728-002.01 doc 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| | | | | | False | |

# Fusion Report - Daily Run Method 010711 Wednesday, March 06, 2019 12:36 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/03/08 09:03 - Friday

## Report Summary Information

| | | | |
|---|---|---|---|
| Company Location: | Gen Chem Lab | | |
| Schedule Name: | Daily Run Method 010711 | Engine Version: | 1.1.5.1 |
| Instrument Name: | Fusion1 | Firmware Version: | 1.2.0696 |
| Report Version: | 1 of 1 | Connection: | RS232 COM1 |
| Report Creation by Operators (schedule version): | Fusion1 (Fusion1) (v59)<br>Fusion1 (Fusion1) (v60)<br>Fusion1 (Fusion1) (v61)<br>Fusion1 (Fusion1) (v62)<br>Fusion1 (Fusion1) (v63)<br>Fusion1 (Fusion1) (v64)<br>Fusion1 (Fusion1) (v65)<br>Fusion1 (Fusion1) (v66)<br>Fusion1 (Fusion1) (v67) | | |
| Comment: | | | |

## Report Results

03/08/19

**Sample Type**: Clean — From Schedule Version 59

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/03/06 12:36 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 13.35 | 17.28 | 3.93 | 49.57 | 05:24 |
| | | | | | | |
| 2 | TC Clean | 6.77 | 9.63 | 2.86 | 49.99 | 04:01 |
| 3 | TC Clean | 1.88 | 4.84 | 2.96 | 50.01 | 03:55 |
| 4 | TC Clean | 1.47 | 4.58 | 3.10 | 50.03 | 03:55 |

**Sample Type**: Clean — From Schedule Version 60

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/03/06 12:59 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.70 | 14.60 | 2.91 | 49.67 | 05:22 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | TC Clean | 4.26 | 7.36 | 3.10 | 49.99 | 04:04 |
| 3 | TC Clean | 2.14 | 5.17 | 3.02 | 50.05 | 03:55 |
| 4 | TC Clean | 1.41 | 4.44 | 3.03 | 50.10 | 03:56 |

**Sample Type**: Clean From Schedule Version 61

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/03/06 13:33 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.51 | 14.34 | 2.83 | 49.74 | 05:23 |
| | | | | | | |
| 2 | TC Clean | 5.23 | 7.99 | 2.75 | 50.05 | 04:01 |
| 3 | TC Clean | 2.47 | 5.42 | 2.96 | 50.11 | 03:46 |
| 4 | TC Clean | 1.76 | 4.78 | 3.02 | 50.07 | 03:46 |

**Sample Type**: Blank (Creating v1229) From Schedule Version 62

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (blank) | | Reagent/Acid Blank | 2019/03/06 13:55 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 0.87 | 3.78 | 2.91 | 49.71 | 05:12 |
| | | | | | | |
| 2 | TC Clean | 4.88 | 8.00 | 3.13 | 50.12 | 04:02 |
| 3 | TC Clean | 2.68 | 5.63 | 2.95 | 50.12 | 03:45 |
| 4 | TC Clean | 2.03 | 4.98 | 2.95 | 50.12 | 03:47 |
| | | | | | | |
| 5 | Reagent Blank | 7.97 | 10.93 | 2.95 | 50.11 | 05:06 |
| | | | | | | |
| 6 | Acid Blank | 1.37 | 4.40 | 3.03 | 49.55 | 05:29 |

**Sample Type**: Sample From Schedule Version 62

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | RB | 0.9560 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 14:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.9560 | 9.5600 | 15.54 | 18.56 | 3.02 | 50.25 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm — From Schedule Version 63

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.5547 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 14:44 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.5547 | 265.5467 | 189.71 | 192.74 | 3.02 | 50.29 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB — From Schedule Version 64

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3488 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 15:01 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3488 | 3.4878 | 11.83 | 14.80 | 2.97 | 50.26 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample — From Schedule Version 65

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 1 | TOC | MB1 | 0.3156 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 15:18 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3156 | 3.1560 | 11.19 | 14.09 | 2.90 | 50.28 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS — From Schedule Version 66

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 27.8336 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 15:39 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 27.8336 | 278.3355 | 198.40 | 201.37 | 2.98 | 50.24 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 66

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 2 | TOC | ICS | 0.7157 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 15:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.7157 | 7.1572 | 13.91 | 16.87 | 2.96 | 50.28 | 10:34 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 3 | TOC | LOD | 0.4741 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 16:09 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4741 | 4.7412 | 12.27 | 15.13 | 2.87 | 50.31 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 4 | TOC | LOQ | 0.7682 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 16:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.7682 | 7.6817 | 14.26 | 17.26 | 3.00 | 50.33 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| ◈ 5 | TOC | K1901602-003.01 4x | 16.7892 ppm | 0.0542 ppm | 0.3200% | 2019/03/06 16:38 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 16.7509 | 167.5093 | 122.75 | 125.69 | 2.94 | 50.36 | 10:28 |
| 2 | TOC | 16.8275 | 168.2753 | 123.27 | 126.23 | 2.96 | 50.37 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 6 | TOC | K1901602-003.01 ms 4x | 43.4995 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 17:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 43.4995 | 434.9954 | 304.32 | 307.30 | 2.98 | 50.39 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 7 | TOC | RB | 0.3908 ppm | 0.1172 ppm | 29.9900% | 2019/03/06 17:20 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4737 | 4.7368 | 12.26 | 15.25 | 2.99 | 50.39 | 10:29 |
| 2 | TOC | 0.3079 | 3.0794 | 11.14 | 14.21 | 3.07 | 50.41 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 8 | TOC | K1901564-002.11 | 4.5904 ppm | 0.0277 ppm | 0.6000% | 2019/03/06 17:48 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.6100 | 46.0998 | 40.34 | 43.18 | 2.84 | 50.42 | 10:26 |
| 2 | TOC | 4.5708 | 45.7080 | 40.07 | 43.06 | 2.98 | 50.40 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 9 | TOC | K1901564-003.11 | 3.5189 ppm | 0.1106 ppm | 3.1400% | 2019/03/06 18:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.5972 | 35.9716 | 33.47 | 36.50 | 3.04 | 50.43 | 10:30 |
| 2 | TOC | 3.4407 | 34.4070 | 32.40 | 35.36 | 2.96 | 50.37 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.1143 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 18:45 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.1143 | 261.1433 | 186.72 | 189.64 | 2.91 | 50.48 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3404 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 18:59 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3404 | 3.4038 | 11.77 | 14.71 | 2.94 | 50.50 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 10 | TOC | K1901564-019.11 4x | 20.7624 ppm | 0.3955 ppm | 1.9100% | 2019/03/06 19:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 20.4827 | 204.8269 | 148.08 | 151.03 | 2.95 | 50.51 | 10:27 |
| 2 | TOC | 21.0421 | 210.4207 | 151.88 | 154.91 | 3.03 | 50.53 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 11 | TOC | K1901564-020.11 4x | 16.6990 ppm | 0.1645 ppm | 0.9900% | 2019/03/06 19:42 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 16.5827 | 165.8269 | 121.61 | 124.60 | 2.99 | 50.55 | 10:29 |
| 2 | TOC | 16.8153 | 168.1530 | 123.19 | 126.24 | 3.05 | 50.56 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 12 | TOC | K1901612-001.01 10x | 112.5359 ppm | 0.3656 ppm | 0.3200% | 2019/03/06 20:10 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 112.2774 | 1122.7739 | 771.18 | 774.16 | 2.98 | 50.57 | 10:27 |
| 2 | TOC | 112.7945 | 1127.9449 | 774.69 | 777.84 | 3.15 | 50.59 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 13 | TOC | K1901612-002.01 4x | 116.0911 ppm | 5.6458 ppm | 4.8600% | 2019/03/06 20:38 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 112.0990 | 1120.9899 | 769.97 | 773.21 | 3.24 | 50.60 | 10:28 |
| 2 | TOC | 120.0833 | 1200.8330 | 824.17 | 828.26 | 4.10 | 50.60 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 14 | TOC | RB | 3.5314 ppm | 4.1684 ppm | 118.0400% | 2019/03/06 21:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.7391 | 97.3908 | 75.16 | 79.27 | 4.12 | 50.63 | 10:26 |
| 2 | TOC | 2.1399 | 21.3987 | 23.57 | 26.84 | 3.27 | 50.63 | 10:25 |
| 3 | TOC | 1.2919 | 12.9189 | 17.82 | 20.87 | 3.05 | 50.65 | 10:29 |
| 4 | TOC | 0.9548 | 9.5482 | 15.53 | 18.48 | 2.95 | 50.61 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 15 | TOC | K1901637-001.01 | 8.6847 ppm | 0.0773 ppm | 0.8900% | 2019/03/06 22:02 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.7394 | 87.3937 | 68.37 | 71.34 | 2.97 | 50.59 | 10:28 |
| 2 | TOC | 8.6301 | 86.3005 | 67.63 | 70.64 | 3.01 | 50.50 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 16 | TOC | K1901638-001.01 | 2.9411 ppm | 0.0696 ppm | 2.3700% | 2019/03/06 22:30 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.9903 | 29.9035 | 29.35 | 32.52 | 3.18 | 50.49 | 10:28 |
| 2 | TOC | 2.8919 | 28.9194 | 28.68 | 31.60 | 2.92 | 50.48 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 17 | TOC | K1901638-002.01 | 11.4260 ppm | 0.1424 ppm | 1.2500% | 2019/03/06 22:58 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 11.5267 | 115.2666 | 87.29 | 90.10 | 2.81 | 50.44 | 10:28 |
| 2 | TOC | 11.3253 | 113.2527 | 85.92 | 88.83 | 2.91 | 50.42 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 18 | TOC | K1901638-003.01 | 5.1774 ppm | 0.0507 ppm | 0.9800% | 2019/03/06 23:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.2133 | 52.1326 | 44.44 | 47.54 | 3.11 | 50.37 | 10:28 |
| 2 | TOC | 5.1415 | 51.4151 | 43.95 | 46.97 | 3.02 | 50.36 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 19 | TOC | RB | 0.4492 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 23:55 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4492 | 4.4922 | 12.10 | 15.09 | 3.00 | 50.35 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | | | Concentration | | | Min / Max | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

| | Pos | BAT | (ppm) | Dil | Sample ID | (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.4560 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 00:09 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.4560 | 264.5596 | 189.04 | 191.98 | 2.94 | 50.32 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3416 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 00:24 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3416 | 3.4156 | 11.78 | 14.62 | 2.84 | 50.32 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 20 | TOC | MB2 | 0.3558 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 00:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3558 | 3.5582 | 11.46 | 14.21 | 2.74 | 50.29 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 27.8960 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 00:53 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 27.8960 | 278.9602 | 198.82 | 201.65 | 2.83 | 50.27 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 21 | TOC | K1901484-001.01 100x | 9.2955 ppm | 0.0429 ppm | 0.4600% | 2019/03/07 01:08 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.2652 | 92.6515 | 71.94 | 74.67 | 2.73 | 50.26 | 10:30 |
| 2 | TOC | 9.3258 | 93.2585 | 72.35 | 75.23 | 2.88 | 50.28 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 22 | TOC | K1901484-004.01 100x | 7.8135 ppm | 0.0953 ppm | 1.2200% | 2019/03/07 01:36 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.7461 | 77.4613 | 61.63 | 64.55 | 2.92 | 50.28 | 10:26 |
| 2 | TOC | 7.8809 | 78.8093 | 62.54 | 65.32 | 2.77 | 50.27 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 23 | TOC | K1901651-001.01 100x | 9.5939 ppm | 0.0064 ppm | 0.0700% | 2019/03/07 02:04 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.5894 | 95.8940 | 74.14 | 77.01 | 2.87 | 50.26 | 10:26 |
| 2 | TOC | 9.5984 | 95.9839 | 74.20 | 77.23 | 3.03 | 50.26 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 24 | TOC | K1901651-002.01 100x | 9.2408 ppm | 0.0160 ppm | 0.1700% | 2019/03/07 02:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.2295 | 92.2950 | 71.70 | 74.56 | 2.86 | 50.26 | 10:31 |
| 2 | TOC | 9.2522 | 92.5219 | 71.85 | 74.63 | 2.78 | 50.24 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) | CAS_salt_010711 | CAS_salt_010711 |

(v1229) (v4) (v30)

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 25 | TOC | K1901651-003.01 100x | 6.8494 ppm | 0.0944 ppm | 1.3800% | 2019/03/07 03:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.9161 | 69.1613 | 55.99 | 58.88 | 2.89 | 50.24 | 10:28 |
| 2 | TOC | 6.7827 | 67.8266 | 55.09 | 57.97 | 2.88 | 50.24 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 26 | TOC | K1901651-004.01 100x | 8.2291 ppm | 0.0176 ppm | 0.2100% | 2019/03/07 03:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.2416 | 82.4157 | 64.99 | 67.94 | 2.95 | 50.22 | 10:26 |
| 2 | TOC | 8.2167 | 82.1667 | 64.82 | 67.64 | 2.81 | 50.23 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 27 | TOC | K1901651-005.01 100x | 7.5602 ppm | 0.0206 ppm | 0.2700% | 2019/03/07 03:56 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.5748 | 75.7480 | 60.46 | 63.31 | 2.85 | 50.22 | 10:26 |
| 2 | TOC | 7.5456 | 75.4563 | 60.27 | 63.11 | 2.84 | 50.23 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 28 | TOC | RB | 0.5632 ppm | 0.0731 ppm | 12.9800% | 2019/03/07 04:24 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.6150 | 6.1496 | 13.22 | 16.24 | 3.02 | 50.19 | 10:26 |
| 2 | TOC | 0.5115 | 5.1154 | 12.52 | 15.25 | 2.73 | 50.20 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.6839 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 04:52 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.6839 | 266.8387 | 190.59 | 193.38 | 2.78 | 50.20 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3270 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 05:07 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3270 | 3.2698 | 11.68 | 14.51 | 2.83 | 50.20 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 29 | TOC | K1901559-001.09 | 1.3591 ppm | 0.0340 ppm | 2.5000% | 2019/03/07 05:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.3831 | 13.8308 | 18.44 | 21.25 | 2.82 | 50.19 | 10:29 |
| 2 | TOC | 1.3351 | 13.3506 | 18.11 | 20.97 | 2.86 | 50.22 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 30 | TOC | K1901559-002.09 | 0.8134 ppm | 0.0800 ppm | 9.8400% | 2019/03/07 05:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.8700 | 8.6997 | 14.95 | 17.92 | 2.97 | 50.19 | 10:31 |
| 2 | TOC | 0.7568 | 7.5683 | 14.18 | 17.14 | 2.95 | 50.19 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 31 | TOC | K1901559-003.09 | 1.3630 ppm | 0.0964 ppm | 7.0700% | 2019/03/07 06:18 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.4311 | 14.3111 | 18.76 | 21.55 | 2.79 | 50.19 | 10:29 |
| 2 | TOC | 1.2948 | 12.9484 | 17.84 | 20.78 | 2.95 | 50.17 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 32 | TOC | K1901674-001.01 50x | 3.6953 ppm | 0.0453 ppm | 1.2300% | 2019/03/07 06:46 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.7274 | 37.2739 | 34.35 | 37.26 | 2.91 | 50.20 | 10:31 |
| 2 | TOC | 3.6633 | 36.6330 | 33.91 | 36.74 | 2.83 | 50.22 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 33 | TOC | K1901674-001.01 ms 50x | 31.6409 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 07:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 31.6409 | 316.4086 | 223.82 | 226.59 | 2.77 | 50.19 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 34 | TOC | RB | 0.3333 ppm | 0.0729 ppm | 21.8800% | 2019/03/07 07:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3848 | 3.8484 | 11.66 | 14.60 | 2.94 | 50.18 | 10:30 |
| 2 | TOC | 0.2817 | 2.8172 | 10.96 | 13.85 | 2.89 | 50.19 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 35 | TOC | K1901674-002.01 10x | 1.2695 ppm | 0.0338 ppm | 2.6600% | 2019/03/07 07:57 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.2934 | 12.9337 | 17.83 | 20.72 | 2.90 | 50.20 | 10:26 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 1.2456 | 12.4563 | 17.50 | 20.40 | 2.89 | 50.20 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 36 | TOC | K1901674-003.01 10x | 4.9624 ppm | 0.3896 ppm | 7.8500% | 2019/03/07 08:25 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.2379 | 52.3786 | 44.60 | 47.46 | 2.86 | 50.18 | 10:29 |
| 2 | TOC | 4.6869 | 46.8688 | 40.86 | 43.91 | 3.05 | 50.20 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 37 | TOC | K1901674-004.01 10x | 4.2076 ppm | 0.0953 ppm | 2.2700% | 2019/03/07 08:53 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.2750 | 42.7498 | 38.07 | 40.94 | 2.88 | 50.18 | 10:27 |
| 2 | TOC | 4.1402 | 41.4018 | 37.15 | 40.13 | 2.98 | 50.19 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 38 | TOC | RB | 0.1295 ppm | 0.0214 ppm | 16.5400% | 2019/03/07 09:21 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.1460 | 1.4604 | 10.04 | 12.97 | 2.93 | 50.21 | 10:29 |
| 2 | TOC | 0.1490 | 1.4898 | 10.06 | 12.92 | 2.86 | 50.17 | 10:23 |
| 3 | TOC | 0.1179 | 1.1790 | 9.85 | 12.83 | 2.98 | 50.24 | 10:28 |
| 4 | TOC | 0.1052 | 1.0523 | 9.76 | 12.62 | 2.86 | 50.27 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.0678 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 10:17 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.0678 | 260.6777 | 186.41 | 189.20 | 2.79 | 50.31 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.1057 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 10:31 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.1057 | 1.0570 | 10.18 | 12.99 | 2.81 | 50.33 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 39 | TOC | MB3 | 0.0790 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 10:46 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0790 | 0.7901 | 9.58 | 12.38 | 2.79 | 50.36 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 26.9353 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 11:01 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 26.9353 | 269.3534 | 192.30 | 195.05 | 2.75 | 50.37 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 40 | TOC | K1901676-001.02 | 2.2636 ppm | 0.2458 ppm | 10.8600% | 2019/03/07 11:15 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.4375 | 24.3745 | 25.59 | 28.67 | 3.07 | 50.39 | 10:29 |
| 2 | TOC | 2.0898 | 20.8978 | 23.23 | 26.41 | 3.18 | 50.42 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 41 | TOC | K1901676-002.02 10x | 18.3144 ppm | 0.0619 ppm | 0.3400% | 2019/03/07 11:43 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 18.2707 | 182.7068 | 133.07 | 136.14 | 3.07 | 50.42 | 10:27 |
| 2 | TOC | 18.3582 | 183.5819 | 133.66 | 136.63 | 2.96 | 50.43 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 42 | TOC | K1901676-003.02 50x | 1.2686 ppm | 0.3821 ppm | 30.1200% | 2019/03/07 12:11 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.5388 | 15.3880 | 19.49 | 22.49 | 3.00 | 50.46 | 10:30 |
| 2 | TOC | 0.9984 | 9.9843 | 15.82 | 18.79 | 2.96 | 50.44 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 43 | TOC | K1901676-004.02 | 2.8031 ppm | 0.0879 ppm | 3.1400% | 2019/03/07 12:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.8653 | 28.6527 | 28.50 | 31.49 | 2.99 | 50.43 | 10:26 |
| 2 | TOC | 2.7409 | 27.4093 | 27.65 | 30.68 | 3.02 | 50.43 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 44 | TOC | RB | 0.3509 ppm | 0.1574 ppm | 44.8600% | 2019/03/07 13:07 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4622 | 4.6219 | 12.18 | 15.13 | 2.94 | 50.45 | 10:26 |
| 2 | TOC | 0.2396 | 2.3959 | 10.67 | 13.63 | 2.96 | 50.46 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 45 | TOC | K1901706-001.01 | 3.6934 ppm | 0.2852 ppm | 7.7200% | 2019/03/07 13:36 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.4917 | 34.9168 | 32.75 | 35.76 | 3.01 | 50.46 | 10:28 |
| 2 | TOC | 3.8950 | 38.9504 | 35.49 | 38.44 | 2.95 | 50.47 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 46 | TOC | K1901706-002.01 | 13.7127 ppm | 1.8415 ppm | 13.4300% | 2019/03/07 14:04 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 15.0149 | 150.1491 | 110.97 | 113.95 | 2.98 | 50.45 | 10:26 |
| 2 | TOC | 12.4106 | 124.1058 | 93.29 | 96.46 | 3.17 | 50.43 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 47 | TOC | K1901706-003.01 | 8.6082 ppm | 1.5858 ppm | 18.4200% | 2019/03/07 14:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.7295 | 97.2950 | 75.09 | 78.13 | 3.03 | 50.41 | 10:30 |
| 2 | TOC | 7.4868 | 74.8685 | 59.87 | 62.82 | 2.95 | 50.38 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.1926 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 15:00 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.1926 | 261.9256 | 187.26 | 190.28 | 3.03 | 50.40 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.5100 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 15:15 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.5100 | 5.0995 | 12.92 | 15.76 | 2.84 | 50.44 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 48 | TOC | K1901706-004.01 | 6.5273 ppm | 0.1218 ppm | 1.8700% | 2019/03/07 15:30 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.6134 | 66.1339 | 53.94 | 56.91 | 2.97 | 50.39 | 10:30 |
| 2 | TOC | 6.4412 | 64.4117 | 52.77 | 55.73 | 2.96 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 49 | TOC | K1901594-001.04 | 1.8063 ppm | 0.0694 ppm | 3.8400% | 2019/03/07 15:58 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.8554 | 18.5539 | 21.64 | 24.59 | 2.94 | 50.39 | 10:26 |
| 2 | TOC | 1.7573 | 17.5728 | 20.98 | 23.88 | 2.90 | 50.42 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 50 | TOC | K1901594-002.04 | 29.6254 ppm | 0.2211 ppm | 0.7500% | 2019/03/07 16:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 29.4691 | 294.6907 | 209.08 | 211.97 | 2.89 | 50.42 | 10:28 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 29.7817 | 297.8168 | 211.20 | 214.26 | 3.05 | 50.44 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 51 | TOC | K1901594-003.04 | 31.5352 ppm | 0.1514 ppm | 0.4800% | 2019/03/07 16:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 31.4281 | 314.2813 | 222.38 | 225.28 | 2.90 | 50.45 | 10:25 |
| 2 | TOC | 31.6422 | 316.4219 | 223.83 | 226.87 | 3.04 | 50.47 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 52 | TOC | K1901594-004.04 | 1.6091 ppm | 0.1022 ppm | 6.3500% | 2019/03/07 17:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.6814 | 16.8141 | 20.46 | 23.60 | 3.14 | 50.42 | 10:27 |
| 2 | TOC | 1.5369 | 15.3689 | 19.48 | 22.47 | 2.99 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 53 | TOC | K1901594-005.04 | 2.1766 ppm | 0.0484 ppm | 2.2300% | 2019/03/07 17:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.2109 | 22.1088 | 24.06 | 27.02 | 2.96 | 50.43 | 10:27 |
| 2 | TOC | 2.1424 | 21.4237 | 23.59 | 26.83 | 3.24 | 50.44 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 54 | TOC | K1901897-001.01 | 5.7203 ppm | 0.0368 ppm | 0.6400% | 2019/03/07 18:18 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.7463 | 57.4626 | 48.05 | 50.98 | 2.93 | 50.46 | 10:28 |
| 2 | TOC | 5.6943 | 56.9426 | 47.70 | 50.53 | 2.83 | 50.41 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ◈ | 55 | TOC | K1901703-001.01 doc | 2.2652 ppm | 0.0938 ppm | 4.1400% | 2019/03/07 18:46 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.3315 | 23.3153 | 24.87 | 27.84 | 2.96 | 50.49 | 10:27 |
| 2 | TOC | 2.1989 | 21.9894 | 23.97 | 27.02 | 3.05 | 50.49 | 10:23 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 56 | TOC | K1901703-001.01 ms doc | 30.5280 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 19:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 30.5280 | 305.2801 | 216.27 | 219.40 | 3.13 | 50.50 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 57 | TOC | RB | 0.2627 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 19:29 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2627 | 2.6271 | 10.83 | 13.87 | 3.04 | 50.50 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.1528 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 19:43 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.1528 | 261.5278 | 186.99 | 189.86 | 2.88 | 50.56 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.1190 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 19:58 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.1190 | 1.1896 | 10.27 | 13.16 | 2.89 | 50.53 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 59 | TOC | K1901703-002.01 doc | 2.1764 ppm | 0.0127 ppm | 0.5800% | 2019/03/07 20:13 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.1674 | 21.6742 | 23.76 | 26.74 | 2.98 | 50.48 | 10:26 |
| 2 | TOC | 2.1854 | 21.8539 | 23.88 | 26.87 | 2.99 | 50.45 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 60 | TOC | K1901703-003.01 doc | 3.7162 ppm | 0.0463 ppm | 1.2400% | 2019/03/07 20:41 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.7489 | 37.4890 | 34.49 | 37.39 | 2.90 | 50.42 | 10:29 |
| 2 | TOC | 3.6835 | 36.8349 | 34.05 | 36.98 | 2.93 | 50.40 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 61 | TOC | K1901703-004.01 doc | 6.4987 ppm | 0.0318 ppm | 0.4900% | 2019/03/07 21:09 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.4762 | 64.7623 | 53.01 | 55.91 | 2.90 | 50.39 | 10:25 |
| 2 | TOC | 6.5212 | 65.2117 | 53.31 | 56.18 | 2.86 | 50.39 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 62 | TOC | K1901703-005.01 doc | 7.6223 ppm | 0.0299 ppm | 0.3900% | 2019/03/07 21:37 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.6435 | 76.4345 | 60.93 | 63.69 | 2.76 | 50.36 | 10:28 |
| 2 | TOC | 7.6012 | 76.0117 | 60.64 | 63.26 | 2.62 | 50.37 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 63 | TOC | K1901703-006.01 doc | 7.6095 ppm | 0.0211 ppm | 0.2800% | 2019/03/07 22:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.5945 | 75.9454 | 60.60 | 63.50 | 2.91 | 50.33 | 10:28 |
| 2 | TOC | 7.6244 | 76.2445 | 60.80 | 63.72 | 2.92 | 50.29 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 64 | TOC | K1901703-007.01 doc | 1.0166 ppm | 0.0185 ppm | 1.8200% | 2019/03/07 22:33 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.0297 | 10.2966 | 16.04 | 18.95 | 2.91 | 50.12 | 10:27 |
| 2 | TOC | 1.0034 | 10.0344 | 15.86 | 18.52 | 2.66 | 50.21 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 65 | TOC | K1901553-001.06 doc 2x | 7.9336 ppm | 0.0659 ppm | 0.8300% | 2019/03/07 23:01 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.8870 | 78.8697 | 62.58 | 65.48 | 2.89 | 50.40 | 10:30 |
| 2 | TOC | 7.9802 | 79.8022 | 63.22 | 66.07 | 2.85 | 50.43 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 66 | TOC | K1901553-002.05 doc | 3.3275 ppm | 0.0993 ppm | 2.9800% | 2019/03/07 23:29 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.3977 | 33.9769 | 32.11 | 35.01 | 2.90 | 50.41 | 10:29 |
| 2 | TOC | 3.2573 | 32.5729 | 31.16 | 33.95 | 2.79 | 50.39 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm — From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.7792 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 23:57 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.7792 | 257.7917 | 184.45 | 187.32 | 2.87 | 50.36 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB — From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0491 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/08 00:12 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0491 | 0.4913 | 9.80 | 12.77 | 2.97 | 50.32 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample — From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 67 | TOC | K1901865-001.02 doc | 5.9540 ppm | 0.0577 ppm | 0.9700% | 2019/03/08 00:27 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.9132 | 59.1318 | 49.19 | 52.18 | 2.99 | 50.29 | 10:30 |
| 2 | TOC | 5.9948 | 59.9479 | 49.74 | 52.50 | 2.76 | 50.30 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 68 | TOC | K1901865-002.02 doc | 2.8095 ppm | 0.0151 ppm | 0.5400% | 2019/03/08 00:55 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.7988 | 27.9883 | 28.05 | 30.99 | 2.94 | 50.29 | 10:24 |
| 2 | TOC | 2.8202 | 28.2019 | 28.19 | 31.23 | 3.04 | 50.28 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 69 | TOC | RB | 0.1225 ppm | 0.0605 ppm | 49.3900% | 2019/03/08 01:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.1653 | 1.6534 | 10.17 | 12.88 | 2.71 | 50.28 | 10:27 |
| 2 | TOC | 0.0797 | 0.7974 | 9.59 | 12.49 | 2.90 | 50.28 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 70 | TOC | FB | 0.0226 ppm | 0.0198 ppm | 87.6400% | 2019/03/08 01:51 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0366 | 0.3658 | 9.30 | 12.23 | 2.94 | 50.27 | 10:28 |
| 2 | TOC | 0.0086 | 0.0859 | 9.11 | 11.91 | 2.80 | 50.26 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 71 | TOC | K1901728-001.01 doc | 1.7817 ppm | 0.0129 ppm | 0.7200% | 2019/03/08 02:19 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.7726 | 17.7260 | 21.08 | 23.90 | 2.82 | 50.26 | 10:25 |
| 2 | TOC | 1.7909 | 17.9087 | 21.20 | 23.95 | 2.75 | 50.25 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 72 | TOC | K1901728-002.01 doc 100x | 0.5750 ppm | 0.0235 ppm | 4.0900% | 2019/03/08 02:47 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.5917 | 5.9168 | 13.06 | 15.82 | 2.75 | 50.24 | 10:28 |
| 2 | TOC | 0.5584 | 5.5839 | 12.84 | 15.78 | 2.94 | 50.23 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.2814 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/08 03:15 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.2814 | 252.8138 | 181.07 | 183.95 | 2.88 | 50.22 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0213 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/08 03:30 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0213 | 0.2129 | 9.61 | 12.42 | 2.81 | 50.22 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

## Meta Data Used in this Report

**Blanks**

| Version | Reagent (Abs) | Acid (Abs) | DI IC (Abs) | DI TC (Abs) | DI TOC (Abs) | Save Time | Operator |
|---|---|---|---|---|---|---|---|
| v1228 | 1.4157 | 0.7880 | 0.0000 | 0.0000 | 0.0000 | 2019/03/05 15:06 | Fusion1 (Fusion1) |
| v1229 | 2.6573 | 1.3700 | 0.0000 | 0.0000 | 0.0000 | 2019/03/06 14:28 | Fusion1 (Fusion1) |

**Calibrations**

**Name: CAS_salt_010711 (TOC)**

| | | | |
|---|---|---|---|
| Version: | v30 | Calibration curve formula: | TOC: y = 6.788x + 9.463 |
| Ver Creation: | 2019/03/05 17:42 | $r^2$ value: | TOC: $r^2$ = 0.99963 |
| Comment: | | | |
| Operator: | Fusion1 (Fusion1) | | |
| Basic Analysis Type | TOC | | |

**Basic Analysis Type**: TOC

| Sample ID | Y Raw Value | X Expected | Message | End Time |
|---|---|---|---|---|
| DI Water | 7.8970 | 0.0000 | | 2019/03/05 16:15 |
| 0.500 ppm | 11.5280 | 0.5000 | | 2019/03/05 16:29 |
| 1.0 ppm | 14.9760 | 1.0000 | | 2019/03/05 16:44 |
| 5.0 ppm | 43.6500 | 5.0000 | | 2019/03/05 16:58 |
| 10 ppm | 79.6020 | 10.0000 | | 2019/03/05 17:12 |
| 25 ppm | 183.3580 | 25.0000 | | 2019/03/05 17:26 |
| 50 ppm | 346.3230 | 50.0000 | | 2019/03/05 17:40 |

**Methods**

**Name: CAS_salt_010711 (TOC)**

| | | | |
|---|---|---|---|
| Version: | v4 | Operator: | Fusion1 (Fusion1) |
| Ver Creation: | 2019/02/21 17:57 | | |
| Comment: | | | |

| Parameter | Value |
|---|---|
| SampleVolume | 10.0 mL |
| Dilution | 1:10 |
| AcidVolume | 0.5 ml |
| ReagentVolume | 2.0 ml |
| UVReactorPrerinse | Off |
| UVReactorPrerinseVolume | 5.0 |
| NumberOfUVReactorPrerinses | 1 |
| ICSpargeTime | 1.00 mins |
| DetectorSweepFlow | 500 ml/min |
| PreSpargeTime | 2.00 mins |
| SystemFlow | 500 ml/min |

| Advanced Parameter | Value |
|---|---|
| NeedleRinseVolume | 5.0 ml |
| VialPrimeVolume | 2.0 ml |
| ICSamplePrimeVolume | 2.0 ml |
| ICSpargeRinseVolume | 12.0 ml |
| BaselineStabilizeTime | 0.70 min |
| DetectorPressureFlow | 150 ml/min |
| SyringeSpeedWaste | 10 |
| SyringeSpeedAcid | 7 |
| SyringeSpeedReagent | 7 |
| SyringeSpeedDIWater | 7 |
| NDIRPressurization | 60 psig |
| SyringeSpeedSampleDispense | 5 |
| SyringeSpeedSampleAspirate | 4 |
| SyringeSpeedUVDispense | 5 |
| SyringeSpeedUVAspirate | 5 |
| SyringeSpeedICDispense | 5 |
| SyringeSpeedICAspirate | 5 |
| NDIRPressureStabilize | 1.75 min |
| SampleMixing | Off |
| SampleMixingCycles | 1 |
| SampleMixingVolume | 10.0 |

| | |
|---|---|
| LowLevelFilterNDIR | Off |

## Acceptance / Approval

**Electronic Signatures**

| Report Version | User Name | Acceptance | Reason | Date |
|---|---|---|---|---|

## Report History

**Report History**

| Report Version | User Name | System Reason | User Reason | Date |
|---|---|---|---|---|
| 1 | Fusion1 (Fusion1) | Schedule completed | Schedule completed | 2019/03/08 03:48 |

StarLIMS Run: 627457, 627458, 627459

Analysis: TOC

Method: 9060, 415.1, SM 5310 C, 9060A

CCV: 11-GEN-05-76B 50 ppm LCS: 11-GEN-05-74L 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-76F

21 % H3PO4: 11-GEN-05-76G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: NA

| | |
|---|---|
| Analyzed By: BD | Date Analyzed: 3/6/19 |
| Reviewed By: | Date Reviewed: 03/08/19 |

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

March 13, 2019

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19021316**

Laboratory Results for: **Longhorn Army Ammunition Plant**

Dear Susan,

ALS Environmental received 6 sample(s) on Feb 26, 2019 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 Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:** HS19021316

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19021316-01 | LHSMW25-190225 | Groundwater | | 25-Feb-2019 08:40 | 26-Feb-2019 08:50 | ☐ |
| HS19021316-02 | LHSMW21-190225 | Groundwater | | 25-Feb-2019 09:35 | 26-Feb-2019 08:50 | ☐ |
| HS19021316-03 | 46WW05-190225 | Groundwater | | 25-Feb-2019 10:35 | 26-Feb-2019 08:50 | ☐ |
| HS19021316-04 | 46WW09-190225 | Groundwater | | 25-Feb-2019 11:35 | 26-Feb-2019 08:50 | ☐ |
| HS19021316-05 | 46WW09-190225-FD | Groundwater | | 25-Feb-2019 11:35 | 26-Feb-2019 08:50 | ☐ |
| HS19021316-06 | Trip Blank | Water | ALS-020119-58 | 25-Feb-2019 00:00 | 26-Feb-2019 08:50 | ☐ |

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:**

**CASE NARRATIVE**

## Work Order Comments

• The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

## Work Order Comments

• The analysis for TOC was subcontracted to ALS Environmental in Kelso, WA. Final Report attached.

## GCMS Volatiles by Method SW8260

### Batch ID: R334099

**Sample ID: HS19021185-01MS**

• MS was performed on an unrelated sample

## WetChemistry by Method SW9056

### Batch ID: R334216

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

### Batch ID: R334151

**Sample ID: 46WW05-190225 (HS19021316-03)**

• The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

**Sample ID: 46WW09-190225 (HS19021316-04)**

• The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

**Sample ID: 46WW09-190225-FD (HS19021316-05)**

• The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

**Sample ID: 46WW09-190225-FD (HS19021316-05MSD)**

• 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: LHSMW21-190225 (HS19021316-02)**

• The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

**ALS Houston, US** Date: 13-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: LHSMW25-190225
Collection Date: 25-Feb-2019 08:40

**ANALYTICAL REPORT**
WorkOrder:HS19021316
Lab ID:HS19021316-01
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 02:07 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 02:07 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 02:07 |
| *Surr: 1,2-Dichloroethane-d4* | *84.4* | | | **0** | *81-118* | *%REC* | *1* | *06-Mar-2019 02:07* |
| *Surr: 4-Bromofluorobenzene* | *99.7* | | | **0** | *85-114* | *%REC* | *1* | *06-Mar-2019 02:07* |
| *Surr: Dibromofluoromethane* | *85.5* | | | **0** | *80-119* | *%REC* | *1* | *06-Mar-2019 02:07* |
| *Surr: Toluene-d8* | *109* | | | **0** | *89-112* | *%REC* | *1* | *06-Mar-2019 02:07* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 13-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.

**ANALYTICAL REPORT**

Project: Longhorn Army Ammunition Plant

WorkOrder:HS19021316

Sample ID: LHSMW21-190225

Lab ID:HS19021316-02

Collection Date: 25-Feb-2019 09:35

Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| **cis-1,2-Dichloroethene** | **100** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 05-Mar-2019 23:42 |
| **Trichloroethene** | **20** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 05-Mar-2019 23:42 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 23:42 |
| *Surr: 1,2-Dichloroethane-d4* | *84.4* | | | **0** | *81-118* | *%REC* | *1* | *05-Mar-2019 23:42* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *05-Mar-2019 23:42* |
| *Surr: Dibromofluoromethane* | *84.2* | | | **0** | *80-119* | *%REC* | *1* | *05-Mar-2019 23:42* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *05-Mar-2019 23:42* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **112** | | **1.00** | **2.50** | **2.50** | **mg/L** | 5 | 26-Feb-2019 18:21 |
| Nitrogen, Nitrate (As N) | 0.500 | U | 0.150 | 0.500 | 0.500 | mg/L | 5 | 26-Feb-2019 18:21 |
| **Sulfate** | **829** | | **4.00** | **10.0** | **10.0** | **mg/L** | 20 | 26-Feb-2019 20:46 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 12-Mar-2019 16:59 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 11-Mar-2019 17:40 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 13-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW05-190225
Collection Date: 25-Feb-2019 10:35

**ANALYTICAL REPORT**
WorkOrder:HS19021316
Lab ID:HS19021316-03
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| **cis-1,2-Dichloroethene** | **2.2** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 06-Mar-2019 02:31 |
| **Trichloroethene** | **27** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 06-Mar-2019 02:31 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 02:31 |
| *Surr: 1,2-Dichloroethane-d4* | *84.7* | | | **0** | *81-118* | *%REC* | *1* | *06-Mar-2019 02:31* |
| *Surr: 4-Bromofluorobenzene* | *99.9* | | | **0** | *85-114* | *%REC* | *1* | *06-Mar-2019 02:31* |
| *Surr: Dibromofluoromethane* | *83.9* | | | **0** | *80-119* | *%REC* | *1* | *06-Mar-2019 02:31* |
| *Surr: Toluene-d8* | *108* | | | **0** | *89-112* | *%REC* | *1* | *06-Mar-2019 02:31* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **206** | | **1.00** | **2.50** | **2.50** | **mg/L** | 5 | 26-Feb-2019 18:35 |
| Nitrogen, Nitrate (As N) | 0.500 | U | 0.150 | 0.500 | 0.500 | mg/L | 5 | 26-Feb-2019 18:35 |
| **Sulfate** | **4,150** | | **10.0** | **25.0** | **25.0** | **mg/L** | 50 | 07-Mar-2019 23:33 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 12-Mar-2019 16:59 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 11-Mar-2019 17:40 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 13-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW09-190225
Collection Date: 25-Feb-2019 11:35

**ANALYTICAL REPORT**
WorkOrder:HS19021316
Lab ID:HS19021316-04
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 02:55 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 02:55 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 02:55 |
| *Surr: 1,2-Dichloroethane-d4* | *86.6* | | | **0** | *81-118* | *%REC* | *1* | *06-Mar-2019 02:55* |
| *Surr: 4-Bromofluorobenzene* | *99.8* | | | **0** | *85-114* | *%REC* | *1* | *06-Mar-2019 02:55* |
| *Surr: Dibromofluoromethane* | *84.7* | | | **0** | *80-119* | *%REC* | *1* | *06-Mar-2019 02:55* |
| *Surr: Toluene-d8* | *108* | | | **0** | *89-112* | *%REC* | *1* | *06-Mar-2019 02:55* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **426** | | **1.00** | **2.50** | **2.50** | **mg/L** | 5 | 26-Feb-2019 18:50 |
| Nitrogen, Nitrate (As N) | 0.500 | U | 0.150 | 0.500 | 0.500 | mg/L | 5 | 26-Feb-2019 18:50 |
| **Sulfate** | **2,000** | | **8.00** | **20.0** | **20.0** | **mg/L** | 40 | 07-Mar-2019 23:47 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 12-Mar-2019 16:59 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 11-Mar-2019 17:40 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 13-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: 46WW09-190225-FD
Collection Date: 25-Feb-2019 11:35

**ANALYTICAL REPORT**
WorkOrder:HS19021316
Lab ID:HS19021316-05
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 03:19 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 03:19 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Mar-2019 03:19 |
| *Surr: 1,2-Dichloroethane-d4* | *84.8* | | | **0** | *81-118* | *%REC* | *1* | *06-Mar-2019 03:19* |
| *Surr: 4-Bromofluorobenzene* | *104* | | | **0** | *85-114* | *%REC* | *1* | *06-Mar-2019 03:19* |
| *Surr: Dibromofluoromethane* | *83.5* | | | **0** | *80-119* | *%REC* | *1* | *06-Mar-2019 03:19* |
| *Surr: Toluene-d8* | *103* | | | **0** | *89-112* | *%REC* | *1* | *06-Mar-2019 03:19* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **427** | | **1.00** | **2.50** | **2.50** | **mg/L** | 5 | 26-Feb-2019 19:04 |
| Nitrogen, Nitrate (As N) | 0.500 | U | 0.150 | 0.500 | 0.500 | mg/L | 5 | 26-Feb-2019 19:04 |
| **Sulfate** | **2,030** | | **8.00** | **20.0** | **20.0** | **mg/L** | 40 | 08-Mar-2019 00:02 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 12-Mar-2019 16:59 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 11-Mar-2019 17:40 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 13-Mar-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: Trip Blank
Collection Date: 25-Feb-2019 00:00

**ANALYTICAL REPORT**
WorkOrder:HS19021316
Lab ID:HS19021316-06
Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 22:30 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 22:30 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 05-Mar-2019 22:30 |
| *Surr: 1,2-Dichloroethane-d4* | *82.4* | | | **0** | *81-118* | *%REC* | *1* | *05-Mar-2019 22:30* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *05-Mar-2019 22:30* |
| *Surr: Dibromofluoromethane* | *84.0* | | | **0** | *80-119* | *%REC* | *1* | *05-Mar-2019 22:30* |
| *Surr: Toluene-d8* | *107* | | | **0** | *89-112* | *%REC* | *1* | *05-Mar-2019 22:30* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021316

## DATES REPORT

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID** R334099 | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Water | |
| HS19021316-06 | Trip Blank | 25 Feb 2019 00:00 | | | 05 Mar 2019 22:30 | 1 |
| **Batch ID** R334099 | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Groundwater | |
| HS19021316-01 | LHSMW25-190225 | 25 Feb 2019 08:40 | | | 06 Mar 2019 02:07 | 1 |
| HS19021316-02 | LHSMW21-190225 | 25 Feb 2019 09:35 | | | 05 Mar 2019 23:42 | 1 |
| HS19021316-03 | 46WW05-190225 | 25 Feb 2019 10:35 | | | 06 Mar 2019 02:31 | 1 |
| HS19021316-04 | 46WW09-190225 | 25 Feb 2019 11:35 | | | 06 Mar 2019 02:55 | 1 |
| HS19021316-05 | 46WW09-190225-FD | 25 Feb 2019 11:35 | | | 06 Mar 2019 03:19 | 1 |
| **Batch ID** R334151 | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19021316-02 | LHSMW21-190225 | 25 Feb 2019 09:35 | | | 26 Feb 2019 20:46 | 20 |
| HS19021316-02 | LHSMW21-190225 | 25 Feb 2019 09:35 | | | 26 Feb 2019 18:21 | 5 |
| HS19021316-03 | 46WW05-190225 | 25 Feb 2019 10:35 | | | 26 Feb 2019 18:35 | 5 |
| HS19021316-04 | 46WW09-190225 | 25 Feb 2019 11:35 | | | 26 Feb 2019 18:50 | 5 |
| HS19021316-05 | 46WW09-190225-FD | 25 Feb 2019 11:35 | | | 26 Feb 2019 19:04 | 5 |
| **Batch ID** R334216 | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19021316-03 | 46WW05-190225 | 25 Feb 2019 10:35 | | | 07 Mar 2019 23:33 | 50 |
| HS19021316-04 | 46WW09-190225 | 25 Feb 2019 11:35 | | | 07 Mar 2019 23:47 | 40 |
| HS19021316-05 | 46WW09-190225-FD | 25 Feb 2019 11:35 | | | 08 Mar 2019 00:02 | 40 |
| **Batch ID** R334336 | **Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS | | | | **Matrix:** Groundwater | |
| HS19021316-02 | LHSMW21-190225 | 25 Feb 2019 09:35 | | | 11 Mar 2019 17:40 | 1 |
| HS19021316-03 | 46WW05-190225 | 25 Feb 2019 10:35 | | | 11 Mar 2019 17:40 | 1 |
| HS19021316-04 | 46WW09-190225 | 25 Feb 2019 11:35 | | | 11 Mar 2019 17:40 | 1 |
| HS19021316-05 | 46WW09-190225-FD | 25 Feb 2019 11:35 | | | 11 Mar 2019 17:40 | 1 |
| **Batch ID** R334404 | **Test Name :** SUBCONTRACT ANALYSIS - RSK | | | | **Matrix:** Groundwater | |
| HS19021316-02 | LHSMW21-190225 | 25 Feb 2019 09:35 | | | 12 Mar 2019 16:59 | 1 |
| HS19021316-03 | 46WW05-190225 | 25 Feb 2019 10:35 | | | 12 Mar 2019 16:59 | 1 |
| HS19021316-04 | 46WW09-190225 | 25 Feb 2019 11:35 | | | 12 Mar 2019 16:59 | 1 |
| HS19021316-05 | 46WW09-190225-FD | 25 Feb 2019 11:35 | | | 12 Mar 2019 16:59 | 1 |

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021316

**QC BATCH REPORT**

**Batch ID: R334099** **Instrument: VOA6** **Method: SW8260**

**MBLK** Sample ID: **VBLKW-190305** Units: **UG/L** Analysis Date: **05-Mar-2019 19:18**
Client ID: Run ID: **VOA6_334099** SeqNo: **4977030** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 0.50 | 1.0 | | | | | | | | U |
| Trichloroethene | 0.50 | 1.0 | | | | | | | | U |
| Vinyl chloride | 0.50 | 1.0 | | | | | | | | U |
| *Surr: 1,2-Dichloroethane-d4* | *40.72* | *1.0* | *50* | *0* | *81.4* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *50.56* | *1.0* | *50* | *0* | *101* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *42.1* | *1.0* | *50* | *0* | *84.2* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *53.5* | *1.0* | *50* | *0* | *107* | *89 - 112* | | | | |

**LCS** Sample ID: **VLCSW-190305** Units: **UG/L** Analysis Date: **05-Mar-2019 18:05**
Client ID: Run ID: **VOA6_334099** SeqNo: **4977029** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 18.62 | 1.0 | 20 | 0 | 93.1 | 78 - 123 | | | | |
| Trichloroethene | 19.04 | 1.0 | 20 | 0 | 95.2 | 79 - 123 | | | | |
| Vinyl chloride | 17.04 | 1.0 | 20 | 0 | 85.2 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *52.42* | *1.0* | *50* | *0* | *105* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *52.66* | *1.0* | *50* | *0* | *105* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *51.95* | *1.0* | *50* | *0* | *104* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *49.26* | *1.0* | *50* | *0* | *98.5* | *89 - 112* | | | | |

**MS** Sample ID: **HS19021185-01MS** Units: **UG/L** Analysis Date: **06-Mar-2019 00:06**
Client ID: Run ID: **VOA6_334099** SeqNo: **4977037** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 15.51 | 1.0 | 20 | 0 | 77.6 | 78 - 123 | | | | S |
| Trichloroethene | 31.05 | 1.0 | 20 | 13.06 | 90.0 | 79 - 123 | | | | |
| Vinyl chloride | 14.49 | 1.0 | 20 | 0 | 72.4 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *42.2* | *1.0* | *50* | *0* | *84.4* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *50.35* | *1.0* | *50* | *0* | *101* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *42.74* | *1.0* | *50* | *0* | *85.5* | *80 - 119* | | | | |
| *Surr: Toluene-d8* | *52.15* | *1.0* | *50* | *0* | *104* | *89 - 112* | | | | |

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021316

**QC BATCH REPORT**

**Batch ID: R334099** **Instrument: VOA6** **Method: SW8260**

**MSD** Sample ID: **HS19021185-01MSD** Units: **UG/L** Analysis Date: **06-Mar-2019 00:30**
Client ID: Run ID: **VOA6_334099** SeqNo: **4977038** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 18.3 | 1.0 | 20 | 0 | 91.5 | 78 - 123 | 15.51 | 16.5 | 20 | |
| Trichloroethene | 36.16 | 1.0 | 20 | 13.06 | 115 | 79 - 123 | 31.05 | 15.2 | 20 | |
| Vinyl chloride | 16.23 | 1.0 | 20 | 0 | 81.1 | 58 - 137 | 14.49 | 11.3 | 20 | |
| *Surr: 1,2-Dichloroethane-d4* | *41.82* | *1.0* | *50* | *0* | *83.6* | *81 - 118* | *42.2* | *0.909* | *20* | |
| *Surr: 4-Bromofluorobenzene* | *51.21* | *1.0* | *50* | *0* | *102* | *85 - 114* | *50.35* | *1.7* | *20* | |
| *Surr: Dibromofluoromethane* | *42.43* | *1.0* | *50* | *0* | *84.9* | *80 - 119* | *42.74* | *0.725* | *20* | |
| *Surr: Toluene-d8* | *51.03* | *1.0* | *50* | *0* | *102* | *89 - 112* | *52.15* | *2.17* | *20* | |

**The following samples were analyzed in this batch:** HS19021316-01 HS19021316-02 HS19021316-03 HS19021316-04 HS19021316-05 HS19021316-06

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021316

**QC BATCH REPORT**

**Batch ID: R334151** **Instrument: ICS2100** **Method: SW9056**

**MBLK** Sample ID: **WBLKW1-022619** Units: **mg/L** Analysis Date: **26-Feb-2019 13:45**
Client ID: Run ID: **ICS2100_334151** SeqNo: **4978133** 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 |
| Sulfate | 0.500 | 0.500 | | | | | | | | U |

**LCS** Sample ID: **WLCSW1-022619** Units: **mg/L** Analysis Date: **26-Feb-2019 13:59**
Client ID: Run ID: **ICS2100_334151** SeqNo: **4978134** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.26 | 0.500 | 20 | 0 | 101 | 80 - 120 | | | | |
| Nitrogen, Nitrate (As N) | 3.972 | 0.100 | 4 | 0 | 99.3 | 80 - 120 | | | | |
| Sulfate | 20.2 | 0.500 | 20 | 0 | 101 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW1-022619** Units: **mg/L** Analysis Date: **26-Feb-2019 14:14**
Client ID: Run ID: **ICS2100_334151** SeqNo: **4978135** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.54 | 0.500 | 20 | 0 | 103 | 80 - 120 | 20.26 | 1.37 | 20 | |
| Nitrogen, Nitrate (As N) | 4.022 | 0.100 | 4 | 0 | 101 | 80 - 120 | 3.972 | 1.25 | 20 | |
| Sulfate | 20.4 | 0.500 | 20 | 0 | 102 | 80 - 120 | 20.2 | 1.01 | 20 | |

**MS** Sample ID: **HS19021316-05MS** Units: **mg/L** Analysis Date: **26-Feb-2019 20:03**
Client ID: **46WW09-190225-FD** Run ID: **ICS2100_334151** SeqNo: **4978143** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 522.7 | 5.00 | 100 | 422.6 | 100 | 80 - 120 | | | | O |
| Nitrogen, Nitrate (As N) | 21.95 | 1.00 | 20 | 0 | 110 | 80 - 120 | | | | |
| Sulfate | 2141 | 5.00 | 100 | 2057 | 84.3 | 80 - 120 | | | | EO |

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021316

**QC BATCH REPORT**

**Batch ID: R334151** **Instrument: ICS2100** **Method: SW9056**

**MSD** Sample ID: **HS19021316-05MSD** Units: **mg/L** Analysis Date: **26-Feb-2019 20:17**
Client ID: **46WW09-190225-FD** Run ID: **ICS2100_334151** SeqNo: **4978144** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 521.4 | 5.00 | 100 | 422.6 | 98.8 | 80 - 120 | 522.7 | 0.255 | 20 | O |
| Nitrogen, Nitrate (As N) | 21.83 | 1.00 | 20 | 0 | 109 | 80 - 120 | 21.95 | 0.534 | 20 | |
| Sulfate | 2128 | 5.00 | 100 | 2057 | 71.4 | 80 - 120 | 2141 | 0.606 | 20 | SEO |

**The following samples were analyzed in this batch:** HS19021316-02 HS19021316-03 HS19021316-04 HS19021316-05

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021316

**QC BATCH REPORT**

**Batch ID: R334216** **Instrument: ICS2100** **Method: SW9056**

**MBLK** Sample ID: **WBLKW1-030719** Units: **mg/L** Analysis Date: **07-Mar-2019 16:22**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979622** 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: **WLCSW1-030719** Units: **mg/L** Analysis Date: **07-Mar-2019 16:37**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979623** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 20.79 | 0.500 | 20 | 0 | 104 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW1-030719** Units: **mg/L** Analysis Date: **07-Mar-2019 16:51**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979624** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 20 | 0.500 | 20 | 0 | 100.0 | 80 - 120 | 20.79 | 3.91 | 20 | |

**MS** Sample ID: **HS19030301-01MS** Units: **mg/L** Analysis Date: **08-Mar-2019 00:31**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979646** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 107.6 | 5.00 | 100 | 13.91 | 93.7 | 80 - 120 | | | | |

**MS** Sample ID: **HS19030293-01MS** Units: **mg/L** Analysis Date: **07-Mar-2019 19:04**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979627** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 33.83 | 0.500 | 10 | 24.5 | 93.3 | 80 - 120 | | | | |

**MSD** Sample ID: **HS19030301-01MSD** Units: **mg/L** Analysis Date: **08-Mar-2019 00:46**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979647** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 103 | 5.00 | 100 | 13.91 | 89.1 | 80 - 120 | 107.6 | 4.34 | 20 | |

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19021316

**QC BATCH REPORT**

**Batch ID: R334216** **Instrument: ICS2100** **Method: SW9056**

**MSD** Sample ID: **HS19030293-01MSD** Units: **mg/L** Analysis Date: **07-Mar-2019 19:19**
Client ID: Run ID: **ICS2100_334216** SeqNo: **4979628** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Sulfate | 33.85 | 0.500 | 10 | 24.5 | 93.5 | 80 - 120 | 33.83 | 0.0621 | 20 | |

**The following samples were analyzed in this batch:** HS19021316-03 HS19021316-04 HS19021316-05

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** **HS19021316**

**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 Houston, US** Date: 13-Mar-19

## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| 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 | ANAB L2231 | 20-Dec-2021 |
| Kentucky | 123043 - 2018 | 30-Apr-2019 |
| Kansas | E-10352 2018-2019 | 31-Jul-2019 |
| Oklahoma | 2018-156 | 31-Aug-2019 |
| North Carolina | 624-2019 | 31-Dec-2019 |
| California | 2919, 2018-2019 | 30-Apr-2019 |
| Maryland | 343, 2018-2019 | 30-Jun-2019 |

**ALS Houston, US** Date: 13-Mar-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:** HS19021316

**SAMPLE TRACKING**

| Lab Samp ID | Client Sample ID | Action | Date | Person | New Location |
|---|---|---|---|---|---|
| HS19021316-01 | LHSMW25-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-01 | LHSMW25-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-01 | LHSMW25-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-01 | LHSMW25-190225 | Login | 2/26/2019 11:03:42 AM | NDR | WET359 |
| HS19021316-01 | LHSMW25-190225 | Login | 2/26/2019 11:03:42 AM | NDR | VOA009 |
| HS19021316-02 | LHSMW21-190225 | Login | 2/26/2019 11:03:42 AM | NDR | WET359 |
| HS19021316-02 | LHSMW21-190225 | Login | 2/26/2019 11:03:42 AM | NDR | VOA009 |
| HS19021316-02 | LHSMW21-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-02 | LHSMW21-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-02 | LHSMW21-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-03 | 46WW05-190225 | Login | 2/26/2019 11:03:42 AM | NDR | WET359 |
| HS19021316-03 | 46WW05-190225 | Login | 2/26/2019 11:03:42 AM | NDR | VOA009 |
| HS19021316-03 | 46WW05-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-03 | 46WW05-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |
| HS19021316-03 | 46WW05-190225 | Login | 2/26/2019 11:03:42 AM | NDR | Sub |

00971583

**ALS Houston, US** Date: 13-Mar-19

## Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19021316
Date/Time Received: **26-Feb-2019 08:50**
Received by: **RPG**

Checklist completed by: *Nilesh D. Ranchod* 26-Feb-2019 (eSignature / Date)
Reviewed by: *RJ Modashia* 26-Feb-2019 (eSignature / 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 ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:LHAAP46-FEB2019-ALSHT-1902-25 |
| Samplers name present on COC? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| 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): | 0.8C/ 0.8C UC/C | IR # 11 |
| Cooler(s)/Kit(s): | 44179 | |
| Date/Time sample(s) sent to storage: | 02/26/2019 12:00PM | |

| | | | |
|---|---|---|---|
| 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:

00971584

APTIM

COC ID: LHAAP46-FEB2019-ALSHT-19021 25 TURNAROUND TIME: normal RUSH: Page 1 of

| PROJECT/CLIENT INFO | | | | LABORATORY | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Facility Name | Longhorn AAP | | | Lab Name | ALS Laboratories | | | FedInvoices @aptim.com | |
| Project Number | 501032 | | | Lab Contact | RJ Modashia | | | | |
| | LHAAP-46 | | | Email | RJ.Modashia@alsglobal.com | | | Susan.Huang@aptim.com | |
| Address | 1203-B East Grand Avenue | | | Address | 10450 Stancliff Rd., Suite 210 | | | Susan Huang | |
| | PMB 202 | | | | | | | 4005 Port Chicago Hwy | |
| City | Marshall | State | TX | City | Houston | State | TX | Concord | State CA |
| Postal Code | 75670 | Country | USA | Postal Code | 77099 | Country | USA | 94520 | Country USA |
| Phone Number | 713.243 7264 | | | Phone Number | 281.575.2279 or 281.530.5656 | | | | |
| Project Manager | Praveen Srivastav | | | | | | | | |

SAMPLE DETAILS / ANALYSIS REQUESTED

| Sample ID | Location | Start Depth | End Depth | Depth Unit | Field Matrix | Date | Time (24hr) | # Of Cont. | ANALYSIS: Containers and Preservative | VOCs in Water by 8260B (see VOC list below) | Anions (Nitrate, Sulfate, Chloride) by 9056 | Carbon Dioxide by RSK-175 | Dissolved Gases by RSK 175 | TOC by SM5310C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 3x40 ml VOA, HCl | 1x250ml HDPE, Ice | 3x40 ml VOA, Ice | 3x40 ml VOA, HCL Ice | 2-40 ml Amber, H2SO4 |
| LHSmw25-190225 | LHAAP46 | 30.93 | 31.15 | | WG | 2/25/19 | 0840 | 3 | | X | | | | |
| LHSmw21-190225 | LHAAP46 | 22.22 | 22.43 | | WG | 2/25/19 | 0935 | 12 | | X | X | X | X | X |
| 46WW05-190225 | LHAAP46 | 39.14 | 39.37 | | WG | 2/25/19 | 1035 | 12 | | X | X | X | X | X |
| 46WW09-190225 | LHAAP46 | 38.81 | 39.06 | | WG | 2/25/19 | 1135 | 12 | | X | X | X | X | X |
| 46WW09-190225-FD | LHAAP46 | 38.81 | 39.06 | | WG | 2/25/19 | 1135 | 12 | | X | X | X | X | X |
| TRIP BLANK | LHAAP46 | | | | W | 2/25/19 | | 2 | | X | | | | |

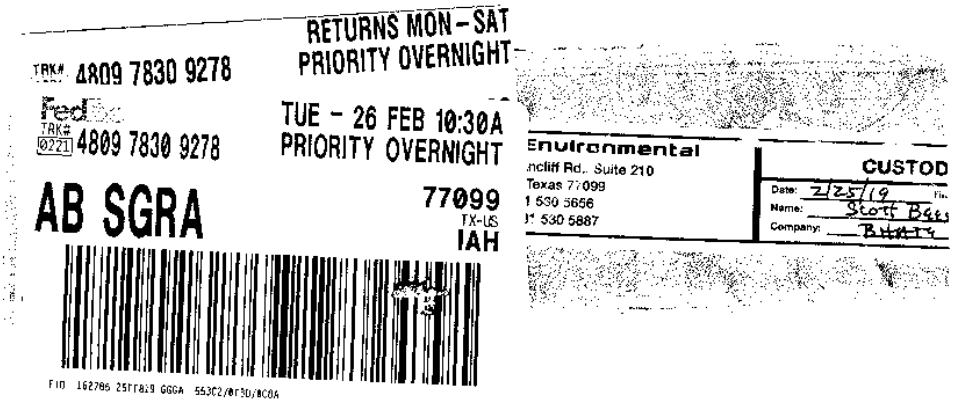
| ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME |
|---|---|---|---|---|
| Select list VOC's (TCE, cis-1,2-DCE, and VC) | Susan Huang / BHATE | 2/25/19 1400 | R Cuff ALS ITS | 02/26/19 0950 |
| | | | | Cooler # 44179 |
| | | | | IR 11 CF0 |
| | | | | TEMP - 3.3°C |

HS19021316

Aptim Environmental & Infrastucture, Inc.
Longhorn Army Ammunition Plant

00971585

Y SEAL
1400


RETURNS MON – SAT
PRIORITY OVERNIGHT
TRK# 4809 7830 9278
TUE – 26 FEB 10:30A
PRIORITY OVERNIGHT
TRK# 0221 4809 7830 9278
AB SGRA
77099
TX-US
IAH
Environmental
ncliff Rd., Suite 210
Texas 77099
1 530 5656
530 5887
CUSTOD
Date: 2/25/19
Name: Scott Bak
Company: BHMTY

ALS Environmental
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March 11, 2019 **Analytical Report for Service Request No:** K1901706

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

**RE: ALS Houston DOD TOC / HS19021316**

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory February 27, 2019
For your reference, these analyses have been assigned our service request number **K1901706.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Kelley Lovejoy

Kelley Lovejoy
Project Manager

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Raw Data
    General Chemistry

**Acronyms**

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| A2LA | American Association for Laboratory Accreditation |
| CARB | California Air Resources Board |
| CAS Number | Chemical Abstract Service registry Number |
| CFC | Chlorofluorocarbon |
| CFU | Colony-Forming Unit |
| DEC | Department of Environmental Conservation |
| DEQ | Department of Environmental Quality |
| DHS | Department of Health Services |
| DOE | Department of Ecology |
| DOH | Department of Health |
| EPA | U. S. Environmental Protection Agency |
| ELAP | Environmental Laboratory Accreditation Program |
| GC | Gas Chromatography |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| LUFT | Leaking Underground Fuel Tank |
| M | Modified |
| MCL | Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA. |
| MDL | Method Detection Limit |
| MPN | Most Probable Number |
| MRL | Method Reporting Limit |
| NA | Not Applicable |
| NC | Not Calculated |
| NCASI | National Council of the Paper Industry for Air and Stream Improvement |
| ND | Not Detected |
| NIOSH | National Institute for Occupational Safety and Health |
| PQL | Practical Quantitation Limit |
| RCRA | Resource Conservation and Recovery Act |
| SIM | Selected Ion Monitoring |
| TPH | Total Petroleum Hydrocarbons |
| tr | Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL. |

## Inorganic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| E | The result is an estimate amount because the value exceeded the instrument calibration range. |
| J | The result is an estimated value. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |
| H | The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory. |

## Metals Data Qualifiers

| | |
|---|---|
| # | The control limit criteria is not applicable. See case narrative. |
| J | The result is an estimated value. |
| E | The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample. |
| M | The duplicate injection precision was not met. |
| N | The Matrix Spike sample recovery is not within control limits. See case narrative. |
| S | The reported value was determined by the Method of Standard Additions (MSA). |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| W | The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| + | The correlation coefficient for the MSA is less than 0.995. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Organic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| A | A tentatively identified compound, a suspected aldol-condensation product. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| C | The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data. |
| D | The reported result is from a dilution. |
| E | The result is an estimated value. |
| J | The result is an estimated value. |
| N | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| P | The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Additional Petroleum Hydrocarbon Specific Qualifiers

| | |
|---|---|
| F | The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard. |
| L | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard. |
| H | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard. |
| O | The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard. |
| Y | The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard. |
| Z | The chromatographic fingerprint does not resemble a petroleum product. |

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso**
**State Certifications, Accreditations, and Licenses**

| Agency | Web Site | Number |
|---|---|---|
| Alaska DEH | http://dec.alaska.gov/eh/lab/cs/csapproval.htm | UST-040 |
| Arizona DHS | http://www.azdhs.gov/lab/license/env.htm | AZ0339 |
| Arkansas - DEQ | http://www.adeq.state.ar.us/techsvs/labcert.htm | 88-0637 |
| California DHS (ELAP) | http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx | 2795 |
| DOD ELAP | http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm | L16-58-R4 |
| Florida DOH | http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm | E87412 |
| Hawaii DOH | http://health.hawaii.gov/ | - |
| ISO 17025 | http://www.pjlabs.com/ | L16-57 |
| Louisiana DEQ | http://www.deq.louisiana.gov/page/la-lab-accreditation | 03016 |
| Maine DHS | http://www.maine.gov/dhhs/ | WA01276 |
| Minnesota DOH | http://www.health.state.mn.us/accreditation | 053-999-457 |
| Nevada DEP | http://ndep.nv.gov/bsdw/labservice.htm | WA01276 |
| New Jersey DEP | http://www.nj.gov/dep/enforcement/oqa.html | WA005 |
| New York - DOH | https://www.wadsworth.org/regulatory/elap | 12060 |
| North Carolina DEQ | https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification | 605 |
| Oklahoma DEQ | http://www.deq.state.ok.us/CSDnew/labcert.htm | 9801 |
| Oregon – DEQ (NELAP) | http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx | WA100010 |
| South Carolina DHEC | http://www.scdhec.gov/environment/EnvironmentalLabCertification/ | 61002 |
| Texas CEQ | http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html | T104704427 |
| Washington DOE | http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html | C544 |
| Wyoming (EPA Region 8) | https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water- | - |
| Kelso Laboratory Website | www.alsglobal.com | NA |

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

# Case Narrative

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

**Client:** ALS Environmental - US
**Project:** ALS Houston DOD TOC
**Sample Matrix:** Ground Water

**Service Request:** K1901706
**Date Received:** 02/27/2019

## CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

**Sample Receipt:**

Four ground water samples were received for analysis at ALS Environmental on 02/27/2019. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

**General Chemistry:**

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 03/11/2019

# Chain of Custody

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
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K1901706

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: 10832**

**SUBCONTRACT TO:**

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

**Phone:** +1 360 501 3312

**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:** | HS19021316 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| **1.** | **HS19021316-02** | **LHSMW21-190225** | **Groundwater** | **25 Feb 2019 09:35** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 12 Mar 2019 |
| **2.** | **HS19021316-03** | **46WW05-190225** | **Groundwater** | **25 Feb 2019 10:35** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 12 Mar 2019 |
| **3.** | **HS19021316-04** | **46WW09-190225** | **Groundwater** | **25 Feb 2019 11:35** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 12 Mar 2019 |
| **4.** | **HS19021316-05** | **46WW09-190225-FD** | **Groundwater** | **25 Feb 2019 11:35** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 12 Mar 2019 |

**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: 2/26/19 1800.

Received By: _____ Date/Time: 2-27-19 1930

Cooler ID(s): _____ Temperature(s): _____

PC KL

## Cooler Receipt and Preservation Form

Client ALS - Houston Service Request K19 01706

Received: 2-27-19 Opened: 2-27-19 By: JSP Unloaded: 2-27-19 By: JSP

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Top Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

| Raw Cooler Temp | Corrected Cooler Temp | Raw Temp Blank | Corrected Temp Blank | Corr. Factor | Thermometer ID | Cooler/COC ID (NA) | Tracking Number NA | Filed |
|---|---|---|---|---|---|---|---|---|
| 1.2 | 1.1 | 1.6 | 1.5 | -0.1 | 393 | 10832 | 4809 7851 6304 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

| Sample ID on Bottle | Sample ID on COC | Identified by: |
|---|---|---|
| | | |
| | | |
| | | |

| Sample ID | Bottle Count Bottle Type | Out of Temp | Head-space | Broke | pH | Reagent | Volume added | Reagent Lot Number | Initials | Time |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

*Notes, Discrepancies, & Resolutions:* _____

# General Chemistry

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901706 |
| **Project:** | ALS Houston DOD TOC/HS19021316 | **Date Collected:** | 02/25/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 02/27/19 |
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |

**Carbon, Total Organic**

| Sample Name | Lab Code | Result | LOQ | LOD | MDL | Dil. | Date Analyzed | Q |
|---|---|---|---|---|---|---|---|---|
| LHSMW21-190225 | K1901706-001 | **3.15** | 0.50 | 0.20 | 0.07 | 1 | 03/07/19 13:36 | |
| 46WW05-190225 | K1901706-002 | **14.7** | 0.50 | 0.20 | 0.07 | 1 | 03/07/19 14:04 | |
| 46WW09-190225 | K1901706-003 | **9.39** | 0.50 | 0.20 | 0.07 | 1 | 03/07/19 14:32 | |
| 46WW09-190225-FD | K1901706-004 | **6.28** | 0.50 | 0.20 | 0.07 | 1 | 03/07/19 15:30 | |
| Method Blank | K1901706-MB | ND U | 0.50 | 0.20 | 0.07 | 1 | 03/07/19 00:39 | |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901706 |
| **Project:** | ALS Houston DOD TOC/HS19021316 | **Date Collected:** | N/A |
| **Sample Matrix:** | Ground Water | **Date Received:** | N/A |
| | | **Date Analyzed:** | 03/7/19 |
| | | **Date Extracted:** | NA |

**Matrix Spike Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Sample Name:** | Batch QC | **Units:** | mg/L |
| **Lab Code:** | K1901674-001 | **Basis:** | NA |
| **Analysis Method:** | SM 5310 C | | |
| **Prep Method:** | None | | |

**Matrix Spike**
K1901674-001MS

| Analyte Name | Sample Result | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Carbon, Total Organic | 169 | 1570 | 1250 | 112 | 83-117 |

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

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1901706 |
| **Project:** | ALS Houston DOD TOC/HS19021316 | **Date Analyzed:** | 03/07/19 |
| **Sample Matrix:** | Ground Water | **Date Extracted:** | NA |

**Lab Control Sample Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |
| | | **Analysis Lot:** | 627458 |

| Sample Name | Lab Code | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Lab Control Sample | K1901706-LCS | 27.6 | 25.0 | 110 | 83-117 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:** K1901706
**Project:** ALS Houston DOD TOC/HS19021316

## Continuing Calibration Verification (CCV) Summary

### Carbon, Total Organic

**Analysis Method:** SM 5310 C **Units:** mg/L

| | Analysis Lot | Lab Code | Date Analyzed | True Value | Measured Value | Percent Recovery | Acceptance Limits |
|---|---|---|---|---|---|---|---|
| CCV1 | 627458 | KQ1902969-05 | 03/07/19 04:52 | 25.0 | 26.3 | 105 | 90-110 |
| CCV2 | 627458 | KQ1902969-06 | 03/07/19 10:17 | 25.0 | 25.7 | 103 | 90-110 |
| CCV3 | 627458 | KQ1902969-07 | 03/07/19 15:00 | 25.0 | 25.9 | 103 | 90-110 |
| CCV4 | 627458 | KQ1902969-08 | 03/07/19 19:43 | 25.0 | 25.8 | 103 | 90-110 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:**K1901706
**Project:** ALS Houston DOD TOC/HS19021316

## Continuing Calibration Blank (CCB) Summary
**Carbon, Total Organic**

**Analysis Method:** SM 5310 C **Units:**mg/L

| | Analysis Lot | Lab Code | Date Analyzed | LOQ | LOD | MDL | Result | Q |
|---|---|---|---|---|---|---|---|---|
| CCB1 | 627458 | KQ1902969-01 | 03/07/19 05:07 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB2 | 627458 | KQ1902969-02 | 03/07/19 10:31 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB3 | 627458 | KQ1902969-03 | 03/07/19 15:15 | 0.50 | 0.20 | 0.07 | 0.17 | J |
| CCB4 | 627458 | KQ1902969-04 | 03/07/19 19:58 | 0.50 | 0.20 | 0.07 | ND | U |

# Raw Data

**ALS Environmental—Kelso Laboratory**
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# General Chemistry

**ALS Environmental—Kelso Laboratory**
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Work Request # Original ( ) KP00530, 1484, 1559, 1564, 1602, 1612, 1637, 1638, 1651, 1594, 1674, 1676, 1706, 1897, 1853, 1203, 1865

Tier: I II II IV II II IV IV II II II II II

Date Analyzed: 3/6/19

Analyst: BCD

Run # DOC;627459

Analysis: TOC

TOC;627457, 627458,

## DATA QUALITY REPORT
## INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

| | | |
|---|---|---|
| 1. | Is the method name and number correct and appropriate? | yes/no/NA |
| 2. | Holding times met for all analyses and for all samples? | yes/no/NA |
| 3. | Are calculations correct? | yes/no/NA |
| 4. | Is the reporting basis correct? (Dry Weight) | yes/no/NA |
| 5. | All quality control criteria met? | yes/no |
| 6. | Is the calibration curve correlation coefficient ≥ 0.995? | yes/no/NA |
| 7. | MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? | yes/no/NA |
| 8. | Are ICVs, CCVs, and CCBs all within acceptance limits? | yes/no/NA |
| 9. | Are results for methods blanks all ND? | yes/no/NA |
| 10. | Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) | yes/no/NA |
| 11. | Are all exceptions explained? | yes/no/NA |
| 12. | Have all applicable service requests been reviewed? | yes/no/NA |
| 13. | Are all samples labeled correctly? | yes/no/NA |
| 14. | Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V) | yes/no/NA |
| 15. | Are detection limits and units reported correctly? | yes/no/NA |
| 16. | Is the unused space on the benchsheet crossed out? | yes/no/NA |
| 17. | Was analysis turned in by the due date? (n-2) (If not record SR#) | yes/no/NA |

**COMMENTS:** KP01612-1/2 sent for EA for additional dilutions.
KP01728-2 Needed large dilution due to dirty/oily sample.
KP01559-2/3, 1676-1, 1594-4 have a high %RSD, but are less than 5x the MRL.
KP01674-3, 1676-3, 1706-1/2/3 have a high %RSD, but these are dirty, non-homogenous samples.

Final Approved by: [signature] Date: 03/08/19

DQREPORT

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627457 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1900530-026 | Carbon, Total Organic | N/A | | Water | 0.43 mg/L | 10 mL | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 16:23:00 | N | I |
| K1901484-001 | Carbon, Total Organic | N/A | | Water | 8.93 mg/L | 10 ml | 893 mg/L | 100 | 7 | 50 | | | 3/7/19 01:08 | N | II |
| K1901484-004 | Carbon, Total Organic | N/A | | Water | 7.41 mg/L | 10 ml | 741 mg/L | 100 | 7 | 50 | | | 3/7/19 01:36 | N | II |
| K1901559-001 | Carbon, Total Organic | N/A | | Ground Water | 1.04 mg/L | 10 ml | 1.04 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 05:22 | N | II |
| K1901564-002 | Carbon, Total Organic | N/A | | Water | 4.27 mg/L | 10 ml | 4.27 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 17:48 | N | IV |
| K1901564-003 | Carbon, Total Organic | N/A | | Water | 3.26 mg/L | 10 ml | 3.26 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 18:16 | N | IV |
| K1901564-019 | Carbon, Total Organic | N/A | | Water | 20.14 mg/L | 10 ml | 80.6 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 19:14 | N | IV |
| K1901564-020 | Carbon, Total Organic | N/A | | Water | 16.24 mg/L | 10 ml | 65.0 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 19:42 | N | IV |
| K1901602-003 | Carbon, Total Organic | N/A | | Water | 16.41 mg/L | 10 ml | 65.7 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 16:38 | N | II |
| K1901612-001 | Carbon, Total Organic | N/A | | Water | 111.94 mg/L | 10 ml | 1120 mg/L | 10 | 0.7 | 5.0 | | | 3/6/19 20:10 | N | II |
| K1901612-002 | Carbon, Total Organic | N/A | | Water | 111.76 mg/L | 10 ml | 447 mg/L | 4 | 0.3 | 2.0 | | | 3/6/19 20:38 | N | II |
| K1901637-001 | Carbon, Total Organic | N/A | | Water | 8.40 mg/L | 10 ml | 8.40 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 22:02 | N | IV |
| K1901638-001 | Carbon, Total Organic | N/A | | Ground Water | 2.65 mg/L | 10 ml | 2.65 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 22:30 | N | IV |
| K1901638-002 | Carbon, Total Organic | N/A | | Ground Water | 11.19 mg/L | 10 ml | 11.2 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 22:58 | N | IV |
| K1901638-003 | Carbon, Total Organic | N/A | | Ground Water | 4.88 mg/L | 10 ml | 4.88 mg/L | 1 | 0.07 | 0.50 | | | 3/6/19 23:26 | N | IV |
| K1901651-001 | Carbon, Total Organic | N/A | | Water | 9.25 mg/L | 10 ml | 925 mg/L | 100 | 7 | 50 | | | 3/7/19 02:04 | N | II |
| K1901651-002 | Carbon, Total Organic | N/A | | Water | 8.89 mg/L | 10 ml | 889 mg/L | 100 | 7 | 50 | | | 3/7/19 02:32 | N | II |
| K1901651-003 | Carbon, Total Organic | N/A | | Water | 6.58 mg/L | 10 ml | 658 mg/L | 100 | 7 | 50 | | | 3/7/19 03:00 | N | II |
| K1901651-004 | Carbon, Total Organic | N/A | | Water | 7.90 mg/L | 10 ml | 790 mg/L | 100 | 7 | 50 | | | 3/7/19 03:28 | N | II |
| K1901651-005 | Carbon, Total Organic | N/A | | Water | 7.24 mg/L | 10 ml | 724 mg/L | 100 | 7 | 50 | | | 3/7/19 03:56 | N | II |
| KQ1902968-01 | Carbon, Total Organic | CCB | | Water | 0.01 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 15:01 | N | I |
| KQ1902968-02 | Carbon, Total Organic | CCB | | Water | 2.19999999999998E-02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 18:59 | N | I |
| KQ1902968-03 | Carbon, Total Organic | CCB | | Water | 3.40000000000001E-02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 00:24 | N | I |
| KQ1902968-04 | Carbon, Total Organic | CCB | | Water | -0.01 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 05:07 | N | I |
| KQ1902968-05 | Carbon, Total Organic | CCB | | Water | -0.23 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 10:31 | N | I |
| KQ1902968-06 | Carbon, Total Organic | CCV | | Water | 26.22 mg/L | 10 ml | 26.2 mg/L | 1 | | | 105 | | 3/6/19 14:44 | N | I |
| KQ1902968-07 | Carbon, Total Organic | CCV | | Water | 25.78 mg/L | 10 ml | 25.8 mg/L | 1 | | | 103 | | 3/6/19 18:45 | N | I |
| KQ1902968-08 | Carbon, Total Organic | CCV | | Water | 26.12 mg/L | 10 ml | 26.1 mg/L | 1 | | | 104 | | 3/7/19 00:09 | N | I |
| KQ1902968-09 | Carbon, Total Organic | CCV | | Water | 26.35 mg/L | 10 ml | 26.3 mg/L | 1 | | | 105 | | 3/7/19 04:52 | N | I |
| KQ1902968-10 | Carbon, Total Organic | CCV | | Water | 25.73 mg/L | 10 ml | 25.7 mg/L | 1 | | | 103 | | 3/7/19 10:17 | N | I |
| KQ1902968-11 | Carbon, Total Organic | MB | | Water | -0.02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/6/19 15:18 | N | I |
| KQ1902968-12 | Carbon, Total Organic | LCS | | Water | 27.50 mg/L | 10 ml | 27.5 mg/L | 1 | 0.07 | 0.50 | 110 | | 3/6/19 15:39 | N | I |
| KQ1902968-13 | Carbon, Total Organic | LODV | | Water | 0.14 mg/L | 10 mL | 0.14 mg/L J | 1 | 0.07 | 0.50 | | | 3/6/19 16:09:00 | N | I |
| KQ1902968-14 | Carbon, Total Organic | LOQV | | Water | 0.43 mg/L | 10 mL | 0.43 mg/L J | 1 | 0.07 | 0.50 | | | 3/6/19 16:23:00 | N | I |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

03/08/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627457 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1902968-17 | Carbon, Total Organic | DUP | K1901602-003 | Water | 16.49 mg/L | 10 ml | 66.0 mg/L | 4 | 0.3 | 2.0 | | <1 | 3/6/19 16:38 | N | II |
| KQ1902968-18 | Carbon, Total Organic | DUP | K1901564-002 | Water | 4.23 mg/L | 10 ml | 4.23 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/6/19 17:48 | N | IV |
| KQ1902968-19 | Carbon, Total Organic | DUP | K1901564-003 | Water | 3.10 mg/L | 10 ml | 3.10 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/6/19 18:16 | N | IV |
| KQ1902968-20 | Carbon, Total Organic | DUP | K1901564-019 | Water | 20.70 mg/L | 10 ml | 82.8 mg/L | 4 | 0.3 | 2.0 | | 3 | 3/6/19 19:14 | N | IV |
| KQ1902968-21 | Carbon, Total Organic | DUP | K1901564-020 | Water | 16.48 mg/L | 10 ml | 65.9 mg/L | 4 | 0.3 | 2.0 | | 1 | 3/6/19 19:42 | N | IV |
| KQ1902968-22 | Carbon, Total Organic | DUP | K1901612-001 | Water | 112.46 mg/L | 10 ml | 1120 mg/L | 10 | 0.7 | 5.0 | | <1 | 3/6/19 20:10 | N | II |
| KQ1902968-23 | Carbon, Total Organic | DUP | K1901612-002 | Water | 119.75 mg/L | 10 ml | 479 mg/L | 4 | 0.3 | 2.0 | | 7 | 3/6/19 20:38 | N | II |
| KQ1902968-24 | Carbon, Total Organic | DUP | K1901637-001 | Water | 8.29 mg/L | 10 ml | 8.29 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/6/19 22:02 | N | IV |
| KQ1902968-25 | Carbon, Total Organic | DUP | K1901638-001 | Ground Water | 2.55 mg/L | 10 ml | 2.55 mg/L | 1 | 0.07 | 0.50 | | 4 | 3/6/19 22:30 | N | IV |
| KQ1902968-26 | Carbon, Total Organic | DUP | K1901638-002 | Ground Water | 10.99 mg/L | 10 ml | 11.0 mg/L | 1 | 0.07 | 0.50 | | 2 | 3/6/19 22:58 | N | IV |
| KQ1902968-27 | Carbon, Total Organic | DUP | K1901638-003 | Ground Water | 4.80 mg/L | 10 ml | 4.80 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/6/19 23:26 | N | IV |
| KQ1902968-28 | Carbon, Total Organic | DUP | K1901484-001 | Water | 8.99 mg/L | 10 ml | 899 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 01:08 | N | II |
| KQ1902968-29 | Carbon, Total Organic | DUP | K1901484-004 | Water | 7.54 mg/L | 10 ml | 754 mg/L | 100 | 7 | 50 | | 2 | 3/7/19 01:36 | N | II |
| KQ1902968-30 | Carbon, Total Organic | DUP | K1901651-001 | Water | 9.26 mg/L | 10 ml | 926 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 02:04 | N | II |
| KQ1902968-31 | Carbon, Total Organic | DUP | K1901651-002 | Water | 8.91 mg/L | 10 ml | 891 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 02:32 | N | II |
| KQ1902968-32 | Carbon, Total Organic | DUP | K1901651-003 | Water | 6.44 mg/L | 10 ml | 644 mg/L | 100 | 7 | 50 | | 2 | 3/7/19 03:00 | N | II |
| KQ1902968-33 | Carbon, Total Organic | DUP | K1901651-004 | Water | 7.88 mg/L | 10 ml | 788 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 03:28 | N | II |
| KQ1902968-34 | Carbon, Total Organic | DUP | K1901651-005 | Water | 7.21 mg/L | 10 ml | 721 mg/L | 100 | 7 | 50 | | <1 | 3/7/19 03:56 | N | II |
| KQ1902968-35 | Carbon, Total Organic | DUP | K1901559-001 | Ground Water | 1.00 mg/L | 10 ml | 1.00 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/7/19 05:22 | N | II |
| KQ1902968-36 | Carbon, Total Organic | MS | K1901602-003 | Water | 43.16 mg/L | 10 ml | 173 mg/L | 4 | 0.3 | 2.0 | 107 | | 3/6/19 17:06 | N | II |



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627458 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1901559-002 | Carbon, Total Organic | N/A | | Ground Water | 0.53 mg/L | 10 ml | 0.53 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 05:50 | N | II |
| K1901559-003 | Carbon, Total Organic | N/A | | Ground Water | 1.09 mg/L | 10 ml | 1.09 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 06:18 | N | II |
| K1901594-001 | Carbon, Total Organic | N/A | | Water | 1.52 mg/L | 10 ml | 1.52 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 15:58 | N | II |
| K1901594-002 | Carbon, Total Organic | N/A | | Water | 29.13 mg/L | 10 ml | 29.1 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 16:26 | N | II |
| K1901594-003 | Carbon, Total Organic | N/A | | Water | 31.09 mg/L | 10 ml | 31.1 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 16:54 | N | II |
| K1901594-004 | Carbon, Total Organic | N/A | | Water | 1.34 mg/L | 10 ml | 1.34 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 17:22 | N | II |
| K1901594-005 | Carbon, Total Organic | N/A | | Water | 1.87 mg/L | 10 ml | 1.87 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 17:50 | N | II |
| K1901674-001 | Carbon, Total Organic | N/A | | Water | 3.39 mg/L | 10 ml | 169 mg/L | 50 | 4 | 25 | | | 3/7/19 06:46 | Y | II |
| K1901674-002 | Carbon, Total Organic | N/A | | Water | 0.96 mg/L | 10 ml | 9.6 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 07:57 | N | II |
| K1901674-003 | Carbon, Total Organic | N/A | | Water | 4.90 mg/L | 10 ml | 49.0 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 08:25 | N | II |
| K1901674-004 | Carbon, Total Organic | N/A | | Water | 3.94 mg/L | 10 ml | 39.4 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 08:53 | N | II |
| K1901676-001 | Carbon, Total Organic | N/A | | Water | 2.10 mg/L | 10 ml | 2.10 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 11:15 | N | II |
| K1901676-002 | Carbon, Total Organic | N/A | | Water | 17.93 mg/L | 10 ml | 179 mg/L | 10 | 0.7 | 5.0 | | | 3/7/19 11:43 | N | II |
| K1901676-003 | Carbon, Total Organic | N/A | | Water | 1.20 mg/L | 10 ml | 60 mg/L | 50 | 4 | 25 | | | 3/7/19 12:11 | N | II |
| K1901676-004 | Carbon, Total Organic | N/A | | Water | 2.53 mg/L | 10 ml | 2.53 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 12:39 | N | II |
| K1901706-001 | Carbon, Total Organic | N/A | | Ground Water | 3.15 mg/L | 10 ml | 3.15 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 13:36 | N | IV |
| K1901706-002 | Carbon, Total Organic | N/A | | Ground Water | 14.68 mg/L | 10 ml | 14.7 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 14:04 | N | IV |
| K1901706-003 | Carbon, Total Organic | N/A | | Ground Water | 9.39 mg/L | 10 ml | 9.39 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 14:32 | N | IV |
| K1901706-004 | Carbon, Total Organic | N/A | | Ground Water | 6.28 mg/L | 10 ml | 6.28 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 15:30 | N | IV |
| K1901897-001 | Carbon, Total Organic | N/A | | Water | 5.41 mg/L | 10 ml | 5.41 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 18:18 | N | II |
| KQ1902969-01 | Carbon, Total Organic | CCB | | Ground Water | -0.01 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 05:07 | N | II |
| KQ1902969-02 | Carbon, Total Organic | CCB | | Ground Water | -0.23 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 10:31 | N | II |
| KQ1902969-03 | Carbon, Total Organic | CCB | | Ground Water | 0.17 mg/L | 10 ml | 0.17 mg/L J | 1 | 0.07 | 0.50 | | | 3/7/19 15:15 | N | II |
| KQ1902969-04 | Carbon, Total Organic | CCB | | Ground Water | -0.22 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 19:58 | N | II |
| KQ1902969-05 | Carbon, Total Organic | CCV | | Ground Water | 26.35 mg/L | 10 ml | 26.3 mg/L | 1 | | | 105 | | 3/7/19 04:52 | N | II |
| KQ1902969-06 | Carbon, Total Organic | CCV | | Ground Water | 25.73 mg/L | 10 ml | 25.7 mg/L | 1 | | | 103 | | 3/7/19 10:17 | N | II |
| KQ1902969-07 | Carbon, Total Organic | CCV | | Ground Water | 25.85 mg/L | 10 ml | 25.9 mg/L | 1 | | | 104 | | 3/7/19 15:00 | N | II |
| KQ1902969-08 | Carbon, Total Organic | CCV | | Ground Water | 25.81 mg/L | 10 ml | 25.8 mg/L | 1 | | | 103 | | 3/7/19 19:43 | N | II |
| KQ1902969-09 | Carbon, Total Organic | MS | K1901674-001 | Water | 31.30 mg/L | 10 ml | 1570 mg/L | 50 | 4 | 25 | 112 | | 3/7/19 07:14 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



03/08/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627458 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1902969-10 | Carbon, Total Organic | DUP | K1901559-002 | Ground Water | 0.42 mg/L | 10 ml | 0.42 mg/L J | 1 | 0.07 | 0.50 | | 24* | 3/7/19 05:50 | N | II |
| KQ1902969-11 | Carbon, Total Organic | DUP | K1901559-003 | Ground Water | 0.96 mg/L | 10 ml | 0.96 mg/L | 1 | 0.07 | 0.50 | | 13* | 3/7/19 06:18 | N | II |
| KQ1902969-12 | Carbon, Total Organic | DUP | K1901674-001 | Water | 3.33 mg/L | 10 ml | 166 mg/L | 50 | 4 | 25 | | 2 | 3/7/19 06:46 | N | II |
| KQ1902969-13 | Carbon, Total Organic | DUP | K1901674-002 | Water | 0.91 mg/L | 10 ml | 9.1 mg/L | 10 | 0.7 | 5.0 | | 5 | 3/7/19 07:57 | N | II |
| KQ1902969-14 | Carbon, Total Organic | DUP | K1901674-003 | Water | 4.35 mg/L | 10 ml | 43.5 mg/L | 10 | 0.7 | 5.0 | | 12* | 3/7/19 08:25 | N | II |
| KQ1902969-15 | Carbon, Total Organic | DUP | K1901674-004 | Water | 3.80 mg/L | 10 ml | 38.0 mg/L | 10 | 0.7 | 5.0 | | 3 | 3/7/19 08:53 | N | II |
| KQ1902969-16 | Carbon, Total Organic | DUP | K1901676-001 | Water | 1.75 mg/L | 10 mL | 1.75 mg/L | 1 | 0.07 | 0.50 | | 18* | 3/7/19 11:15:00 | N | II |
| KQ1902969-17 | Carbon, Total Organic | DUP | K1901676-002 | Water | 18.02 mg/L | 10 ml | 180 mg/L | 10 | 0.7 | 5.0 | | <1 | 3/7/19 11:43 | N | II |
| KQ1902969-18 | Carbon, Total Organic | DUP | K1901676-003 | Water | 0.66 mg/L | 10 ml | 33 mg/L | 50 | 4 | 25 | | 58* | 3/7/19 12:11 | N | II |
| KQ1902969-19 | Carbon, Total Organic | DUP | K1901676-004 | Water | 2.40 mg/L | 10 ml | 2.40 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/7/19 12:39 | N | II |
| KQ1902969-20 | Carbon, Total Organic | DUP | K1901706-001 | Ground Water | 3.56 mg/L | 10 ml | 3.56 mg/L | 1 | 0.07 | 0.50 | | 12* | 3/7/19 13:36 | N | IV |
| KQ1902969-21 | Carbon, Total Organic | DUP | K1901706-002 | Ground Water | 12.07 mg/L | 10 ml | 12.1 mg/L | 1 | 0.07 | 0.50 | | 19* | 3/7/19 14:04 | N | IV |
| KQ1902969-22 | Carbon, Total Organic | DUP | K1901706-003 | Ground Water | 7.15 mg/L | 10 ml | 7.15 mg/L | 1 | 0.07 | 0.50 | | 27* | 3/7/19 14:32 | N | IV |
| KQ1902969-23 | Carbon, Total Organic | DUP | K1901706-004 | Ground Water | 6.10 mg/L | 10 ml | 6.10 mg/L | 1 | 0.07 | 0.50 | | 3 | 3/7/19 15:30 | N | IV |
| KQ1902969-24 | Carbon, Total Organic | DUP | K1901594-001 | Water | 1.42 mg/L | 10 ml | 1.42 mg/L | 1 | 0.07 | 0.50 | | 7 | 3/7/19 15:58 | N | II |
| KQ1902969-25 | Carbon, Total Organic | DUP | K1901594-002 | Water | 29.44 mg/L | 10 ml | 29.4 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/7/19 16:26 | N | II |
| KQ1902969-26 | Carbon, Total Organic | DUP | K1901594-003 | Water | 31.30 mg/L | 10 ml | 31.3 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 16:54 | N | II |
| KQ1902969-27 | Carbon, Total Organic | DUP | K1901594-004 | Water | 1.20 mg/L | 10 ml | 1.20 mg/L | 1 | 0.07 | 0.50 | | 11* | 3/7/19 17:22 | N | II |
| KQ1902969-28 | Carbon, Total Organic | DUP | K1901594-005 | Water | 1.80 mg/L | 10 ml | 1.80 mg/L | 1 | 0.07 | 0.50 | | 4 | 3/7/19 17:50 | N | II |
| KQ1902969-29 | Carbon, Total Organic | DUP | K1901897-001 | Water | 5.36 mg/L | 10 ml | 5.36 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 18:18 | N | II |
| KQ1902969-30 | Carbon, Total Organic | LCS | | Ground Water | 27.56 mg/L | 10 ml | 27.6 mg/L | 1 | 0.07 | 0.50 | 110 | | 3/7/19 00:53 | N | II |
| KQ1902969-31 | Carbon, Total Organic | MB | | Ground Water | 0.02 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 00:39 | N | II |



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627459 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1901553-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.55 mg/L | 10 ml | 15.1 mg/L | 2 | 0.2 | 1.0 | | | 3/7/19 23:01 | N | I |
| K1901553-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 3.06 mg/L | 10 ml | 3.06 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 23:29 | N | I |
| K1901703-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 1.99 mg/L | 10 ml | 1.99 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 18:46 | N | II |
| K1901703-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 1.83 mg/L | 10 ml | 1.83 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 20:13 | N | II |
| K1901703-003 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 3.41 mg/L | 10 ml | 3.41 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 20:41 | N | II |
| K1901703-004 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 6.14 mg/L | 10 ml | 6.14 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 21:09 | N | II |
| K1901703-005 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.31 mg/L | 10 ml | 7.31 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 21:37 | N | II |
| K1901703-006 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.26 mg/L | 10 ml | 7.26 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 22:05 | N | II |
| K1901703-007 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.69 mg/L | 10 ml | 0.69 mg/L | 1 | 0.07 | 0.50 | | | 3/7/19 22:33 | N | II |
| K1901728-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 1.43 mg/L | 10 ml | 1.43 mg/L | 1 | 0.07 | 0.50 | | | 3/8/19 02:19 | N | I |
| K1901728-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.25 mg/L | 10 ml | 25 mg/L J | 100 | 7 | 50 | | | 3/8/19 02:47 | N | I |
| K1901865-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 5.58 mg/L | 10 ml | 5.58 mg/L | 1 | 0.07 | 0.50 | | | 3/8/19 00:27 | N | II |
| K1901865-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 2.46 mg/L | 10 ml | 2.46 mg/L | 1 | 0.07 | 0.50 | | | 3/8/19 00:55 | N | II |
| KQ1902970-01 | Carbon, Dissolved Organic CCB (DOC) | | | Water | 0.17 mg/L | 10 ml | 0.17 mg/L J | 1 | 0.07 | 0.50 | | | 3/7/19 15:15 | N | II |
| KQ1902970-02 | Carbon, Dissolved Organic CCB (DOC) | | | Water | -0.22 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 19:58 | N | II |
| KQ1902970-03 | Carbon, Dissolved Organic CCB (DOC) | | | Water | -0.29 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/8/19 00:12 | N | II |
| KQ1902970-04 | Carbon, Dissolved Organic CCB (DOC) | | | Water | -0.32 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/8/19 03:30 | N | II |
| KQ1902970-05 | Carbon, Dissolved Organic CCV (DOC) | | | Water | 25.85 mg/L | 10 ml | 25.9 mg/L | 1 | | | 104 | | 3/7/19 15:00 | N | II |
| KQ1902970-06 | Carbon, Dissolved Organic CCV (DOC) | | | Water | 25.81 mg/L | 10 ml | 25.8 mg/L | 1 | | | 103 | | 3/7/19 19:43 | N | II |
| KQ1902970-07 | Carbon, Dissolved Organic CCV (DOC) | | | Water | 25.44 mg/L | 10 ml | 25.4 mg/L | 1 | | | 102 | | 3/7/19 23:57 | N | II |
| KQ1902970-08 | Carbon, Dissolved Organic CCV (DOC) | | | Water | 24.94 mg/L | 10 ml | 24.9 mg/L | 1 | | | 100 | | 3/8/19 03:15 | N | II |
| KQ1902970-09 | Carbon, Dissolved Organic MB (DOC) | | | Water | -0.26 mg/L | 10 mL | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 3/7/19 10:46:00 | N | II |
| KQ1902970-10 | Carbon, Dissolved Organic LCS (DOC) | | | Water | 26.60 mg/L | 10 mL | 26.6 mg/L | 1 | 0.07 | 0.50 | 106 | | 3/7/19 11:01:00 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

03/08/19

Printed 3/8/19 10:46

Results Summary

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 627459 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1902970-11 | Carbon, Dissolved Organic (DOC) | MS | K1901703-001 | Water | 30.19 mg/L | 10 ml | 30.2 mg/L | 1 | 0.07 | 0.50 | 113 | | 3/7/19 19:14 | N | II |
| KQ1902970-12 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-001 | Water | 1.86 mg/L | 10 ml | 1.86 mg/L | 1 | 0.07 | 0.50 | | 7 | 3/7/19 18:46 | N | II |
| KQ1902970-13 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-002 | Water | 1.85 mg/L | 10 ml | 1.85 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 20:13 | N | II |
| KQ1902970-14 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-003 | Water | 3.35 mg/L | 10 ml | 3.35 mg/L | 1 | 0.07 | 0.50 | | 2 | 3/7/19 20:41 | N | II |
| KQ1902970-15 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-004 | Water | 6.18 mg/L | 10 ml | 6.18 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 21:09 | N | II |
| KQ1902970-16 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-005 | Water | 7.26 mg/L | 10 ml | 7.26 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 21:37 | N | II |
| KQ1902970-17 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-006 | Water | 7.29 mg/L | 10 ml | 7.29 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/7/19 22:05 | N | II |
| KQ1902970-18 | Carbon, Dissolved Organic (DOC) | DUP | K1901703-007 | Water | 0.67 mg/L | 10 ml | 0.67 mg/L | 1 | 0.07 | 0.50 | | 4 | 3/7/19 22:33 | N | II |
| KQ1902970-19 | Carbon, Dissolved Organic (DOC) | DUP | K1901553-001 | Water | 7.64 mg/L | 10 ml | 15.3 mg/L | 2 | 0.2 | 1.0 | | 1 | 3/7/19 23:01 | N | I |
| KQ1902970-20 | Carbon, Dissolved Organic (DOC) | DUP | K1901553-002 | Water | 2.92 mg/L | 10 ml | 2.92 mg/L | 1 | 0.07 | 0.50 | | 5 | 3/7/19 23:29 | N | I |
| KQ1902970-21 | Carbon, Dissolved Organic (DOC) | DUP | K1901865-001 | Water | 5.66 mg/L | 10 ml | 5.66 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/8/19 00:27 | N | I |
| KQ1902970-22 | Carbon, Dissolved Organic (DOC) | DUP | K1901865-002 | Water | 2.48 mg/L | 10 ml | 2.48 mg/L | 1 | 0.07 | 0.50 | | <1 | 3/8/19 00:55 | N | I |
| KQ1902970-23 | Carbon, Dissolved Organic (DOC) | DUP | K1901728-001 | Water | 1.45 mg/L | 10 ml | 1.45 mg/L | 1 | 0.07 | 0.50 | | 1 | 3/8/19 02:19 | N | I |
| KQ1902970-24 | Carbon, Dissolved Organic (DOC) | DUP | K1901728-002 | Water | 0.22 mg/L | 10 ml | 22 mg/L J | 100 | 7 | 50 | | 14* | 3/8/19 02:47 | N | I |



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

TOC: 627457
627458
DOC: 627459

# Schedule: Daily Run Method 010711

**Version:** 67
**Instrument:** Fusion1
**Last Saved by:** Fusion1 (Fusion1)
**Last Saved on:** 2019/03/06 16:23 - Wednesday

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Blank) | Blank | Reagent/Acid Blank | | 1 | True | Ready |
| D | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 1 | Sample | MB1 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 2 | Sample | ICS | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 3 | Sample | LOD | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 4 | Sample | LOQ | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 5 | Sample | K1901602-003.01 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 6 | Sample | K1901602-003.01 ms 4x | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 7 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 8 | Sample | K1901564-002.11 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 9 | Sample | K1901564-003.11 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 10 | Sample | K1901564-019.11 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 11 | Sample | K1901564-020.11 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 12 | Sample | K1901612-001.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 13 | Sample | K1901612-002.01 4x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 14 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 4 | True | Ready |
| 15 | Sample | K1901637-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 16 | Sample | K1901638-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 17 | Sample | K1901638-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 18 | Sample | K1901638-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 19 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 20 | Sample | MB2 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 21 | Sample | K1901484-001.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 22 | Sample | K1901484-004.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 23 | Sample | K1901651-001.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 24 | Sample | K1901651-002.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 25 | Sample | K1901651-003.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 26 | Sample | K1901651-004.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 27 | Sample | K1901651-005.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 28 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 29 | Sample | K1901559-001.09 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 30 | Sample | K1901559-002.09 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 31 | Sample | K1901559-003.09 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 32 | Sample | K1901674-001.01 50x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 33 | Sample | K1901674-001.01 ms 50x | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 34 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 35 | Sample | K1901674-002.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 36 | Sample | K1901674-003.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 37 | Sample | K1901674-004.01 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 38 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 4 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |

# Schedule: Daily Run Method 010711

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 39 | Sample | MB3 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 40 | Sample | K1901676-001.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 41 | Sample | K1901676-002.02 10x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 42 | Sample | K1901676-003.02 50x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 43 | Sample | K1901676-004.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 44 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 45 | Sample | K1901706-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 46 | Sample | K1901706-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 47 | Sample | K1901706-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 48 | Sample | K1901706-004.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 49 | Sample | K1901594-001.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 50 | Sample | K1901594-002.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 51 | Sample | K1901594-003.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 52 | Sample | K1901594-004.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 53 | Sample | K1901594-005.04 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 54 | Sample | K1901897-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 55 | Sample | K1901703-001.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 56 | Sample | K1901703-001.01 ms doc | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 57 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 58 | Sample | MB4 | CAS_salt_010711 (CAS_salt_010711) | 1 | False | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | False | Ready |
| 59 | Sample | K1901703-002.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 60 | Sample | K1901703-003.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 61 | Sample | K1901703-004.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 62 | Sample | K1901703-005.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 63 | Sample | K1901703-006.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 64 | Sample | K1901703-007.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 65 | Sample | K1901553-001.06 doc 2x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 66 | Sample | K1901553-002.05 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 67 | Sample | K1901865-001.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 68 | Sample | K1901865-002.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 69 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 70 | Sample | FB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 71 | Sample | K1901728-001.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 72 | Sample | K1901728-002.01 doc 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| | | | | | False | |

# Fusion Report - Daily Run Method 010711 Wednesday, March 06, 2019 12:36 PM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/03/08 09:03 - Friday

## Report Summary Information

| | | | |
|---|---|---|---|
| Company Location: | Gen Chem Lab | | |
| Schedule Name: | Daily Run Method 010711 | Engine Version: | 1.1.5.1 |
| Instrument Name: | Fusion1 | Firmware Version: | 1.2.0696 |
| Report Version: | 1 of 1 | Connection: | RS232 COM1 |
| Report Creation by Operators (schedule version): | Fusion1 (Fusion1) (v59)<br>Fusion1 (Fusion1) (v60)<br>Fusion1 (Fusion1) (v61)<br>Fusion1 (Fusion1) (v62)<br>Fusion1 (Fusion1) (v63)<br>Fusion1 (Fusion1) (v64)<br>Fusion1 (Fusion1) (v65)<br>Fusion1 (Fusion1) (v66)<br>Fusion1 (Fusion1) (v67) | | |
| Comment: | | | |

## Report Results

03/08/19

**Sample Type**: Clean — From Schedule Version 59

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/03/06 12:36 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 13.35 | 17.28 | 3.93 | 49.57 | 05:24 |
| | | | | | | |
| 2 | TC Clean | 6.77 | 9.63 | 2.86 | 49.99 | 04:01 |
| 3 | TC Clean | 1.88 | 4.84 | 2.96 | 50.01 | 03:55 |
| 4 | TC Clean | 1.47 | 4.58 | 3.10 | 50.03 | 03:55 |

**Sample Type**: Clean — From Schedule Version 60

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/03/06 12:59 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.70 | 14.60 | 2.91 | 49.67 | 05:22 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | TC Clean | 4.26 | 7.36 | 3.10 | 49.99 | 04:04 |
| 3 | TC Clean | 2.14 | 5.17 | 3.02 | 50.05 | 03:55 |
| 4 | TC Clean | 1.41 | 4.44 | 3.03 | 50.10 | 03:56 |

**Sample Type**: Clean From Schedule Version 61

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/03/06 13:33 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.51 | 14.34 | 2.83 | 49.74 | 05:23 |
| | | | | | | |
| 2 | TC Clean | 5.23 | 7.99 | 2.75 | 50.05 | 04:01 |
| 3 | TC Clean | 2.47 | 5.42 | 2.96 | 50.11 | 03:46 |
| 4 | TC Clean | 1.76 | 4.78 | 3.02 | 50.07 | 03:46 |

**Sample Type**: Blank (Creating v1229) From Schedule Version 62

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (blank) | | Reagent/Acid Blank | 2019/03/06 13:55 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 0.87 | 3.78 | 2.91 | 49.71 | 05:12 |
| | | | | | | |
| 2 | TC Clean | 4.88 | 8.00 | 3.13 | 50.12 | 04:02 |
| 3 | TC Clean | 2.68 | 5.63 | 2.95 | 50.12 | 03:45 |
| 4 | TC Clean | 2.03 | 4.98 | 2.95 | 50.12 | 03:47 |
| | | | | | | |
| 5 | Reagent Blank | 7.97 | 10.93 | 2.95 | 50.11 | 05:06 |
| | | | | | | |
| 6 | Acid Blank | 1.37 | 4.40 | 3.03 | 49.55 | 05:29 |

**Sample Type**: Sample From Schedule Version 62

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | RB | 0.9560 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 14:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.9560 | 9.5600 | 15.54 | 18.56 | 3.02 | 50.25 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm — From Schedule Version 63

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.5547 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 14:44 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.5547 | 265.5467 | 189.71 | 192.74 | 3.02 | 50.29 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB — From Schedule Version 64

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3488 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 15:01 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3488 | 3.4878 | 11.83 | 14.80 | 2.97 | 50.26 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample — From Schedule Version 65

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 1 | TOC | MB1 | 0.3156 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 15:18 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3156 | 3.1560 | 11.19 | 14.09 | 2.90 | 50.28 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS — From Schedule Version 66

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 27.8336 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 15:39 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 27.8336 | 278.3355 | 198.40 | 201.37 | 2.98 | 50.24 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 66

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 2 | TOC | ICS | 0.7157 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 15:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.7157 | 7.1572 | 13.91 | 16.87 | 2.96 | 50.28 | 10:34 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 3 | TOC | LOD | 0.4741 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 16:09 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4741 | 4.7412 | 12.27 | 15.13 | 2.87 | 50.31 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 4 | TOC | LOQ | 0.7682 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 16:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.7682 | 7.6817 | 14.26 | 17.26 | 3.00 | 50.33 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ◈ | 5 | TOC | K1901602-003.01 4x | 16.7892 ppm | 0.0542 ppm | 0.3200% | 2019/03/06 16:38 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 16.7509 | 167.5093 | 122.75 | 125.69 | 2.94 | 50.36 | 10:28 |
| 2 | TOC | 16.8275 | 168.2753 | 123.27 | 126.23 | 2.96 | 50.37 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 6 | TOC | K1901602-003.01 ms 4x | 43.4995 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 17:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 43.4995 | 434.9954 | 304.32 | 307.30 | 2.98 | 50.39 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 7 | TOC | RB | 0.3908 ppm | 0.1172 ppm | 29.9900% | 2019/03/06 17:20 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4737 | 4.7368 | 12.26 | 15.25 | 2.99 | 50.39 | 10:29 |
| 2 | TOC | 0.3079 | 3.0794 | 11.14 | 14.21 | 3.07 | 50.41 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 8 | TOC | K1901564-002.11 | 4.5904 ppm | 0.0277 ppm | 0.6000% | 2019/03/06 17:48 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.6100 | 46.0998 | 40.34 | 43.18 | 2.84 | 50.42 | 10:26 |
| 2 | TOC | 4.5708 | 45.7080 | 40.07 | 43.06 | 2.98 | 50.40 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 9 | TOC | K1901564-003.11 | 3.5189 ppm | 0.1106 ppm | 3.1400% | 2019/03/06 18:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.5972 | 35.9716 | 33.47 | 36.50 | 3.04 | 50.43 | 10:30 |
| 2 | TOC | 3.4407 | 34.4070 | 32.40 | 35.36 | 2.96 | 50.37 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.1143 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 18:45 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.1143 | 261.1433 | 186.72 | 189.64 | 2.91 | 50.48 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3404 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/06 18:59 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3404 | 3.4038 | 11.77 | 14.71 | 2.94 | 50.50 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 10 | TOC | K1901564-019.11 4x | 20.7624 ppm | 0.3955 ppm | 1.9100% | 2019/03/06 19:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 20.4827 | 204.8269 | 148.08 | 151.03 | 2.95 | 50.51 | 10:27 |
| 2 | TOC | 21.0421 | 210.4207 | 151.88 | 154.91 | 3.03 | 50.53 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 11 | TOC | K1901564-020.11 4x | 16.6990 ppm | 0.1645 ppm | 0.9900% | 2019/03/06 19:42 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 16.5827 | 165.8269 | 121.61 | 124.60 | 2.99 | 50.55 | 10:29 |
| 2 | TOC | 16.8153 | 168.1530 | 123.19 | 126.24 | 3.05 | 50.56 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 12 | TOC | K1901612-001.01 10x | 112.5359 ppm | 0.3656 ppm | 0.3200% | 2019/03/06 20:10 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 112.2774 | 1122.7739 | 771.18 | 774.16 | 2.98 | 50.57 | 10:27 |
| 2 | TOC | 112.7945 | 1127.9449 | 774.69 | 777.84 | 3.15 | 50.59 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 13 | TOC | K1901612-002.01 4x | 116.0911 ppm | 5.6458 ppm | 4.8600% | 2019/03/06 20:38 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 112.0990 | 1120.9899 | 769.97 | 773.21 | 3.24 | 50.60 | 10:28 |
| 2 | TOC | 120.0833 | 1200.8330 | 824.17 | 828.26 | 4.10 | 50.60 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 14 | TOC | RB | 3.5314 ppm | 4.1684 ppm | 118.0400% | 2019/03/06 21:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.7391 | 97.3908 | 75.16 | 79.27 | 4.12 | 50.63 | 10:26 |
| 2 | TOC | 2.1399 | 21.3987 | 23.57 | 26.84 | 3.27 | 50.63 | 10:25 |
| 3 | TOC | 1.2919 | 12.9189 | 17.82 | 20.87 | 3.05 | 50.65 | 10:29 |
| 4 | TOC | 0.9548 | 9.5482 | 15.53 | 18.48 | 2.95 | 50.61 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 15 | TOC | K1901637-001.01 | 8.6847 ppm | 0.0773 ppm | 0.8900% | 2019/03/06 22:02 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.7394 | 87.3937 | 68.37 | 71.34 | 2.97 | 50.59 | 10:28 |
| 2 | TOC | 8.6301 | 86.3005 | 67.63 | 70.64 | 3.01 | 50.50 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 16 | TOC | K1901638-001.01 | 2.9411 ppm | 0.0696 ppm | 2.3700% | 2019/03/06 22:30 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.9903 | 29.9035 | 29.35 | 32.52 | 3.18 | 50.49 | 10:28 |
| 2 | TOC | 2.8919 | 28.9194 | 28.68 | 31.60 | 2.92 | 50.48 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 17 | TOC | K1901638-002.01 | 11.4260 ppm | 0.1424 ppm | 1.2500% | 2019/03/06 22:58 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 11.5267 | 115.2666 | 87.29 | 90.10 | 2.81 | 50.44 | 10:28 |
| 2 | TOC | 11.3253 | 113.2527 | 85.92 | 88.83 | 2.91 | 50.42 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 18 | TOC | K1901638-003.01 | 5.1774 ppm | 0.0507 ppm | 0.9800% | 2019/03/06 23:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.2133 | 52.1326 | 44.44 | 47.54 | 3.11 | 50.37 | 10:28 |
| 2 | TOC | 5.1415 | 51.4151 | 43.95 | 46.97 | 3.02 | 50.36 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 19 | TOC | RB | 0.4492 ppm | 0.0000 ppm | 0.0000% | 2019/03/06 23:55 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4492 | 4.4922 | 12.10 | 15.09 | 3.00 | 50.35 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | | | Concentration | | | Min / Max | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

| | Pos | BAT | (ppm) | Dil | Sample ID | (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.4560 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 00:09 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.4560 | 264.5596 | 189.04 | 191.98 | 2.94 | 50.32 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3416 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 00:24 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3416 | 3.4156 | 11.78 | 14.62 | 2.84 | 50.32 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 20 | TOC | MB2 | 0.3558 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 00:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3558 | 3.5582 | 11.46 | 14.21 | 2.74 | 50.29 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 27.8960 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 00:53 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 27.8960 | 278.9602 | 198.82 | 201.65 | 2.83 | 50.27 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 21 | TOC | K1901484-001.01 100x | 9.2955 ppm | 0.0429 ppm | 0.4600% | 2019/03/07 01:08 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.2652 | 92.6515 | 71.94 | 74.67 | 2.73 | 50.26 | 10:30 |
| 2 | TOC | 9.3258 | 93.2585 | 72.35 | 75.23 | 2.88 | 50.28 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 22 | TOC | K1901484-004.01 100x | 7.8135 ppm | 0.0953 ppm | 1.2200% | 2019/03/07 01:36 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.7461 | 77.4613 | 61.63 | 64.55 | 2.92 | 50.28 | 10:26 |
| 2 | TOC | 7.8809 | 78.8093 | 62.54 | 65.32 | 2.77 | 50.27 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 23 | TOC | K1901651-001.01 100x | 9.5939 ppm | 0.0064 ppm | 0.0700% | 2019/03/07 02:04 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.5894 | 95.8940 | 74.14 | 77.01 | 2.87 | 50.26 | 10:26 |
| 2 | TOC | 9.5984 | 95.9839 | 74.20 | 77.23 | 3.03 | 50.26 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 24 | TOC | K1901651-002.01 100x | 9.2408 ppm | 0.0160 ppm | 0.1700% | 2019/03/07 02:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.2295 | 92.2950 | 71.70 | 74.56 | 2.86 | 50.26 | 10:31 |
| 2 | TOC | 9.2522 | 92.5219 | 71.85 | 74.63 | 2.78 | 50.24 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) | CAS_salt_010711 | CAS_salt_010711 |

(v1229) (v4) (v30)

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 25 | TOC | K1901651-003.01 100x | 6.8494 ppm | 0.0944 ppm | 1.3800% | 2019/03/07 03:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.9161 | 69.1613 | 55.99 | 58.88 | 2.89 | 50.24 | 10:28 |
| 2 | TOC | 6.7827 | 67.8266 | 55.09 | 57.97 | 2.88 | 50.24 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 26 | TOC | K1901651-004.01 100x | 8.2291 ppm | 0.0176 ppm | 0.2100% | 2019/03/07 03:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.2416 | 82.4157 | 64.99 | 67.94 | 2.95 | 50.22 | 10:26 |
| 2 | TOC | 8.2167 | 82.1667 | 64.82 | 67.64 | 2.81 | 50.23 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 27 | TOC | K1901651-005.01 100x | 7.5602 ppm | 0.0206 ppm | 0.2700% | 2019/03/07 03:56 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.5748 | 75.7480 | 60.46 | 63.31 | 2.85 | 50.22 | 10:26 |
| 2 | TOC | 7.5456 | 75.4563 | 60.27 | 63.11 | 2.84 | 50.23 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 28 | TOC | RB | 0.5632 ppm | 0.0731 ppm | 12.9800% | 2019/03/07 04:24 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.6150 | 6.1496 | 13.22 | 16.24 | 3.02 | 50.19 | 10:26 |
| 2 | TOC | 0.5115 | 5.1154 | 12.52 | 15.25 | 2.73 | 50.20 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.6839 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 04:52 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.6839 | 266.8387 | 190.59 | 193.38 | 2.78 | 50.20 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3270 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 05:07 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3270 | 3.2698 | 11.68 | 14.51 | 2.83 | 50.20 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 29 | TOC | K1901559-001.09 | 1.3591 ppm | 0.0340 ppm | 2.5000% | 2019/03/07 05:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.3831 | 13.8308 | 18.44 | 21.25 | 2.82 | 50.19 | 10:29 |
| 2 | TOC | 1.3351 | 13.3506 | 18.11 | 20.97 | 2.86 | 50.22 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 30 | TOC | K1901559-002.09 | 0.8134 ppm | 0.0800 ppm | 9.8400% | 2019/03/07 05:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.8700 | 8.6997 | 14.95 | 17.92 | 2.97 | 50.19 | 10:31 |
| 2 | TOC | 0.7568 | 7.5683 | 14.18 | 17.14 | 2.95 | 50.19 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 31 | TOC | K1901559-003.09 | 1.3630 ppm | 0.0964 ppm | 7.0700% | 2019/03/07 06:18 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.4311 | 14.3111 | 18.76 | 21.55 | 2.79 | 50.19 | 10:29 |
| 2 | TOC | 1.2948 | 12.9484 | 17.84 | 20.78 | 2.95 | 50.17 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 32 | TOC | K1901674-001.01 50x | 3.6953 ppm | 0.0453 ppm | 1.2300% | 2019/03/07 06:46 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.7274 | 37.2739 | 34.35 | 37.26 | 2.91 | 50.20 | 10:31 |
| 2 | TOC | 3.6633 | 36.6330 | 33.91 | 36.74 | 2.83 | 50.22 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 33 | TOC | K1901674-001.01 ms 50x | 31.6409 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 07:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 31.6409 | 316.4086 | 223.82 | 226.59 | 2.77 | 50.19 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 34 | TOC | RB | 0.3333 ppm | 0.0729 ppm | 21.8800% | 2019/03/07 07:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3848 | 3.8484 | 11.66 | 14.60 | 2.94 | 50.18 | 10:30 |
| 2 | TOC | 0.2817 | 2.8172 | 10.96 | 13.85 | 2.89 | 50.19 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 35 | TOC | K1901674-002.01 10x | 1.2695 ppm | 0.0338 ppm | 2.6600% | 2019/03/07 07:57 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.2934 | 12.9337 | 17.83 | 20.72 | 2.90 | 50.20 | 10:26 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 1.2456 | 12.4563 | 17.50 | 20.40 | 2.89 | 50.20 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 36 | TOC | K1901674-003.01 10x | 4.9624 ppm | 0.3896 ppm | 7.8500% | 2019/03/07 08:25 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.2379 | 52.3786 | 44.60 | 47.46 | 2.86 | 50.18 | 10:29 |
| 2 | TOC | 4.6869 | 46.8688 | 40.86 | 43.91 | 3.05 | 50.20 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 37 | TOC | K1901674-004.01 10x | 4.2076 ppm | 0.0953 ppm | 2.2700% | 2019/03/07 08:53 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.2750 | 42.7498 | 38.07 | 40.94 | 2.88 | 50.18 | 10:27 |
| 2 | TOC | 4.1402 | 41.4018 | 37.15 | 40.13 | 2.98 | 50.19 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 38 | TOC | RB | 0.1295 ppm | 0.0214 ppm | 16.5400% | 2019/03/07 09:21 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.1460 | 1.4604 | 10.04 | 12.97 | 2.93 | 50.21 | 10:29 |
| 2 | TOC | 0.1490 | 1.4898 | 10.06 | 12.92 | 2.86 | 50.17 | 10:23 |
| 3 | TOC | 0.1179 | 1.1790 | 9.85 | 12.83 | 2.98 | 50.24 | 10:28 |
| 4 | TOC | 0.1052 | 1.0523 | 9.76 | 12.62 | 2.86 | 50.27 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.0678 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 10:17 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.0678 | 260.6777 | 186.41 | 189.20 | 2.79 | 50.31 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.1057 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 10:31 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.1057 | 1.0570 | 10.18 | 12.99 | 2.81 | 50.33 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 39 | TOC | MB3 | 0.0790 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 10:46 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0790 | 0.7901 | 9.58 | 12.38 | 2.79 | 50.36 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 26.9353 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 11:01 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 26.9353 | 269.3534 | 192.30 | 195.05 | 2.75 | 50.37 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 40 | TOC | K1901676-001.02 | 2.2636 ppm | 0.2458 ppm | 10.8600% | 2019/03/07 11:15 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.4375 | 24.3745 | 25.59 | 28.67 | 3.07 | 50.39 | 10:29 |
| 2 | TOC | 2.0898 | 20.8978 | 23.23 | 26.41 | 3.18 | 50.42 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 41 | TOC | K1901676-002.02 10x | 18.3144 ppm | 0.0619 ppm | 0.3400% | 2019/03/07 11:43 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 18.2707 | 182.7068 | 133.07 | 136.14 | 3.07 | 50.42 | 10:27 |
| 2 | TOC | 18.3582 | 183.5819 | 133.66 | 136.63 | 2.96 | 50.43 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 42 | TOC | K1901676-003.02 50x | 1.2686 ppm | 0.3821 ppm | 30.1200% | 2019/03/07 12:11 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.5388 | 15.3880 | 19.49 | 22.49 | 3.00 | 50.46 | 10:30 |
| 2 | TOC | 0.9984 | 9.9843 | 15.82 | 18.79 | 2.96 | 50.44 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 43 | TOC | K1901676-004.02 | 2.8031 ppm | 0.0879 ppm | 3.1400% | 2019/03/07 12:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.8653 | 28.6527 | 28.50 | 31.49 | 2.99 | 50.43 | 10:26 |
| 2 | TOC | 2.7409 | 27.4093 | 27.65 | 30.68 | 3.02 | 50.43 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 44 | TOC | RB | 0.3509 ppm | 0.1574 ppm | 44.8600% | 2019/03/07 13:07 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4622 | 4.6219 | 12.18 | 15.13 | 2.94 | 50.45 | 10:26 |
| 2 | TOC | 0.2396 | 2.3959 | 10.67 | 13.63 | 2.96 | 50.46 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 45 | TOC | K1901706-001.01 | 3.6934 ppm | 0.2852 ppm | 7.7200% | 2019/03/07 13:36 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.4917 | 34.9168 | 32.75 | 35.76 | 3.01 | 50.46 | 10:28 |
| 2 | TOC | 3.8950 | 38.9504 | 35.49 | 38.44 | 2.95 | 50.47 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 46 | TOC | K1901706-002.01 | 13.7127 ppm | 1.8415 ppm | 13.4300% | 2019/03/07 14:04 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 15.0149 | 150.1491 | 110.97 | 113.95 | 2.98 | 50.45 | 10:26 |
| 2 | TOC | 12.4106 | 124.1058 | 93.29 | 96.46 | 3.17 | 50.43 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 47 | TOC | K1901706-003.01 | 8.6082 ppm | 1.5858 ppm | 18.4200% | 2019/03/07 14:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.7295 | 97.2950 | 75.09 | 78.13 | 3.03 | 50.41 | 10:30 |
| 2 | TOC | 7.4868 | 74.8685 | 59.87 | 62.82 | 2.95 | 50.38 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.1926 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 15:00 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.1926 | 261.9256 | 187.26 | 190.28 | 3.03 | 50.40 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.5100 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 15:15 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.5100 | 5.0995 | 12.92 | 15.76 | 2.84 | 50.44 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 48 | TOC | K1901706-004.01 | 6.5273 ppm | 0.1218 ppm | 1.8700% | 2019/03/07 15:30 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.6134 | 66.1339 | 53.94 | 56.91 | 2.97 | 50.39 | 10:30 |
| 2 | TOC | 6.4412 | 64.4117 | 52.77 | 55.73 | 2.96 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 49 | TOC | K1901594-001.04 | 1.8063 ppm | 0.0694 ppm | 3.8400% | 2019/03/07 15:58 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.8554 | 18.5539 | 21.64 | 24.59 | 2.94 | 50.39 | 10:26 |
| 2 | TOC | 1.7573 | 17.5728 | 20.98 | 23.88 | 2.90 | 50.42 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 50 | TOC | K1901594-002.04 | 29.6254 ppm | 0.2211 ppm | 0.7500% | 2019/03/07 16:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 29.4691 | 294.6907 | 209.08 | 211.97 | 2.89 | 50.42 | 10:28 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 29.7817 | 297.8168 | 211.20 | 214.26 | 3.05 | 50.44 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 51 | TOC | K1901594-003.04 | 31.5352 ppm | 0.1514 ppm | 0.4800% | 2019/03/07 16:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 31.4281 | 314.2813 | 222.38 | 225.28 | 2.90 | 50.45 | 10:25 |
| 2 | TOC | 31.6422 | 316.4219 | 223.83 | 226.87 | 3.04 | 50.47 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 52 | TOC | K1901594-004.04 | 1.6091 ppm | 0.1022 ppm | 6.3500% | 2019/03/07 17:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.6814 | 16.8141 | 20.46 | 23.60 | 3.14 | 50.42 | 10:27 |
| 2 | TOC | 1.5369 | 15.3689 | 19.48 | 22.47 | 2.99 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 53 | TOC | K1901594-005.04 | 2.1766 ppm | 0.0484 ppm | 2.2300% | 2019/03/07 17:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.2109 | 22.1088 | 24.06 | 27.02 | 2.96 | 50.43 | 10:27 |
| 2 | TOC | 2.1424 | 21.4237 | 23.59 | 26.83 | 3.24 | 50.44 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 54 | TOC | K1901897-001.01 | 5.7203 ppm | 0.0368 ppm | 0.6400% | 2019/03/07 18:18 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.7463 | 57.4626 | 48.05 | 50.98 | 2.93 | 50.46 | 10:28 |
| 2 | TOC | 5.6943 | 56.9426 | 47.70 | 50.53 | 2.83 | 50.41 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ◈ | 55 | TOC | K1901703-001.01 doc | 2.2652 ppm | 0.0938 ppm | 4.1400% | 2019/03/07 18:46 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.3315 | 23.3153 | 24.87 | 27.84 | 2.96 | 50.49 | 10:27 |
| 2 | TOC | 2.1989 | 21.9894 | 23.97 | 27.02 | 3.05 | 50.49 | 10:23 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 56 | TOC | K1901703-001.01 ms doc | 30.5280 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 19:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 30.5280 | 305.2801 | 216.27 | 219.40 | 3.13 | 50.50 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 57 | TOC | RB | 0.2627 ppm | 0.0000 ppm | 0.0000% | 2019/03/07 19:29 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2627 | 2.6271 | 10.83 | 13.87 | 3.04 | 50.50 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 26.1528 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 19:43 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 26.1528 | 261.5278 | 186.99 | 189.86 | 2.88 | 50.56 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.1190 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 19:58 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.1190 | 1.1896 | 10.27 | 13.16 | 2.89 | 50.53 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 59 | TOC | K1901703-002.01 doc | 2.1764 ppm | 0.0127 ppm | 0.5800% | 2019/03/07 20:13 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.1674 | 21.6742 | 23.76 | 26.74 | 2.98 | 50.48 | 10:26 |
| 2 | TOC | 2.1854 | 21.8539 | 23.88 | 26.87 | 2.99 | 50.45 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 60 | TOC | K1901703-003.01 doc | 3.7162 ppm | 0.0463 ppm | 1.2400% | 2019/03/07 20:41 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.7489 | 37.4890 | 34.49 | 37.39 | 2.90 | 50.42 | 10:29 |
| 2 | TOC | 3.6835 | 36.8349 | 34.05 | 36.98 | 2.93 | 50.40 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 61 | TOC | K1901703-004.01 doc | 6.4987 ppm | 0.0318 ppm | 0.4900% | 2019/03/07 21:09 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.4762 | 64.7623 | 53.01 | 55.91 | 2.90 | 50.39 | 10:25 |
| 2 | TOC | 6.5212 | 65.2117 | 53.31 | 56.18 | 2.86 | 50.39 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 62 | TOC | K1901703-005.01 doc | 7.6223 ppm | 0.0299 ppm | 0.3900% | 2019/03/07 21:37 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.6435 | 76.4345 | 60.93 | 63.69 | 2.76 | 50.36 | 10:28 |
| 2 | TOC | 7.6012 | 76.0117 | 60.64 | 63.26 | 2.62 | 50.37 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 63 | TOC | K1901703-006.01 doc | 7.6095 ppm | 0.0211 ppm | 0.2800% | 2019/03/07 22:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.5945 | 75.9454 | 60.60 | 63.50 | 2.91 | 50.33 | 10:28 |
| 2 | TOC | 7.6244 | 76.2445 | 60.80 | 63.72 | 2.92 | 50.29 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 64 | TOC | K1901703-007.01 doc | 1.0166 ppm | 0.0185 ppm | 1.8200% | 2019/03/07 22:33 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.0297 | 10.2966 | 16.04 | 18.95 | 2.91 | 50.12 | 10:27 |
| 2 | TOC | 1.0034 | 10.0344 | 15.86 | 18.52 | 2.66 | 50.21 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 65 | TOC | K1901553-001.06 doc 2x | 7.9336 ppm | 0.0659 ppm | 0.8300% | 2019/03/07 23:01 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.8870 | 78.8697 | 62.58 | 65.48 | 2.89 | 50.40 | 10:30 |
| 2 | TOC | 7.9802 | 79.8022 | 63.22 | 66.07 | 2.85 | 50.43 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 66 | TOC | K1901553-002.05 doc | 3.3275 ppm | 0.0993 ppm | 2.9800% | 2019/03/07 23:29 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.3977 | 33.9769 | 32.11 | 35.01 | 2.90 | 50.41 | 10:29 |
| 2 | TOC | 3.2573 | 32.5729 | 31.16 | 33.95 | 2.79 | 50.39 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm — From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.7792 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/07 23:57 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.7792 | 257.7917 | 184.45 | 187.32 | 2.87 | 50.36 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB — From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0491 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/08 00:12 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0491 | 0.4913 | 9.80 | 12.77 | 2.97 | 50.32 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample — From Schedule Version 67

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 67 | TOC | K1901865-001.02 doc | 5.9540 ppm | 0.0577 ppm | 0.9700% | 2019/03/08 00:27 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.9132 | 59.1318 | 49.19 | 52.18 | 2.99 | 50.29 | 10:30 |
| 2 | TOC | 5.9948 | 59.9479 | 49.74 | 52.50 | 2.76 | 50.30 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 68 | TOC | K1901865-002.02 doc | 2.8095 ppm | 0.0151 ppm | 0.5400% | 2019/03/08 00:55 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.7988 | 27.9883 | 28.05 | 30.99 | 2.94 | 50.29 | 10:24 |
| 2 | TOC | 2.8202 | 28.2019 | 28.19 | 31.23 | 3.04 | 50.28 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 69 | TOC | RB | 0.1225 ppm | 0.0605 ppm | 49.3900% | 2019/03/08 01:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.1653 | 1.6534 | 10.17 | 12.88 | 2.71 | 50.28 | 10:27 |
| 2 | TOC | 0.0797 | 0.7974 | 9.59 | 12.49 | 2.90 | 50.28 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 70 | TOC | FB | 0.0226 ppm | 0.0198 ppm | 87.6400% | 2019/03/08 01:51 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0366 | 0.3658 | 9.30 | 12.23 | 2.94 | 50.27 | 10:28 |
| 2 | TOC | 0.0086 | 0.0859 | 9.11 | 11.91 | 2.80 | 50.26 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 71 | TOC | K1901728-001.01 doc | 1.7817 ppm | 0.0129 ppm | 0.7200% | 2019/03/08 02:19 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.7726 | 17.7260 | 21.08 | 23.90 | 2.82 | 50.26 | 10:25 |
| 2 | TOC | 1.7909 | 17.9087 | 21.20 | 23.95 | 2.75 | 50.25 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 72 | TOC | K1901728-002.01 doc 100x | 0.5750 ppm | 0.0235 ppm | 4.0900% | 2019/03/08 02:47 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.5917 | 5.9168 | 13.06 | 15.82 | 2.75 | 50.24 | 10:28 |
| 2 | TOC | 0.5584 | 5.5839 | 12.84 | 15.78 | 2.94 | 50.23 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 9.0477 (IC) (v1229) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.2814 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/08 03:15 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.2814 | 252.8138 | 181.07 | 183.95 | 2.88 | 50.22 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 67

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0213 ppm (PASS) | 0.0000 ppm | 0% | 2019/03/08 03:30 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0213 | 0.2129 | 9.61 | 12.42 | 2.81 | 50.22 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

## Meta Data Used in this Report

**Blanks**

| Version | Reagent (Abs) | Acid (Abs) | DI IC (Abs) | DI TC (Abs) | DI TOC (Abs) | Save Time | Operator |
|---|---|---|---|---|---|---|---|
| v1228 | 1.4157 | 0.7880 | 0.0000 | 0.0000 | 0.0000 | 2019/03/05 15:06 | Fusion1 (Fusion1) |
| v1229 | 2.6573 | 1.3700 | 0.0000 | 0.0000 | 0.0000 | 2019/03/06 14:28 | Fusion1 (Fusion1) |

**Calibrations**

**Name: CAS_salt_010711 (TOC)**

| | | | |
|---|---|---|---|
| Version: | v30 | Calibration curve formula: | TOC: y = 6.788x + 9.463 |
| Ver Creation: | 2019/03/05 17:42 | $r^2$ value: | TOC: $r^2$ = 0.99963 |
| Comment: | | | |
| Operator: | Fusion1 (Fusion1) | | |
| Basic Analysis Type | TOC | | |

**Basic Analysis Type**: TOC

| Sample ID | Y Raw Value | X Expected | Message | End Time |
|---|---|---|---|---|
| DI Water | 7.8970 | 0.0000 | | 2019/03/05 16:15 |
| 0.500 ppm | 11.5280 | 0.5000 | | 2019/03/05 16:29 |
| 1.0 ppm | 14.9760 | 1.0000 | | 2019/03/05 16:44 |
| 5.0 ppm | 43.6500 | 5.0000 | | 2019/03/05 16:58 |
| 10 ppm | 79.6020 | 10.0000 | | 2019/03/05 17:12 |
| 25 ppm | 183.3580 | 25.0000 | | 2019/03/05 17:26 |
| 50 ppm | 346.3230 | 50.0000 | | 2019/03/05 17:40 |

**Methods**

**Name: CAS_salt_010711 (TOC)**

| | | | |
|---|---|---|---|
| Version: | v4 | Operator: | Fusion1 (Fusion1) |
| Ver Creation: | 2019/02/21 17:57 | | |
| Comment: | | | |

| Parameter | Value |
|---|---|
| SampleVolume | 10.0 mL |
| Dilution | 1:10 |
| AcidVolume | 0.5 ml |
| ReagentVolume | 2.0 ml |
| UVReactorPrerinse | Off |
| UVReactorPrerinseVolume | 5.0 |
| NumberOfUVReactorPrerinses | 1 |
| ICSpargeTime | 1.00 mins |
| DetectorSweepFlow | 500 ml/min |
| PreSpargeTime | 2.00 mins |
| SystemFlow | 500 ml/min |

| Advanced Parameter | Value |
|---|---|
| NeedleRinseVolume | 5.0 ml |
| VialPrimeVolume | 2.0 ml |
| ICSamplePrimeVolume | 2.0 ml |
| ICSpargeRinseVolume | 12.0 ml |
| BaselineStabilizeTime | 0.70 min |
| DetectorPressureFlow | 150 ml/min |
| SyringeSpeedWaste | 10 |
| SyringeSpeedAcid | 7 |
| SyringeSpeedReagent | 7 |
| SyringeSpeedDIWater | 7 |
| NDIRPressurization | 60 psig |
| SyringeSpeedSampleDispense | 5 |
| SyringeSpeedSampleAspirate | 4 |
| SyringeSpeedUVDispense | 5 |
| SyringeSpeedUVAspirate | 5 |
| SyringeSpeedICDispense | 5 |
| SyringeSpeedICAspirate | 5 |
| NDIRPressureStabilize | 1.75 min |
| SampleMixing | Off |
| SampleMixingCycles | 1 |
| SampleMixingVolume | 10.0 |

| | |
|---|---|
| LowLevelFilterNDIR | Off |

## Acceptance / Approval

**Electronic Signatures**

| Report Version | User Name | Acceptance | Reason | Date |
|---|---|---|---|---|

## Report History

**Report History**

| Report Version | User Name | System Reason | User Reason | Date |
|---|---|---|---|---|
| 1 | Fusion1 (Fusion1) | Schedule completed | Schedule completed | 2019/03/08 03:48 |

ALS Environmental

StarLIMS Run: 627457, 627458, 627459

Analysis: TOC

Method: 9060, 415.1, SM 5310 C, 9060A

CCV: 11-GEN-05-76B 50 ppm LCS: 11-GEN-05-74L 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-74A

ICS TV: 25.0 ppm ICS % R = 2

Spike ID: 11-GEN-05-70O 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-76F

21 % H3PO4: 11-GEN-05-76G

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: NA

| | |
|---|---|
| Analyzed By: BD | Date Analyzed: 3/6/19 |
| Reviewed By: | Date Reviewed: 03/08/19 |

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# LABORATORY REPORT

March 12, 2019

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

**RE: HS19021316**

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on February 27, 2019. For your reference, these analyses have been assigned our service request number P1901011.

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 Hayden Akers at 2:31, March 12, 2019*

Hayden Akers
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
**T:** +1 805 526 7161
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS19021316

Service Request No: P1901011

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## CASE NARRATIVE

The samples were received intact under chain of custody on February 27, 2019 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.

Sample P1901011-002 (46WW05-190225) was received with a pH of 5. A pH at this level may artificially elevate the carbon dioxide results

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.

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*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.*

2655 Park Center Dr., Suite A
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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 | 2018027 |
| Minnesota DOH (NELAP) | http://www.health.state.mn.us/accreditation | 1521096 |
| 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 | 4068-006 |
| 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: HS19021316
Service Request: P1901011

Date Received: 2/27/2019
Time Received: 09:30

| Client Sample ID | Lab Code | Matrix | Date Collected | Time Collected | RSK 175 - CO2 | RSK 175 - Gases |
|---|---|---|---|---|---|---|
| LHSMW21-190225 | P1901011-001 | Water | 2/25/2019 | 09:35 | X | X |
| 46WW05-190225 | P1901011-002 | Water | 2/25/2019 | 10:35 | X | X |
| 46WW09-190225 | P1901011-003 | Water | 2/25/2019 | 11:35 | X | X |
| 46WW09-190225-FD | P1901011-004 | Water | 2/25/2019 | 11:35 | X | X |

P1901011

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**F:** +1 281 530 5887
**www.alsglobal.com**

# Subcontract Chain of Custody

**COC ID: 10830**

**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:** | HS19021316 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| **1.** | **HS19021316-02** | **LHSMW21-190225** | **Groundwater** | **25 Feb 2019 09:35** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 12 Mar 2019 |
| **2.** | **HS19021316-03** | **46WW05-190225** | **Groundwater** | **25 Feb 2019 10:35** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 12 Mar 2019 |
| **3.** | **HS19021316-04** | **46WW09-190225** | **Groundwater** | **25 Feb 2019 11:35** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 12 Mar 2019 |
| **4.** | **HS19021316-05** | **46WW09-190225-FD** | **Groundwater** | **25 Feb 2019 11:35** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 12 Mar 2019 |

**Comments:** Please analyze for the analysis listed above.
Send report to the emails shown above.
Neat & HCL vials for MEE + CO2

**QC Level:** DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 2/26/19 1800.

Received By: _____ Date/Time: 2/27/19 0930

Cooler ID(s): _____ Temperature(s): 1° wet ice

# ALS Environmental
## Sample Acceptance Check Form

Client: ALS Laboratory Group  Work order: P1901011
Project: HS19021316
Sample(s) received on: 2/27/19  Date opened: 2/27/19  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: 1° C  Blank Temperature: ° C | | | |
| 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 |
|---|---|---|---|---|---|---|
| P1901011-001.01 | 40mL VOA NP | | 7 | | A | MR 3/4/19 |
| P1901011-001.02 | 40mL VOA NP | | | | A | |
| P1901011-001.03 | 40mL VOA NP | | | | A | |
| P1901011-001.04 | 40ml VOA HCL | | 1 | | A | MR 3/5/19 |
| P1901011-001.05 | 40ml VOA HCL | | | | A | |
| P1901011-001.06 | 40ml VOA HCL | | | | A | |
| P1901011-002.01 | 40mL VOA NP | | 5 | | A | MR 3/4/19 |
| P1901011-002.02 | 40mL VOA NP | | | | A | |
| P1901011-002.03 | 40mL VOA NP | | | | A | |
| P1901011-002.04 | 40ml VOA HCL | | 1 | | A | MR 3/5/19 |
| P1901011-002.05 | 40ml VOA HCL | | | | A | |
| P1901011-002.06 | 40ml VOA HCL | | | | A | |
| P1901011-003.01 | 40mL VOA NP | | 6 | | A | MR 3/4/19 |
| P1901011-003.02 | 40mL VOA NP | | | | A | |
| P1901011-003.03 | 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: P1901011

Project: HS19021316

Sample(s) received on: 2/27/19  Date opened: 2/27/19  by: ADAVID

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P1901011-003.04 | 40ml VOA HCL | | 1 | | A | MR 3/5/19 |
| P1901011-003.05 | 40ml VOA HCL | | | | A | |
| P1901011-003.06 | 40ml VOA HCL | | | | A | |
| P1901011-004.01 | 40mL VOA NP | | 6 | | A | MR 3/4/19 |
| P1901011-004.02 | 40mL VOA NP | | | | A | |
| P1901011-004.03 | 40mL VOA NP | | | | A | |
| P1901011-004.04 | 40ml VOA HCL | | 1 | | A | MR 3/5/19 |
| P1901011-004.05 | 40ml VOA HCL | | | | A | |
| P1901011-004.06 | 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:** **HS19021316** ALS Project ID: P1901011

## Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 2/25/19
Analyst: Magaly Rodriguez Date Received: 2/27/19
Matrix: Water Date Analyzed: 3/4/19
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 |
|---|---|---|---|---|---|---|---|
| LHSMW21-190225 | P1901011-001 | 0.050 | **680,000** | 2,000 | 1,700 | 740 | |
| 46WW05-190225 | P1901011-002 | 0.050 | **870,000** | 2,000 | 1,700 | 740 | |
| 46WW09-190225 | P1901011-003 | 0.050 | **920,000** | 2,000 | 1,700 | 740 | |
| 46WW09-190225-FD | P1901011-004 | 0.050 | **930,000** | 2,000 | 1,700 | 740 | |
| Method Control Sample | P190304-MB | 0.10 | 860 | 1,000 | 860 | 370 | **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: P1901011
**Client Project ID:** **HS19021316** ALS Sample ID: P190304-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 3/04/19
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 | 19,300 | 20,000 | **84** | **87** | 80-122 | 4 | 12 | |

[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:** **LHSMW21-190225**
**Client Project ID:** **HS19021316**

ALS Project ID: P1901011
ALS Sample ID: P1901011-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/25/19
Date Received: 2/27/19
Date Analyzed: 3/5/19
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:** **46WW05-190225**
**Client Project ID:** **HS19021316**

ALS Project ID: P1901011
ALS Sample ID: P1901011-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/25/19
Date Received: 2/27/19
Date Analyzed: 3/5/19
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 | **7.2** | 1.3 | 1.0 | 0.51 | **B** |
| 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.
B = Analyte detected in both the sample and associated method blank.

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS



**Client:** **ALS Laboratory Group**
**Client Sample ID:** **46WW09-190225**
**Client Project ID:** **HS19021316**

ALS Project ID: P1901011
ALS Sample ID: P1901011-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/25/19
Date Received: 2/27/19
Date Analyzed: 3/5/19
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:** **46WW09-190225-FD**
**Client Project ID:** **HS19021316**

ALS Project ID: P1901011
ALS Sample ID: P1901011-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: 2/25/19
Date Received: 2/27/19
Date Analyzed: 3/5/19
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** ALS Project ID: P1901011
**Client Project ID:** **HS19021316** ALS Sample ID: P190305-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 3/05/19
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 | **0.51** | 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:** **HS19021316**

ALS Project ID: P1901011
ALS Sample ID: P190305-LCS
P190305-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Magaly Rodriguez
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 3/05/19
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 | 2.38 | 2.67 | **95** | **107** | 73-125 | 12 | 26 | |
| 74-85-1 | Ethene | 4.37 | 4.66 | 4.69 | **107** | **107** | 72-133 | 0 | 11 | |
| 74-84-0 | Ethane | 4.69 | 4.94 | 5.01 | **105** | **107** | 74-131 | 2 | 10 | |

$_1$ = 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
T: +1 281 530 5656
F: +1 281 530 5887

August 30, 2019

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19080637**

Laboratory Results for: **LHAAP-46**

Dear Susan,

ALS Environmental received 9 sample(s) on Aug 13, 2019 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 Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**Work Order:** HS19080637

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19080637-01 | 46WW03-190812 | Groundwater | | 12-Aug-2019 07:55 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-02 | 46WW02-190812 | Groundwater | | 12-Aug-2019 08:40 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-03 | 46WW11-190812 | Groundwater | | 12-Aug-2019 09:35 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-04 | 46WW1-190812-FD | Groundwater | | 12-Aug-2019 09:35 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-05 | 46WW19-190812 | Groundwater | | 12-Aug-2019 10:35 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-06 | 46WW09-190812 | Groundwater | | 12-Aug-2019 11:25 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-07 | 46WW07-190812 | Groundwater | | 12-Aug-2019 12:25 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-08 | LHSMW25-190812 | Groundwater | | 12-Aug-2019 13:15 | 13-Aug-2019 10:30 | ☐ |
| HS19080637-09 | Trip Blank | Water | C&G-080519-34 | 12-Aug-2019 00:00 | 13-Aug-2019 10:30 | ☐ |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**Work Order:**

**CASE NARRATIVE**

## Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.
- The analysis for TOC Analysis was subcontracted to ALS Kelso, WA. Final report attached.

## GCMS Volatiles by Method SW8260

### Batch ID: R344280

**Sample ID: HS19080684-02MS**

- MS and MSD are for an unrelated sample

## WetChemistry by Method SW9056

### Batch ID: R344399

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

### Batch ID: R344398

**Sample ID: HS19080684-02MS**

- MS and MSD are for an unrelated sample (Chloride,Sulfate)

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW03-190812
Collection Date: 12-Aug-2019 07:55

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-01
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.

**ANALYTICAL REPORT**

Project: LHAAP-46

WorkOrder:HS19080637

Sample ID: 46WW03-190812

Lab ID:HS19080637-01

Collection Date: 12-Aug-2019 07:55

Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:24 |
| *Surr: 1,2-Dichloroethane-d4* | *88.5* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 13:24* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 13:24* |
| *Surr: Dibromofluoromethane* | *91.9* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 13:24* |
| *Surr: Toluene-d8* | *103* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 13:24* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW02-190812
Collection Date: 12-Aug-2019 08:40

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-02
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| **1,1-Dichloroethene** | **1.5** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 13:48 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.

**ANALYTICAL REPORT**

Project: LHAAP-46

WorkOrder:HS19080637

Sample ID: 46WW02-190812

Lab ID:HS19080637-02

Collection Date: 12-Aug-2019 08:40

Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| **cis-1,2-Dichloroethene** | **1.1** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 13:48 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| **Trichloroethene** | **17** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 13:48 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:48 |
| *Surr: 1,2-Dichloroethane-d4* | *89.0* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 13:48* |
| *Surr: 4-Bromofluorobenzene* | *99.2* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 13:48* |
| *Surr: Dibromofluoromethane* | *91.5* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 13:48* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 13:48* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **13.9** | | **0.200** | **0.500** | **0.500** | **mg/L** | 1 | 13-Aug-2019 19:49 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 13-Aug-2019 19:49 |
| **Sulfate** | **123** | | **1.00** | **2.50** | **2.50** | **mg/L** | 5 | 14-Aug-2019 19:50 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 27-Aug-2019 13:55 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 30-Aug-2019 14:51 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW11-190812
Collection Date: 12-Aug-2019 09:35

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-03
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW11-190812
Collection Date: 12-Aug-2019 09:35

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-03
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| **Trichloroethene** | **24** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 14:12 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:12 |
| *Surr: 1,2-Dichloroethane-d4* | *88.7* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 14:12* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 14:12* |
| *Surr: Dibromofluoromethane* | *92.9* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 14:12* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 14:12* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **208** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 14-Aug-2019 20:07 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 13-Aug-2019 20:33 |
| **Sulfate** | **183** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 14-Aug-2019 20:07 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 27-Aug-2019 13:55 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 30-Aug-2019 14:51 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW1-190812-FD
Collection Date: 12-Aug-2019 09:35

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-04
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW1-190812-FD
Collection Date: 12-Aug-2019 09:35

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-04
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| **Trichloroethene** | **24** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 14:36 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 14:36 |
| *Surr: 1,2-Dichloroethane-d4* | *89.0* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 14:36* |
| *Surr: 4-Bromofluorobenzene* | *102* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 14:36* |
| *Surr: Dibromofluoromethane* | *92.5* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 14:36* |
| *Surr: Toluene-d8* | *101* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 14:36* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **202** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 14-Aug-2019 21:13 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 13-Aug-2019 20:48 |
| **Sulfate** | **192** | | **2.00** | **5.00** | **5.00** | **mg/L** | 10 | 14-Aug-2019 21:13 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 27-Aug-2019 13:55 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 30-Aug-2019 14:51 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW19-190812
Collection Date: 12-Aug-2019 10:35

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-05
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW19-190812
Collection Date: 12-Aug-2019 10:35

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-05
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| **cis-1,2-Dichloroethene** | **4.2** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 17:24 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| **Trichloroethene** | **13** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 17:24 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:24 |
| *Surr: 1,2-Dichloroethane-d4* | *90.7* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 17:24* |
| *Surr: 4-Bromofluorobenzene* | *102* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 17:24* |
| *Surr: Dibromofluoromethane* | *93.7* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 17:24* |
| *Surr: Toluene-d8* | *103* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 17:24* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW09-190812
Collection Date: 12-Aug-2019 11:25

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-06
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW09-190812
Collection Date: 12-Aug-2019 11:25

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-06
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 17:48 |
| *Surr: 1,2-Dichloroethane-d4* | *89.5* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 17:48* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 17:48* |
| *Surr: Dibromofluoromethane* | *92.9* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 17:48* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 17:48* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **479** | | **20.0** | **50.0** | **50.0** | **mg/L** | 100 | 14-Aug-2019 21:30 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 13-Aug-2019 21:02 |
| **Sulfate** | **2,330** | | **20.0** | **50.0** | **50.0** | **mg/L** | 100 | 14-Aug-2019 21:30 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 27-Aug-2019 13:55 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 30-Aug-2019 14:51 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW07-190812
Collection Date: 12-Aug-2019 12:25

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-07
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.

**ANALYTICAL REPORT**

Project: LHAAP-46

WorkOrder:HS19080637

Sample ID: 46WW07-190812

Lab ID:HS19080637-07

Collection Date: 12-Aug-2019 12:25

Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:12 |
| *Surr: 1,2-Dichloroethane-d4* | *87.7* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 18:12* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 18:12* |
| *Surr: Dibromofluoromethane* | *91.2* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 18:12* |
| *Surr: Toluene-d8* | *103* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 18:12* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: LHSMW25-190812
Collection Date: 12-Aug-2019 13:15

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-08
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: LHSMW25-190812
Collection Date: 12-Aug-2019 13:15

**ANALYTICAL REPORT**
WorkOrder:HS19080637
Lab ID:HS19080637-08
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 18:37 |
| *Surr: 1,2-Dichloroethane-d4* | *90.1* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 18:37* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 18:37* |
| *Surr: Dibromofluoromethane* | *92.6* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 18:37* |
| *Surr: Toluene-d8* | *100* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 18:37* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.

**ANALYTICAL REPORT**

Project: LHAAP-46

WorkOrder:HS19080637

Sample ID: Trip Blank

Lab ID:HS19080637-09

Collection Date: 12-Aug-2019 00:00

Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.

**ANALYTICAL REPORT**

Project: LHAAP-46

WorkOrder:HS19080637

Sample ID: Trip Blank

Lab ID:HS19080637-09

Collection Date: 12-Aug-2019 00:00

Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 13:00 |
| *Surr: 1,2-Dichloroethane-d4* | *87.9* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 13:00* |
| *Surr: 4-Bromofluorobenzene* | *102* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 13:00* |
| *Surr: Dibromofluoromethane* | *91.7* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 13:00* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 13:00* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

## DATES REPORT

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID:** R344280 ( 0 ) | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Water | |
| HS19080637-09 | Trip Blank | 12 Aug 2019 00:00 | | | 14 Aug 2019 13:00 | 1 |
| **Batch ID:** R344280 ( 0 ) | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Groundwater | |
| HS19080637-01 | 46WW03-190812 | 12 Aug 2019 07:55 | | | 14 Aug 2019 13:24 | 1 |
| HS19080637-02 | 46WW02-190812 | 12 Aug 2019 08:40 | | | 14 Aug 2019 13:48 | 1 |
| HS19080637-03 | 46WW11-190812 | 12 Aug 2019 09:35 | | | 14 Aug 2019 14:12 | 1 |
| HS19080637-04 | 46WW1-190812-FD | 12 Aug 2019 09:35 | | | 14 Aug 2019 14:36 | 1 |
| HS19080637-05 | 46WW19-190812 | 12 Aug 2019 10:35 | | | 14 Aug 2019 17:24 | 1 |
| HS19080637-06 | 46WW09-190812 | 12 Aug 2019 11:25 | | | 14 Aug 2019 17:48 | 1 |
| HS19080637-07 | 46WW07-190812 | 12 Aug 2019 12:25 | | | 14 Aug 2019 18:12 | 1 |
| HS19080637-08 | LHSMW25-190812 | 12 Aug 2019 13:15 | | | 14 Aug 2019 18:37 | 1 |
| **Batch ID:** R344398 ( 0 ) | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19080637-02 | 46WW02-190812 | 12 Aug 2019 08:40 | | | 14 Aug 2019 19:50 | 5 |
| HS19080637-03 | 46WW11-190812 | 12 Aug 2019 09:35 | | | 14 Aug 2019 20:07 | 10 |
| HS19080637-04 | 46WW1-190812-FD | 12 Aug 2019 09:35 | | | 14 Aug 2019 21:13 | 10 |
| HS19080637-06 | 46WW09-190812 | 12 Aug 2019 11:25 | | | 14 Aug 2019 21:30 | 100 |
| **Batch ID:** R344399 ( 0 ) | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19080637-02 | 46WW02-190812 | 12 Aug 2019 08:40 | | | 13 Aug 2019 19:49 | 1 |
| HS19080637-03 | 46WW11-190812 | 12 Aug 2019 09:35 | | | 13 Aug 2019 20:33 | 1 |
| HS19080637-04 | 46WW1-190812-FD | 12 Aug 2019 09:35 | | | 13 Aug 2019 20:48 | 1 |
| HS19080637-06 | 46WW09-190812 | 12 Aug 2019 11:25 | | | 13 Aug 2019 21:02 | 1 |
| **Batch ID:** R345038 ( 0 ) | **Test Name :** SUBCONTRACT ANALYSIS - RSK | | | | **Matrix:** Groundwater | |
| HS19080637-02 | 46WW02-190812 | 12 Aug 2019 08:40 | | | 27 Aug 2019 13:55 | 1 |
| HS19080637-03 | 46WW11-190812 | 12 Aug 2019 09:35 | | | 27 Aug 2019 13:55 | 1 |
| HS19080637-04 | 46WW1-190812-FD | 12 Aug 2019 09:35 | | | 27 Aug 2019 13:55 | 1 |
| HS19080637-06 | 46WW09-190812 | 12 Aug 2019 11:25 | | | 27 Aug 2019 13:55 | 1 |
| **Batch ID:** R345307 ( 0 ) | **Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS | | | | **Matrix:** Groundwater | |
| HS19080637-02 | 46WW02-190812 | 12 Aug 2019 08:40 | | | 30 Aug 2019 14:51 | 1 |
| HS19080637-03 | 46WW11-190812 | 12 Aug 2019 09:35 | | | 30 Aug 2019 14:51 | 1 |
| HS19080637-04 | 46WW1-190812-FD | 12 Aug 2019 09:35 | | | 30 Aug 2019 14:51 | 1 |
| HS19080637-06 | 46WW09-190812 | 12 Aug 2019 11:25 | | | 30 Aug 2019 14:51 | 1 |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 12:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210202** 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 |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID: R344280 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**MBLK** Sample ID: **VBLKW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 12:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210202** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %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 | 1.0 | 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* | *44.14* | *1.0* | *50* | *0* | *88.3* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *51.44* | *1.0* | *50* | *0* | *103* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *46.04* | *1.0* | *50* | *0* | *92.1* | *80 - 119* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 12:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210202** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *51.39* | *1.0* | *50* | *0* | *103* | *89 - 112* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID: R344280 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**LCS** Sample ID: **VLCSW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 11:48**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210201** 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 | 19.56 | 1.0 | 20 | 0 | 97.8 | 78 - 124 | | | | |
| 1,1,1-Trichloroethane | 19.37 | 1.0 | 20 | 0 | 96.8 | 74 - 131 | | | | |
| 1,1,2,2-Tetrachloroethane | 20.72 | 1.0 | 20 | 0 | 104 | 71 - 121 | | | | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 20.07 | 1.0 | 20 | 0 | 100 | 70 - 136 | | | | |
| 1,1,2-Trichloroethane | 19.85 | 1.0 | 20 | 0 | 99.3 | 80 - 119 | | | | |
| 1,1-Dichloroethane | 20.48 | 1.0 | 20 | 0 | 102 | 77 - 125 | | | | |
| 1,1-Dichloroethene | 20.87 | 1.0 | 20 | 0 | 104 | 71 - 131 | | | | |
| 1,1-Dichloropropene | 18.84 | 1.0 | 20 | 0 | 94.2 | 78 - 125 | | | | |
| 1,2,3-Trichlorobenzene | 22.16 | 1.0 | 20 | 0 | 111 | 69 - 129 | | | | |
| 1,2,3-Trichloropropane | 20.42 | 1.0 | 20 | 0 | 102 | 73 - 122 | | | | |
| 1,2,4-Trichlorobenzene | 21.46 | 1.0 | 20 | 0 | 107 | 69 - 130 | | | | |
| 1,2,4-Trimethylbenzene | 19.11 | 1.0 | 20 | 0 | 95.5 | 76 - 124 | | | | |
| 1,2-Dibromo-3-chloropropane | 19.96 | 1.0 | 20 | 0 | 99.8 | 62 - 128 | | | | |
| 1,2-Dibromoethane | 19.95 | 1.0 | 20 | 0 | 99.8 | 77 - 121 | | | | |
| 1,2-Dichlorobenzene | 20.33 | 1.0 | 20 | 0 | 102 | 80 - 119 | | | | |
| 1,2-Dichloroethane | 19.44 | 1.0 | 20 | 0 | 97.2 | 73 - 128 | | | | |
| 1,2-Dichloropropane | 21.38 | 1.0 | 20 | 0 | 107 | 78 - 122 | | | | |
| 1,3,5-Trimethylbenzene | 18.57 | 1.0 | 20 | 0 | 92.8 | 75 - 124 | | | | |
| 1,3-Dichlorobenzene | 18.77 | 1.0 | 20 | 0 | 93.9 | 80 - 119 | | | | |
| 1,3-Dichloropropane | 19.87 | 1.0 | 20 | 0 | 99.4 | 80 - 119 | | | | |
| 1,4-Dichlorobenzene | 20.07 | 1.0 | 20 | 0 | 100 | 79 - 118 | | | | |
| 2,2-Dichloropropane | 20.72 | 1.0 | 20 | 0 | 104 | 60 - 139 | | | | |
| 2-Butanone | 40.71 | 2.0 | 40 | 0 | 102 | 56 - 143 | | | | |
| 2-Chlorotoluene | 18.72 | 1.0 | 20 | 0 | 93.6 | 79 - 122 | | | | |
| 2-Hexanone | 40.6 | 2.0 | 40 | 0 | 102 | 57 - 139 | | | | |
| 4-Chlorotoluene | 18.82 | 1.0 | 20 | 0 | 94.1 | 78 - 122 | | | | |
| 4-Isopropyltoluene | 18.36 | 1.0 | 20 | 0 | 91.8 | 77 - 127 | | | | |
| 4-Methyl-2-pentanone | 39.66 | 2.0 | 40 | 0 | 99.2 | 67 - 130 | | | | |
| Acetone | 41.52 | 2.0 | 40 | 0 | 104 | 39 - 160 | | | | |
| Benzene | 20.44 | 1.0 | 20 | 0 | 102 | 79 - 120 | | | | |
| Bromobenzene | 19.06 | 1.0 | 20 | 0 | 95.3 | 80 - 120 | | | | |
| Bromochloromethane | 20.15 | 1.0 | 20 | 0 | 101 | 78 - 123 | | | | |
| Bromodichloromethane | 20.1 | 1.0 | 20 | 0 | 100 | 79 - 125 | | | | |
| Bromoform | 19.46 | 1.0 | 20 | 0 | 97.3 | 66 - 130 | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID: R344280 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**LCS** Sample ID: **VLCSW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 11:48**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210201** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 23.39 | 1.0 | 20 | 0 | 117 | 53 - 141 | | | | |
| Carbon disulfide | 42.28 | 2.0 | 40 | 0 | 106 | 64 - 133 | | | | |
| Carbon tetrachloride | 17.9 | 1.0 | 20 | 0 | 89.5 | 72 - 136 | | | | |
| Chlorobenzene | 19.23 | 1.0 | 20 | 0 | 96.2 | 82 - 118 | | | | |
| Chloroethane | 23.16 | 1.0 | 20 | 0 | 116 | 60 - 138 | | | | |
| Chloroform | 20.34 | 1.0 | 20 | 0 | 102 | 79 - 124 | | | | |
| Chloromethane | 20.47 | 1.0 | 20 | 0 | 102 | 50 - 139 | | | | |
| cis-1,2-Dichloroethene | 20.43 | 1.0 | 20 | 0 | 102 | 78 - 123 | | | | |
| cis-1,3-Dichloropropene | 21.05 | 1.0 | 20 | 0 | 105 | 75 - 124 | | | | |
| Dibromochloromethane | 19.45 | 1.0 | 20 | 0 | 97.2 | 74 - 126 | | | | |
| Dibromomethane | 20.02 | 1.0 | 20 | 0 | 100 | 79 - 123 | | | | |
| Dichlorodifluoromethane | 17.75 | 1.0 | 20 | 0 | 88.7 | 32 - 152 | | | | |
| Ethylbenzene | 18.75 | 1.0 | 20 | 0 | 93.7 | 79 - 121 | | | | |
| Hexachlorobutadiene | 23.22 | 1.0 | 20 | 0 | 116 | 66 - 134 | | | | |
| Isopropylbenzene | 18.35 | 1.0 | 20 | 0 | 91.8 | 72 - 131 | | | | |
| m,p-Xylene | 38.24 | 2.0 | 40 | 0 | 95.6 | 80 - 121 | | | | |
| Methylene chloride | 21.43 | 2.0 | 20 | 0 | 107 | 74 - 124 | | | | |
| Naphthalene | 20.43 | 1.0 | 20 | 0 | 102 | 61 - 128 | | | | |
| n-Butylbenzene | 19.06 | 1.0 | 20 | 0 | 95.3 | 75 - 128 | | | | |
| n-Propylbenzene | 18.44 | 1.0 | 20 | 0 | 92.2 | 76 - 126 | | | | |
| o-Xylene | 19.34 | 1.0 | 20 | 0 | 96.7 | 78 - 122 | | | | |
| sec-Butylbenzene | 18.05 | 1.0 | 20 | 0 | 90.2 | 77 - 126 | | | | |
| Styrene | 19.89 | 1.0 | 20 | 0 | 99.5 | 78 - 123 | | | | |
| tert-Butylbenzene | 17.98 | 1.0 | 20 | 0 | 89.9 | 78 - 124 | | | | |
| Tetrachloroethene | 17.83 | 1.0 | 20 | 0 | 89.1 | 74 - 129 | | | | |
| Toluene | 19.6 | 1.0 | 20 | 0 | 98.0 | 80 - 121 | | | | |
| trans-1,2-Dichloroethene | 20.48 | 1.0 | 20 | 0 | 102 | 75 - 124 | | | | |
| trans-1,3-Dichloropropene | 20.63 | 1.0 | 20 | 0 | 103 | 73 - 127 | | | | |
| Trichloroethene | 19.8 | 1.0 | 20 | 0 | 99.0 | 79 - 123 | | | | |
| Trichlorofluoromethane | 19.62 | 1.0 | 20 | 0 | 98.1 | 65 - 141 | | | | |
| Vinyl chloride | 21.29 | 1.0 | 20 | 0 | 106 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *50.89* | *1.0* | *50* | *0* | *102* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *51.83* | *1.0* | *50* | *0* | *104* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *51.4* | *1.0* | *50* | *0* | *103* | *80 - 119* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 11:48**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210201** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *47.89* | *1.0* | *50* | *0* | *95.8* | *89 - 112* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID: R344280 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**MS** Sample ID: **HS19080684-02MS** Units: **UG/L** Analysis Date: **14-Aug-2019 16:12**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210211** 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 | 17.48 | 1.0 | 20 | 0 | 87.4 | 78 - 124 | | | | |
| 1,1,1-Trichloroethane | 16.51 | 1.0 | 20 | 0 | 82.6 | 74 - 131 | | | | |
| 1,1,2,2-Tetrachloroethane | 18.66 | 1.0 | 20 | 0 | 93.3 | 71 - 121 | | | | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 18.88 | 1.0 | 20 | 0 | 94.4 | 70 - 136 | | | | |
| 1,1,2-Trichloroethane | 17.6 | 1.0 | 20 | 0 | 88.0 | 80 - 119 | | | | |
| 1,1-Dichloroethane | 16.01 | 1.0 | 20 | 0 | 80.0 | 77 - 125 | | | | |
| 1,1-Dichloroethene | 16.59 | 1.0 | 20 | 0 | 83.0 | 71 - 131 | | | | |
| 1,1-Dichloropropene | 17.36 | 1.0 | 20 | 0 | 86.8 | 78 - 125 | | | | |
| 1,2,3-Trichlorobenzene | 19.54 | 1.0 | 20 | 0 | 97.7 | 69 - 129 | | | | |
| 1,2,3-Trichloropropane | 18.36 | 1.0 | 20 | 0 | 91.8 | 73 - 122 | | | | |
| 1,2,4-Trichlorobenzene | 19.21 | 1.0 | 20 | 0 | 96.0 | 69 - 130 | | | | |
| 1,2,4-Trimethylbenzene | 18.82 | 1.0 | 20 | 0 | 94.1 | 76 - 124 | | | | |
| 1,2-Dibromo-3-chloropropane | 17.98 | 1.0 | 20 | 0 | 89.9 | 62 - 128 | | | | |
| 1,2-Dibromoethane | 17.37 | 1.0 | 20 | 0 | 86.9 | 77 - 121 | | | | |
| 1,2-Dichlorobenzene | 18.53 | 1.0 | 20 | 0 | 92.6 | 80 - 119 | | | | |
| 1,2-Dichloroethane | 15.72 | 1.0 | 20 | 0 | 78.6 | 73 - 128 | | | | |
| 1,2-Dichloropropane | 17.39 | 1.0 | 20 | 0 | 87.0 | 78 - 122 | | | | |
| 1,3,5-Trimethylbenzene | 19.23 | 1.0 | 20 | 0 | 96.2 | 75 - 124 | | | | |
| 1,3-Dichlorobenzene | 17.95 | 1.0 | 20 | 0 | 89.7 | 80 - 119 | | | | |
| 1,3-Dichloropropane | 17.13 | 1.0 | 20 | 0 | 85.6 | 80 - 119 | | | | |
| 1,4-Dichlorobenzene | 18.74 | 1.0 | 20 | 0 | 93.7 | 79 - 118 | | | | |
| 2,2-Dichloropropane | 16.59 | 1.0 | 20 | 0 | 82.9 | 60 - 139 | | | | |
| 2-Butanone | 41.79 | 2.0 | 40 | 0 | 104 | 56 - 143 | | | | |
| 2-Chlorotoluene | 18.52 | 1.0 | 20 | 0 | 92.6 | 79 - 122 | | | | |
| 2-Hexanone | 51.62 | 2.0 | 40 | 0 | 129 | 57 - 139 | | | | |
| 4-Chlorotoluene | 18.15 | 1.0 | 20 | 0 | 90.7 | 78 - 122 | | | | |
| 4-Isopropyltoluene | 19.1 | 1.0 | 20 | 0 | 95.5 | 77 - 127 | | | | |
| 4-Methyl-2-pentanone | 50.9 | 2.0 | 40 | 0 | 127 | 67 - 130 | | | | |
| Acetone | 33.15 | 2.0 | 40 | 0 | 82.9 | 39 - 160 | | | | |
| Benzene | 17.14 | 1.0 | 20 | 0 | 85.7 | 79 - 120 | | | | |
| Bromobenzene | 17.6 | 1.0 | 20 | 0 | 88.0 | 80 - 120 | | | | |
| Bromochloromethane | 15.55 | 1.0 | 20 | 0 | 77.7 | 78 - 123 | | | | S |
| Bromodichloromethane | 16.53 | 1.0 | 20 | 0 | 82.7 | 79 - 125 | | | | |
| Bromoform | 16.79 | 1.0 | 20 | 0 | 84.0 | 66 - 130 | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19080684-02MS** Units: **UG/L** Analysis Date: **14-Aug-2019 16:12**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210211** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 13.06 | 1.0 | 20 | 0 | 65.3 | 53 - 141 | | | | |
| Carbon disulfide | 48.23 | 2.0 | 40 | 0 | 121 | 64 - 133 | | | | |
| Carbon tetrachloride | 17.14 | 1.0 | 20 | 0 | 85.7 | 72 - 136 | | | | |
| Chlorobenzene | 17.43 | 1.0 | 20 | 0 | 87.2 | 82 - 118 | | | | |
| Chloroethane | 16.43 | 1.0 | 20 | 0 | 82.1 | 60 - 138 | | | | |
| Chloroform | 15.85 | 1.0 | 20 | 0 | 79.2 | 79 - 124 | | | | |
| Chloromethane | 10.94 | 1.0 | 20 | 0 | 54.7 | 50 - 139 | | | | |
| cis-1,2-Dichloroethene | 16.22 | 1.0 | 20 | 0 | 81.1 | 78 - 123 | | | | |
| cis-1,3-Dichloropropene | 16.88 | 1.0 | 20 | 0 | 84.4 | 75 - 124 | | | | |
| Dibromochloromethane | 16.94 | 1.0 | 20 | 0 | 84.7 | 74 - 126 | | | | |
| Dibromomethane | 16.32 | 1.0 | 20 | 0 | 81.6 | 79 - 123 | | | | |
| Dichlorodifluoromethane | 7.664 | 1.0 | 20 | 0 | 38.3 | 32 - 152 | | | | |
| Ethylbenzene | 18.41 | 1.0 | 20 | 0 | 92.0 | 79 - 121 | | | | |
| Hexachlorobutadiene | 20.68 | 1.0 | 20 | 0 | 103 | 66 - 134 | | | | |
| Isopropylbenzene | 18.69 | 1.0 | 20 | 0 | 93.4 | 72 - 131 | | | | |
| m,p-Xylene | 36.51 | 2.0 | 40 | 0 | 91.3 | 80 - 121 | | | | |
| Methylene chloride | 16.36 | 2.0 | 20 | 0 | 81.8 | 74 - 124 | | | | |
| Naphthalene | 18.23 | 1.0 | 20 | 0 | 91.1 | 61 - 128 | | | | |
| n-Butylbenzene | 19.41 | 1.0 | 20 | 0 | 97.1 | 75 - 128 | | | | |
| n-Propylbenzene | 19.41 | 1.0 | 20 | 0 | 97.1 | 76 - 126 | | | | |
| o-Xylene | 18.15 | 1.0 | 20 | 0 | 90.7 | 78 - 122 | | | | |
| sec-Butylbenzene | 19.26 | 1.0 | 20 | 0 | 96.3 | 77 - 126 | | | | |
| Styrene | 18.04 | 1.0 | 20 | 0 | 90.2 | 78 - 123 | | | | |
| tert-Butylbenzene | 19.08 | 1.0 | 20 | 0 | 95.4 | 78 - 124 | | | | |
| Tetrachloroethene | 18.39 | 1.0 | 20 | 0 | 91.9 | 74 - 129 | | | | |
| Toluene | 18.15 | 1.0 | 20 | 0 | 90.8 | 80 - 121 | | | | |
| trans-1,2-Dichloroethene | 15.98 | 1.0 | 20 | 0 | 79.9 | 75 - 124 | | | | |
| trans-1,3-Dichloropropene | 16.3 | 1.0 | 20 | 0 | 81.5 | 73 - 127 | | | | |
| Trichloroethene | 17.39 | 1.0 | 20 | 0 | 86.9 | 79 - 123 | | | | |
| Trichlorofluoromethane | 15.9 | 1.0 | 20 | 0 | 79.5 | 65 - 141 | | | | |
| Vinyl chloride | 13.77 | 1.0 | 20 | 0 | 68.8 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *45.59* | *1.0* | *50* | *0* | *91.2* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *50.91* | *1.0* | *50* | *0* | *102* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *46.9* | *1.0* | *50* | *0* | *93.8* | *80 - 119* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19080684-02MS** Units: **UG/L** Analysis Date: **14-Aug-2019 16:12**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210211** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *50.36* | *1.0* | *50* | *0* | *101* | *89 - 112* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID: R344280 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**MSD** Sample ID: **HS19080684-02MSD** Units: **UG/L** Analysis Date: **14-Aug-2019 16:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210212** 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 | 18.03 | 1.0 | 20 | 0 | 90.2 | 78 - 124 | 17.48 | 3.13 | 20 | |
| 1,1,1-Trichloroethane | 16.87 | 1.0 | 20 | 0 | 84.3 | 74 - 131 | 16.51 | 2.12 | 20 | |
| 1,1,2,2-Tetrachloroethane | 19.52 | 1.0 | 20 | 0 | 97.6 | 71 - 121 | 18.66 | 4.47 | 20 | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 18.71 | 1.0 | 20 | 0 | 93.5 | 70 - 136 | 18.88 | 0.89 | 20 | |
| 1,1,2-Trichloroethane | 18 | 1.0 | 20 | 0 | 90.0 | 80 - 119 | 17.6 | 2.23 | 20 | |
| 1,1-Dichloroethane | 16.22 | 1.0 | 20 | 0 | 81.1 | 77 - 125 | 16.01 | 1.33 | 20 | |
| 1,1-Dichloroethene | 16.61 | 1.0 | 20 | 0 | 83.1 | 71 - 131 | 16.59 | 0.135 | 20 | |
| 1,1-Dichloropropene | 17.68 | 1.0 | 20 | 0 | 88.4 | 78 - 125 | 17.36 | 1.83 | 20 | |
| 1,2,3-Trichlorobenzene | 21.26 | 1.0 | 20 | 0 | 106 | 69 - 129 | 19.54 | 8.45 | 20 | |
| 1,2,3-Trichloropropane | 19.27 | 1.0 | 20 | 0 | 96.3 | 73 - 122 | 18.36 | 4.84 | 20 | |
| 1,2,4-Trichlorobenzene | 20.38 | 1.0 | 20 | 0 | 102 | 69 - 130 | 19.21 | 5.91 | 20 | |
| 1,2,4-Trimethylbenzene | 19.4 | 1.0 | 20 | 0 | 97.0 | 76 - 124 | 18.82 | 3.05 | 20 | |
| 1,2-Dibromo-3-chloropropane | 19.27 | 1.0 | 20 | 0 | 96.3 | 62 - 128 | 17.98 | 6.91 | 20 | |
| 1,2-Dibromoethane | 18.34 | 1.0 | 20 | 0 | 91.7 | 77 - 121 | 17.37 | 5.46 | 20 | |
| 1,2-Dichlorobenzene | 19.4 | 1.0 | 20 | 0 | 97.0 | 80 - 119 | 18.53 | 4.6 | 20 | |
| 1,2-Dichloroethane | 16.43 | 1.0 | 20 | 0 | 82.2 | 73 - 128 | 15.72 | 4.41 | 20 | |
| 1,2-Dichloropropane | 18.22 | 1.0 | 20 | 0 | 91.1 | 78 - 122 | 17.39 | 4.68 | 20 | |
| 1,3,5-Trimethylbenzene | 19.46 | 1.0 | 20 | 0 | 97.3 | 75 - 124 | 19.23 | 1.18 | 20 | |
| 1,3-Dichlorobenzene | 18.41 | 1.0 | 20 | 0 | 92.0 | 80 - 119 | 17.95 | 2.53 | 20 | |
| 1,3-Dichloropropane | 18.32 | 1.0 | 20 | 0 | 91.6 | 80 - 119 | 17.13 | 6.72 | 20 | |
| 1,4-Dichlorobenzene | 19.3 | 1.0 | 20 | 0 | 96.5 | 79 - 118 | 18.74 | 2.92 | 20 | |
| 2,2-Dichloropropane | 16.9 | 1.0 | 20 | 0 | 84.5 | 60 - 139 | 16.59 | 1.86 | 20 | |
| 2-Butanone | 44.9 | 2.0 | 40 | 0 | 112 | 56 - 143 | 41.79 | 7.17 | 20 | |
| 2-Chlorotoluene | 18.87 | 1.0 | 20 | 0 | 94.4 | 79 - 122 | 18.52 | 1.91 | 20 | |
| 2-Hexanone | 54.85 | 2.0 | 40 | 0 | 137 | 57 - 139 | 51.62 | 6.08 | 20 | |
| 4-Chlorotoluene | 18.63 | 1.0 | 20 | 0 | 93.1 | 78 - 122 | 18.15 | 2.61 | 20 | |
| 4-Isopropyltoluene | 19.56 | 1.0 | 20 | 0 | 97.8 | 77 - 127 | 19.1 | 2.39 | 20 | |
| 4-Methyl-2-pentanone | 54.81 | 2.0 | 40 | 0 | 137 | 67 - 130 | 50.9 | 7.4 | 20 | S |
| Acetone | 34.89 | 2.0 | 40 | 0 | 87.2 | 39 - 160 | 33.15 | 5.13 | 20 | |
| Benzene | 17.51 | 1.0 | 20 | 0 | 87.6 | 79 - 120 | 17.14 | 2.14 | 20 | |
| Bromobenzene | 17.9 | 1.0 | 20 | 0 | 89.5 | 80 - 120 | 17.6 | 1.69 | 20 | |
| Bromochloromethane | 15.91 | 1.0 | 20 | 0 | 79.5 | 78 - 123 | 15.55 | 2.3 | 20 | |
| Bromodichloromethane | 17.08 | 1.0 | 20 | 0 | 85.4 | 79 - 125 | 16.53 | 3.29 | 20 | |
| Bromoform | 17.99 | 1.0 | 20 | 0 | 89.9 | 66 - 130 | 16.79 | 6.87 | 20 | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19080684-02MSD** Units: **UG/L** Analysis Date: **14-Aug-2019 16:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210212** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 12.21 | 1.0 | 20 | 0 | 61.0 | 53 - 141 | 13.06 | 6.71 | 20 | |
| Carbon disulfide | 48.74 | 2.0 | 40 | 0 | 122 | 64 - 133 | 48.23 | 1.04 | 20 | |
| Carbon tetrachloride | 17.45 | 1.0 | 20 | 0 | 87.2 | 72 - 136 | 17.14 | 1.78 | 20 | |
| Chlorobenzene | 18.14 | 1.0 | 20 | 0 | 90.7 | 82 - 118 | 17.43 | 3.96 | 20 | |
| Chloroethane | 15.33 | 1.0 | 20 | 0 | 76.6 | 60 - 138 | 16.43 | 6.95 | 20 | |
| Chloroform | 16.34 | 1.0 | 20 | 0 | 81.7 | 79 - 124 | 15.85 | 3.07 | 20 | |
| Chloromethane | 10.55 | 1.0 | 20 | 0 | 52.7 | 50 - 139 | 10.94 | 3.7 | 20 | |
| cis-1,2-Dichloroethene | 16.41 | 1.0 | 20 | 0 | 82.1 | 78 - 123 | 16.22 | 1.15 | 20 | |
| cis-1,3-Dichloropropene | 17.66 | 1.0 | 20 | 0 | 88.3 | 75 - 124 | 16.88 | 4.51 | 20 | |
| Dibromochloromethane | 17.81 | 1.0 | 20 | 0 | 89.1 | 74 - 126 | 16.94 | 5 | 20 | |
| Dibromomethane | 17.17 | 1.0 | 20 | 0 | 85.8 | 79 - 123 | 16.32 | 5.09 | 20 | |
| Dichlorodifluoromethane | 7.5 | 1.0 | 20 | 0 | 37.5 | 32 - 152 | 7.664 | 2.16 | 20 | |
| Ethylbenzene | 18.83 | 1.0 | 20 | 0 | 94.2 | 79 - 121 | 18.41 | 2.28 | 20 | |
| Hexachlorobutadiene | 22.04 | 1.0 | 20 | 0 | 110 | 66 - 134 | 20.68 | 6.36 | 20 | |
| Isopropylbenzene | 19.34 | 1.0 | 20 | 0 | 96.7 | 72 - 131 | 18.69 | 3.45 | 20 | |
| m,p-Xylene | 37.74 | 2.0 | 40 | 0 | 94.3 | 80 - 121 | 36.51 | 3.3 | 20 | |
| Methylene chloride | 16.57 | 2.0 | 20 | 0 | 82.9 | 74 - 124 | 16.36 | 1.32 | 20 | |
| Naphthalene | 19.95 | 1.0 | 20 | 0 | 99.8 | 61 - 128 | 18.23 | 9.04 | 20 | |
| n-Butylbenzene | 19.96 | 1.0 | 20 | 0 | 99.8 | 75 - 128 | 19.41 | 2.78 | 20 | |
| n-Propylbenzene | 19.61 | 1.0 | 20 | 0 | 98.0 | 76 - 126 | 19.41 | 1.02 | 20 | |
| o-Xylene | 18.75 | 1.0 | 20 | 0 | 93.8 | 78 - 122 | 18.15 | 3.27 | 20 | |
| sec-Butylbenzene | 19.61 | 1.0 | 20 | 0 | 98.0 | 77 - 126 | 19.26 | 1.78 | 20 | |
| Styrene | 18.71 | 1.0 | 20 | 0 | 93.6 | 78 - 123 | 18.04 | 3.67 | 20 | |
| tert-Butylbenzene | 19.42 | 1.0 | 20 | 0 | 97.1 | 78 - 124 | 19.08 | 1.75 | 20 | |
| Tetrachloroethene | 18.98 | 1.0 | 20 | 0 | 94.9 | 74 - 129 | 18.39 | 3.19 | 20 | |
| Toluene | 18.79 | 1.0 | 20 | 0 | 93.9 | 80 - 121 | 18.15 | 3.44 | 20 | |
| trans-1,2-Dichloroethene | 16.33 | 1.0 | 20 | 0 | 81.7 | 75 - 124 | 15.98 | 2.16 | 20 | |
| trans-1,3-Dichloropropene | 17.02 | 1.0 | 20 | 0 | 85.1 | 73 - 127 | 16.3 | 4.35 | 20 | |
| Trichloroethene | 17.8 | 1.0 | 20 | 0 | 89.0 | 79 - 123 | 17.39 | 2.36 | 20 | |
| Trichlorofluoromethane | 15.84 | 1.0 | 20 | 0 | 79.2 | 65 - 141 | 15.9 | 0.355 | 20 | |
| Vinyl chloride | 13.85 | 1.0 | 20 | 0 | 69.3 | 58 - 137 | 13.77 | 0.63 | 20 | |
| *Surr: 1,2-Dichloroethane-d4* | *45.6* | *1.0* | *50* | *0* | *91.2* | *81 - 118* | *45.59* | *0.0116* | *20* | |
| *Surr: 4-Bromofluorobenzene* | *50.87* | *1.0* | *50* | *0* | *102* | *85 - 114* | *50.91* | *0.065* | *20* | |
| *Surr: Dibromofluoromethane* | *46.13* | *1.0* | *50* | *0* | *92.3* | *80 - 119* | *46.9* | *1.65* | *20* | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19080684-02MSD** Units: **UG/L** Analysis Date: **14-Aug-2019 16:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210212** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *50.22* | *1.0* | *50* | *0* | *100* | *89 - 112* | *50.36* | *0.286* | *20* | |

**The following samples were analyzed in this batch:**

| | | | |
|---|---|---|---|
| HS19080637-01 | HS19080637-02 | HS19080637-03 | HS19080637-04 |
| HS19080637-05 | HS19080637-06 | HS19080637-07 | HS19080637-08 |
| HS19080637-09 | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID: R344398 ( 0 )** **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

**MBLK** Sample ID: **WBLKW1-081419** Units: **mg/L** Analysis Date: **14-Aug-2019 14:14**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212625** 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 |
| Sulfate | 0.500 | 0.500 | | | | | | | | U |

**LCS** Sample ID: **WLCSW1-081419** Units: **mg/L** Analysis Date: **14-Aug-2019 14:30**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212626** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.04 | 0.500 | 20 | 0 | 100 | 80 - 120 | | | | |
| Sulfate | 20.25 | 0.500 | 20 | 0 | 101 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW1-081419** Units: **mg/L** Analysis Date: **14-Aug-2019 14:47**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212627** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.02 | 0.500 | 20 | 0 | 100 | 80 - 120 | 20.04 | 0.11 | 20 | |
| Sulfate | 20.09 | 0.500 | 20 | 0 | 100 | 80 - 120 | 20.25 | 0.787 | 20 | |

**MS** Sample ID: **HS19080684-02MS** Units: **mg/L** Analysis Date: **14-Aug-2019 18:27**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212633** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 302 | 0.500 | 10 | 299.4 | 26.1 | 80 - 120 | | | | SEO |
| Sulfate | 709.1 | 0.500 | 10 | 717.8 | -86.9 | 80 - 120 | | | | SEO |

**MSD** Sample ID: **HS19080684-02MSD** Units: **mg/L** Analysis Date: **14-Aug-2019 18:44**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212634** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 303.5 | 0.500 | 10 | 299.4 | 40.4 | 80 - 120 | 302 | 0.475 | 20 | SEO |
| Sulfate | 714 | 0.500 | 10 | 717.8 | -37.3 | 80 - 120 | 709.1 | 0.697 | 20 | SEO |

**The following samples were analyzed in this batch:** HS19080637-02 HS19080637-03 HS19080637-04 HS19080637-06

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080637

**QC BATCH REPORT**

**Batch ID: R344399 ( 0 )** **Instrument: ICS2100** **Method: ANIONS BY SW9056A**

**MBLK** Sample ID: **WBLKW1-081319** Units: **mg/L** Analysis Date: **13-Aug-2019 19:05**
Client ID: Run ID: **ICS2100_344399** SeqNo: **5212683** 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 |

**LCS** Sample ID: **WLCSW1-081319** Units: **mg/L** Analysis Date: **13-Aug-2019 19:20**
Client ID: Run ID: **ICS2100_344399** SeqNo: **5212684** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.19 | 0.500 | 20 | 0 | 101 | 80 - 120 | | | | |
| Nitrogen, Nitrate (As N) | 3.926 | 0.100 | 4 | 0 | 98.2 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW1-081319** Units: **mg/L** Analysis Date: **13-Aug-2019 19:34**
Client ID: Run ID: **ICS2100_344399** SeqNo: **5212685** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 19.51 | 0.500 | 20 | 0 | 97.6 | 80 - 120 | 20.19 | 3.39 | 20 | |
| Nitrogen, Nitrate (As N) | 3.783 | 0.100 | 4 | 0 | 94.6 | 80 - 120 | 3.926 | 3.71 | 20 | |

**MS** Sample ID: **HS19080637-02MS** Units: **mg/L** Analysis Date: **13-Aug-2019 20:04**
Client ID: **46WW02-190812** Run ID: **ICS2100_344399** SeqNo: **5212687** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 22.66 | 0.500 | 10 | 13.95 | 87.1 | 80 - 120 | | | | |
| Nitrogen, Nitrate (As N) | 2.175 | 0.100 | 2 | 0 | 109 | 80 - 120 | | | | |

**MSD** Sample ID: **HS19080637-02MSD** Units: **mg/L** Analysis Date: **13-Aug-2019 20:18**
Client ID: **46WW02-190812** Run ID: **ICS2100_344399** SeqNo: **5212688** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 23.58 | 0.500 | 10 | 13.95 | 96.3 | 80 - 120 | 22.66 | 3.98 | 20 | |
| Nitrogen, Nitrate (As N) | 2.241 | 0.100 | 2 | 0 | 112 | 80 - 120 | 2.175 | 2.99 | 20 | |

**The following samples were analyzed in this batch:** HS19080637-02 HS19080637-03 HS19080637-04 HS19080637-06

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** **HS19080637**

**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 Houston, US** Date: 30-Aug-19

## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| Arkansas | 19-028-0 | 27-Mar-2020 |
| California | 2919, 2019-2020 | 30-Apr-2020 |
| Dept of Defense | ANAB L2231 | 20-Dec-2021 |
| Kansas | E-10352 2019-2020 | 31-Jul-2020 |
| Kentucky | 123043, 2019-2020 | 30-Apr-2020 |
| Louisiana | 03087, 2019-2020 | 30-Jun-2020 |
| Maryland | 343, 2019-2020 | 30-Jun-2020 |
| North Carolina | 624-2019 | 31-Dec-2019 |
| North Dakota | R-193 2019 | 30-Apr-2020 |
| Oklahoma | 2019-141 | 31-Aug-2020 |
| Oklahoma | 2018-156 | 31-Aug-2019 |
| Texas | TX104704231-19-23 | 30-Apr-2020 |

00971694

**ALS Houston, US** Date: 30-Aug-19

## Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19080637
Date/Time Received: **13-Aug-2019 10:30**
Received by: **NDD**

Checklist completed by: *Paresh M. Giga* 13-Aug-2019
eSignature | Date

Reviewed by: *RJ Modashia* 13-Aug-2019
eSignature | Date

Matrices: **Groundwater/Water**
Carrier name: **UPS**

| | | | |
|---|---|---|---|
| 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 ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:LHAAP46-AUG2019-ALS |
| Samplers name present on COC? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| 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): | 4.2c U/C | IR25 |
| Cooler(s)/Kit(s): | 44858 | |
| Date/Time sample(s) sent to storage: | 8/13/19 13:25 | |

| | | | |
|---|---|---|---|
| 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: LHAAP46-AUG2019-ALS | TURNAROUND TIME: | RUSH:

| PROJECT/CLIENT INFO | | | | LABORATORY | | | | OTHER INFO | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Name | Longhorn AAP | | | Lab Name | ALS Laboratories | | | Email Invoice To | FedInvoices@aptim.com | | |
| Project Number | 501032 | | | Lab Contact | RJ Modashia | | | | | | |
| | LHAAP-46 | | | Email | RJ.Modashia@alsglobal.com | | | Email Report To | Susan.Huang@aptim.com | | |
| Address | 1203-B East Grand Avenue | | | Address | 10450 Stancliff Rd., Suite 210 | | | Mail Reports To | Susan Huang | | |
| | PMB 202 | | | | | | | Address | 4005 Port Chicago Highway, Suite 200 | | |
| City | Marshall | State | TX | City | Houston | State | TX | City | Concord | State | CA |
| Postal Code | 75670 | Country | USA | Postal Code | 77099 | Country | USA | Postal Code | 94520 | 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 | Sample Container and Preservatives: 3-40 ml VOA/HCL — Vocs by 8260B | 3-40 ml VOA/HCL — MEE by RSK175 | 3-40 ml VOA/Cool to 6 deg C — CO2 by RSK175 | 2-40ml Amber/H2SO4 — TOC by Sm5310C | 1-250ml /Cool to 6 deg C — Anions (chloride/sulfate/nitrate) by 9056 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46mw03-190812 | LHAAP 46 | 41.19 | 41.37 | | WG | 8/12/19 | 0755 | 3 | | X | | | | |
| 46mw02-190812 | LHAAP 46 | 38.23 | 38.44 | | WG | 8/12/19 | 0840 | 12 | | X | X | X | X | X |
| 46mw11-190812 | LHAAP46 | 24.62 | 24.86 | | WG | 8/12/19 | 0935 | 12 | | X | X | X | X | X |
| 46mw11-190812-FD | LHAAP46 | 24.62 | 24.86 | | WG | 8/12/19 | 0935 | 12 | | X | X | X | X | X |
| LHSmw19-190812 | LHAAP 46 | 24.70 | 24.95 | | WG | 8/12/19 | 1035 | 3 | | X | | | | |
| 46mw09-190812 | LHAAP 46 | 38.40 | 38.63 | | WG | 8/12/19 | 1125 | 12 | | X | X | X | X | X |
| 46mw07-190812 | LHAAP 46 | 36.42 | 36.64 | | WG | 8/12/19 | 1225 | 3 | | X | | | | |
| LHSmw25-190812 | LHAAP 46 | 29.85 | 30.07 | | WG | 8/12/19 | 1315 | 3 | | X | | | | |
| TRIP BLANK | LHAAP 46 | | | | W | 8/12/19 | | 2 | | X | | | | |

HS19080637

Aptim Environmental & Infrastucture. Inc.

LHAAP-46

| ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME |
|---|---|---|---|---|
| ND 08/13/19 10:30 VIC<br>Temp 4.2 BR+25<br>Cooler # 44858 | Susan Berger/ BNMC | 8/12/19 1500 | ND | 8/13/19 10:30 |

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5687

1114858

**CUSTODY SEAL**

Date: 8/12/19 Time: 1500
Name: Scott Beissner
Company: Burns

Seal Broken By: SMA
Date: 08/13/19

1114858

AUG 13 2019

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DATE OF SHIPMENT

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United Parcel Service, Louisville, KY

ALS Environmental
ALS Group USA, Corp
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August 30, 2019 **Analytical Report for Service Request No:** K1907469

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

**RE: HS19080637**

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory August 14, 2019
For your reference, these analyses have been assigned our service request number **K1907469.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Kelley Lovejoy

Kelley Lovejoy
Project Manager

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**Acronyms**

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| A2LA | American Association for Laboratory Accreditation |
| CARB | California Air Resources Board |
| CAS Number | Chemical Abstract Service registry Number |
| CFC | Chlorofluorocarbon |
| CFU | Colony-Forming Unit |
| DEC | Department of Environmental Conservation |
| DEQ | Department of Environmental Quality |
| DHS | Department of Health Services |
| DOE | Department of Ecology |
| DOH | Department of Health |
| EPA | U. S. Environmental Protection Agency |
| ELAP | Environmental Laboratory Accreditation Program |
| GC | Gas Chromatography |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| LUFT | Leaking Underground Fuel Tank |
| M | Modified |
| MCL | Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA. |
| MDL | Method Detection Limit |
| MPN | Most Probable Number |
| MRL | Method Reporting Limit |
| NA | Not Applicable |
| NC | Not Calculated |
| NCASI | National Council of the Paper Industry for Air and Stream Improvement |
| ND | Not Detected |
| NIOSH | National Institute for Occupational Safety and Health |
| PQL | Practical Quantitation Limit |
| RCRA | Resource Conservation and Recovery Act |
| SIM | Selected Ion Monitoring |
| TPH | Total Petroleum Hydrocarbons |
| tr | Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL. |

## Inorganic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| E | The result is an estimate amount because the value exceeded the instrument calibration range. |
| J | The result is an estimated value. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |
| H | The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory. |

## Metals Data Qualifiers

| | |
|---|---|
| # | The control limit criteria is not applicable. See case narrative. |
| J | The result is an estimated value. |
| E | The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample. |
| M | The duplicate injection precision was not met. |
| N | The Matrix Spike sample recovery is not within control limits. See case narrative. |
| S | The reported value was determined by the Method of Standard Additions (MSA). |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| W | The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| + | The correlation coefficient for the MSA is less than 0.995. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Organic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| A | A tentatively identified compound, a suspected aldol-condensation product. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| C | The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data. |
| D | The reported result is from a dilution. |
| E | The result is an estimated value. |
| J | The result is an estimated value. |
| N | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| P | The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Additional Petroleum Hydrocarbon Specific Qualifiers

| | |
|---|---|
| F | The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard. |
| L | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard. |
| H | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard. |
| O | The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard. |
| Y | The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard. |
| Z | The chromatographic fingerprint does not resemble a petroleum product. |

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso**
**State Certifications, Accreditations, and Licenses**

| Agency | Web Site | Number |
|---|---|---|
| Alaska DEH | http://dec.alaska.gov/eh/lab/cs/csapproval.htm | UST-040 |
| Arizona DHS | http://www.azdhs.gov/lab/license/env.htm | AZ0339 |
| Arkansas - DEQ | http://www.adeq.state.ar.us/techsvs/labcert.htm | 88-0637 |
| California DHS (ELAP) | http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx | 2795 |
| DOD ELAP | http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm | L16-58-R4 |
| Florida DOH | http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm | E87412 |
| Hawaii DOH | http://health.hawaii.gov/ | - |
| ISO 17025 | http://www.pjlabs.com/ | L16-57 |
| Louisiana DEQ | http://www.deq.louisiana.gov/page/la-lab-accreditation | 03016 |
| Maine DHS | http://www.maine.gov/dhhs/ | WA01276 |
| Minnesota DOH | http://www.health.state.mn.us/accreditation | 053-999-457 |
| Nevada DEP | http://ndep.nv.gov/bsdw/labservice.htm | WA01276 |
| New Jersey DEP | http://www.nj.gov/dep/enforcement/oqa.html | WA005 |
| New York - DOH | https://www.wadsworth.org/regulatory/elap | 12060 |
| North Carolina DEQ | https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification | 605 |
| Oklahoma DEQ | http://www.deq.state.ok.us/CSDnew/labcert.htm | 9801 |
| Oregon – DEQ (NELAP) | http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx | WA100010 |
| South Carolina DHEC | http://www.scdhec.gov/environment/EnvironmentalLabCertification/ | 61002 |
| Texas CEQ | http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html | T104704427 |
| Washington DOE | http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html | C544 |
| Wyoming (EPA Region 8) | https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water- | - |
| Kelso Laboratory Website | www.alsglobal.com | NA |

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

# Case Narrative

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

**Client:** ALS Environmental - US
**Project:** HS19080637
**Sample Matrix:** Ground Water

**Service Request:** K1907469
**Date Received:** 08/14/2019

## CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

**Sample Receipt:**

Four ground water samples were received for analysis at ALS Environmental on 08/14/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**General Chemistry:**

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 08/30/2019

# Chain of Custody

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
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# Subcontract Chain of Custody

**SAMPLING STATE:** **Texas** **COC ID:** **11969**

**SUBCONTRACT TO:**

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

**Phone:** +1 360 501 3312

K1907469

**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:** | |
| **Email:** | |

**INVOICE INFORMATION:**

| | |
|---|---|
| **Company:** | ALS Houston |
| **Contact:** | Accounts Payable |
| **Address:** | 10450 Stancliff Rd, Ste 210 |
| **Phone:** | +1 281 530 5656 |
| **Reference:** | HS19080637 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| **1.** | **HS19080637-02** | **46WW02-190812** | **Groundwater** | **12 Aug 2019 08:40** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 27 Aug 2019 |
| **2.** | **HS19080637-03** | **46WW11-190812** | **Groundwater** | **12 Aug 2019 09:35** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 27 Aug 2019 |
| **3.** | **HS19080637-04** | **46WW1-190812-FD** | **Groundwater** | **12 Aug 2019 09:35** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 27 Aug 2019 |
| **4.** | **HS19080637-06** | **46WW09-190812** | **Groundwater** | **12 Aug 2019 11:25** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 27 Aug 2019 |

**Comments:** Please analyze for the analysis listed above.
Send report to the emails shown above.

**QC Level:** DOD IV (DoD Data Package)

Relinquished By: J. MAKAMV Date/Time: 8/13/19 18:00

Received By: Date/Time: 8/14/19 1000

Cooler ID(s): Temperature(s):

PC KL

## Cooler Receipt and Preservation Form

Client ALS Houston Service Request K19 07469

Received: 8/14/19 Opened: 8/14/19 By: CG Unloaded: 8/14/19 By: CG

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

| Raw Cooler Temp | Corrected Cooler Temp | Raw Temp Blank | Corrected Temp Blank | Corr. Factor | Thermometer ID | Cooler/COC ID NA | Tracking Number NA | Filed |
|---|---|---|---|---|---|---|---|---|
| -0.6 | -0.4 | 0.3 | 0.5 | +0.2 | 371 | 11969 | 4809 7836 7064 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

| Sample ID on Bottle | Sample ID on COC | Identified by: |
|---|---|---|
| | | |
| | | |
| | | |

| Sample ID | Bottle Count Bottle Type | Out of Temp | Head-space | Broke | pH | Reagent | Volume added | Reagent Lot Number | Initials | Time |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

*Notes, Discrepancies, & Resolutions:* _____

# General Chemistry

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636-1 068
www.alsglobal.com

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907469 |
| **Project:** | HS19080637 | **Date Collected:** | 08/12/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 08/14/19 |
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |

**Carbon, Total Organic**

| Sample Name | Lab Code | Result | LOQ | LOD | MDL | Dil. | Date Analyzed | Q |
|---|---|---|---|---|---|---|---|---|
| 46WW02-190812 | K1907469-001 | **7.63** | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 05:44 | |
| 46WW11-190812 | K1907469-002 | **1.50** | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 06:12 | |
| 46WW1-190812-FD | K1907469-003 | **1.37** | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 07:09 | |
| 46WW09-190812 | K1907469-004 | **3.84** | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 07:37 | |
| Method Blank | K1907469-MB | ND U | 0.50 | 0.20 | 0.07 | 1 | 08/27/19 23:36 | |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907469 |
| **Project** | HS19080637 | **Date Collected:** | 08/12/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 08/14/19 |
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |

**Replicate Sample Summary**
**Carbon, Total Organic**

| Sample Name: | Lab Code: | LOQ | LOD | MDL | Sample Result | Duplicate Result | Average | RPD | RPD Limit | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 46WW02-190812 | K1907469-001DUP | 0.50 | 0.20 | 0.07 | 7.63 | 7.41 | 7.52 | 3 | 10 | 08/28/19 |
| 46WW11-190812 | K1907469-002DUP | 0.50 | 0.20 | 0.07 | 1.50 | 1.49 | 1.49 | <1 | 10 | 08/28/19 |
| 46WW1-190812-FD | K1907469-003DUP | 0.50 | 0.20 | 0.07 | 1.37 | 1.41 | 1.39 | 3 | 10 | 08/28/19 |
| 46WW09-190812 | K1907469-004DUP | 0.50 | 0.20 | 0.07 | 3.84 | 3.77 | 3.80 | 2 | 10 | 08/28/19 |

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

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907469 |
| **Project:** | HS19080637 | **Date Collected:** | 08/12/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 08/14/19 |
| | | **Date Analyzed:** | 08/28/19 |
| | | **Date Extracted:** | NA |

**Matrix Spike Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Sample Name:** | 46WW11-190812 | **Units:** | mg/L |
| **Lab Code:** | K1907469-002 | **Basis:** | NA |
| **Analysis Method:** | SM 5310 C | | |
| **Prep Method:** | None | | |

**Matrix Spike**
K1907469-002MS

| Analyte Name | Sample Result | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Carbon, Total Organic | 1.50 | 26.9 | 25.0 | 102 | 83-117 |

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

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907469 |
| **Project:** | HS19080637 | **Date Analyzed:** | 08/27/19 |
| **Sample Matrix:** | Ground Water | **Date Extracted:** | NA |

**Lab Control Sample Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |
| | | **Analysis Lot:** | 648996 |

| Sample Name | Lab Code | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Lab Control Sample | K1907469-LCS | 25.2 | 25.0 | 101 | 83-117 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:** K1907469
**Project:** HS19080637

## Continuing Calibration Verification (CCV) Summary

### Carbon, Total Organic

**Analysis Method:** SM 5310 C **Units:** mg/L

| | Analysis Lot | Lab Code | Date Analyzed | True Value | Measured Value | Percent Recovery | Acceptance Limits |
|---|---|---|---|---|---|---|---|
| CCV1 | 648996 | KQ1912156-05 | 08/27/19 23:07 | 25.0 | 25.0 | 100 | 90-110 |
| CCV2 | 648996 | KQ1912156-06 | 08/28/19 03:50 | 25.0 | 24.6 | 98 | 90-110 |
| CCV3 | 648996 | KQ1912156-07 | 08/28/19 08:33 | 25.0 | 24.5 | 98 | 90-110 |
| CCV4 | 648996 | KQ1912156-08 | 08/28/19 13:44 | 25.0 | 25.6 | 102 | 90-110 |
| CCV5 | 648996 | KQ1912156-09 | 08/28/19 18:28 | 25.0 | 25.0 | 100 | 90-110 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:**K1907469
**Project:** HS19080637

## Continuing Calibration Blank (CCB) Summary
### Carbon, Total Organic

**Analysis Method:** SM 5310 C **Units:**mg/L

| | Analysis Lot | Lab Code | Date Analyzed | LOQ | LOD | MDL | Result | Q |
|---|---|---|---|---|---|---|---|---|
| CCB1 | 648996 | KQ1912156-10 | 08/27/19 23:21 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB2 | 648996 | KQ1912156-11 | 08/28/19 04:04 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB3 | 648996 | KQ1912156-12 | 08/28/19 08:48 | 0.50 | 0.20 | 0.07 | ND | U |
| CCB4 | 648996 | KQ1912156-13 | 08/28/19 13:59 | 0.50 | 0.20 | 0.07 | 0.37 | J |
| CCB5 | 648996 | KQ1912156-14 | 08/28/19 18:43 | 0.50 | 0.20 | 0.07 | ND | U |

# Raw Data

**ALS Environmental—Kelso Laboratory**
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# General Chemistry

**ALS Environmental—Kelso Laboratory**
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Work Request # Original (K190 ) 7294, 7303, 7495, 7279, 7469, 7474, 7476, 7552, 7535, 7548, 7526, 7311, 7413, 7440, 7456

Tier: I II II I IV II II IV I II IV II I

Date Analyzed: 8/27/19

Analyst: HLM/BCD

Analysis: TOC/DOC

TOC: 648995, 648996, 648997,

Run # DOC: 648998

## DATA QUALITY REPORT
## INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

| | | |
|---|---|---|
| 1. | Is the method name and number correct and appropriate? | yes/no/NA |
| 2. | Holding times met for all analyses and for all samples? | yes/no/NA |
| 3. | Are calculations correct? | yes/no/NA |
| 4. | Is the reporting basis correct? (Dry Weight) | yes/no/NA |
| 5. | All quality control criteria met? | yes/no |
| 6. | Is the calibration curve correlation coefficient ≥ 0.995? | yes/no/NA |
| 7. | MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? | yes/no/NA |
| 8. | Are ICVs, CCVs, and CCBs all within acceptance limits? | yes/no/NA |
| 9. | Are results for methods blanks all ND? | yes/no/NA |
| 10. | Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) | yes/no/NA |
| 11. | Are all exceptions explained? | yes/no/NA |
| 12. | Have all applicable service requests been reviewed? | yes/no/NA |
| 13. | Are all samples labeled correctly? | yes/no/NA |
| 14. | Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V) | yes/no/NA |
| 15. | Are detection limits and units reported correctly? | yes/no/NA |
| 16. | Is the unused space on the benchsheet crossed out? | yes/no/NA |
| 17. | Was analysis turned in by the due date? (n-2) (If not record SR#) | yes/no/NA |

**COMMENTS:**
K1907548-2,2D & K1907311-3,3D present high percent RPD. However, they are less than 5x the MRL.

Final Approved by: _____ Date: 8/29/19

DQREPORT

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648995 **Method/Testcode:** 415.1/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907294-001 | Carbon, Total Organic | N/A | | Drinking Water | 1.38 mg/L | 10 ml | 1.38 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 15:07 | N | I |
| K1907294-002 | Carbon, Total Organic | N/A | | Drinking Water | 0.72 mg/L | 10 ml | 0.72 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 16:05 | N | I |
| K1907303-001 | Carbon, Total Organic | N/A | | Water | 2.69 mg/L | 10 ml | 2.69 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 16:33 | N | II |
| K1907303-002 | Carbon, Total Organic | N/A | | Water | 2.65 mg/L | 10 ml | 2.65 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 17:01 | N | II |
| K1907303-003 | Carbon, Total Organic | N/A | | Water | 3.48 mg/L | 10 ml | 3.48 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 17:29 | N | II |
| K1907303-004 | Carbon, Total Organic | N/A | | Water | 1.78 mg/L | 10 ml | 36 mg/L | 20 | 2 | 10 | | | 8/27/19 18:26 | N | II |
| K1907495-001 | Carbon, Total Organic | N/A | | Water | 0.45 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 18:54 | N | II |
| K1907495-002 | Carbon, Total Organic | N/A | | Water | 9.14 mg/L | 10 ml | 9.14 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 19:22 | N | II |
| K1907495-008 | Carbon, Total Organic | N/A | | Water | 0.58 mg/L | 10 ml | 0.58 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 19:50 | N | II |
| K1907495-009 | Carbon, Total Organic | N/A | | Water | 0.58 mg/L | 10 ml | 0.58 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 20:19 | N | II |
| K1907495-010 | Carbon, Total Organic | N/A | | Water | 8.97 mg/L | 10 ml | 8.97 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 20:47 | N | II |
| K1907495-011 | Carbon, Total Organic | N/A | | Water | 10.02 mg/L | 10 ml | 10.0 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 21:15 | N | II |
| K1907495-012 | Carbon, Total Organic | N/A | | Water | 3.52 mg/L | 10 ml | 3.52 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 21:43 | N | II |
| K1907495-013 | Carbon, Total Organic | N/A | | Water | 5.18 mg/L | 10 ml | 5.18 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 22:11 | N | II |
| K1907495-014 | Carbon, Total Organic | N/A | | Water | 0.56 mg/L | 10 ml | 0.56 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 22:39 | N | II |
| K1907495-022 | Carbon, Total Organic | N/A | | Water | 0.24 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 00:05 | N | II |
| K1907495-023 | Carbon, Total Organic | N/A | | Water | 1.00 mg/L | 10 ml | 1.00 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 00:33 | N | II |
| K1907495-024 | Carbon, Total Organic | N/A | | Water | 1.17 mg/L | 10 ml | 1.17 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 01:01 | N | II |
| K1907495-027 | Carbon, Total Organic | N/A | | Water | 0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 01:30 | N | II |
| K1907495-028 | Carbon, Total Organic | N/A | | Water | 3.84 mg/L | 10 ml | 3.84 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 01:58 | N | II |
| KQ1912155-01 | Carbon, Total Organic | MS | K1907294-001 | Drinking Water | 26.82 mg/L | 10 ml | 26.8 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/27/19 15:35 | N | I |
| KQ1912155-02 | Carbon, Total Organic | CCV | | Drinking Water | 25.31 mg/L | 10 ml | 25.3 mg/L | 1 | | | | | 8/27/19 13:53 | N | I |
| KQ1912155-03 | Carbon, Total Organic | CCV | | Drinking Water | 24.78 mg/L | 10 ml | 24.8 mg/L | 1 | | | | | 8/27/19 17:57 | N | I |
| KQ1912155-04 | Carbon, Total Organic | CCV | | Drinking Water | 24.97 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/27/19 23:07 | N | I |
| KQ1912155-05 | Carbon, Total Organic | CCV | | Drinking Water | 24.55 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 03:50 | N | I |
| KQ1912155-06 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 14:08 | N | I |
| KQ1912155-07 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 18:11 | N | I |
| KQ1912155-08 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:21 | N | I |
| KQ1912155-09 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 04:04 | N | I |
| KQ1912155-10 | Carbon, Total Organic | MB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 14:23 | N | I |
| KQ1912155-11 | Carbon, Total Organic | LCS | | Drinking Water | 25.16 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/27/19 14:38 | N | I |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

8/29/19

HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648995 **Method/Testcode:** 415.1/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912155-12 | Carbon, Total Organic | DUP | K1907294-001 | Drinking Water | 1.34 mg/L | 10 ml | 1.34 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/27/19 15:07 | N | I |
| KQ1912155-13 | Carbon, Total Organic | DUP | K1907294-002 | Drinking Water | 0.71 mg/L | 10 ml | 0.71 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 16:05 | N | I |
| KQ1912155-14 | Carbon, Total Organic | DUP | K1907303-001 | Water | 2.67 mg/L | 10 ml | 2.67 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 16:33 | N | II |
| KQ1912155-15 | Carbon, Total Organic | DUP | K1907303-002 | Water | 2.68 mg/L | 10 ml | 2.68 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/27/19 17:01 | N | II |
| KQ1912155-16 | Carbon, Total Organic | DUP | K1907303-003 | Water | 3.49 mg/L | 10 ml | 3.49 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 17:29 | N | II |
| KQ1912155-17 | Carbon, Total Organic | DUP | K1907303-004 | Water | 1.87 mg/L | 10 ml | 37 mg/L | 20 | 2 | 10 | | 5 | 8/27/19 18:26 | N | II |
| KQ1912155-18 | Carbon, Total Organic | DUP | K1907495-001 | Water | 0.42 mg/L | 10 ml | 0.42 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/27/19 18:54 | N | II |
| KQ1912155-19 | Carbon, Total Organic | DUP | K1907495-002 | Water | 9.45 mg/L | 10 ml | 9.45 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/27/19 19:22 | N | II |
| KQ1912155-20 | Carbon, Total Organic | DUP | K1907495-008 | Water | 0.50 mg/L | 10 ml | 0.50 mg/L | 1 | 0.07 | 0.50 | | 14 | 8/27/19 19:50 | N | II |
| KQ1912155-21 | Carbon, Total Organic | DUP | K1907495-009 | Water | 0.55 mg/L | 10 ml | 0.55 mg/L | 1 | 0.07 | 0.50 | | 5 | 8/27/19 20:19 | N | II |
| KQ1912155-22 | Carbon, Total Organic | DUP | K1907495-010 | Water | 8.57 mg/L | 10 ml | 8.57 mg/L | 1 | 0.07 | 0.50 | | 5 | 8/27/19 20:47 | N | II |
| KQ1912155-23 | Carbon, Total Organic | DUP | K1907495-011 | Water | 10.20 mg/L | 10 ml | 10.2 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/27/19 21:15 | N | II |
| KQ1912155-24 | Carbon, Total Organic | DUP | K1907495-012 | Water | 3.53 mg/L | 10 ml | 3.53 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 21:43 | N | II |
| KQ1912155-25 | Carbon, Total Organic | DUP | K1907495-013 | Water | 5.20 mg/L | 10 ml | 5.20 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 22:11 | N | II |
| KQ1912155-26 | Carbon, Total Organic | DUP | K1907495-014 | Water | 0.47 mg/L | 10 ml | 0.47 mg/L J | 1 | 0.07 | 0.50 | | 17 | 8/27/19 22:39 | N | II |
| KQ1912155-27 | Carbon, Total Organic | DUP | K1907495-022 | Water | 0.15 mg/L | 10 ml | 0.15 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 00:05 | N | II |
| KQ1912155-28 | Carbon, Total Organic | DUP | K1907495-023 | Water | 1.02 mg/L | 10 ml | 1.02 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 00:33 | N | II |
| KQ1912155-29 | Carbon, Total Organic | DUP | K1907495-024 | Water | 1.16 mg/L | 10 ml | 1.16 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 01:01 | N | II |
| KQ1912155-30 | Carbon, Total Organic | DUP | K1907495-027 | Water | 0.00 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | NC | 8/28/19 01:30 | N | II |
| KQ1912155-31 | Carbon, Total Organic | DUP | K1907495-028 | Water | 3.65 mg/L | 10 ml | 3.65 mg/L | 1 | 0.07 | 0.50 | | 5 | 8/28/19 01:58 | N | II |



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648996 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907279-001 | Carbon, Total Organic | N/A | | Ground Water | 8.96 mg/L | 10 ml | 8.96 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 02:54 | N | I |
| K1907279-002 | Carbon, Total Organic | N/A | | Ground Water | 15.68 mg/L | 10 ml | 15.7 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 03:22 | N | I |
| K1907279-003 | Carbon, Total Organic | N/A | | Ground Water | 27.94 mg/L | 10 ml | 27.9 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 04:19 | N | I |
| K1907279-004 | Carbon, Total Organic | N/A | | Ground Water | 22.36 mg/L | 10 ml | 22.4 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 04:47 | N | I |
| K1907279-005 | Carbon, Total Organic | N/A | | Ground Water | 27.15 mg/L | 10 ml | 54.3 mg/L | 2 | 0.2 | 1.0 | | | 8/28/19 05:16 | N | I |
| K1907469-001 | Carbon, Total Organic | N/A | | Ground Water | 7.63 mg/L | 10 ml | 7.63 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 05:44 | N | IV |
| K1907469-002 | Carbon, Total Organic | N/A | | Ground Water | 1.50 mg/L | 10 ml | 1.50 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 06:12 | N | IV |
| K1907469-003 | Carbon, Total Organic | N/A | | Ground Water | 1.37 mg/L | 10 ml | 1.37 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 07:09 | N | IV |
| K1907469-004 | Carbon, Total Organic | N/A | | Ground Water | 3.84 mg/L | 10 ml | 3.84 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 07:37 | N | IV |
| K1907474-001 | Carbon, Total Organic | N/A | | Water | 1.20 mg/L | 10 ml | 1.20 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 09:32 | N | II |
| K1907476-001 | Carbon, Total Organic | N/A | | Water | 7.99 mg/L | 10 ml | 799 mg/L | 100 | 7 | 50 | | | 8/28/19 14:14 | N | II |
| K1907476-002 | Carbon, Total Organic | N/A | | Water | 5.02 mg/L | 10 ml | 502 mg/L | 100 | 7 | 50 | | | 8/28/19 14:42 | N | II |
| K1907476-003 | Carbon, Total Organic | N/A | | Water | 3.43 mg/L | 10 ml | 343 mg/L | 100 | 7 | 50 | | | 8/28/19 15:10 | N | II |
| K1907495-032 | Carbon, Total Organic | N/A | | Water | 3.80 mg/L | 10 ml | 3.80 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 02:26 | N | II |
| K1907532-001 | Carbon, Total Organic | N/A | | Water | 18.99 mg/L | 10 ml | 19.0 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 10:56 | N | IV |
| K1907535-001 | Carbon, Total Organic | N/A | | Water | 4.96 mg/L | 10 ml | 4.96 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 08:05 | N | II |
| K1907548-001 | Carbon, Total Organic | N/A | | Water | 9.19 mg/L | 10 ml | 9.19 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 11:24 | N | II |
| K1907548-002 | Carbon, Total Organic | N/A | | Water | 0.80 mg/L | 10 ml | 0.80 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 11:52 | N | II |
| K1907548-003 | Carbon, Total Organic | N/A | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 12:20 | N | II |
| K1907548-004 | Carbon, Total Organic | N/A | | Water | 24.51 mg/L | 10 ml | 24.5 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 12:48 | N | II |
| K1907548-005 | Carbon, Total Organic | N/A | | Water | 25.75 mg/L | 10 ml | 25.7 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 13:16 | N | II |
| KQ1912156-01 | Carbon, Total Organic | MS | K1907469-002 | Ground Water | 26.88 mg/L | 10 ml | 26.9 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/28/19 06:40 | N | IV |
| KQ1912156-02 | Carbon, Total Organic | N/A | | Water | 1.50 mg/L | 10 mL | 1.50 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 06:12:00 | N | II |
| KQ1912156-03 | Carbon, Total Organic | MS | KQ1912156-02 | Water | 26.88 mg/L | 10 mL | 26.9 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/28/19 06:40:00 | N | II |
| KQ1912156-04 | Carbon, Total Organic | DUP | KQ1912156-02 | Water | 1.49 mg/L | 10 mL | 1.49 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 06:12:00 | N | II |
| KQ1912156-05 | Carbon, Total Organic | CCV | | Water | 24.97 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/27/19 23:07 | N | II |
| KQ1912156-05 | Carbon, Total Organic | CCV | | Water | 24.97 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/27/19 23:07 | N | II |
| KQ1912156-06 | Carbon, Total Organic | CCV | | Water | 24.55 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 03:50 | N | II |
| KQ1912156-06 | Carbon, Total Organic | CCV | | Water | 24.55 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 03:50 | N | II |
| KQ1912156-07 | Carbon, Total Organic | CCV | | Water | 24.50 mg/L | 10 ml | 24.5 mg/L | 1 | | | | | 8/28/19 08:33 | N | II |
| KQ1912156-07 | Carbon, Total Organic | CCV | | Water | 24.50 mg/L | 10 ml | 24.5 mg/L | 1 | | | | | 8/28/19 08:33 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648996 **Method/Testcode:** 415.1/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912156-08 | Carbon, Total Organic | CCV | | Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | II |
| KQ1912156-08 | Carbon, Total Organic | CCV | | Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | II |
| KQ1912156-09 | Carbon, Total Organic | CCV | | Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | II |
| KQ1912156-09 | Carbon, Total Organic | CCV | | Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | II |
| KQ1912156-10 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:21 | N | II |
| KQ1912156-10 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:21 | N | II |
| KQ1912156-11 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 04:04 | N | II |
| KQ1912156-11 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 04:04 | N | II |
| KQ1912156-12 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 08:48 | N | II |
| KQ1912156-12 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 08:48 | N | II |
| KQ1912156-13 | Carbon, Total Organic | CCB | | Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | II |
| KQ1912156-13 | Carbon, Total Organic | CCB | | Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | II |
| KQ1912156-14 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | II |
| KQ1912156-14 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | II |
| KQ1912156-15 | Carbon, Total Organic | MB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:36 | N | II |
| KQ1912156-15 | Carbon, Total Organic | MB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:36 | N | II |
| KQ1912156-16 | Carbon, Total Organic | LCS | | Water | 25.18 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/27/19 23:50 | N | II |
| KQ1912156-16 | Carbon, Total Organic | LCS | | Water | 25.18 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/27/19 23:50 | N | II |
| KQ1912156-17 | Carbon, Total Organic | DUP | K1907495-032 | Water | 3.81 mg/L | 10 ml | 3.81 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 02:26 | N | II |
| KQ1912156-18 | Carbon, Total Organic | DUP | K1907279-001 | Ground Water | 9.02 mg/L | 10 ml | 9.02 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 02:54 | N | I |
| KQ1912156-19 | Carbon, Total Organic | DUP | K1907279-002 | Ground Water | 15.77 mg/L | 10 ml | 15.8 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 03:22 | N | I |
| KQ1912156-20 | Carbon, Total Organic | DUP | K1907279-003 | Ground Water | 27.51 mg/L | 10 ml | 27.5 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 04:19 | N | I |
| KQ1912156-21 | Carbon, Total Organic | DUP | K1907279-004 | Ground Water | 22.40 mg/L | 10 ml | 22.4 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 04:47 | N | I |
| KQ1912156-22 | Carbon, Total Organic | DUP | K1907279-005 | Ground Water | 27.48 mg/L | 10 ml | 55.0 mg/L | 2 | 0.2 | 1.0 | | 1 | 8/28/19 05:16 | N | I |
| KQ1912156-23 | Carbon, Total Organic | DUP | K1907469-001 | Ground Water | 7.41 mg/L | 10 ml | 7.41 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/28/19 05:44 | N | IV |
| KQ1912156-24 | Carbon, Total Organic | DUP | K1907469-002 | Ground Water | 1.49 mg/L | 10 ml | 1.49 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 06:12 | N | IV |
| KQ1912156-25 | Carbon, Total Organic | DUP | K1907469-003 | Ground Water | 1.41 mg/L | 10 ml | 1.41 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/28/19 07:09 | N | IV |
| KQ1912156-26 | Carbon, Total Organic | DUP | K1907469-004 | Ground Water | 3.77 mg/L | 10 ml | 3.77 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 07:37 | N | IV |
| KQ1912156-27 | Carbon, Total Organic | DUP | K1907535-001 | Water | 4.94 mg/L | 10 ml | 4.94 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 08:05 | N | II |
| KQ1912156-28 | Carbon, Total Organic | DUP | K1907532-001 | Water | 18.54 mg/L | 10 ml | 18.5 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 10:56 | N | IV |
| KQ1912156-29 | Carbon, Total Organic | DUP | K1907548-001 | Water | 9.23 mg/L | 10 ml | 9.23 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 11:24 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 6/19/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648996 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912156-30 | Carbon, Total Organic | DUP | K1907548-002 | Water | 0.70 mg/L | 10 ml | 0.70 mg/L | 1 | 0.07 | 0.50 | | 13* | 8/28/19 11:52 | N | II |
| KQ1912156-31 | Carbon, Total Organic | DUP | K1907548-003 | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | NC | 8/28/19 12:20 | N | II |
| KQ1912156-32 | Carbon, Total Organic | DUP | K1907548-004 | Water | 25.17 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/28/19 12:48 | N | II |
| KQ1912156-33 | Carbon, Total Organic | DUP | K1907548-005 | Water | 26.07 mg/L | 10 ml | 26.1 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 13:16 | N | II |
| KQ1912156-34 | Carbon, Total Organic | DUP | K1907476-001 | Water | 7.99 mg/L | 10 ml | 799 mg/L | 100 | 7 | 50 | | <1 | 8/28/19 14:14 | N | II |
| KQ1912156-35 | Carbon, Total Organic | DUP | K1907476-002 | Water | 4.93 mg/L | 10 ml | 493 mg/L | 100 | 7 | 50 | | 2 | 8/28/19 14:42 | N | II |
| KQ1912156-36 | Carbon, Total Organic | DUP | K1907476-003 | Water | 3.26 mg/L | 10 ml | 326 mg/L | 100 | 7 | 50 | | 5 | 8/28/19 15:10 | N | II |
| KQ1912156-37 | Carbon, Total Organic | DUP | K1907474-001 | Water | 1.10 mg/L | 10 ml | 1.10 mg/L | 1 | 0.07 | 0.50 | | 9 | 8/28/19 09:32 | N | II |



8/28/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648997 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907526-001 | Carbon, Total Organic | N/A | | Ground Water | 11.56 mg/L | 10 ml | 11.6 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 15:38 | N | IV |
| K1907526-002 | Carbon, Total Organic | N/A | | Ground Water | 2.73 mg/L | 10 ml | 2.73 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 16:06 | Y | IV |
| K1907526-003 | Carbon, Total Organic | N/A | | Ground Water | 1.95 mg/L | 10 ml | 1.95 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 17:03 | N | IV |
| KQ1912157-01 | Carbon, Total Organic | CCV | | Ground Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | IV |
| KQ1912157-02 | Carbon, Total Organic | CCV | | Ground Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | IV |
| KQ1912157-03 | Carbon, Total Organic | CCB | | Ground Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | IV |
| KQ1912157-04 | Carbon, Total Organic | CCB | | Ground Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | IV |
| KQ1912157-05 | Carbon, Total Organic | MB | | Ground Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 09:03 | N | IV |
| KQ1912157-06 | Carbon, Total Organic | LCS | | Ground Water | 24.98 mg/L | 10 ml | 25.0 mg/L | 1 | 0.07 | 0.50 | 100 | | 8/28/19 09:17 | N | IV |
| KQ1912157-07 | Carbon, Total Organic | MS | K1907526-002 | Ground Water | 28.35 mg/L | 10 ml | 28.4 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/28/19 16:34 | N | IV |
| KQ1912157-08 | Carbon, Total Organic | DUP | K1907526-001 | Ground Water | 11.42 mg/L | 10 ml | 11.4 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 15:38 | N | IV |
| KQ1912157-09 | Carbon, Total Organic | DUP | K1907526-002 | Ground Water | 2.63 mg/L | 10 ml | 2.63 mg/L | 1 | 0.07 | 0.50 | | 4 | 8/28/19 16:06 | N | IV |
| KQ1912157-10 | Carbon, Total Organic | DUP | K1907526-003 | Ground Water | 1.93 mg/L | 10 ml | 1.93 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 17:03 | N | IV |



8/29/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648998 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912158-10 | Carbon, Dissolved Organic (DOC) | LCS | | Water | 25.17 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/28/19 19:12 | N | II |
| KQ1912158-11 | Carbon, Dissolved Organic (DOC) | MS | K1907440-001 | Water | 25.65 mg/L | 10 ml | 25.7 mg/L | 1 | 0.07 | 0.50 | 103 | | 8/28/19 22:16 | N | II |
| KQ1912158-12 | Carbon, Dissolved Organic (DOC) | DUP | K1907311-001 | Water | 5.02 mg/L | 10 ml | 5.02 mg/L | 1 | 0.07 | 0.50 | | 6 | 8/28/19 17:32 | N | II |
| KQ1912158-13 | Carbon, Dissolved Organic (DOC) | DUP | K1907311-002 | Water | 4.96 mg/L | 10 ml | 4.96 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 18:00 | N | II |
| KQ1912158-14 | Carbon, Dissolved Organic (DOC) | DUP | K1907311-003 | Water | 0.75 mg/L | 10 ml | 0.75 mg/L | 1 | 0.07 | 0.50 | | 13* | 8/28/19 19:27 | N | II |
| KQ1912158-15 | Carbon, Dissolved Organic (DOC) | DUP | K1907413-001 | Water | 3.38 mg/L | 10 ml | 3.38 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 19:55 | N | II |
| KQ1912158-16 | Carbon, Dissolved Organic (DOC) | DUP | K1907413-002 | Water | 6.14 mg/L | 10 ml | 6.14 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 20:23 | N | II |
| KQ1912158-17 | Carbon, Dissolved Organic (DOC) | DUP | K1907456-001 | Water | 9.84 mg/L | 10 ml | 19.7 mg/L | 2 | 0.2 | 1.0 | | <1 | 8/28/19 21:20 | N | I |
| KQ1912158-18 | Carbon, Dissolved Organic (DOC) | DUP | K1907456-002 | Water | 6.93 mg/L | 10 ml | 6.93 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 21:48 | N | I |
| KQ1912158-19 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-001 | Water | 0.09 mg/L | 10 ml | 0.09 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 23:00 | N | II |
| KQ1912158-20 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-002 | Water | 0.23 mg/L | 10 ml | 0.23 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 23:28 | N | II |
| KQ1912158-21 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-003 | Water | 0.43 mg/L | 10 ml | 0.43 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 23:57 | N | II |
| KQ1912158-22 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-004 | Water | 0.34 mg/L | 10 ml | 0.34 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/29/19 00:25 | N | II |
| KQ1912158-23 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-005 | Water | 0.26 mg/L | 10 ml | 0.26 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/29/19 00:53 | N | II |
| KQ1912158-24 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-006 | Water | 0.43 mg/L | 10 ml | 0.43 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/29/19 01:21 | N | II |
| KQ1912158-25 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-007 | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | NC | 8/29/19 01:49 | N | II |



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648998 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907311-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 5.31 mg/L | 10 ml | 5.31 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 17:32 | N | II |
| K1907311-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 4.91 mg/L | 10 ml | 4.91 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 18:00 | N | II |
| K1907311-003 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.85 mg/L | 10 ml | 0.85 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 19:27 | N | II |
| K1907413-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 3.36 mg/L | 10 ml | 3.36 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 19:55 | N | II |
| K1907413-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 6.13 mg/L | 10 ml | 6.13 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 20:23 | N | II |
| K1907440-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.08 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 23:00 | N | II |
| K1907440-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.18 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 23:28 | N | II |
| K1907440-003 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.42 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 23:57 | N | II |
| K1907440-004 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.36 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 00:25 | N | II |
| K1907440-005 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.25 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 00:53 | N | II |
| K1907440-006 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.41 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 01:21 | N | II |
| K1907440-007 | Carbon, Dissolved Organic (DOC) | N/A | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 01:49 | N | II |
| K1907456-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 9.88 mg/L | 10 ml | 19.8 mg/L | 2 | 0.2 | 1.0 | | | 8/28/19 21:20 | N | I |
| K1907456-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.09 mg/L | 10 ml | 7.09 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 21:48 | N | I |
| KQ1912158-01 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | II |
| KQ1912158-02 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | II |
| KQ1912158-03 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 24.58 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 22:31 | N | II |
| KQ1912158-04 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 24.13 mg/L | 10 ml | 24.1 mg/L | 1 | | | | | 8/29/19 02:45 | N | II |
| KQ1912158-05 | Carbon, Dissolved Organic (DOC) | CCB | | Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | II |
| KQ1912158-06 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | II |
| KQ1912158-07 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 22:46 | N | II |
| KQ1912158-08 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 03:00 | N | II |
| KQ1912158-09 | Carbon, Dissolved Organic (DOC) | MB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:57 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

8/29/19

Printed 8/29/19 12:09

Results Summary



HLM 8.29.19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | ccv | 1 | 25.338 | 0.0305 | 25.3073 | 25.30731 | 25.3 | 8/27/2019 |
| 3 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 4 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 5 | lcs | 1 | 25.193 | 0.0305 | 25.1628 | 25.16281 | 25.2 | 8/27/2019 |
| 6 | K1907294-001 | 1 | 1.410 | 0.0305 | 1.3796 | 1.37961 | 1.38 | 8/27/2019 |
| 7 | K1907294-001 | 1 | 1.374 | 0.0305 | 1.3437 | 1.34371 | 1.3 | 8/27/2019 |
| 8 | KQ1912155-01 | 1 | 26.851 | 0.0305 | 26.8200 | 26.82001 | 27 | 8/27/2019 |
| 9 | K1907294-002 | 1 | 0.748 | 0.0305 | 0.7173 | 0.71731 | 0.72 | 8/27/2019 |
| 10 | K1907294-002 | 1 | 0.745 | 0.0305 | 0.7145 | 0.71451 | 0.71 | 8/27/2019 |
| 11 | K1907303-001 | 1 | 2.717 | 0.0305 | 2.6869 | 2.68691 | 2.7 | 8/27/2019 |
| 12 | K1907303-001 | 1 | 2.702 | 0.0305 | 2.6713 | 2.67131 | 2.67 | 8/27/2019 |
| 13 | K1907303-002 | 1 | 2.680 | 0.0305 | 2.6494 | 2.64941 | 2.65 | 8/27/2019 |
| 14 | K1907303-002 | 1 | 2.714 | 0.0305 | 2.6834 | 2.68341 | 2.68 | 8/27/2019 |
| 15 | K1907303-003 | 1 | 3.508 | 0.0305 | 3.4776 | 3.47761 | 3.5 | 8/27/2019 |
| 16 | K1907303-003 | 1 | 3.520 | 0.0305 | 3.4894 | 3.48941 | 3.5 | 8/27/2019 |
| 17 | ccv | 1 | 24.813 | 0.0305 | 24.7827 | 24.78271 | 24.78 | 8/27/2019 |
| 18 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 19 | K1907303-004 | 20 | 1.806 | 0.0305 | 1.7752 | 35.5042 | 35.5 | 8/27/2019 |
| 20 | K1907303-004 | 20 | 1.899 | 0.0305 | 1.8681 | 37.3622 | 37.36 | 8/27/2019 |
| 21 | K1907495-001 | 1 | 0.484 | 0.0305 | 0.4537 | 0.45371 | <0.5 | 8/27/2019 |
| 22 | K1907495-001 | 1 | 0.454 | 0.0305 | 0.4237 | 0.42371 | <0.5 | 8/27/2019 |
| 23 | K1907495-002 | 1 | 9.167 | 0.0305 | 9.1366 | 9.13661 | 9.1 | 8/27/2019 |
| 24 | K1907495-002 | 1 | 9.476 | 0.0305 | 9.4457 | 9.44571 | 9.45 | 8/27/2019 |
| 25 | K1907495-008 | 1 | 0.611 | 0.0305 | 0.5801 | 0.58011 | 0.58 | 8/27/2019 |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | | date | time |
|---|---|---|---|
| Analyzed By: BLD | Date Analyzed | 8/27/19 | |
| Reviewed By: | Date Reviewed | 8/28/19 | |

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 26 | K1907495-008 | 1 | 0.533 | 0.0305 | 0.5029 | 0.50291 | 0.50 | 8/27/2019 |
| 27 | K1907495-009 | 1 | 0.615 | 0.0305 | 0.5845 | 0.58451 | 0.58 | 8/27/2019 |
| 28 | K1907495-009 | 1 | 0.584 | 0.0305 | 0.5539 | 0.55391 | 0.6 | 8/27/2019 |
| 29 | K1907495-010 | 1 | 9.004 | 0.0305 | 8.9738 | 8.97381 | 9.0 | 8/27/2019 |
| 30 | K1907495-010 | 1 | 8.605 | 0.0305 | 8.5740 | 8.57401 | 8.6 | 8/27/2019 |
| 31 | K1907495-011 | 1 | 10.055 | 0.0305 | 10.0242 | 10.02421 | 10.0 | 8/27/2019 |
| 32 | K1907495-011 | 1 | 10.234 | 0.0305 | 10.2034 | 10.20341 | 10.2 | 8/27/2019 |
| 33 | K1907495-012 | 1 | 3.546 | 0.0305 | 3.5158 | 3.51581 | 3.5 | 8/27/2019 |
| 34 | K1907495-012 | 1 | 3.559 | 0.0305 | 3.5280 | 3.52801 | 3.5 | 8/27/2019 |
| 35 | K1907495-013 | 1 | 5.215 | 0.0305 | 5.1845 | 5.18451 | 5.2 | 8/27/2019 |
| 36 | K1907495-013 | 1 | 5.226 | 0.0305 | 5.1952 | 5.19521 | 5.2 | 8/27/2019 |
| 37 | K1907495-014 | 1 | 0.595 | 0.0305 | 0.5642 | 0.56421 | 0.6 | 8/27/2019 |
| 38 | K1907495-014 | 1 | 0.505 | 0.0305 | 0.4745 | 0.47451 | <0.5 | 8/27/2019 |
| 39 | ccv | 1 | 24.997 | 0.0305 | 24.9664 | 24.96641 | 25.0 | 8/27/2019 |
| 40 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 41 | K1907495-022 | 1 | 0.269 | 0.0305 | 0.2383 | 0.23831 | <0.5 | 8/28/2019 |
| 42 | K1907495-022 | 1 | 0.176 | 0.0305 | 0.1457 | 0.14571 | <0.5 | 8/28/2019 |
| 43 | K1907495-023 | 1 | 1.033 | 0.0305 | 1.0029 | 1.00291 | 1.0 | 8/28/2019 |
| 44 | K1907495-023 | 1 | 1.048 | 0.0305 | 1.0171 | 1.01711 | 1.0 | 8/28/2019 |
| 45 | K1907495-024 | 1 | 1.203 | 0.0305 | 1.1723 | 1.17231 | 1.2 | 8/28/2019 |
| 46 | K1907495-024 | 1 | 1.192 | 0.0305 | 1.1611 | 1.16111 | 1.2 | 8/28/2019 |
| 47 | K1907495-027 | 1 | 0.058 | 0.0305 | 0.0274 | 0.02741 | <0.5 | 8/28/2019 |
| 48 | K1907495-027 | 1 | 0.028 | 0.0305 | -0.0022 | -0.00219 | <0.5 | 8/28/2019 |
| 49 | K1907495-028 | 1 | 3.874 | 0.0305 | 3.8430 | 3.84301 | 3.8 | 8/28/2019 |
| 50 | K1907495-028 | 1 | 3.683 | 0.0305 | 3.6523 | 3.65231 | 3.7 | 8/28/2019 |

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|---|---|
| Analyzed By: KP | Date Analyzed 8/27/19 |
| Reviewed By: | Date Reviewed 8/29/19 |



TOCwaterLims ALS
HLM 8/29/19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 51 | ccv | 1 | 24.582 | 0.0305 | 24.5510 | 24.55101 | 24.55 | 8/28/2019 |
| 52 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 53 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 54 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 55 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 56 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 57 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 58 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 59 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 60 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 61 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 62 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 63 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 64 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 65 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 66 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 67 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 68 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 69 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 70 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 71 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 72 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 73 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 74 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 75 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

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|---|---|
| Analyzed By: BCP | Date Analyzed 8/27/19 |
| Reviewed By: | Date Reviewed 8/29/19 |



TOCwaterLims ALS
HLM 8/29/19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | ccv | 1 | 24.997 | 0.0305 | 24.9664 | 24.96641 | 25.0 | 8/27/2019 |
| 3 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 4 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 5 | lcs | 1 | 25.212 | 0.0305 | 25.1816 | 25.18161 | 25.2 | 8/27/2019 |
| 6 | K1907495-032 | 1 | 3.832 | 0.0305 | 3.8016 | 3.80161 | 3.80 | 8/28/2019 |
| 7 | K1907495-032 | 1 | 3.841 | 0.0305 | 3.8107 | 3.81071 | 3.8 | 8/28/2019 |
| 8 | K1907279-001 | 1 | 8.989 | 0.0305 | 8.9584 | 8.95841 | 9 | 8/28/2019 |
| 9 | K1907279-001 | 1 | 9.054 | 0.0305 | 9.0232 | 9.02321 | 9.02 | 8/28/2019 |
| 10 | K1907279-002 | 1 | 15.714 | 0.0305 | 15.6834 | 15.68341 | 15.68 | 8/28/2019 |
| 11 | K1907279-002 | 1 | 15.798 | 0.0305 | 15.7678 | 15.76781 | 15.8 | 8/28/2019 |
| 12 | ccv | 1 | 24.582 | 0.0305 | 24.5510 | 24.55101 | 24.55 | 8/28/2019 |
| 13 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 14 | K1907279-003 | 1 | 27.966 | 0.0305 | 27.9355 | 27.93551 | 27.94 | 8/28/2019 |
| 15 | K1907279-003 | 1 | 27.543 | 0.0305 | 27.5126 | 27.51261 | 27.5 | 8/28/2019 |
| 16 | K1907279-004 | 1 | 22.388 | 0.0305 | 22.3574 | 22.35741 | 22.4 | 8/28/2019 |
| 17 | K1907279-004 | 1 | 22.432 | 0.0305 | 22.4012 | 22.40121 | 22.40 | 8/28/2019 |
| 18 | K1907279-005 | 2 | 27.184 | 0.0305 | 27.1531 | 54.30622 | 54.3 | 8/28/2019 |
| 19 | K1907279-005 | 2 | 27.515 | 0.0305 | 27.4843 | 54.96862 | 55.0 | 8/28/2019 |
| 20 | K1907469-001 | 1 | 7.657 | 0.0305 | 7.6264 | 7.62641 | 7.63 | 8/28/2019 |
| 21 | K1907469-001 | 1 | 7.445 | 0.0305 | 7.4140 | 7.41401 | 7.41 | 8/28/2019 |
| 22 | K1907469-002 | 1 | 1.526 | 0.0305 | 1.4956 | 1.49561 | 1.5 | 8/28/2019 |
| 23 | K1907469-002 | 1 | 1.520 | 0.0305 | 1.4891 | 1.48911 | 1.5 | 8/28/2019 |
| 24 | KQ1912156-01 | 1 | 26.907 | 0.0305 | 26.8763 | 26.87631 | 26.88 | 8/28/2019 |
| 25 | K1907469-003 | 1 | 1.401 | 0.0305 | 1.3703 | 1.37031 | 1.37 | 8/28/2019 |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | | date | time |
|---|---|---|---|
| Analyzed By: | | Date Analyzed | 8/27/19 |
| Reviewed By: | | Date Reviewed | 8/29/19 |

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS



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HLM 8/29/19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 26 | K1907469-003 | 1 | 1.445 | 0.0305 | 1.4145 | 1.41451 | 1.41 | 8/28/2019 |
| 27 | K1907469-004 | 1 | 3.869 | 0.0305 | 3.8381 | 3.83811 | 3.84 | 8/28/2019 |
| 28 | K1907469-004 | 1 | 3.799 | 0.0305 | 3.7683 | 3.76831 | 3.8 | 8/28/2019 |
| 29 | K1907535-001 | 1 | 4.990 | 0.0305 | 4.9596 | 4.95961 | 5.0 | 8/28/2019 |
| 30 | K1907535-001 | 1 | 4.973 | 0.0305 | 4.9426 | 4.94261 | 4.9 | 8/28/2019 |
| 31 | ccv | 1 | 24.526 | 0.0305 | 24.4954 | 24.49541 | 24.5 | 8/28/2019 |
| 32 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 33 | K1907474-001 | 1 | 1.233 | 0.0305 | 1.2028 | 1.20281 | 1.2 | 8/28/2019 |
| 34 | K1907474-001 | 1 | 1.126 | 0.0305 | 1.0953 | 1.09531 | 1.1 | 8/28/2019 |
| 35 | K1907532-001 | 1 | 19.024 | 0.0305 | 18.9934 | 18.99341 | 19.0 | 8/28/2019 |
| 36 | K1907532-001 | 1 | 18.569 | 0.0305 | 18.5380 | 18.53801 | 18.5 | 8/28/2019 |
| 37 | K1907548-001 | 1 | 9.223 | 0.0305 | 9.1929 | 9.19291 | 9.2 | 8/28/2019 |
| 38 | K1907548-001 | 1 | 9.263 | 0.0305 | 9.2321 | 9.23211 | 9.2 | 8/28/2019 |
| 39 | K1907548-002 | 1 | 0.835 | 0.0305 | 0.8049 | 0.80491 | 0.8 | 8/28/2019 |
| 40 | K1907548-002 | 1 | 0.735 | 0.0305 | 0.7040 | 0.70401 | 0.7 | 8/28/2019 |
| 41 | K1907548-003 | 1 | 0.004 | 0.0305 | -0.0264 | -0.02639 | <0.5 | 8/28/2019 |
| 42 | K1907548-003 | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 43 | K1907548-004 | 1 | 24.545 | 0.0305 | 24.5148 | 24.51481 | 24.5 | 8/28/2019 |
| 44 | K1907548-004 | 1 | 25.196 | 0.0305 | 25.1656 | 25.16561 | 25.2 | 8/28/2019 |
| 45 | K1907548-005 | 1 | 25.776 | 0.0305 | 25.7453 | 25.74531 | 25.7 | 8/28/2019 |
| 46 | K1907548-005 | 1 | 26.098 | 0.0305 | 26.0678 | 26.06781 | 26.1 | 8/28/2019 |
| 47 | ccv | 1 | 25.643 | 0.0305 | 25.6127 | 25.61271 | 25.6 | 8/28/2019 |
| 48 | ccb | 1 | 0.396 | 0.0305 | 0.3659 | 0.36591 | <0.5 | 8/28/2019 |
| 49 | K1907476-001 | 100 | 8.022 | 0.0305 | 7.9913 | 799.131 | 799.1 | 8/28/2019 |
| 50 | K1907476-001 | 100 | 8.016 | 0.0305 | 7.9857 | 798.571 | 798.6 | 8/28/2019 |

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|---|---|
| Analyzed By: BCD | Date Analyzed 8/27/19 |
| Reviewed By: | Date Reviewed 8/29/19 |



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HLM 8/29/19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 51 | K1907476-002 | 100 | 5.054 | 0.0305 | 5.0237 | 502.371 | 502.37 | 8/28/2019 |
| 52 | K1907476-002 | 100 | 4.962 | 0.0305 | 4.9317 | 493.171 | 493.2 | 8/28/2019 |
| 53 | K1907476-003 | 100 | 3.458 | 0.0305 | 3.4272 | 342.721 | 342.7 | 8/28/2019 |
| 54 | K1907476-003 | 100 | 3.293 | 0.0305 | 3.2627 | 326.271 | 326.3 | 8/28/2019 |
| 55 | ccv | 1 | 24.986 | 0.0305 | 24.9559 | 24.95591 | 25.0 | 8/28/2019 |
| 56 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 57 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 58 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 59 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 60 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 61 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 62 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 63 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 64 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 65 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 66 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 67 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 68 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 69 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 70 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 71 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 72 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 73 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 74 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 75 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

| | | | |
|---|---|---|---|
| Analyzed By: | ECP | Date Analyzed | 8/27/19 |
| Reviewed By: | | Date Reviewed | 8/29/19 |



08272019 648996
HLM 8/29/19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 3 | lcs | 1 | 25.013 | 0.0305 | 24.9829 | 24.98291 | 25.0 | 8/28/2019 |
| 4 | ccv | 1 | 25.643 | 0.0305 | 25.6127 | 25.61271 | 25.6 | 8/28/2019 |
| 5 | ccb | 1 | 0.396 | 0.0305 | 0.3659 | 0.36591 | <0.5 | 8/28/2019 |
| 6 | K1907526-001 | 1 | 11.595 | 0.0305 | 11.5646 | 11.56461 | 11.56 | 8/28/2019 |
| 7 | K1907526-001 | 1 | 11.450 | 0.0305 | 11.4199 | 11.41991 | 11.4 | 8/28/2019 |
| 8 | K1907526-002 | 1 | 2.758 | 0.0305 | 2.7275 | 2.72751 | 3 | 8/28/2019 |
| 9 | K1907526-002 | 1 | 2.660 | 0.0305 | 2.6299 | 2.62991 | 2.63 | 8/28/2019 |
| 10 | KQ1912157-07 | 1 | 28.381 | 0.0305 | 28.3507 | 28.35071 | 28.35 | 8/28/2019 |
| 11 | K1907526-003 | 1 | 1.985 | 0.0305 | 1.9545 | 1.95451 | 2.0 | 8/28/2019 |
| 12 | K1907526-003 | 1 | 1.958 | 0.0305 | 1.9278 | 1.92781 | 1.93 | 8/28/2019 |
| 13 | ccv | 1 | 24.986 | 0.0305 | 24.9559 | 24.95591 | 24.96 | 8/28/2019 |
| 14 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 15 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 16 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 17 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 18 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 19 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 20 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 21 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 22 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 23 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 24 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 25 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | | date time |
|---|---|---|
| Analyzed By: BCP | Date Analyzed | 8/27/19 |
| Reviewed By: | Date Reviewed | 8/29/19 |

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | ccv | 1 | 25.643 | 0.0305 | 25.6127 | 25.61271 | 25.6 | 8/28/2019 |
| 3 | ccb | 1 | 0.396 | 0.0305 | 0.3659 | 0.36591 | <0.5 | 8/28/2019 |
| 4 | K1907311-001 | 1 | 5.341 | 0.0305 | 5.3104 | 5.31041 | 5.3 | 8/28/2019 |
| 5 | K1907311-001 | 1 | 5.055 | 0.0305 | 5.0249 | 5.02491 | 5.0 | 8/28/2019 |
| 6 | K1907311-002 | 1 | 4.944 | 0.0305 | 4.9134 | 4.91341 | 4.91 | 8/28/2019 |
| 7 | K1907311-002 | 1 | 4.989 | 0.0305 | 4.9580 | 4.95801 | 5.0 | 8/28/2019 |
| 8 | ccv | 1 | 24.986 | 0.0305 | 24.9559 | 24.95591 | 25 | 8/28/2019 |
| 9 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 10 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 11 | lcs | 1 | 25.197 | 0.0305 | 25.1666 | 25.16661 | 25.2 | 8/28/2019 |
| 12 | K1907311-003 | 1 | 0.879 | 0.0305 | 0.8482 | 0.84821 | 0.85 | 8/28/2019 |
| 13 | K1907311-003 | 1 | 0.778 | 0.0305 | 0.7475 | 0.74751 | 0.75 | 8/28/2019 |
| 14 | K1907413-001 | 1 | 3.392 | 0.0305 | 3.3611 | 3.36111 | 3.36 | 8/28/2019 |
| 15 | K1907413-001 | 1 | 3.406 | 0.0305 | 3.3755 | 3.37551 | 3.4 | 8/28/2019 |
| 16 | K1907413-002 | 1 | 6.163 | 0.0305 | 6.1322 | 6.13221 | 6.1 | 8/28/2019 |
| 17 | K1907413-002 | 1 | 6.166 | 0.0305 | 6.1357 | 6.13571 | 6.14 | 8/28/2019 |
| 18 | K1907456-001 | 2 | 9.913 | 0.0305 | 9.8826 | 19.76522 | 19.8 | 8/28/2019 |
| 19 | K1907456-001 | 2 | 9.871 | 0.0305 | 9.8401 | 19.68022 | 19.7 | 8/28/2019 |
| 20 | K1907456-002 | 1 | 7.116 | 0.0305 | 7.0850 | 7.08501 | 7.09 | 8/28/2019 |
| 21 | K1907456-002 | 1 | 6.958 | 0.0305 | 6.9278 | 6.92781 | 6.93 | 8/28/2019 |
| 22 | KQ1912158-11 | 1 | 25.683 | 0.0305 | 25.6522 | 25.65221 | 25.7 | 8/28/2019 |
| 23 | ccv | 1 | 24.608 | 0.0305 | 24.5778 | 24.57781 | 24.6 | 8/28/2019 |
| 24 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 25 | K1907440-001 | 1 | 0.106 | 0.0305 | 0.0754 | 0.07541 | <0.5 | 8/28/2019 |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | | date | time |
|---|---|---|---|
| Analyzed By: BCP | Date Analyzed | 8/27/19 | |
| Reviewed By: JAW | Date Reviewed | 8/29/19 | |

Revision 1, 2010 R:\WET\ANALYSES\TOC\TEMPLATE\TOCwaterLIMS



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HLM 9/29/19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 26 | K1907440-001 | 1 | 0.116 | 0.0305 | 0.0859 | 0.08591 | <0.5 | 8/28/2019 |
| 27 | K1907440-002 | 1 | 0.212 | 0.0305 | 0.1816 | 0.18161 | <0.5 | 8/28/2019 |
| 28 | K1907440-002 | 1 | 0.258 | 0.0305 | 0.2271 | 0.22711 | <0.5 | 8/28/2019 |
| 29 | K1907440-003 | 1 | 0.447 | 0.0305 | 0.4166 | 0.41661 | <0.5 | 8/28/2019 |
| 30 | K1907440-003 | 1 | 0.458 | 0.0305 | 0.4276 | 0.42761 | <0.5 | 8/28/2019 |
| 31 | K1907440-004 | 1 | 0.391 | 0.0305 | 0.3609 | 0.36091 | <0.5 | 8/29/2019 |
| 32 | K1907440-004 | 1 | 0.373 | 0.0305 | 0.3422 | 0.34221 | <0.5 | 8/29/2019 |
| 33 | K1907440-005 | 1 | 0.280 | 0.0305 | 0.2497 | 0.24971 | <0.5 | 8/29/2019 |
| 34 | K1907440-005 | 1 | 0.287 | 0.0305 | 0.2560 | 0.25601 | <0.5 | 8/29/2019 |
| 35 | K1907440-006 | 1 | 0.444 | 0.0305 | 0.4133 | 0.41331 | <0.5 | 8/29/2019 |
| 36 | K1907440-006 | 1 | 0.459 | 0.0305 | 0.4284 | 0.42841 | <0.5 | 8/29/2019 |
| 37 | K1907440-007 | 1 | 0.002 | 0.0305 | -0.0289 | -0.02889 | <0.5 | 8/29/2019 |
| 38 | K1907440-007 | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/29/2019 |
| 39 | ccv | 1 | 24.156 | 0.0305 | 24.1256 | 24.12561 | 24.1 | 8/29/2019 |
| 40 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/29/2019 |
| 41 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 42 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 43 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 44 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 45 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 46 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 47 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 48 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 49 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 50 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

| | |
|---|---|
| Analyzed By: BCP | Date Analyzed 8/27/19 |
| Reviewed By: | Date Reviewed 8/29/19 |



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| | | |
|---|---|---|
| 0.396 | OBSERVATIONS 13 | ABOVE |
| 0.000 | STD Deviatior 0.10994 | 0 |
| 0.000 | AVERAGE 0.03049 | 0 |
| 0.000 | UCL 0.14043 | 0 |
| 0.000 | LCL -0.07945 | 0 |
| 0.000 | | 0 |
| 0.000 | | 0 |
| 0.000 | OBSERVATIONS 0 | 0 |
| 0.000 | STD Deviatior 0.00000 | 0 |
| 0.000 | AVERAGE #DIV/0! | 0 |
| 0.000 | UCL #DIV/0! | 0 |
| 0.000 | LCL #DIV/0! | 0 |
| 0.000 | | 0 |
| | | 0 |
| | OBSERVATIONS 0 | 0 |
| | STD Deviatior 0.00000 | 0 |
| | AVERAGE #DIV/0! | 0 |
| | UCL #DIV/0! | 0 |
| | LCL #DIV/0! | 0 |
| | | 0 |
| | | 0 |
| | OBSERVATIONS 0 | 0 |
| | STD Deviatior #DIV/0! | 0 |
| | AVERAGE #DIV/0! | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| | | 0 |



HLM 8/29/19

# Schedule: 08272019

**Version:** 6
**Instrument:** Fusion1
**Last Saved by:** Fusion1 (Fusion1)
**Last Saved on:** 2019/08/27 13:17 - Tuesday

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Blank) | Blank | Reagent/Acid Blank | | 1 | True | Ready |
| D | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 1 | Sample | MB1 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 2 | Sample | ICS | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 3 | Sample | K1907294-001.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 4 | Sample | K1907294-001.02 ms | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 5 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 6 | Sample | K1907294-002.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 7 | Sample | K1907303-001.05 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 8 | Sample | K1907303-002.05 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 9 | Sample | K1907303-003.05 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 10 | Sample | K1907303-004.05 20x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 11 | Sample | K1907495-001.16 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 12 | Sample | K1907495-002.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 13 | Sample | K1907495-008.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 14 | Sample | K1907495-009.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 15 | Sample | K1907495-010.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 16 | Sample | K1907495-011.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 17 | Sample | K1907495-012.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 18 | Sample | K1907495-013.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 19 | Sample | K1907495-014.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 20 | Sample | MB2 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 21 | Sample | K1907495-022.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 22 | Sample | K1907495-023.16 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 23 | Sample | K1907495-024.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 24 | Sample | K1907495-027.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 25 | Sample | K1907495-028.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 26 | Sample | K1907495-032.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 27 | Sample | K1907279-001.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 28 | Sample | K1907279-002.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 29 | Sample | K1907279-003.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 30 | Sample | K1907279-004.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 31 | Sample | K1907279-005.03 2x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 32 | Sample | K1907469-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 33 | Sample | K1907469-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 34 | Sample | K1907469-002.01 ms | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 35 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 36 | Sample | K1907469-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 37 | Sample | K1907469-004.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 38 | Sample | K1907535-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |

# Schedule: 08272019

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 39 | Sample | MB3 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [25.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 40 | Sample | K1907474-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 41 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 4 | True | Ready |
| 42 | Sample | K1907532-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 43 | Sample | K1907548-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 44 | Sample | K1907548-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 45 | Sample | K1907548-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 46 | Sample | K1907548-004.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 47 | Sample | K1907548-005.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 48 | Sample | K1907476-001.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 49 | Sample | K1907476-002.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 50 | Sample | K1907476-003.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 51 | Sample | K1907526-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 52 | Sample | K1907526-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 53 | Sample | K1907526-002.01 ms | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 54 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 55 | Sample | K1907526-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 56 | Sample | K1907311-001.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 57 | Sample | K1907311-002.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 58 | Sample | MB4 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [25.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 59 | Sample | K1907311-003.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 60 | Sample | K1907413-001.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 61 | Sample | K1907413-002.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 62 | Sample | FB 8/20/19 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 63 | Sample | FB 8/21/19 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 64 | Sample | K1907456-001.05 doc 2x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 65 | Sample | K1907456-002.05 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 66 | Sample | K1907440-001.01 ms doc | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 67 | Sample | K1907440-001.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 68 | Sample | K1907440-002.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 69 | Sample | K1907440-003.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 70 | Sample | K1907440-004.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 71 | Sample | K1907440-005.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 72 | Sample | K1907440-006.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 73 | Sample | K1907440-007.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 74 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| | | | | | False | |

# Fusion Report - 08272019
# Tuesday, August 27, 2019 11:36 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/08/29 08:26 - Thursday

## Report Summary Information

| | | | |
|---|---|---|---|
| Company Location: | Gen Chem Lab | | |
| Schedule Name: | 08272019 | Engine Version: | 1.1.5.1 |
| Instrument Name: | Fusion1 | Firmware Version: | 1.2.0696 |
| Report Version: | 1 of 1 | Connection: | RS232 COM1 |
| Report Creation by Operators (schedule version): | Fusion1 (Fusion1) (v2)<br>Fusion1 (Fusion1) (v3)<br>Fusion1 (Fusion1) (v4)<br>Fusion1 (Fusion1) (v5)<br>Fusion1 (Fusion1) (v6) | | |
| Comment: | | | |

## Report Results

**Sample Type**: Clean — From Schedule Version 2

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/08/27 11:36 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 13.50 | 16.84 | 3.34 | 49.67 | 05:23 |
| | | | | | | |
| 2 | TC Clean | 17.98 | 21.18 | 3.19 | 50.18 | 04:04 |
| 3 | TC Clean | 3.37 | 6.59 | 3.21 | 50.15 | 03:48 |
| 4 | TC Clean | 2.31 | 5.62 | 3.32 | 50.12 | 03:48 |

**Sample Type**: Clean — From Schedule Version 3

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/08/27 12:01 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.56 | 14.85 | 3.28 | 49.64 | 05:11 |
| | | | | | | |
| 2 | TC Clean | 5.73 | 8.97 | 3.24 | 50.12 | 04:02 |
| 3 | TC Clean | 2.82 | 6.05 | 3.24 | 50.13 | 03:46 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | TC Clean | 1.97 | 5.36 | 3.39 | 50.08 | 03:44 |

**Sample Type**: Clean From Schedule Version 4

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/08/27 12:23 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.24 | 14.58 | 3.34 | 49.68 | 05:13 |
| | | | | | | |
| 2 | TC Clean | 5.34 | 8.58 | 3.23 | 50.09 | 04:00 |
| 3 | TC Clean | 3.52 | 6.67 | 3.14 | 50.12 | 03:54 |
| 4 | TC Clean | 2.30 | 5.63 | 3.33 | 50.13 | 03:55 |

**Sample Type**: Blank (Creating v1288) From Schedule Version 5

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (blank) | | Reagent/Acid Blank | 2019/08/27 13:05 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.45 | 14.84 | 3.39 | 49.56 | 05:20 |
| | | | | | | |
| 2 | TC Clean | 8.98 | 12.24 | 3.26 | 50.07 | 04:03 |
| 3 | TC Clean | 3.79 | 7.03 | 3.24 | 50.15 | 03:47 |
| 4 | TC Clean | 2.19 | 5.50 | 3.31 | 50.05 | 03:44 |
| | | | | | | |
| 5 | Reagent Blank | 5.35 | 8.65 | 3.30 | 50.07 | 05:02 |
| | | | | | | |
| 6 | Acid Blank | 1.50 | 4.71 | 3.21 | 49.58 | 05:25 |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | RB | 0.5233 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 13:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.5233 | 5.2326 | 12.42 | 15.70 | 3.28 | 50.22 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.3378 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 13:53 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.3378 | 253.3780 | 181.45 | 184.62 | 3.16 | 50.27 | 10:34 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 14:08 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 8.26 | 11.52 | 3.25 | 50.29 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 1 | TOC | MB1 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 14:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 7.08 | 10.64 | 3.57 | 50.32 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 25.1933 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 14:38 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.1933 | 251.9328 | 180.47 | 183.99 | 3.52 | 50.34 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 2 | TOC | ICS | 0.2834 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 14:52 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2834 | 2.8342 | 10.80 | 14.22 | 3.42 | 50.34 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 3 | TOC | K1907294-001.02 | 1.3921 ppm | 0.0254 ppm | 1.8300% | 2019/08/27 15:07 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.4101 | 14.1012 | 18.44 | 21.67 | 3.23 | 50.35 | 10:32 |
| 2 | TOC | 1.3742 | 13.7418 | 18.20 | 21.55 | 3.35 | 50.33 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 4 | TOC | K1907294-001.02 ms | 26.8505 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 15:35 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 26.8505 | 268.5053 | 191.13 | 194.58 | 3.45 | 50.37 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 5 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 15:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 7.71 | 11.16 | 3.45 | 50.38 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) | CAS_salt_010711 | CAS_salt_010711 |

(v1288) (v4) (v30)

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 6 | TOC | K1907294-002.02 | 0.7464 ppm | 0.0020 ppm | 0.2700% | 2019/08/27 16:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.7478 | 7.4777 | 13.95 | 17.30 | 3.35 | 50.37 | 10:23 |
| 2 | TOC | 0.7450 | 7.4497 | 13.93 | 17.31 | 3.38 | 50.37 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 7 | TOC | K1907303-001.05 | 2.7096 ppm | 0.0110 ppm | 0.4100% | 2019/08/27 16:33 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.7174 | 27.1744 | 27.32 | 30.55 | 3.23 | 50.37 | 10:26 |
| 2 | TOC | 2.7018 | 27.0182 | 27.21 | 30.66 | 3.45 | 50.40 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 8 | TOC | K1907303-002.05 | 2.6969 ppm | 0.0241 ppm | 0.8900% | 2019/08/27 17:01 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.6799 | 26.7987 | 27.06 | 30.42 | 3.36 | 50.43 | 10:28 |
| 2 | TOC | 2.7139 | 27.1391 | 27.30 | 30.55 | 3.26 | 50.40 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 9 | TOC | K1907303-003.05 | 3.5140 ppm | 0.0083 ppm | 0.2400% | 2019/08/27 17:29 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.5081 | 35.0811 | 32.69 | 36.07 | 3.38 | 50.49 | 10:25 |
| 2 | TOC | 3.5199 | 35.1989 | 32.77 | 36.19 | 3.43 | 50.52 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.8132 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 17:57 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.8132 | 248.1320 | 177.89 | 181.34 | 3.45 | 50.53 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 18:11 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 7.18 | 10.55 | 3.38 | 50.50 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 10 | TOC | K1907303-004.05 20x | 1.8522 ppm | 0.0657 ppm | 3.5500% | 2019/08/27 18:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.8057 | 18.0568 | 21.13 | 24.47 | 3.34 | 50.39 | 10:26 |
| 2 | TOC | 1.8986 | 18.9864 | 21.76 | 24.92 | 3.16 | 50.35 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 11 | TOC | K1907495-001.16 | 0.4692 ppm | 0.0213 ppm | 4.5300% | 2019/08/27 18:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4842 | 4.8422 | 12.16 | 15.37 | 3.21 | 50.28 | 10:28 |
| 2 | TOC | 0.4542 | 4.5416 | 11.96 | 15.22 | 3.27 | 50.28 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 12 | TOC | K1907495-002.15 | 9.3217 ppm | 0.2186 ppm | 2.3400% | 2019/08/27 19:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.1671 | 91.6711 | 71.10 | 74.39 | 3.29 | 50.27 | 10:29 |
| 2 | TOC | 9.4762 | 94.7619 | 73.20 | 76.67 | 3.47 | 50.21 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 13 | TOC | K1907495-008.15 | 0.5720 ppm | 0.0546 ppm | 9.5400% | 2019/08/27 19:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.6106 | 6.1062 | 13.02 | 16.23 | 3.21 | 50.25 | 10:27 |
| 2 | TOC | 0.5334 | 5.3342 | 12.49 | 15.70 | 3.21 | 50.22 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 14 | TOC | K1907495-009.15 | 0.5997 ppm | 0.0217 ppm | 3.6100% | 2019/08/27 20:19 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.6150 | 6.1504 | 13.05 | 16.19 | 3.14 | 50.20 | 10:25 |
| 2 | TOC | 0.5844 | 5.8439 | 12.84 | 16.27 | 3.43 | 50.15 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 15 | TOC | K1907495-010.15 | 8.8044 ppm | 0.2827 ppm | 3.2100% | 2019/08/27 20:47 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.0043 | 90.0433 | 69.99 | 73.32 | 3.32 | 50.12 | 10:26 |
| 2 | TOC | 8.6045 | 86.0450 | 67.28 | 70.56 | 3.28 | 50.10 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 16 | TOC | K1907495-011.15 | 10.1443 ppm | 0.1267 ppm | 1.2500% | 2019/08/27 21:15 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 10.0547 | 100.5472 | 77.12 | 80.29 | 3.17 | 50.09 | 10:28 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 10.2339 | 102.3386 | 78.34 | 81.81 | 3.47 | 50.05 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 17 | TOC | K1907495-012.15 | 3.5524 ppm | 0.0086 ppm | 0.2400% | 2019/08/27 21:43 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.5463 | 35.4626 | 32.94 | 36.31 | 3.37 | 50.06 | 10:26 |
| 2 | TOC | 3.5585 | 35.5849 | 33.03 | 36.27 | 3.24 | 50.06 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 18 | TOC | K1907495-013.15 | 5.2203 ppm | 0.0076 ppm | 0.1500% | 2019/08/27 22:11 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.2150 | 52.1496 | 44.27 | 47.63 | 3.36 | 50.07 | 10:28 |
| 2 | TOC | 5.2257 | 52.2571 | 44.34 | 47.52 | 3.17 | 50.08 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 19 | TOC | K1907495-014.15 | 0.5498 ppm | 0.0634 ppm | 11.5400% | 2019/08/27 22:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.5947 | 5.9471 | 12.91 | 16.18 | 3.27 | 50.09 | 10:27 |
| 2 | TOC | 0.5050 | 5.0499 | 12.30 | 15.64 | 3.34 | 50.09 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.9969 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 23:07 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.9969 | 249.9691 | 179.14 | 182.23 | 3.09 | 50.12 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 23:21 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.67 | 9.98 | 3.31 | 50.11 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 20 | TOC | MB2 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 23:36 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.26 | 9.63 | 3.37 | 50.13 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 25.2121 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 23:50 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.2121 | 252.1214 | 180.60 | 184.07 | 3.47 | 50.15 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 21 | TOC | K1907495-022.15 | 0.2225 ppm | 0.0655 ppm | 29.4500% | 2019/08/28 00:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2688 | 2.6883 | 10.70 | 14.15 | 3.46 | 50.14 | 10:28 |
| 2 | TOC | 0.1762 | 1.7617 | 10.07 | 13.25 | 3.18 | 50.17 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 22 | TOC | K1907495-023.16 | 1.0405 ppm | 0.0100 ppm | 0.9600% | 2019/08/28 00:33 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.0334 | 10.3342 | 15.89 | 19.39 | 3.50 | 50.19 | 10:31 |
| 2 | TOC | 1.0476 | 10.4757 | 15.98 | 19.38 | 3.40 | 50.20 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 23 | TOC | K1907495-024.15 | 1.1972 ppm | 0.0079 ppm | 0.6600% | 2019/08/28 01:01 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.2028 | 12.0284 | 17.04 | 20.38 | 3.34 | 50.22 | 10:30 |
| 2 | TOC | 1.1916 | 11.9165 | 16.96 | 20.15 | 3.19 | 50.25 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 24 | TOC | K1907495-027.15 | 0.0431 ppm | 0.0209 ppm | 48.6200% | 2019/08/28 01:30 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0579 | 0.5787 | 9.27 | 12.61 | 3.34 | 50.28 | 10:28 |
| 2 | TOC | 0.0283 | 0.2826 | 9.06 | 12.50 | 3.43 | 50.28 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 25 | TOC | K1907495-028.15 | 3.7781 ppm | 0.1348 ppm | 3.5700% | 2019/08/28 01:58 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.8735 | 38.7346 | 35.17 | 38.47 | 3.30 | 50.30 | 10:29 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 3.6828 | 36.8283 | 33.87 | 37.23 | 3.36 | 50.31 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 26 | TOC | K1907495-032.15 | 3.8366 ppm | 0.0065 ppm | 0.1700% | 2019/08/28 02:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.8321 | 38.3206 | 34.88 | 38.36 | 3.47 | 50.34 | 10:26 |
| 2 | TOC | 3.8412 | 38.4120 | 34.95 | 38.29 | 3.35 | 50.33 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 27 | TOC | K1907279-001.03 | 9.0213 ppm | 0.0458 ppm | 0.5100% | 2019/08/28 02:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.9889 | 89.8886 | 69.89 | 73.15 | 3.26 | 50.37 | 10:25 |
| 2 | TOC | 9.0537 | 90.5368 | 70.33 | 73.49 | 3.16 | 50.38 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 28 | TOC | K1907279-002.03 | 15.7561 ppm | 0.0597 ppm | 0.3800% | 2019/08/28 03:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 15.7139 | 157.1387 | 115.54 | 118.67 | 3.14 | 50.41 | 10:26 |
| 2 | TOC | 15.7983 | 157.9829 | 116.11 | 119.41 | 3.30 | 50.40 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.5815 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 03:50 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.5815 | 245.8146 | 176.32 | 179.74 | 3.42 | 50.42 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 04:04 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.67 | 10.05 | 3.39 | 50.45 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 29 | TOC | K1907279-003.03 | 27.7546 ppm | 0.2991 ppm | 1.0800% | 2019/08/28 04:19 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 27.9660 | 279.6604 | 198.70 | 202.13 | 3.43 | 50.44 | 10:26 |
| 2 | TOC | 27.5431 | 275.4308 | 195.83 | 199.16 | 3.32 | 50.46 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 30 | TOC | K1907279-004.03 | 22.4098 ppm | 0.0309 ppm | 0.1400% | 2019/08/28 04:47 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 22.3879 | 223.8791 | 160.84 | 164.30 | 3.46 | 50.49 | 10:26 |
| 2 | TOC | 22.4317 | 224.3167 | 161.14 | 164.46 | 3.32 | 50.48 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 31 | TOC | K1907279-005.03 2x | 27.3492 ppm | 0.2342 ppm | 0.8600% | 2019/08/28 05:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 27.1836 | 271.8362 | 193.39 | 196.68 | 3.28 | 50.51 | 10:28 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 27.5148 | 275.1480 | 195.64 | 199.06 | 3.42 | 50.51 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 32 | TOC | K1907469-001.01 | 7.5507 ppm | 0.1502 ppm | 1.9900% | 2019/08/28 05:44 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.6569 | 76.5694 | 60.85 | 63.98 | 3.14 | 50.52 | 10:29 |
| 2 | TOC | 7.4445 | 74.4450 | 59.41 | 62.69 | 3.28 | 50.53 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 33 | TOC | K1907469-002.01 | 1.5228 ppm | 0.0046 ppm | 0.3000% | 2019/08/28 06:12 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.5261 | 15.2606 | 19.23 | 22.53 | 3.30 | 50.56 | 10:30 |
| 2 | TOC | 1.5196 | 15.1958 | 19.19 | 22.36 | 3.17 | 50.57 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 34 | TOC | K1907469-002.01 ms | 26.9068 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 06:40 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 26.9068 | 269.0681 | 191.52 | 194.76 | 3.24 | 50.59 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 35 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 06:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.80 | 10.18 | 3.39 | 50.61 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 36 | TOC | K1907469-003.01 | 1.4229 ppm | 0.0313 ppm | 2.2000% | 2019/08/28 07:09 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.4008 | 14.0084 | 18.38 | 21.71 | 3.33 | 50.66 | 10:27 |
| 2 | TOC | 1.4450 | 14.4504 | 18.68 | 22.02 | 3.33 | 50.63 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 37 | TOC | K1907469-004.01 | 3.8337 ppm | 0.0494 ppm | 1.2900% | 2019/08/28 07:37 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.8686 | 38.6860 | 35.13 | 38.34 | 3.20 | 50.64 | 10:27 |
| 2 | TOC | 3.7988 | 37.9877 | 34.66 | 38.05 | 3.39 | 50.64 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 38 | TOC | K1907535-001.01 | 4.9816 ppm | 0.0121 ppm | 0.2400% | 2019/08/28 08:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.9901 | 49.9015 | 42.75 | 46.02 | 3.27 | 50.65 | 10:27 |
| 2 | TOC | 4.9731 | 49.7306 | 42.63 | 45.92 | 3.29 | 50.63 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.5259 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 08:33 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.5259 | 245.2592 | 175.94 | 179.31 | 3.36 | 50.63 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 08:48 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.32 | 9.77 | 3.45 | 50.58 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 39 | TOC | MB3 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 09:03 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 5.77 | 9.14 | 3.36 | 50.57 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [25.0 ppm] | 0 / infinity ( NA / NA ) | 25.0134 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 09:17 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.0134 | 250.1341 | 179.25 | 182.57 | 3.31 | 50.52 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 40 | TOC | K1907474-001.01 | 1.1796 ppm | 0.0760 ppm | 6.4500% | 2019/08/28 09:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.2333 | 12.3334 | 17.24 | 20.61 | 3.36 | 50.45 | 10:30 |
| 2 | TOC | 1.1258 | 11.2579 | 16.52 | 19.77 | 3.25 | 50.39 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 41 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 10:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 5.96 | 9.28 | 3.31 | 50.35 | 10:25 |
| 2 | TOC | 0.0000 | 0.0000 | 6.50 | 9.62 | 3.12 | 50.31 | 10:29 |
| 3 | TOC | 0.0000 | 0.0000 | 6.19 | 9.44 | 3.25 | 50.27 | 10:26 |
| 4 | TOC | 0.0000 | 0.0000 | 6.40 | 9.51 | 3.11 | 50.31 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 42 | TOC | K1907532-001.01 | 18.7962 ppm | 0.3220 ppm | 1.7100% | 2019/08/28 10:56 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 19.0239 | 190.2386 | 138.01 | 141.21 | 3.20 | 50.24 | 10:27 |
| 2 | TOC | 18.5685 | 185.6849 | 134.92 | 138.03 | 3.11 | 50.28 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 43 | TOC | K1907548-001.01 | 9.2430 ppm | 0.0277 ppm | 0.3000% | 2019/08/28 11:24 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.2234 | 92.2339 | 71.48 | 74.65 | 3.16 | 50.30 | 10:30 |
| 2 | TOC | 9.2626 | 92.6258 | 71.75 | 74.97 | 3.23 | 50.24 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 44 | TOC | K1907548-002.01 | 0.7850 ppm | 0.0714 ppm | 9.0900% | 2019/08/28 11:52 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.8354 | 8.3543 | 14.54 | 17.89 | 3.35 | 50.27 | 10:25 |
| 2 | TOC | 0.7345 | 7.3451 | 13.86 | 17.07 | 3.21 | 50.32 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ◈ | 45 | TOC | K1907548-003.01 | 0.0020 ppm | 0.0029 ppm | 141.4200% | 2019/08/28 12:20 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0041 | 0.0410 | 8.90 | 12.14 | 3.24 | 50.28 | 10:29 |
| 2 | TOC | 0.0000 | 0.0000 | 8.74 | 12.06 | 3.31 | 50.32 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 46 | TOC | K1907548-004.01 | 24.8707 ppm | 0.4602 ppm | 1.8500% | 2019/08/28 12:48 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 24.5453 | 245.4527 | 175.48 | 178.69 | 3.21 | 50.34 | 10:26 |
| 2 | TOC | 25.1961 | 251.9613 | 179.90 | 183.24 | 3.34 | 50.32 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 47 | TOC | K1907548-005.01 | 25.9371 ppm | 0.2280 ppm | 0.8800% | 2019/08/28 13:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 25.7758 | 257.7583 | 183.84 | 187.39 | 3.55 | 50.35 | 10:28 |
| 2 | TOC | 26.0983 | 260.9832 | 186.03 | 189.59 | 3.57 | 50.35 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.6432 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 13:44 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.6432 | 256.4320 | 183.53 | 186.81 | 3.29 | 50.29 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | | | Concentration | | | Min / Max | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

| | Pos | BAT | (ppm) | Dil | Sample ID | (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3964 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 13:59 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3964 | 3.9637 | 12.15 | 15.51 | 3.36 | 50.39 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 48 | TOC | K1907476-001.01 100x | 8.0190 ppm | 0.0040 ppm | 0.0500% | 2019/08/28 14:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.0218 | 80.2185 | 63.32 | 66.69 | 3.37 | 50.36 | 10:28 |
| 2 | TOC | 8.0162 | 80.1625 | 63.29 | 66.63 | 3.34 | 50.31 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 49 | TOC | K1907476-002.01 100x | 5.0082 ppm | 0.0651 ppm | 1.3000% | 2019/08/28 14:42 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.0542 | 50.5423 | 43.18 | 46.51 | 3.33 | 50.29 | 10:27 |
| 2 | TOC | 4.9622 | 49.6216 | 42.56 | 45.87 | 3.32 | 50.39 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 50 | TOC | K1907476-003.01 100x | 3.3754 ppm | 0.1164 ppm | 3.4500% | 2019/08/28 15:10 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.4577 | 34.5772 | 32.34 | 35.75 | 3.40 | 50.34 | 10:29 |
| 2 | TOC | 3.2932 | 32.9317 | 31.23 | 34.68 | 3.45 | 50.37 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 51 | TOC | K1907526-001.01 | 11.5228 ppm | 0.1023 ppm | 0.8900% | 2019/08/28 15:38 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 11.5951 | 115.9510 | 87.58 | 90.92 | 3.34 | 50.45 | 10:27 |
| 2 | TOC | 11.4504 | 114.5043 | 86.60 | 89.87 | 3.27 | 50.45 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 52 | TOC | K1907526-002.01 | 2.7092 ppm | 0.0690 ppm | 2.5500% | 2019/08/28 16:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.7580 | 27.5795 | 27.59 | 30.96 | 3.37 | 50.40 | 10:29 |
| 2 | TOC | 2.6604 | 26.6043 | 26.93 | 30.23 | 3.30 | 50.53 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 53 | TOC | K1907526-002.01 ms | 28.3812 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 16:34 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 28.3812 | 283.8119 | 201.52 | 204.94 | 3.41 | 50.50 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 54 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 16:49 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 8.24 | 11.67 | 3.44 | 50.45 | 10:34 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 55 | TOC | K1907526-003.01 | 1.9716 ppm | 0.0189 ppm | 0.9600% | 2019/08/28 17:03 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.9850 | 19.8497 | 22.35 | 25.79 | 3.44 | 50.60 | 10:29 |
| 2 | TOC | 1.9583 | 19.5830 | 22.17 | 25.54 | 3.38 | 50.57 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | | Analysis | | | Std. Dev. | | |
|---|---|---|---|---|---|---|---|

| | Pos | Type | Sample ID | Result (ppmC) | (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 56 | TOC | K1907311-001.02 doc | 5.1982 ppm | 0.2019 ppm | 3.8800% | 2019/08/28 17:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.3409 | 53.4092 | 45.13 | 48.48 | 3.35 | 50.57 | 10:29 |
| 2 | TOC | 5.0554 | 50.5541 | 43.19 | 46.50 | 3.31 | 50.55 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 57 | TOC | K1907311-002.02 doc | 4.9662 ppm | 0.0316 ppm | 0.6400% | 2019/08/28 18:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.9439 | 49.4389 | 42.43 | 45.75 | 3.32 | 50.67 | 10:31 |
| 2 | TOC | 4.9885 | 49.8853 | 42.74 | 46.09 | 3.36 | 50.64 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.9864 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 18:28 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.9864 | 249.8645 | 179.07 | 182.27 | 3.20 | 50.58 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 18:43 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 7.59 | 10.97 | 3.39 | 50.46 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria | Do Nothing | CAS_salt_010711 | CAS_salt_010711 | 0 ppmC |

| | | |
|---|---|---|
| met. | (v4) | (v30) |

**Sample Type**: Sample — From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 58 | TOC | MB4 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 18:57 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.95 | 10.36 | 3.41 | 50.39 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS — From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [25.0 ppm] | 0 / infinity ( NA / NA ) | 25.1971 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 19:12 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.1971 | 251.9711 | 180.50 | 183.78 | 3.28 | 50.31 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample — From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 59 | TOC | K1907311-003.02 doc | 0.8284 ppm | 0.0713 ppm | 8.6000% | 2019/08/28 19:27 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.8787 | 8.7874 | 14.84 | 18.12 | 3.28 | 50.22 | 10:25 |
| 2 | TOC | 0.7780 | 7.7797 | 14.15 | 17.51 | 3.36 | 50.18 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 60 | TOC | K1907413-001.02 doc | 3.3988 ppm | 0.0102 ppm | 0.3000% | 2019/08/28 19:55 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.3916 | 33.9158 | 31.90 | 35.11 | 3.21 | 50.14 | 10:27 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 3.4060 | 34.0601 | 31.99 | 35.20 | 3.21 | 50.11 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 61 | TOC | K1907413-002.02 doc | 6.1644 ppm | 0.0025 ppm | 0.0400% | 2019/08/28 20:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.1627 | 61.6267 | 50.70 | 53.94 | 3.24 | 50.10 | 10:26 |
| 2 | TOC | 6.1662 | 61.6620 | 50.73 | 54.00 | 3.27 | 50.14 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 62 | TOC | FB 8/20/19 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 20:51 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 7.66 | 10.80 | 3.14 | 50.14 | 10:33 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 63 | TOC | FB 8/21/19 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 21:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.71 | 10.04 | 3.33 | 50.15 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 64 | TOC | K1907456-001.05 doc 2x | 9.8919 ppm | 0.0301 ppm | 0.3000% | 2019/08/28 21:20 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.9131 | 99.1314 | 76.16 | 79.59 | 3.42 | 50.20 | 10:25 |
| 2 | TOC | 9.8706 | 98.7057 | 75.87 | 79.36 | 3.48 | 50.27 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 65 | TOC | K1907456-002.05 doc | 7.0369 ppm | 0.1112 ppm | 1.5800% | 2019/08/28 21:48 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.1155 | 71.1553 | 57.17 | 60.57 | 3.40 | 50.35 | 10:29 |
| 2 | TOC | 6.9583 | 69.5834 | 56.11 | 59.38 | 3.27 | 50.51 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 66 | TOC | K1907440-001.01 ms doc | 25.6827 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 22:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 25.6827 | 256.8273 | 183.21 | 186.45 | 3.25 | 50.62 | 10:32 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.6083 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 22:31 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.6083 | 246.0827 | 176.50 | 179.76 | 3.26 | 50.62 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 22:46 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 7.17 | 10.32 | 3.15 | 50.54 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 67 | TOC | K1907440-001.01 doc | 0.1111 ppm | 0.0074 ppm | 6.6600% | 2019/08/28 23:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.1059 | 1.0590 | 9.59 | 12.83 | 3.24 | 50.52 | 10:26 |
| 2 | TOC | 0.1164 | 1.1636 | 9.66 | 12.83 | 3.16 | 50.51 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 68 | TOC | K1907440-002.01 doc | 0.2349 ppm | 0.0322 ppm | 13.7000% | 2019/08/28 23:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2121 | 2.1212 | 10.31 | 13.64 | 3.33 | 50.48 | 10:29 |
| 2 | TOC | 0.2576 | 2.5764 | 10.62 | 13.84 | 3.22 | 50.48 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 69 | TOC | K1907440-003.01 doc | 0.4526 ppm | 0.0078 ppm | 1.7300% | 2019/08/28 23:57 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4471 | 4.4709 | 11.91 | 15.15 | 3.24 | 50.45 | 10:26 |
| 2 | TOC | 0.4581 | 4.5814 | 11.98 | 15.24 | 3.25 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 70 | TOC | K1907440-004.01 doc | 0.3820 ppm | 0.0132 ppm | 3.4600% | 2019/08/29 00:25 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3914 | 3.9140 | 11.53 | 14.83 | 3.30 | 50.45 | 10:27 |
| 2 | TOC | 0.3727 | 3.7269 | 11.40 | 14.66 | 3.26 | 50.44 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 71 | TOC | K1907440-005.01 doc | 0.2833 ppm | 0.0045 ppm | 1.5800% | 2019/08/29 00:53 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2802 | 2.8018 | 10.78 | 14.10 | 3.33 | 50.44 | 10:25 |
| 2 | TOC | 0.2865 | 2.8651 | 10.82 | 14.13 | 3.31 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 72 | TOC | K1907440-006.01 doc | 0.4514 ppm | 0.0106 ppm | 2.3500% | 2019/08/29 01:21 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4438 | 4.4385 | 11.89 | 15.19 | 3.31 | 50.44 | 10:31 |
| 2 | TOC | 0.4589 | 4.5888 | 11.99 | 15.21 | 3.22 | 50.44 | 10:22 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 73 | TOC | K1907440-007.01 doc | 0.0008 ppm | 0.0011 ppm | 141.4200% | 2019/08/29 01:49 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0016 | 0.0159 | 8.88 | 12.29 | 3.40 | 50.46 | 10:25 |
| 2 | TOC | 0.0000 | 0.0000 | 8.81 | 12.06 | 3.25 | 50.46 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 74 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/29 02:17 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.09 | 9.34 | 3.25 | 50.46 | 10:30 |
| 2 | TOC | 0.0000 | 0.0000 | 6.27 | 9.57 | 3.30 | 50.46 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.1561 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/29 02:45 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.1561 | 241.5615 | 173.43 | 176.77 | 3.34 | 50.46 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/29 03:00 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.38 | 9.72 | 3.34 | 50.48 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

## Meta Data Used in this Report

**Blanks**

| Version | Reagent (Abs) | Acid (Abs) | DI IC (Abs) | DI TC (Abs) | DI TOC (Abs) | Save Time | Operator |
|---|---|---|---|---|---|---|---|
| v1287 | 2.0470 | 1.9200 | 0.0000 | 0.0000 | 0.0000 | 2019/08/22 18:03 | Fusion1 (Fusion1) |
| v1288 | 1.7847 | 1.4960 | 0.0000 | 0.0000 | 0.0000 | 2019/08/27 13:39 | Fusion1 (Fusion1) |

**Calibrations**

**Name: CAS_salt_010711 (TOC)**

| | | | |
|---|---|---|---|
| Version: | v30 | Calibration curve formula: | TOC: y = 6.788x + 9.463 |
| Ver Creation: | 2019/03/05 17:42 | $r^2$ value: | TOC: $r^2$ = 0.99963 |
| Comment: | | | |
| Operator: | Fusion1 (Fusion1) | | |
| Basic Analysis Type | TOC | | |

**Basic Analysis Type**: TOC

| Sample ID | Y Raw Value | X Expected | Message | End Time |
|---|---|---|---|---|
| DI Water | 7.8970 | 0.0000 | | 2019/03/05 16:15 |
| 0.500 ppm | 11.5280 | 0.5000 | | 2019/03/05 16:29 |
| 1.0 ppm | 14.9760 | 1.0000 | | 2019/03/05 16:44 |

| | | | | |
|---|---|---|---|---|
| 5.0 ppm | 43.6500 | 5.0000 | | 2019/03/05 16:58 |
| 10 ppm | 79.6020 | 10.0000 | | 2019/03/05 17:12 |
| 25 ppm | 183.3580 | 25.0000 | | 2019/03/05 17:26 |
| 50 ppm | 346.3230 | 50.0000 | | 2019/03/05 17:40 |

**Methods**

**Name: CAS_salt_010711 (TOC)**

Version: v4 Operator: Fusion1 (Fusion1)

Ver Creation: 2019/02/21 17:57

Comment:

| Parameter | Value |
|---|---|
| SampleVolume | 10.0 mL |
| Dilution | 1:10 |
| AcidVolume | 0.5 ml |
| ReagentVolume | 2.0 ml |
| UVReactorPrerinse | Off |
| UVReactorPrerinseVolume | 5.0 |
| NumberOfUVReactorPrerinses | 1 |
| ICSpargeTime | 1.00 mins |
| DetectorSweepFlow | 500 ml/min |
| PreSpargeTime | 2.00 mins |
| SystemFlow | 500 ml/min |

| Advanced Parameter | Value |
|---|---|
| NeedleRinseVolume | 5.0 ml |
| VialPrimeVolume | 2.0 ml |
| ICSamplePrimeVolume | 2.0 ml |
| ICSpargeRinseVolume | 12.0 ml |
| BaselineStabilizeTime | 0.70 min |
| DetectorPressureFlow | 150 ml/min |
| SyringeSpeedWaste | 10 |
| SyringeSpeedAcid | 7 |
| SyringeSpeedReagent | 7 |
| SyringeSpeedDIWater | 7 |
| NDIRPressurization | 60 psig |
| SyringeSpeedSampleDispense | 5 |
| SyringeSpeedSampleAspirate | 4 |
| SyringeSpeedUVDispense | 5 |
| SyringeSpeedUVAspirate | 5 |
| SyringeSpeedICDispense | 5 |
| SyringeSpeedICAspirate | 5 |
| NDIRPressureStabilize | 1.75 min |
| SampleMixing | Off |
| SampleMixingCycles | 1 |
| SampleMixingVolume | 10.0 |
| LowLevelFilterNDIR | Off |

## Acceptance / Approval

**Electronic Signatures**

| Report Version | User Name | Acceptance | Reason | Date |
|---|---|---|---|---|

# Report History

**Report History**

| Report Version | User Name | System Reason | User Reason | Date |
|---|---|---|---|---|
| 1 | Fusion1 (Fusion1) | Schedule completed | Schedule completed | 2019/08/29 03:17 |

StarLIMS Run: 648995, 648996, 648997, 648998

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-79K 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-80D

21 % H3PO4: 11-GEN-05-80C

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 100559

| | |
|---|---|
| Analyzed By: [signature] | Date Analyzed: 8/29/19 |
| Reviewed By: [signature] | Date Reviewed: 8/29/19 |

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# LABORATORY REPORT

August 27, 2019

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

**RE: HS19080637**

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on August 14, 2019. For your reference, these analyses have been assigned our service request number P1904812.

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 Hayden Akers at 11:37 am, Aug 27, 2019*

Hayden Akers
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
**T:** +1 805 526 7161
www.alsglobal.com

Client: ALS Laboratory Group
Project: HS19080637

Service Request No: P1904812

---

**CASE NARRATIVE**

The samples were received intact under chain of custody on August 14, 2019 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.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

| Sample Identification(s) | Analyte(s) |
|---|---|
| P1904812-001, 002, 003 | Carbon dioxide |

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.

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*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 |
|---|---|---|
| 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 | 2018027 |
| Minnesota DOH (NELAP) | http://www.health.state.mn.us/accreditation | 1521096 |
| 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 | 4068-006 |
| 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 | T104704413-19-10 |
| Utah DOH (NELAP) | http://health.utah.gov/lab/lab_cert_env | CA016272019-10 |
| 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: HS19080637

Service Request: P1904812

Date Received: 8/14/2019
Time Received: 09:15

| Client Sample ID | Lab Code | Matrix | Date Collected | Time Collected | RSK 175 - CO2 | RSK 175 - Gases |
|---|---|---|---|---|---|---|
| 46WW02-190812 | P1904812-001 | Water | 8/12/2019 | 08:40 | X | X |
| 46WW11-190812 | P1904812-002 | Water | 8/12/2019 | 09:35 | X | X |
| 46WW1-190812-FD | P1904812-003 | Water | 8/12/2019 | 09:35 | X | X |
| 46WW09-190812 | P1904812-004 | Water | 8/12/2019 | 11:25 | X | X |

P1904812

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

**SAMPLING STATE:** **Texas** **COC ID:** **11968**

**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:** | |
| **Email:** | |

**INVOICE INFORMATION:**

| | |
|---|---|
| **Company:** | ALS Houston |
| **Contact:** | Accounts Payable |
| **Address:** | 10450 Stancliff Rd, Ste 210 |
| **Phone:** | +1 281 530 5656 |
| **Reference:** | HS19080637 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| 1. | **HS19080637-02** | **46WW02-190812** | **Groundwater** | **12 Aug 2019 08:40** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 27 Aug 2019 |
| 2. | **HS19080637-03** | **46WW11-190812** | **Groundwater** | **12 Aug 2019 09:35** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 27 Aug 2019 |
| 3. | **HS19080637-04** | **46WW1-190812-FD** | **Groundwater** | **12 Aug 2019 09:35** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 27 Aug 2019 |
| 4. | **HS19080637-06** | **46WW09-190812** | **Groundwater** | **12 Aug 2019 11:25** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 27 Aug 2019 |

**Comments:** Please analyze for the analysis listed above.
Send report to the emails shown above.

**QC Level:** DOD IV (DoD Data Package)

Relinquished By: J. Mahaffey Date/Time: 8/13/19, 18:00

Received By: Date/Time: 8/14/19 0915 2° wet ice

Cooler ID(s): Temperature(s):

# ALS Environmental
## Sample Acceptance Check Form

Client: ALS Laboratory Group  Work order: P1904812
Project: HS19080637
Sample(s) received on: 8/14/19  Date opened: 8/14/19  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: 2° C  Blank Temperature: ° C  Thermometer ID T-111  Wet Ic | | | |
| 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 |
|---|---|---|---|---|---|---|
| P1904812-001.01 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904812-001.02 | 40mL VOA NP | | | | A | |
| P1904812-001.03 | 40mL VOA NP | | | | A | |
| P1904812-001.04 | 40ml VOA HCL | | 1 | | A | wh 8/16/19 |
| P1904812-001.05 | 40ml VOA HCL | | | | A | |
| P1904812-001.06 | 40ml VOA HCL | | | | A | |
| P1904812-002.01 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904812-002.02 | 40mL VOA NP | | | | A | |
| P1904812-002.03 | 40mL VOA NP | | | | A | |
| P1904812-002.04 | 40ml VOA HCL | | 1 | | A | wh 8/16/19 |
| P1904812-002.05 | 40ml VOA HCL | | | | A | |
| P1904812-002.06 | 40ml VOA HCL | | | | A | |
| P1904812-003.01 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904812-003.02 | 40mL VOA NP | | | | A | |
| P1904812-003.03 | 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: P1904812

Project: HS19080637

Sample(s) received on: 8/14/19  Date opened: 8/14/19  by: ADAVID

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P1904812-003.04 | 40ml VOA HCL | | 1 | | A | wh 8/16/19 |
| P1904812-003.05 | 40ml VOA HCL | | | | A | |
| P1904812-003.06 | 40ml VOA HCL | | | | A | |
| P1904812-004.01 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904812-004.02 | 40mL VOA NP | | | | A | |
| P1904812-004.03 | 40mL VOA NP | | | | A | |
| P1904812-004.04 | 40ml VOA HCL | | 1 | | A | wh 8/16/19 |
| P1904812-004.05 | 40ml VOA HCL | | | | A | |
| P1904812-004.06 | 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:** **HS19080637** ALS Project ID: P1904812

## Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD Date(s) Collected: 8/12/19
Analyst: Wade Henton Date Received: 8/14/19
Matrix: Water Date Analyzed: 8/21/19
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 |
|---|---|---|---|---|---|---|---|
| 46WW02-190812 | P1904812-001 | 0.10 | **120,000** | 1,000 | 860 | 370 | |
| 46WW11-190812 | P1904812-002 | 0.10 | **140,000** | 1,000 | 860 | 370 | |
| 46WW1-190812-FD | P1904812-003 | 0.10 | **150,000** | 1,000 | 860 | 370 | |
| 46WW09-190812 | P1904812-004 | 0.10 | **160,000** | 1,000 | 860 | 370 | |
| Method Control Sample | P190821-MB | 0.10 | 860 | 1,000 | 860 | 370 | **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: P1904812
**Client Project ID:** **HS19080637** ALS Sample ID: P190821-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 8/21/19
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 | 23,900 | 22,800 | **104** | **100** | 80-122 | 4 | 12 | |

[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:** **46WW02-190812**
**Client Project ID:** **HS19080637**

ALS Project ID: P1904812
ALS Sample ID: P1904812-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/12/19
Date Received: 8/14/19
Date Analyzed: 8/16/19
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:** **46WW11-190812**
**Client Project ID:** **HS19080637**

ALS Project ID: P1904812
ALS Sample ID: P1904812-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/12/19
Date Received: 8/14/19
Date Analyzed: 8/16/19
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 | **15** | 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:** **46WW1-190812-FD**
**Client Project ID:** **HS19080637**

ALS Project ID: P1904812
ALS Sample ID: P1904812-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/12/19
Date Received: 8/14/19
Date Analyzed: 8/16/19
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:** **46WW09-190812**
**Client Project ID:** **HS19080637**

ALS Project ID: P1904812
ALS Sample ID: P1904812-004

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/12/19
Date Received: 8/14/19
Date Analyzed: 8/16/19
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 | **7.7** | 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:** **Method Control Sample** ALS Project ID: P1904812
**Client Project ID:** **HS19080637** ALS Sample ID: P190816-MB

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/FID Date Received: NA
Analyst: Wade Henton Date Analyzed: 8/16/19
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**
**Client Project ID:** **HS19080637**

ALS Project ID: P1904812
ALS Sample ID: P190816-LCS
P190816-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: 8/16/19
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 | 2.52 | 2.29 | 2.37 | **91** | **94** | 73-125 | 3 | 26 | |
| 74-85-1 | Ethene | 4.40 | 4.64 | 4.48 | **105** | **102** | 72-133 | 3 | 11 | |
| 74-84-0 | Ethane | 4.72 | 4.52 | 4.42 | **96** | **94** | 74-131 | 2 | 10 | |

$_1$ = 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\2019_08\21\
Data File : 08211907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:30:30
Operator : WH
Sample : P1904812-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:11 2019
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 | 1.972f | 353385 | 0.074 | ppm | |
| 2) | Carbon monoxide | 1.972f | 353385 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.045 | 1285813 | 5477.858 | ppm | m |
| 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 | |

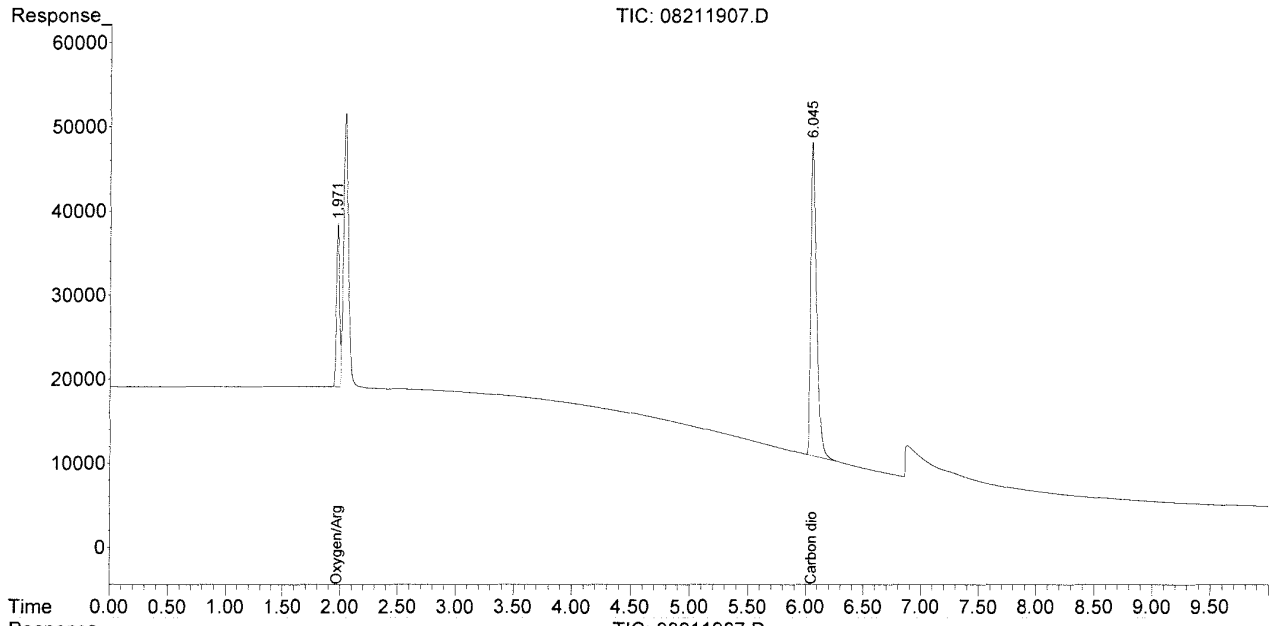
(f)=RT Delta > 1/2 Window (m)=manual int.

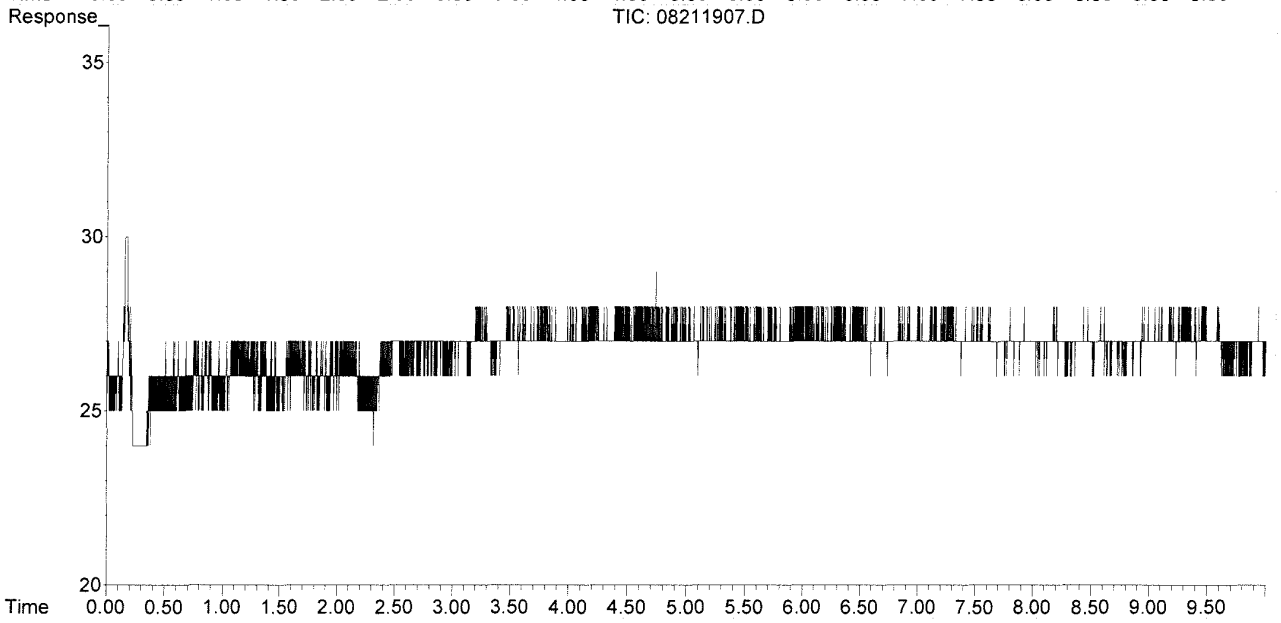
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:30:30
Operator : WH
Sample : P1904812-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:11 2019
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 :



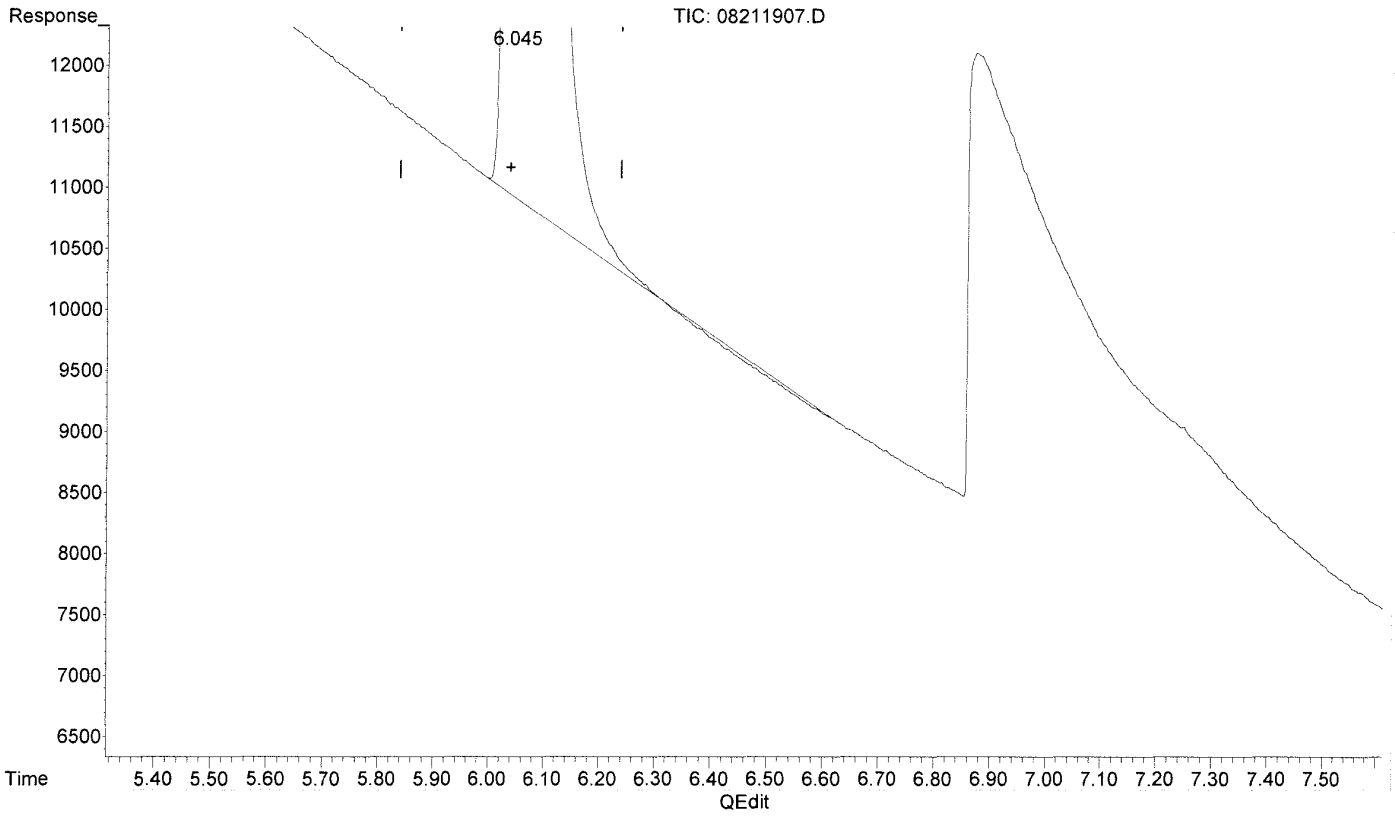



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211907.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:30:30
Operator : WH
Sample : P1904812-001 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:11 2019
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 :




(4) Carbon dioxide

6.046min 5477.089 ppm

response 1285633

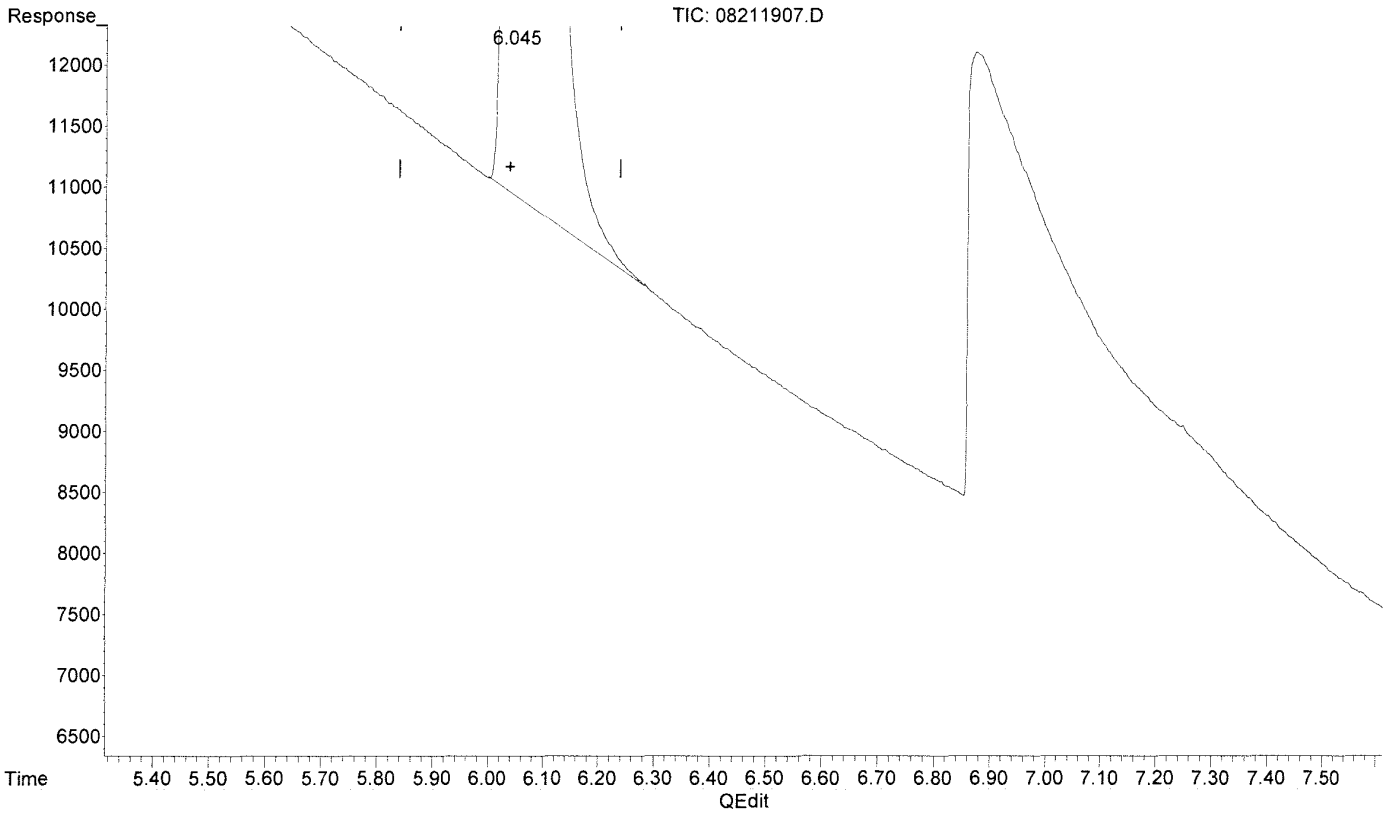
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211907.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:30:30
Operator : WH
Sample : P1904812-001 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:11 2019
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 :




(4) Carbon dioxide

6.045min 5477.858 ppm m

response 1285813

MF 8/22/19

MF 8/21/19

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 21 16:49:39 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:44:38
Operator : WH
Sample : P1904812-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:51 2019
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 | 1.972f | 299934 | 0.063 | ppm | |
| 2) | Carbon monoxide | 1.972f | 299934 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.042 | 1532927 | 6530.618 | ppm | m |
| 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 | |

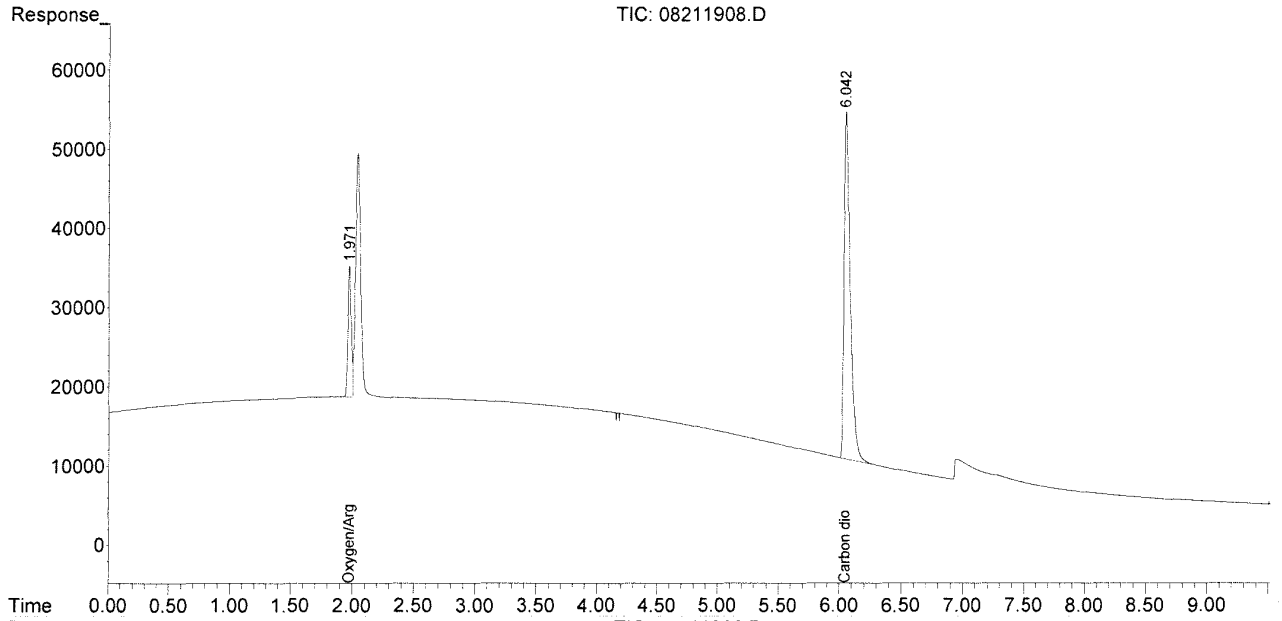
(f)=RT Delta > 1/2 Window (m)=manual int.

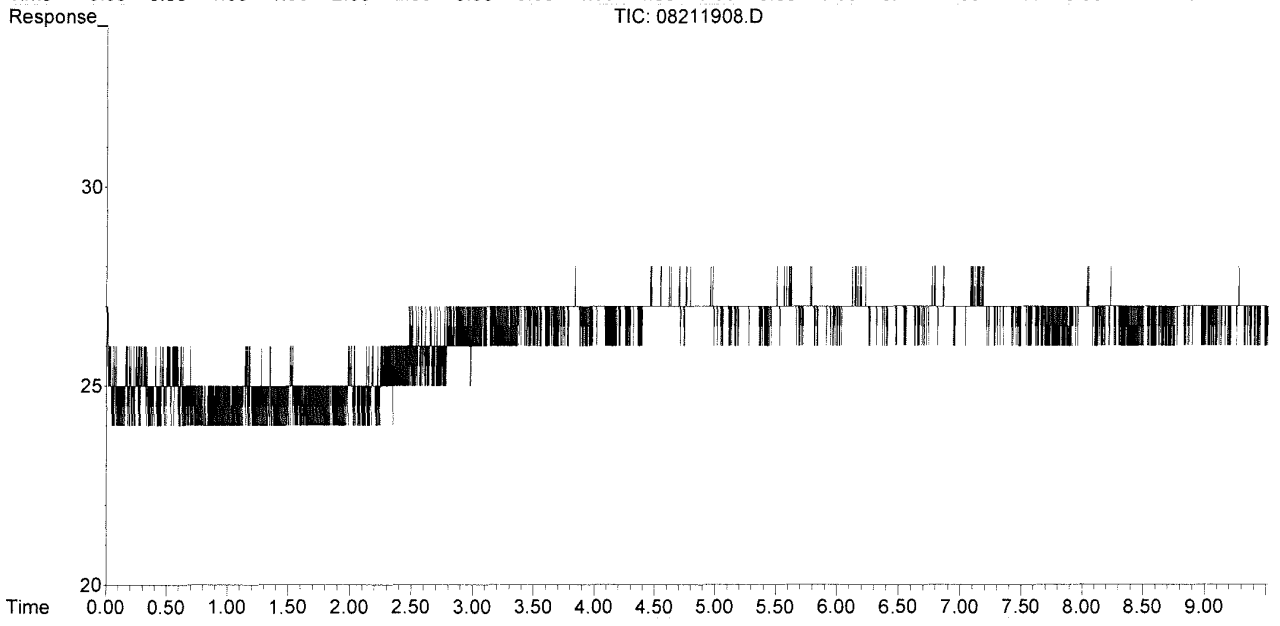
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:44:38
Operator : WH
Sample : P1904812-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:51 2019
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 :



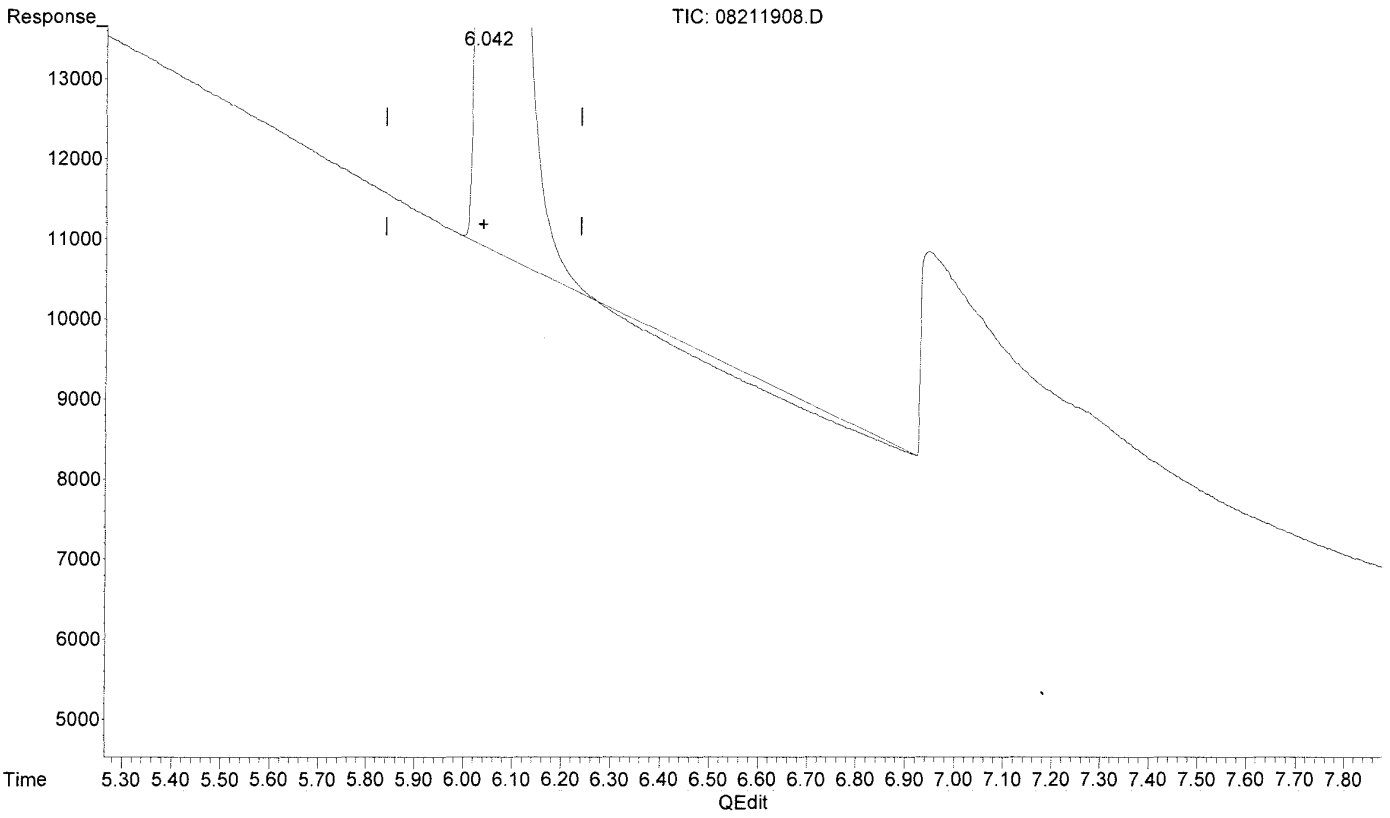



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211908.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:44:38
Operator : WH
Sample : P1904812-002 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:51 2019
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 :




(4) Carbon dioxide

6.043min 6386.648 ppm

response 1499133

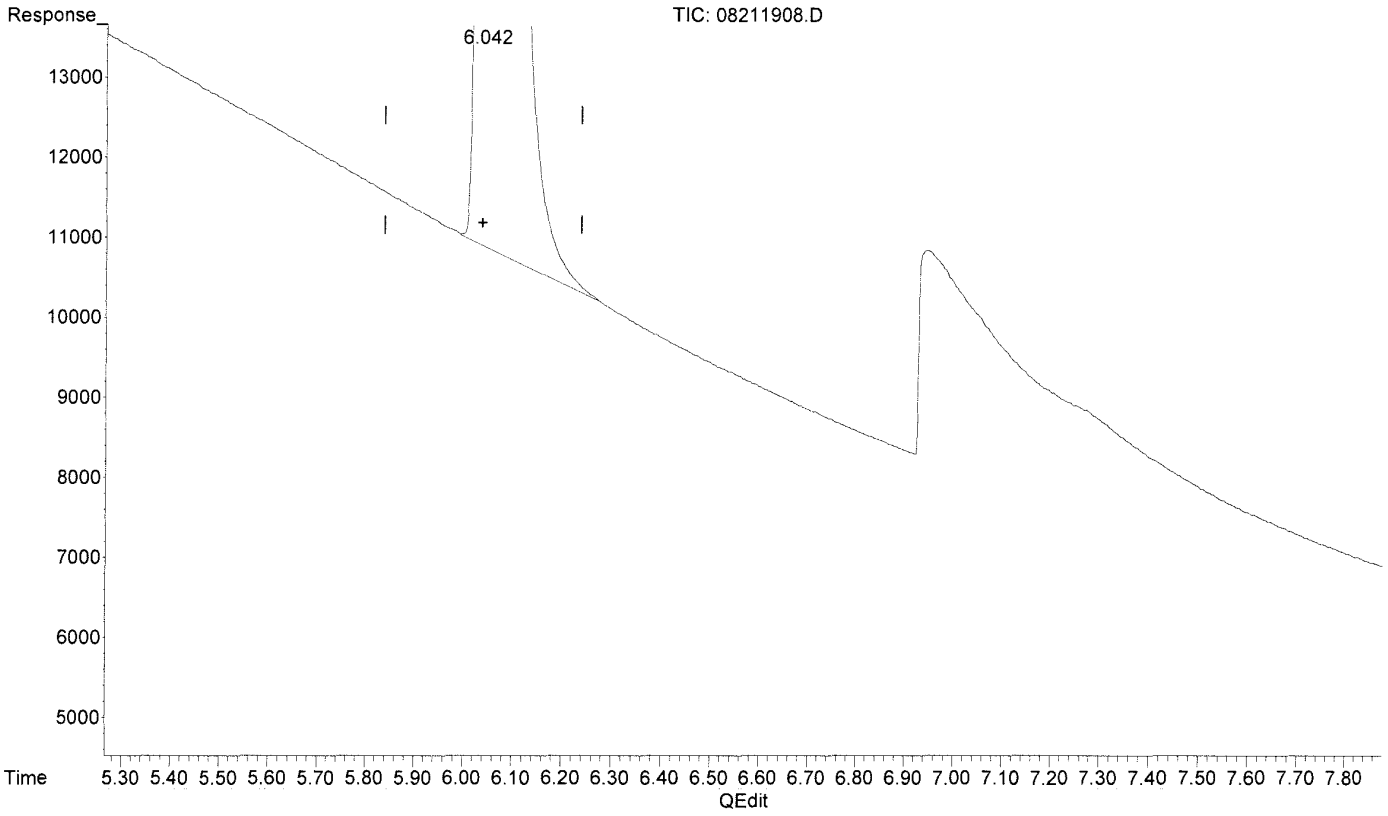
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211908.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:44:38
Operator : WH
Sample : P1904812-002 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:49:51 2019
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 :




(4) Carbon dioxide

6.042min 6530.618 ppm m

response 1532927

8/22/19

8/21/19

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 21 16:50:06 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:04:09
Operator : WH
Sample : P1904812-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:50:16 2019
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 | 1.974f | 307576 | 0.065 | ppm | |
| 2) | Carbon monoxide | 1.974f | 307576 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.043 | 1571129 | 6693.369 | ppm | m |
| 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 | |

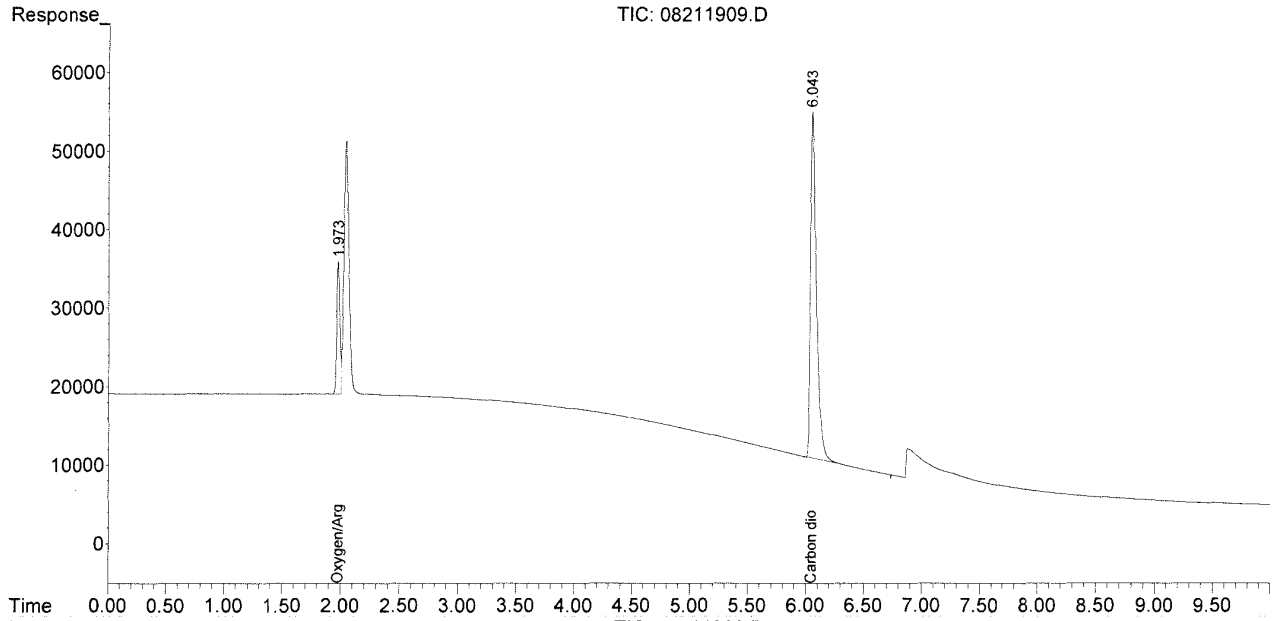
(f)=RT Delta > 1/2 Window (m)=manual int.

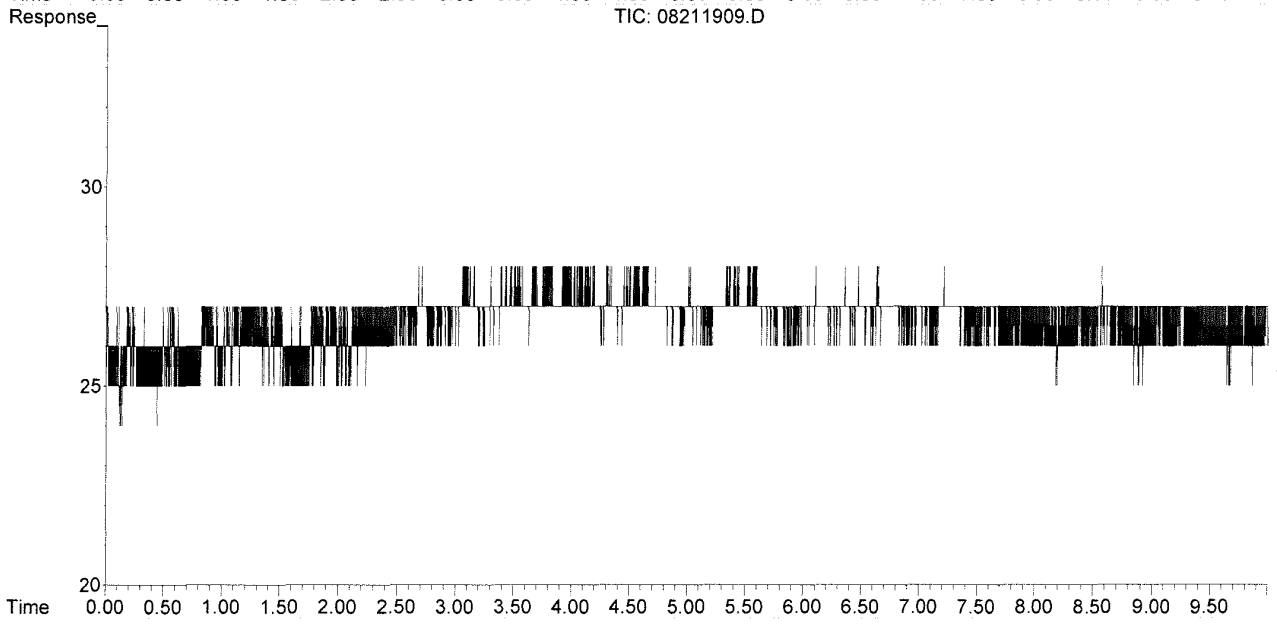
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:04:09
Operator : WH
Sample : P1904812-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:50:16 2019
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 :



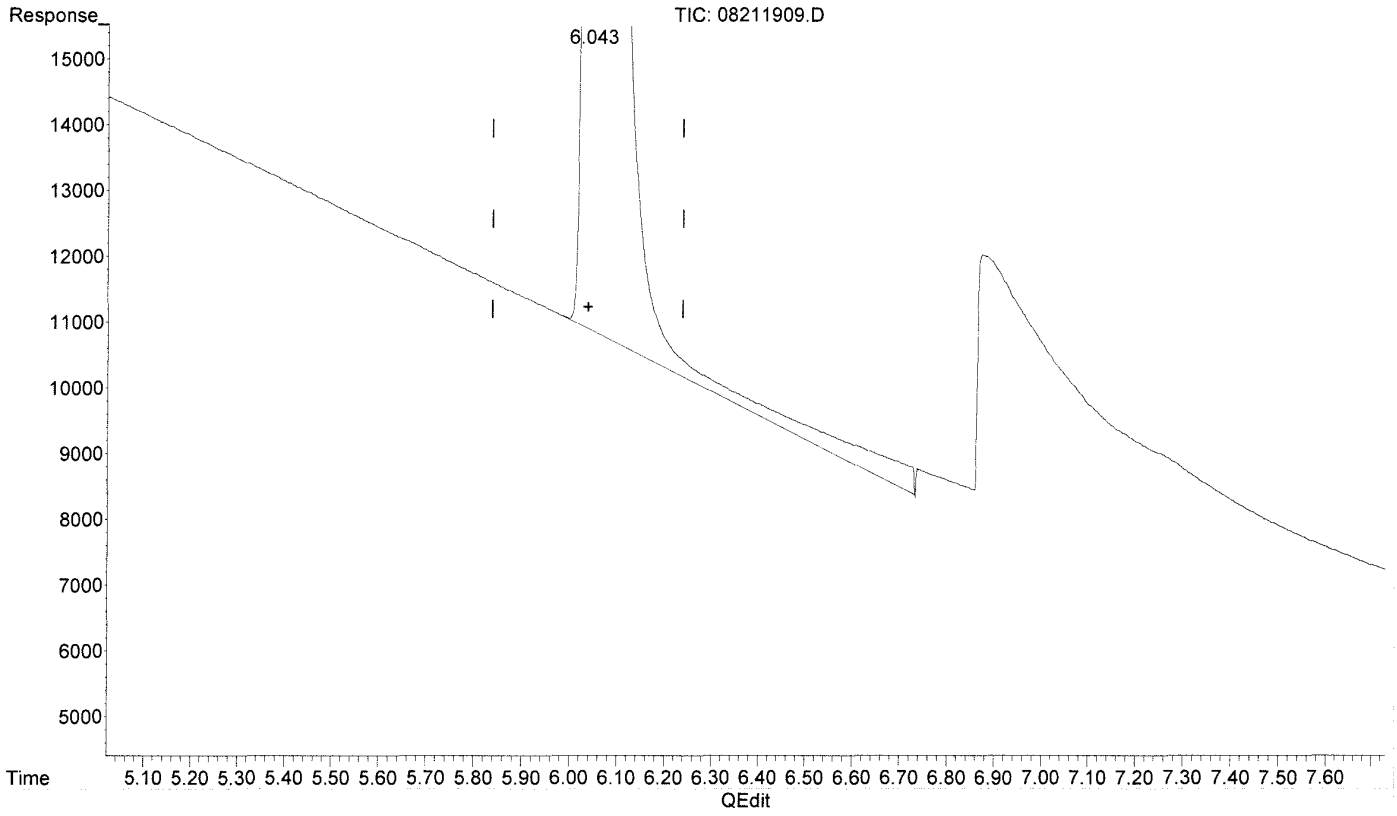



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211909.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:04:09
Operator : WH
Sample : P1904812-003 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:50:16 2019
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 :




(4) Carbon dioxide

6.043min 7025.073 ppm

response 1648990

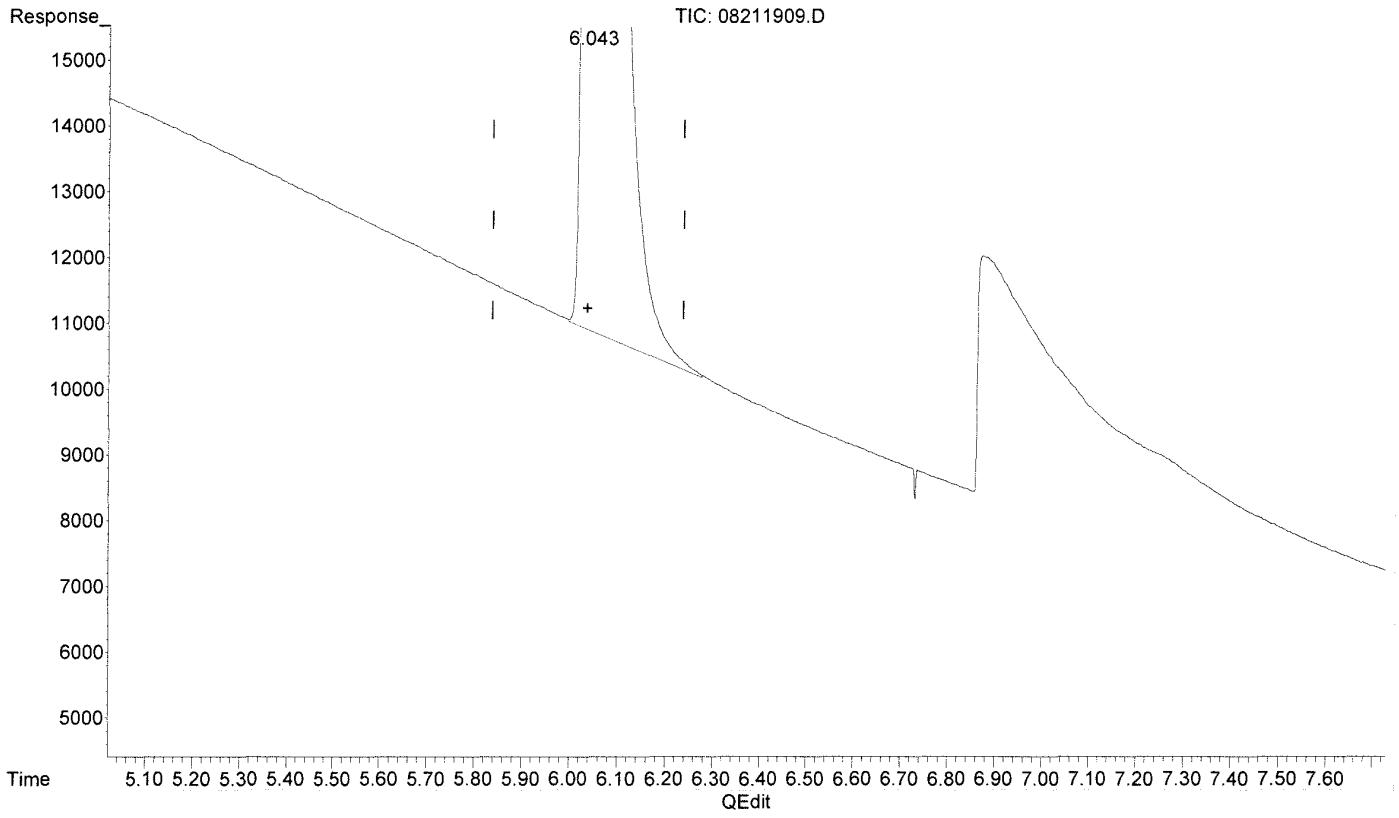
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211909.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:04:09
Operator : WH
Sample : P1904812-003 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:50:16 2019
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 #1 Info :
Signal #2 Phase:
Signal #2 Info :




(4) Carbon dioxide

6.043min 6693.369 ppm m

response 1571129

MK 8/22/19

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 21 16:52:18 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:17:26
Operator : WH
Sample : P1904812-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:52:30 2019
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 | 1.973f | 1254179 | 0.264 | ppm |
| 2) | Carbon monoxide | 1.973f | 1254179 | N.D. | ppm |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm |
| 4) | Carbon dioxide | 6.041 | 1716811 | 7314.005 | 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 |

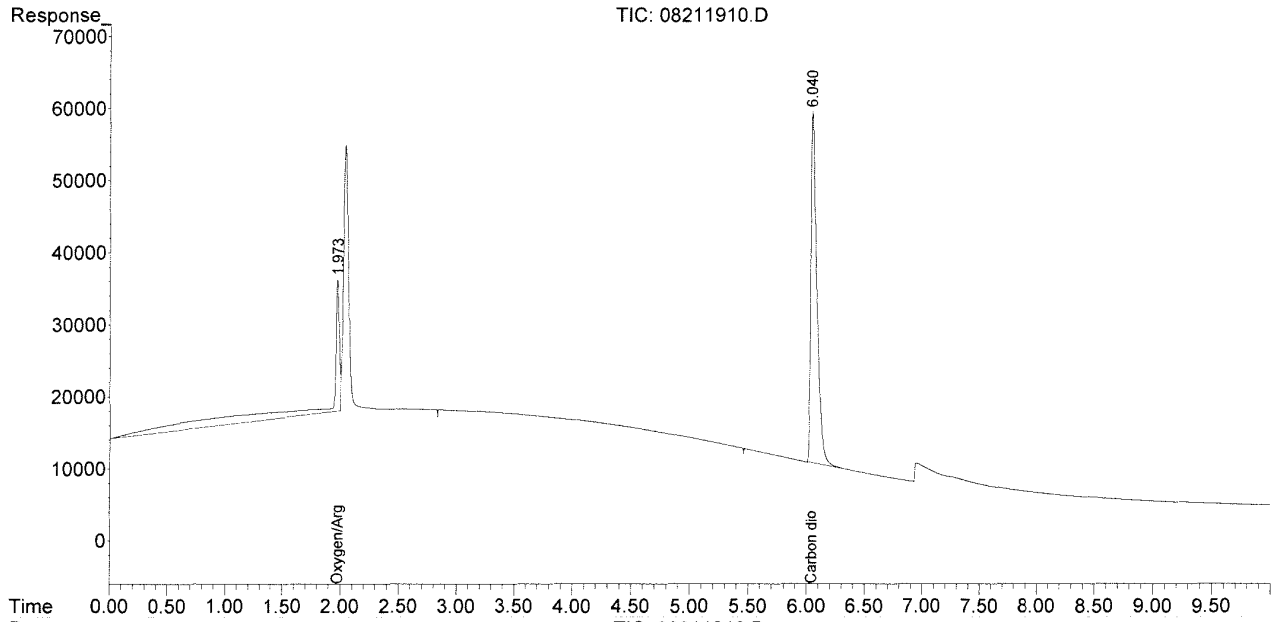
(f)=RT Delta > 1/2 Window (m)=manual int.

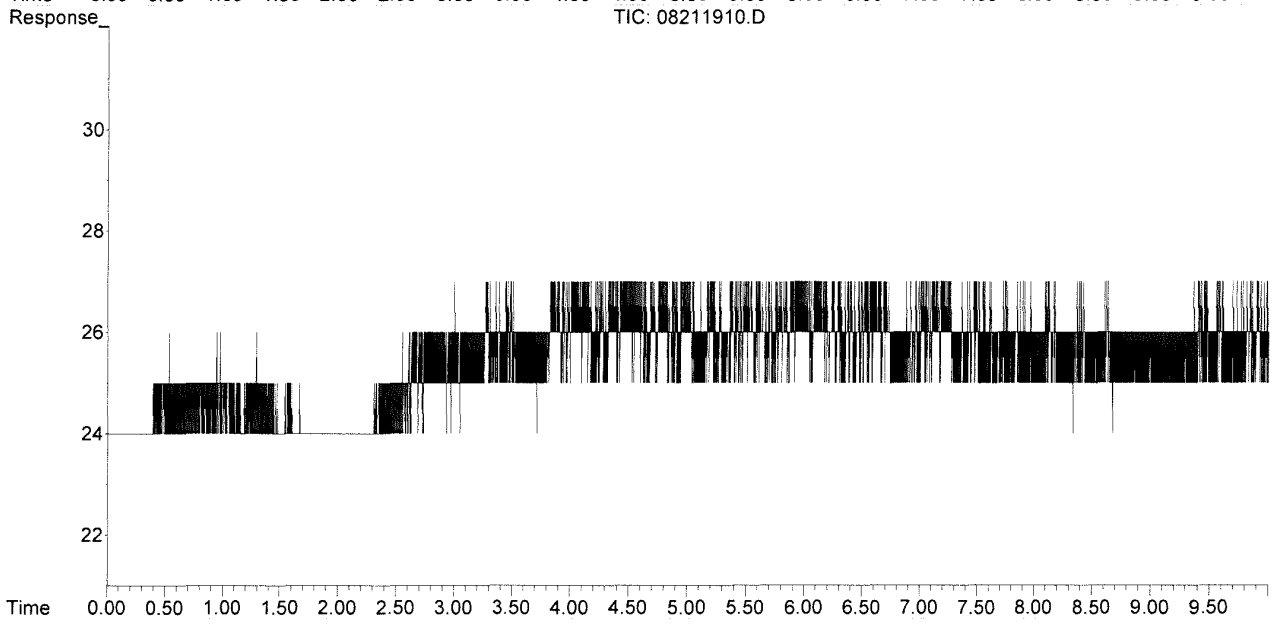
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:17:26
Operator : WH
Sample : P1904812-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:52:30 2019
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\2019_08\21\
Data File : 08211903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:24:01
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 21 13:41:54 2019
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 | 1.975f | 146912 | 0.031 | ppm | |
| 2) | Carbon monoxide | 1.975f | 146912 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.073 | 6238 | 26.576 | ppm | m |
| 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 | |

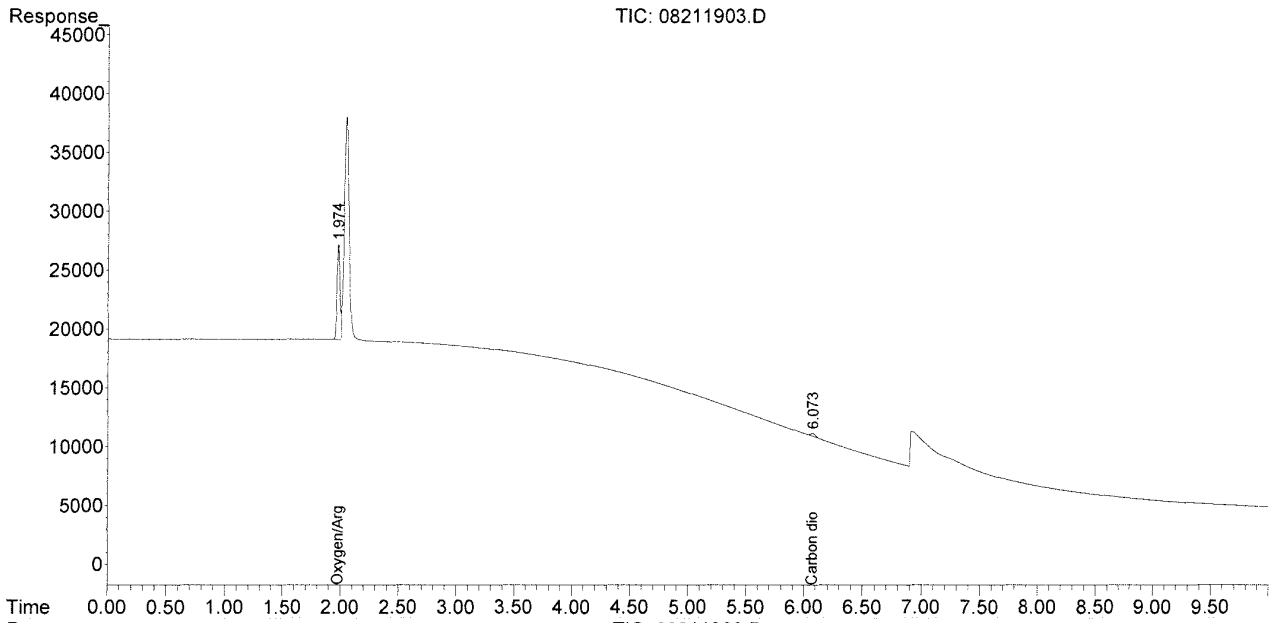
(f)=RT Delta > 1/2 Window (m)=manual int.

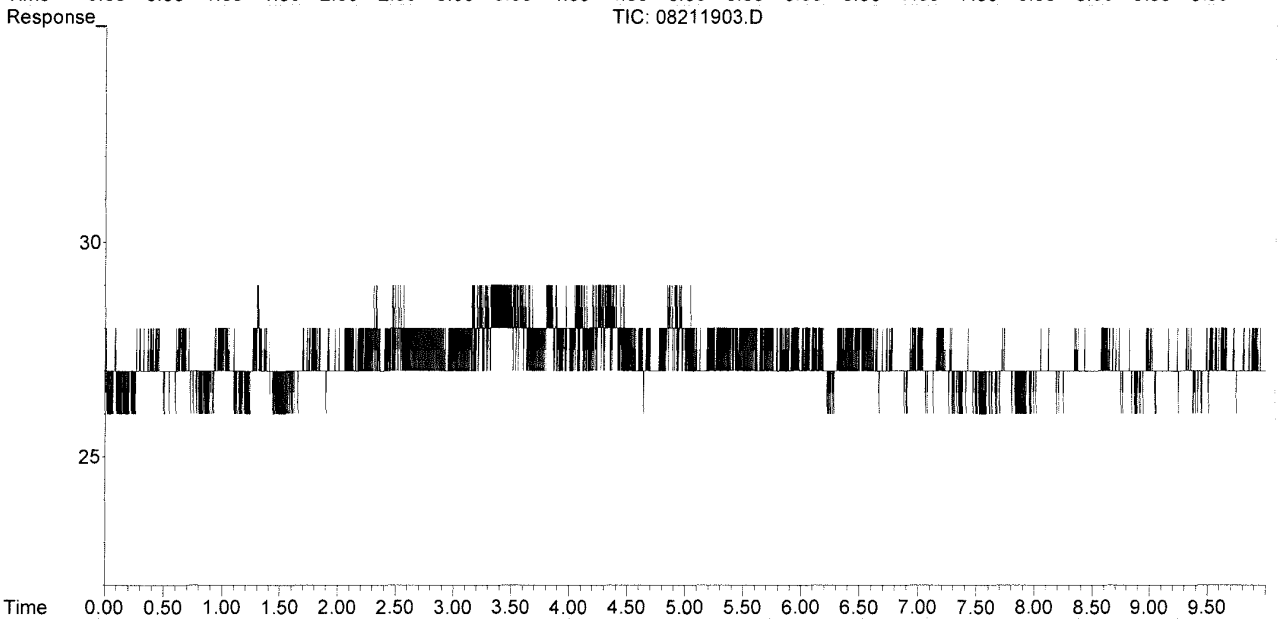
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:24:01
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 21 13:41:54 2019
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 :



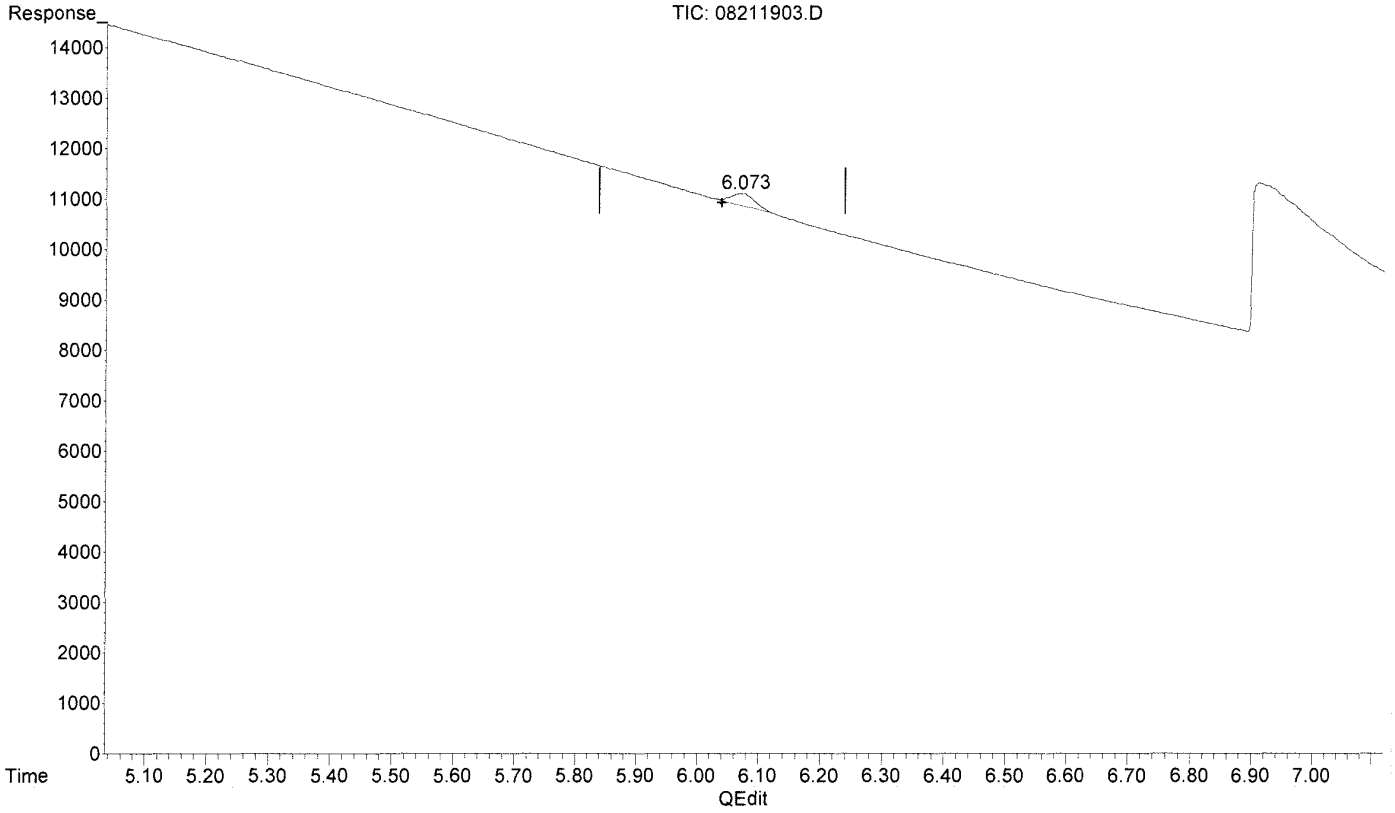



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211903.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:24:01
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 21 13:41:54 2019
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 :




(4) Carbon dioxide

6.073min 26.576 ppm m

response 6238

MR 8/22/19

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:43:39
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 13:56:23 2019
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 | 1.919f | 2348841 | 0.494 | ppm | |
| 2) | Carbon monoxide | 1.919f | 2348841 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.067 | 263675 | 1123.317 | ppm | m |
| 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 | |

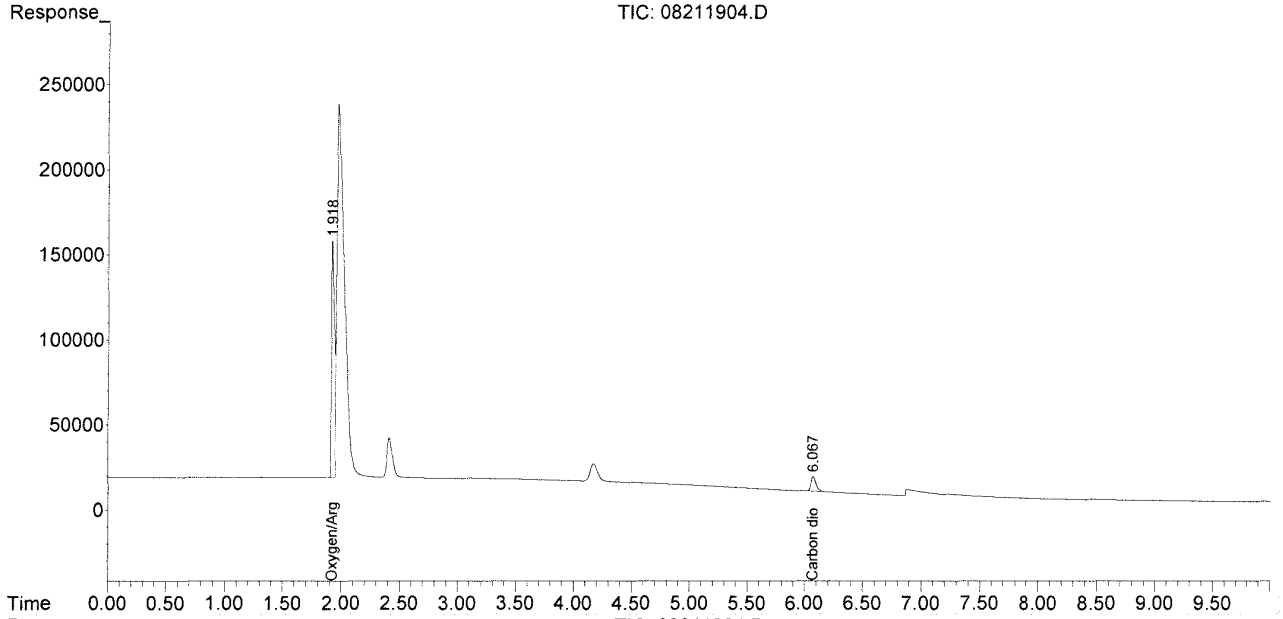
(f)=RT Delta > 1/2 Window (m)=manual int.

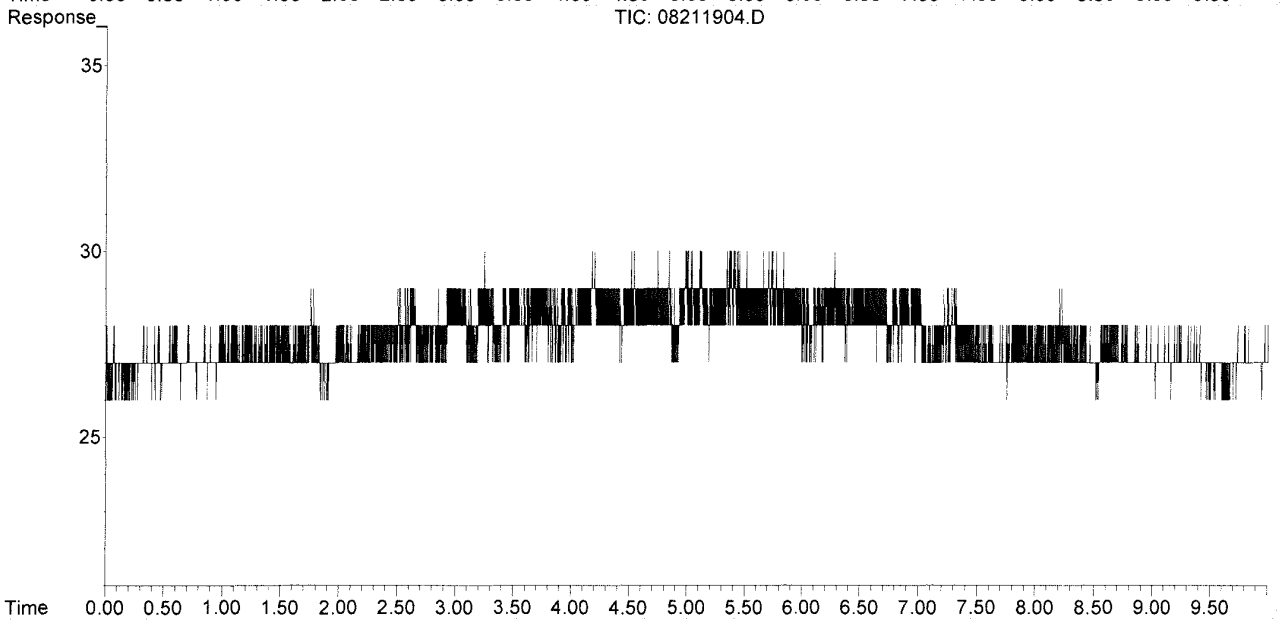
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:43:39
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 13:56:23 2019
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 :



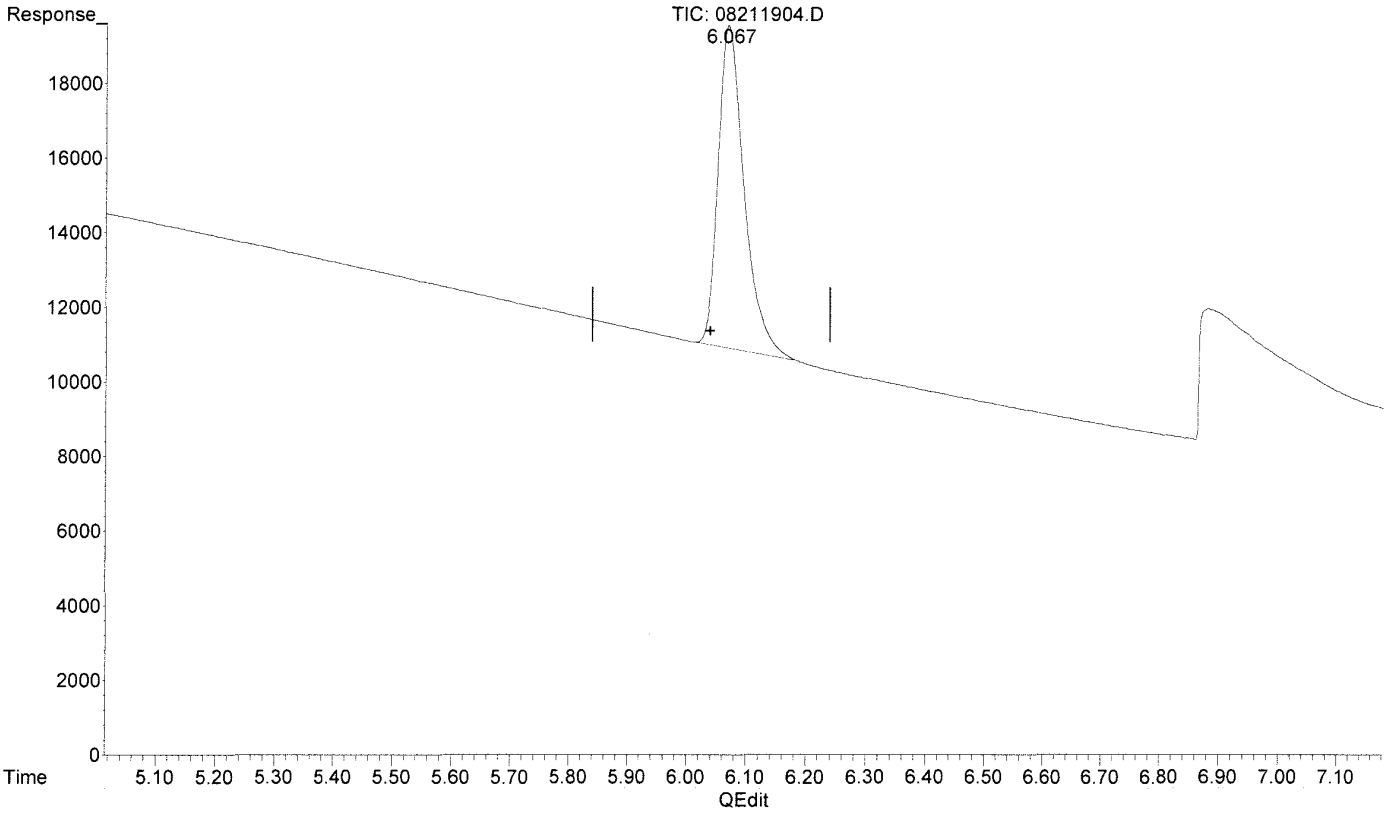



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211904.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:43:39
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 13:56:23 2019
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 :




(4) Carbon dioxide

6.067min 1123.317 ppm m

response 263675

MR 8/22/19

WH 12/16/19 Re-issue w/ printout

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:12:37
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 14:22:55 2019
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 | 1.955f | 1050494 | 0.221 | ppm | |
| 2) | Carbon monoxide | 1.955f | 1050494 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.069 | 251793 | 1072.695 | ppm | m |
| 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 | |

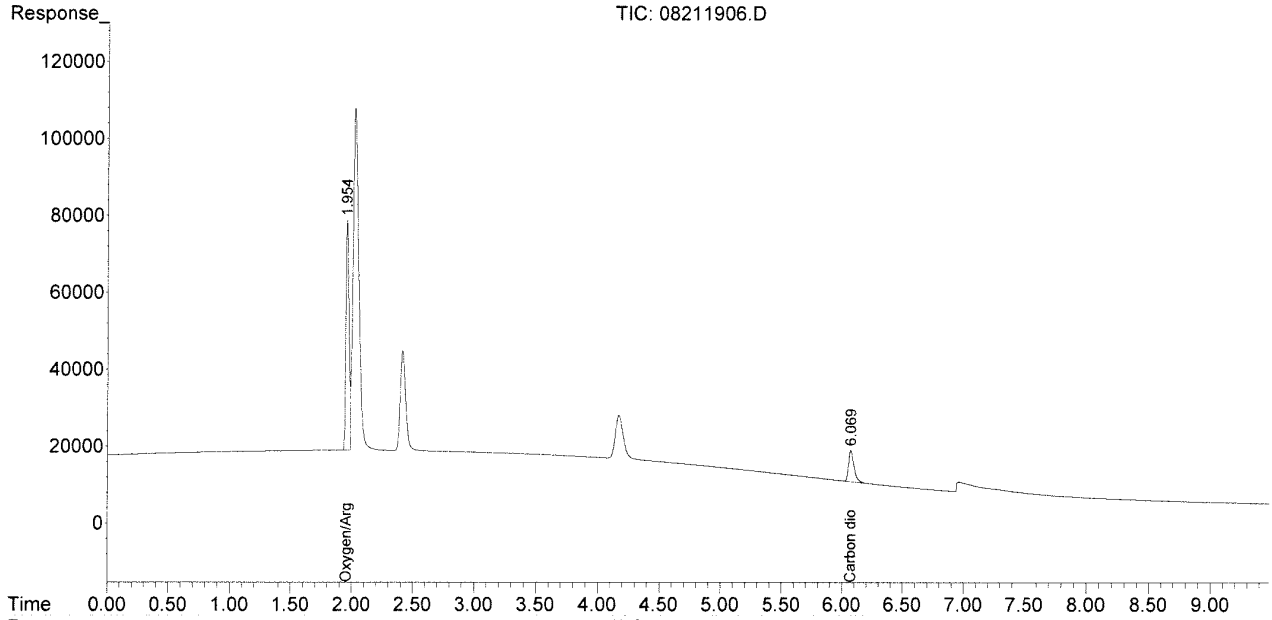
(f)=RT Delta > 1/2 Window (m)=manual int.

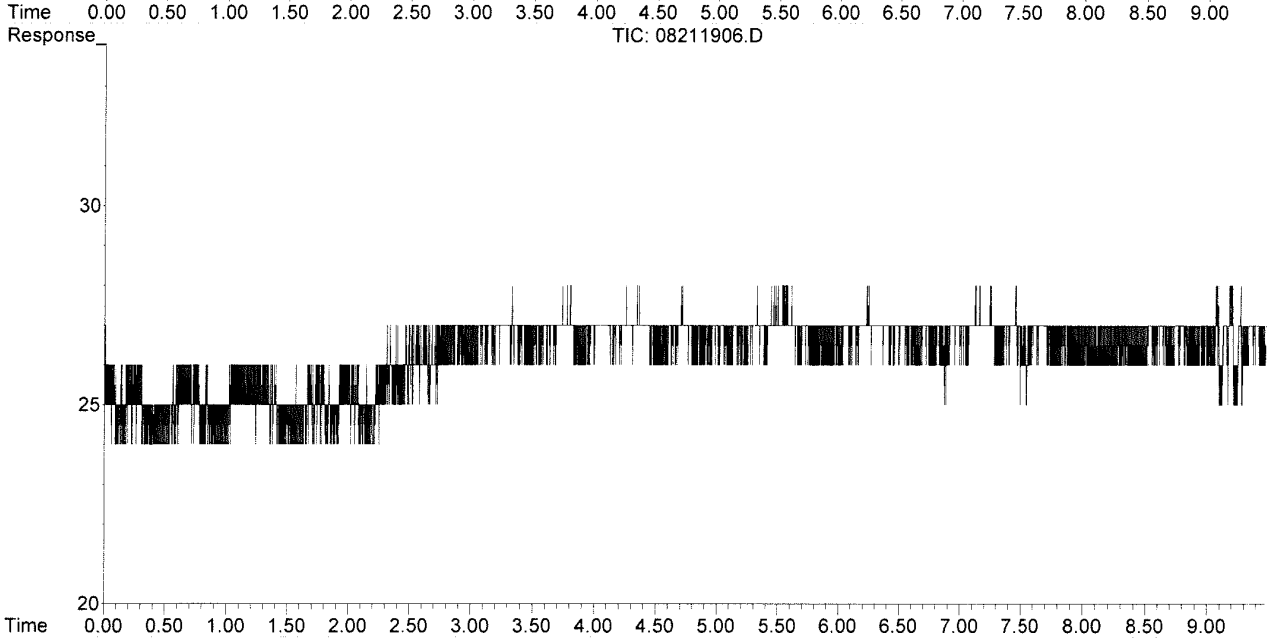
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:12:37
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 14:22:55 2019
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 :



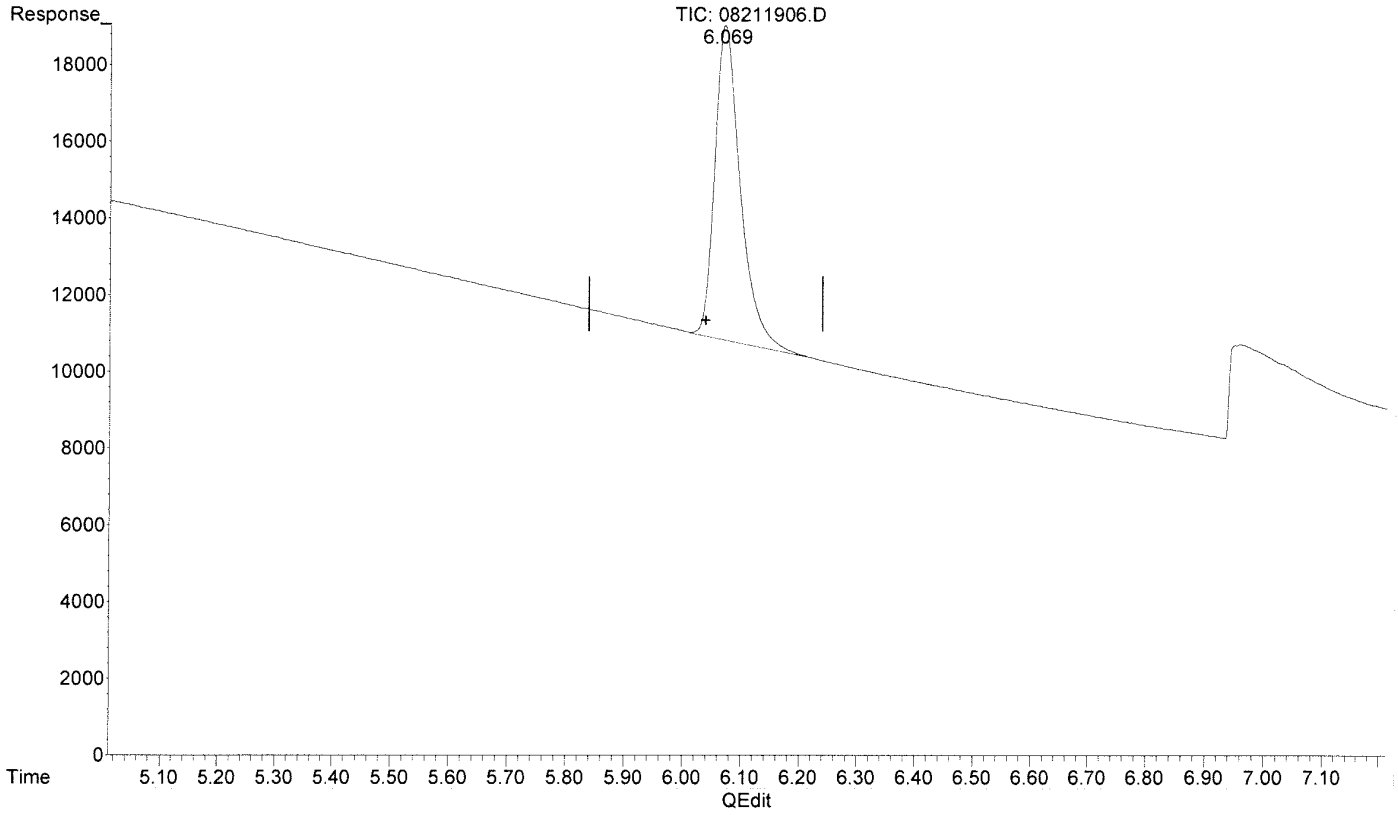



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211906.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:12:37
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 14:22:55 2019
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 :




(4) Carbon dioxide

6.069min 1072.695 ppm m

response 251793

MR 8/22/19

(+) = Expected Retention Time

# 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

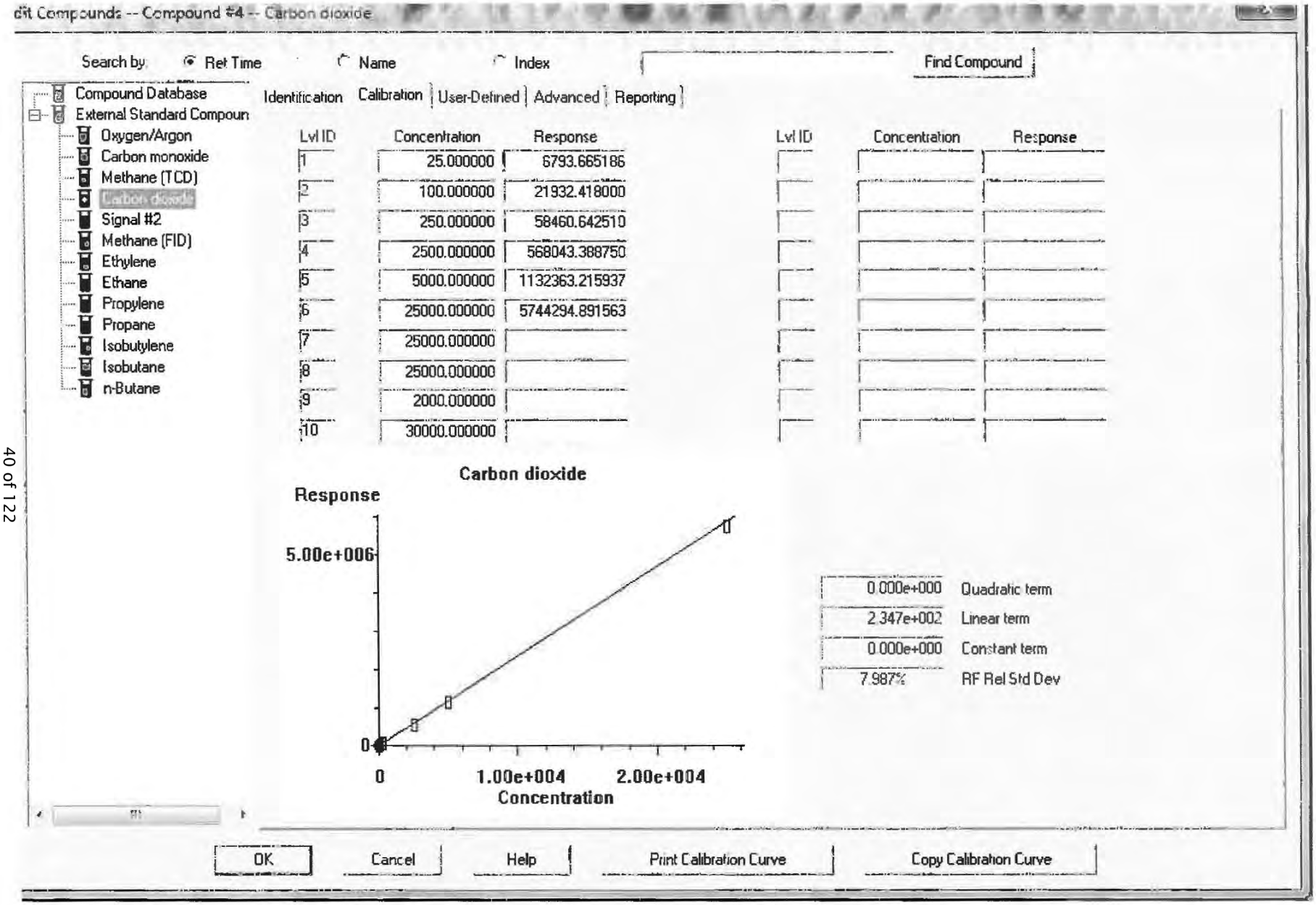
| | Compound | 1 | 2 | 3 | 4 | 5 | 6 | Avg | | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | Oxygen/Argon | 4.760 | | | | | | 4.760 | E6 | 0.00 |
| 2) | Carbon monoxide | 2.775 | | 1.066 | 0.043 | 0.033 | 0.027 | 0.657 | E6 | 170.12 |
| 3) | Methane (TCD) | | | | | | | 9.457 | | 0.00 |
| 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
Carbon dioxide
Response
5.00e+006
0
0
1.00e+004
2.00e+004
Concentration
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

Quantitation Report (QT Reviewed)

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 | |

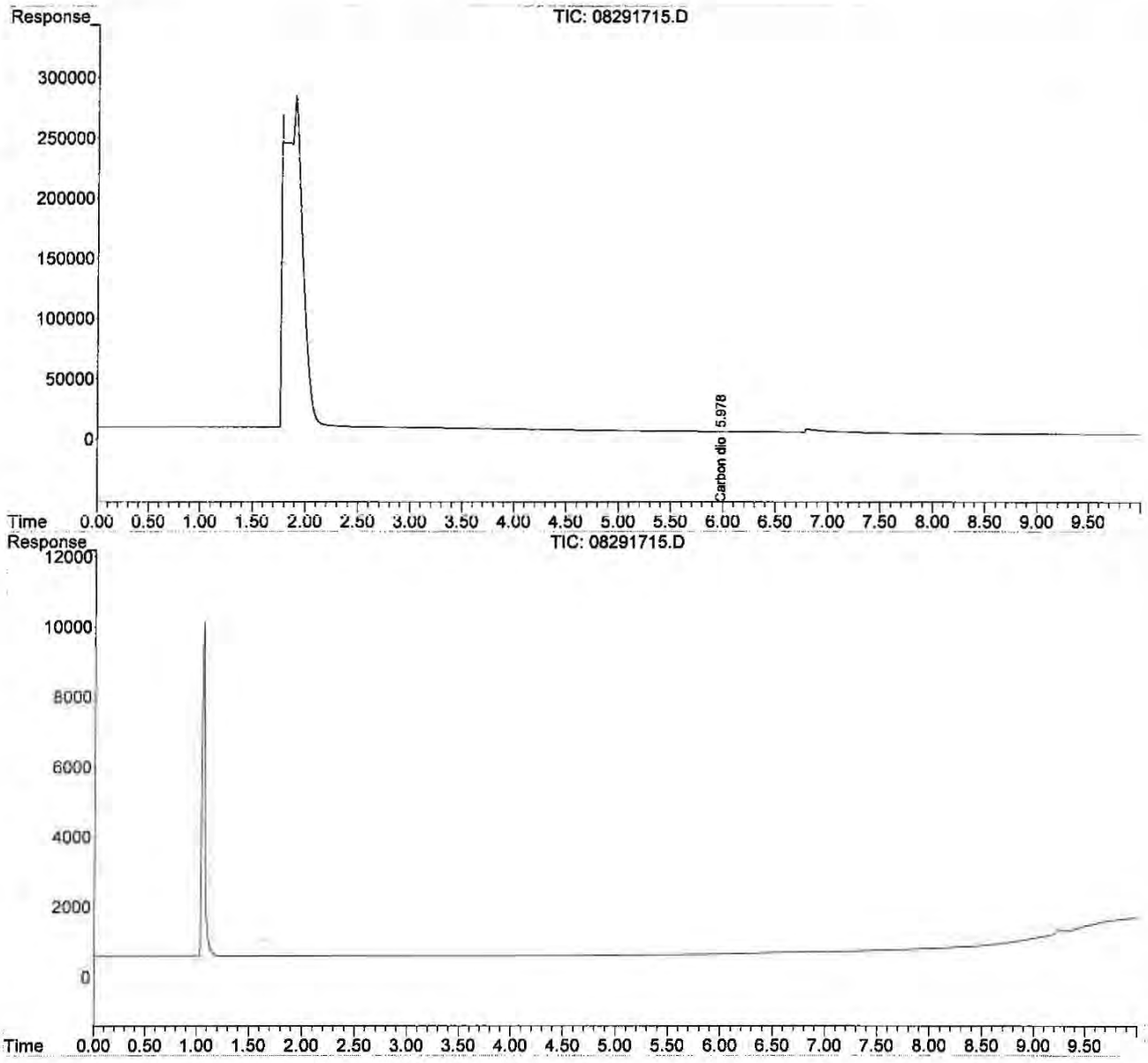
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :

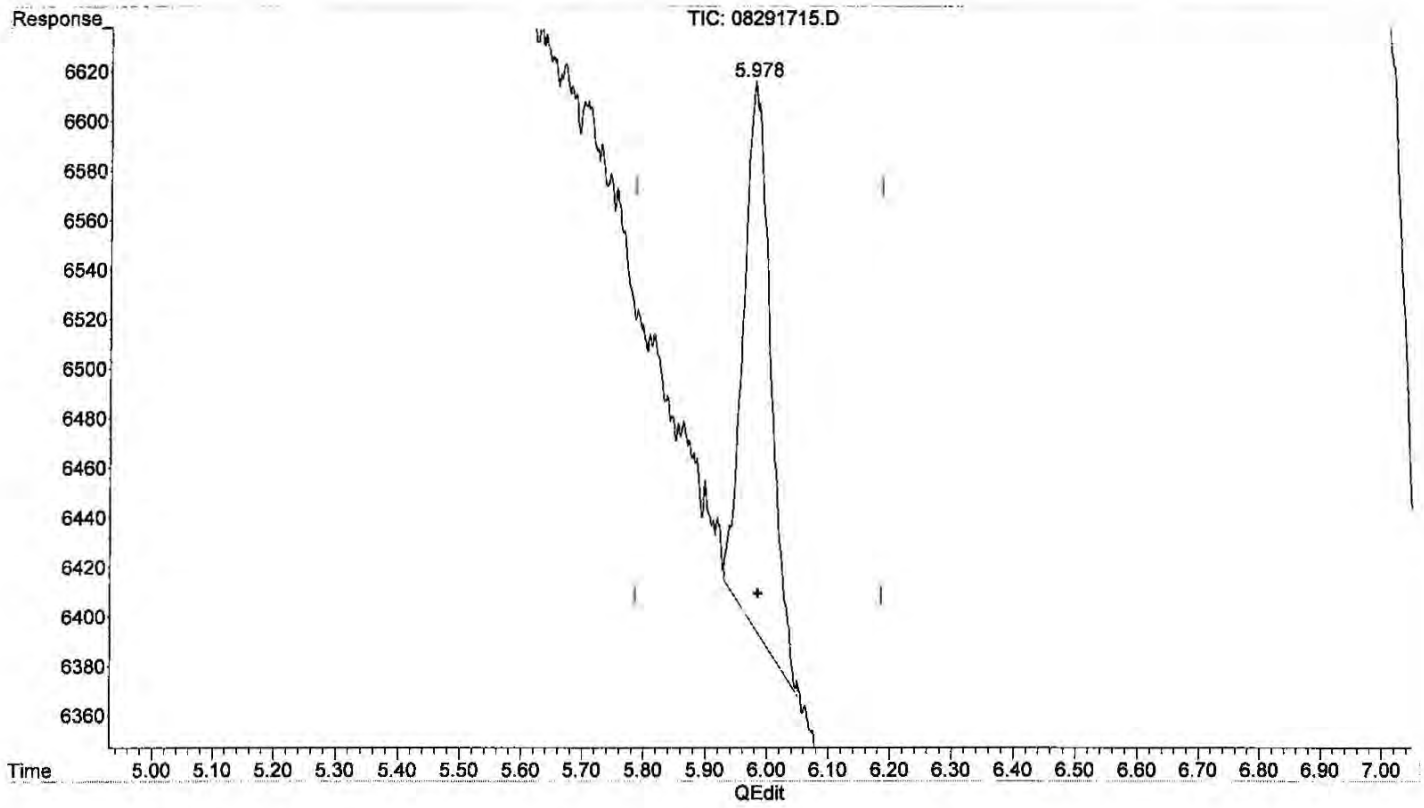


Quantitation Report (Qedit)

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 #1 Info :
Signal #2 Phase:
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

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 :

| | 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 | |

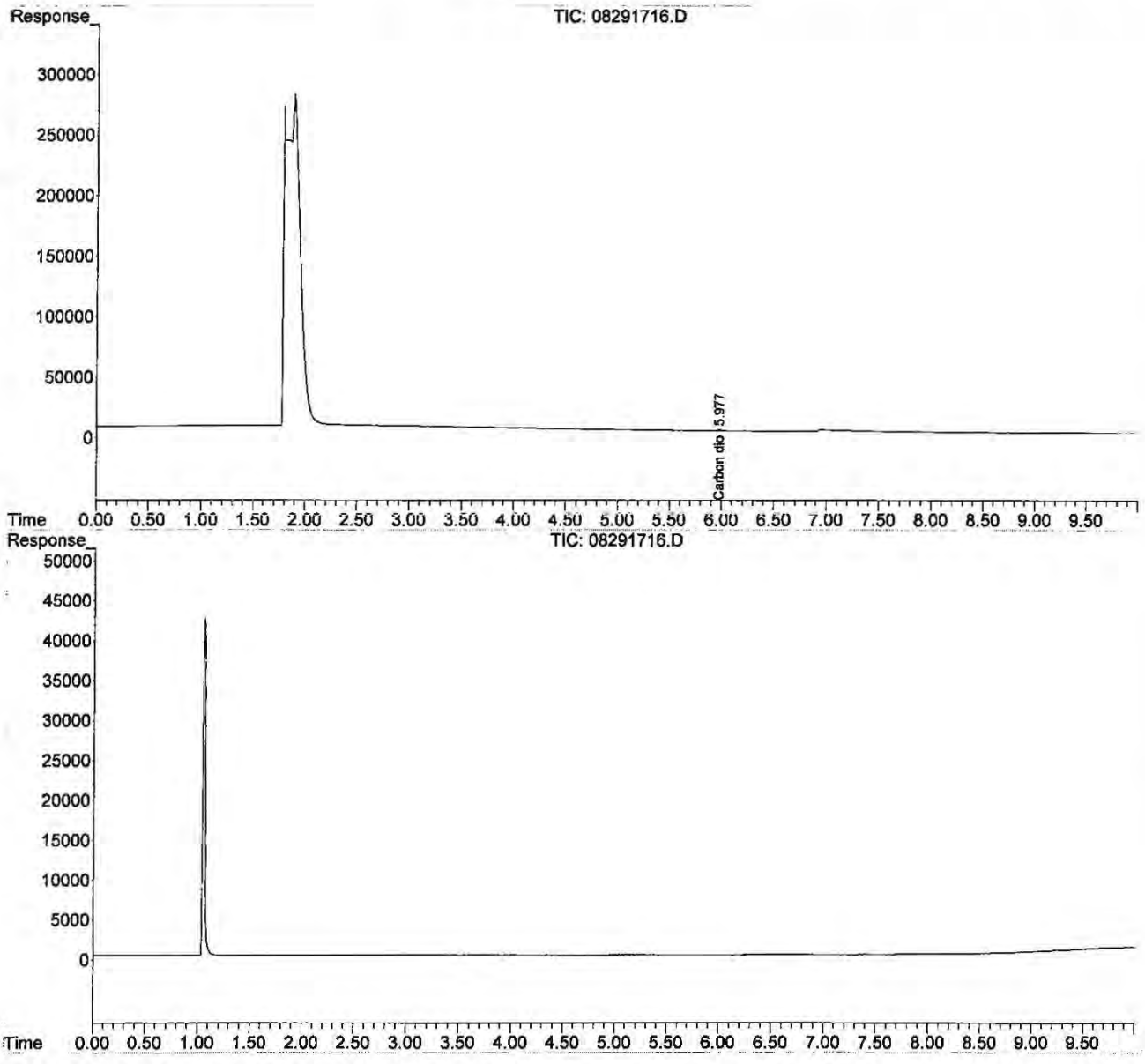
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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 :

| | 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 | |

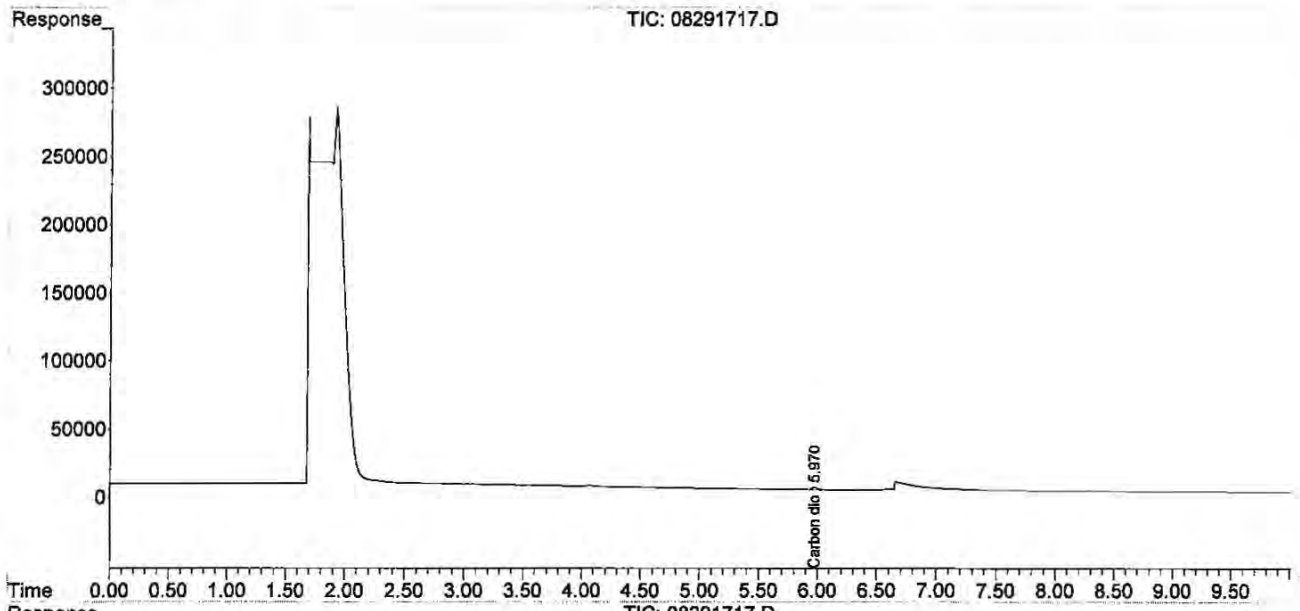
(f)=RT Delta > 1/2 Window (m)=manual int.

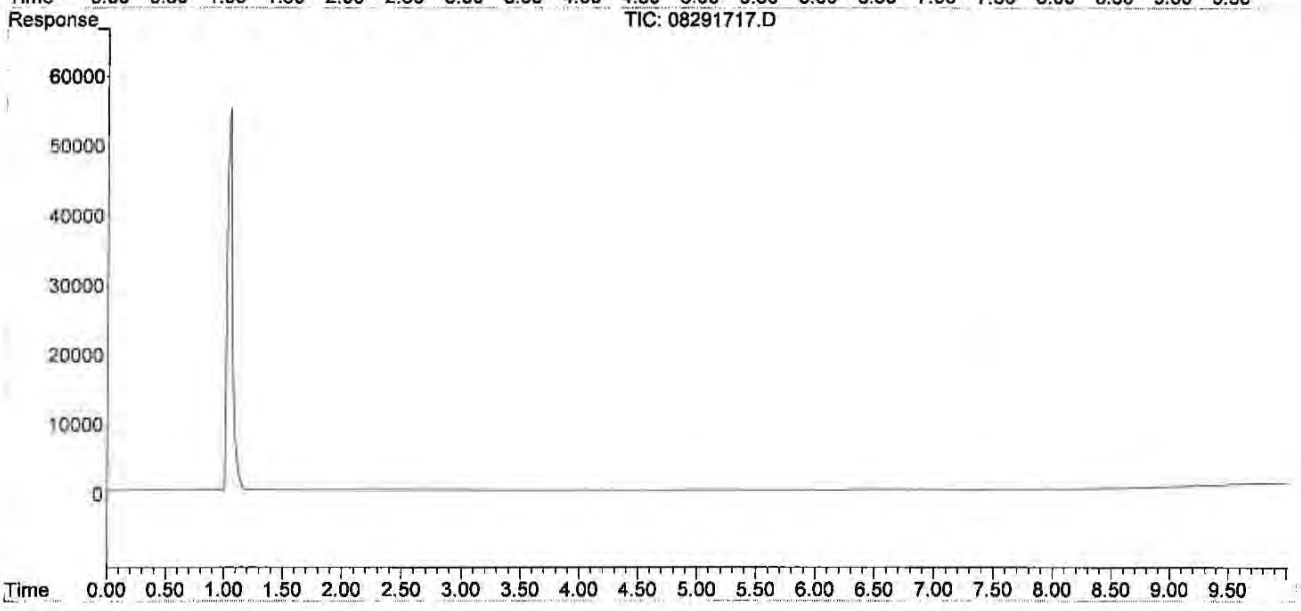
Quantitation Report (QT Reviewed)

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 :



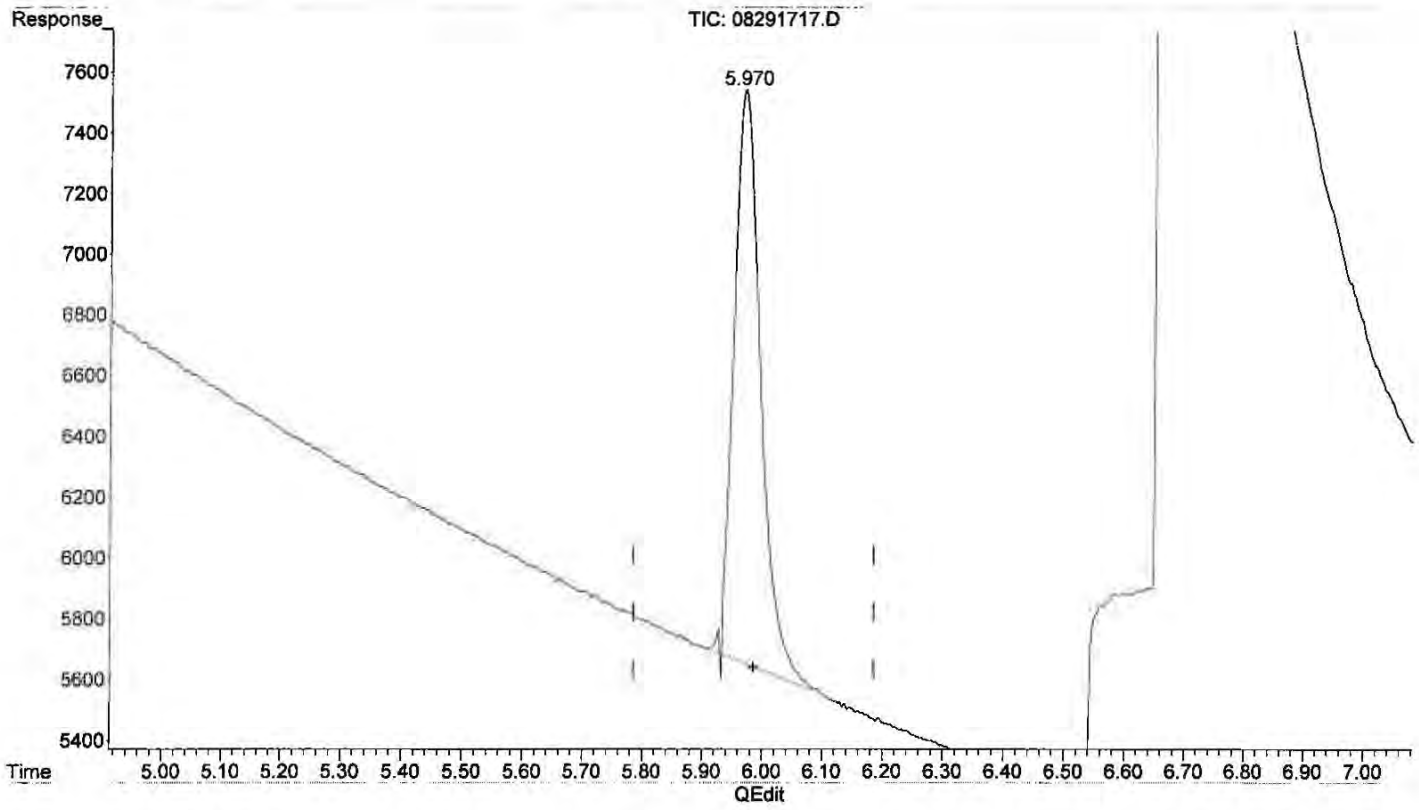



Quantitation Report (Qedit)

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 | |

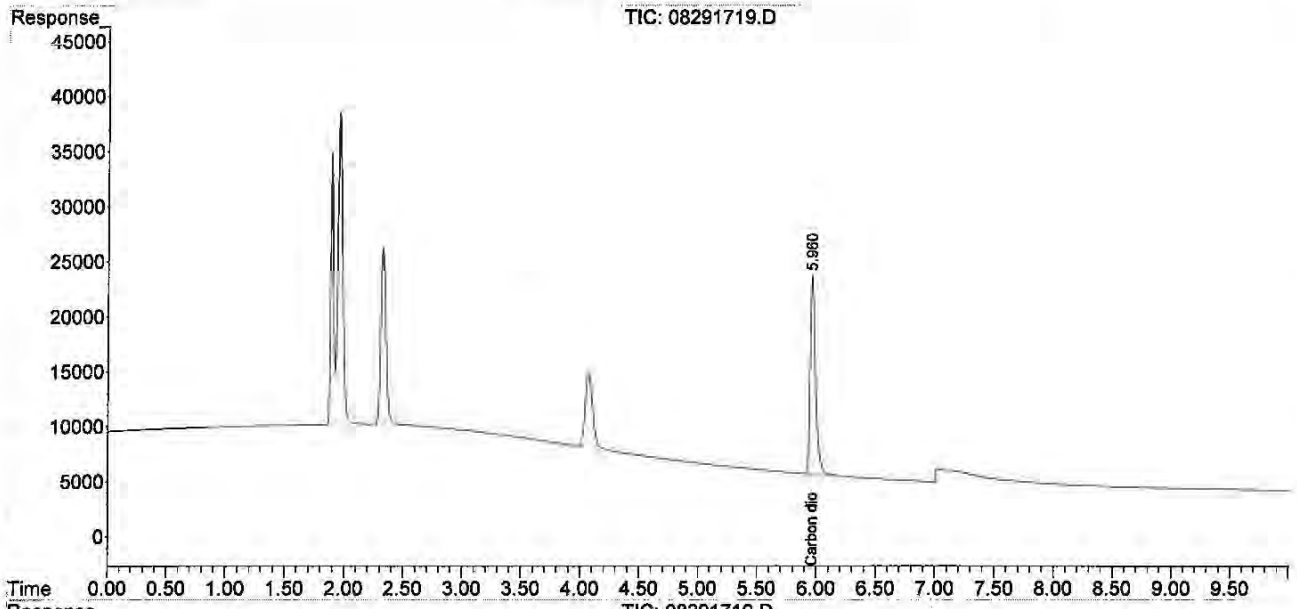
(f)=RT Delta > 1/2 Window (m)=manual int.

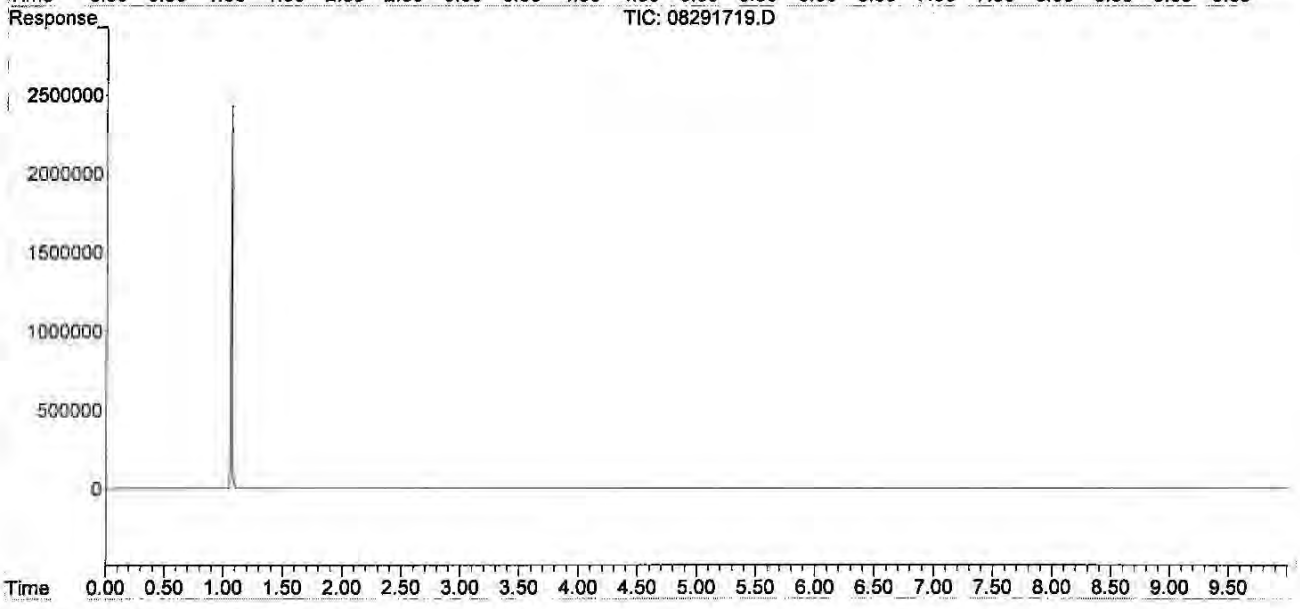
Quantitation Report (QT Reviewed)

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 :



Quantitation Report (QT Reviewed)

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 | |

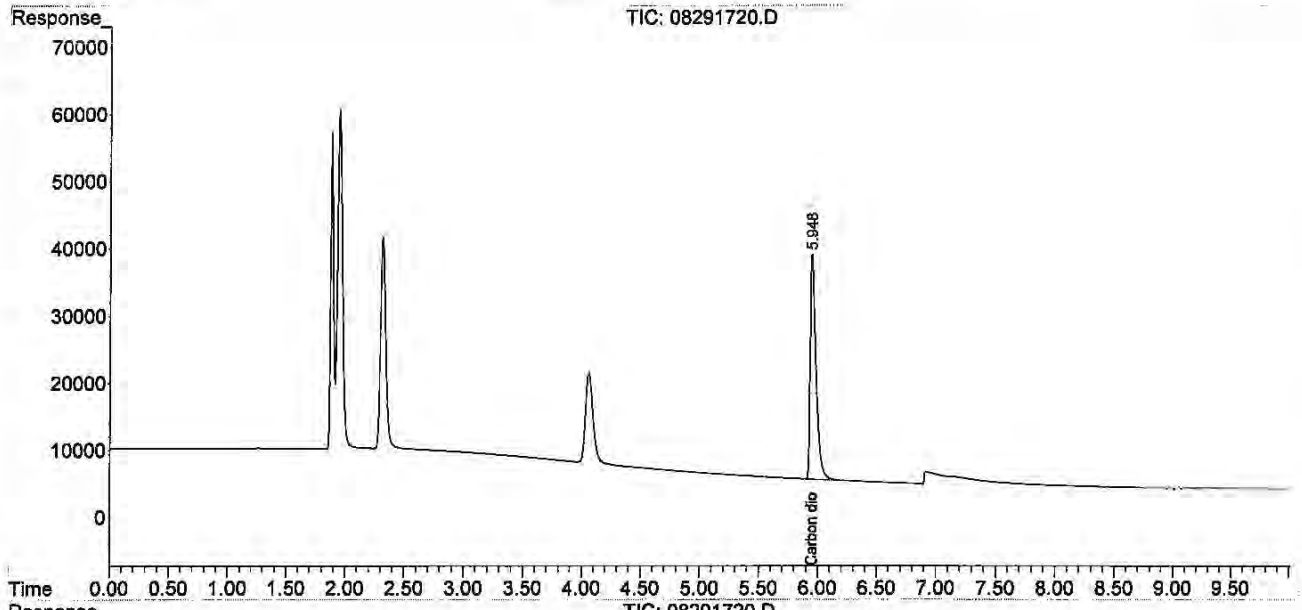
(f)=RT Delta > 1/2 Window (m)=manual int.

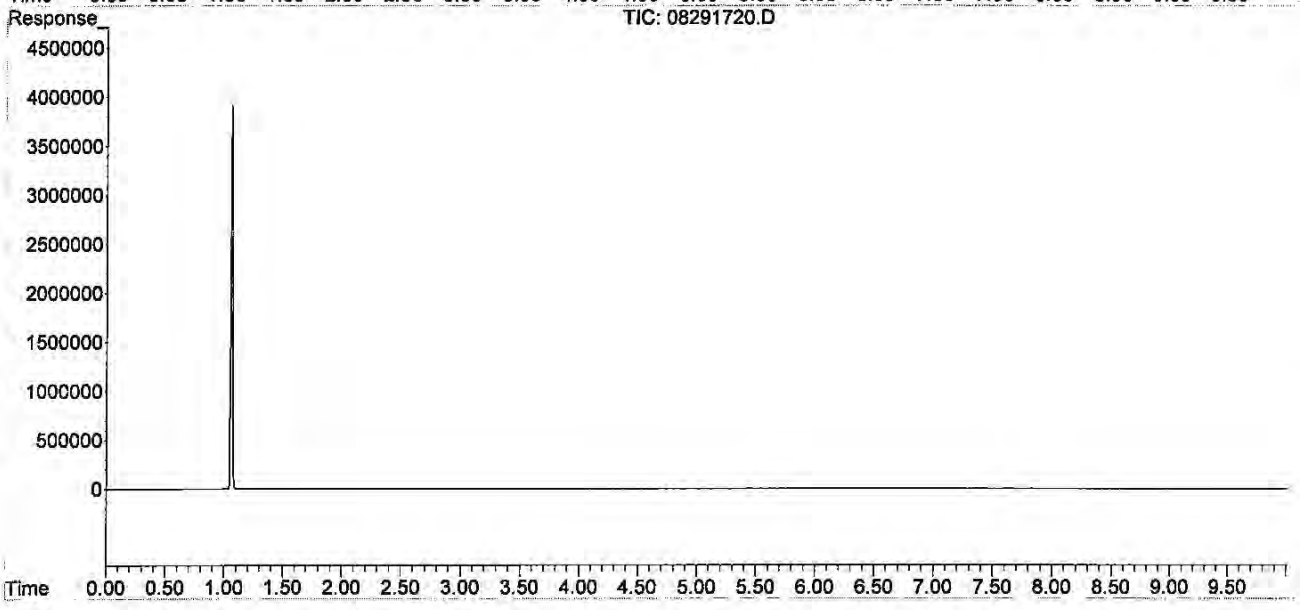
Quantitation Report (QT Reviewed)

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 | |

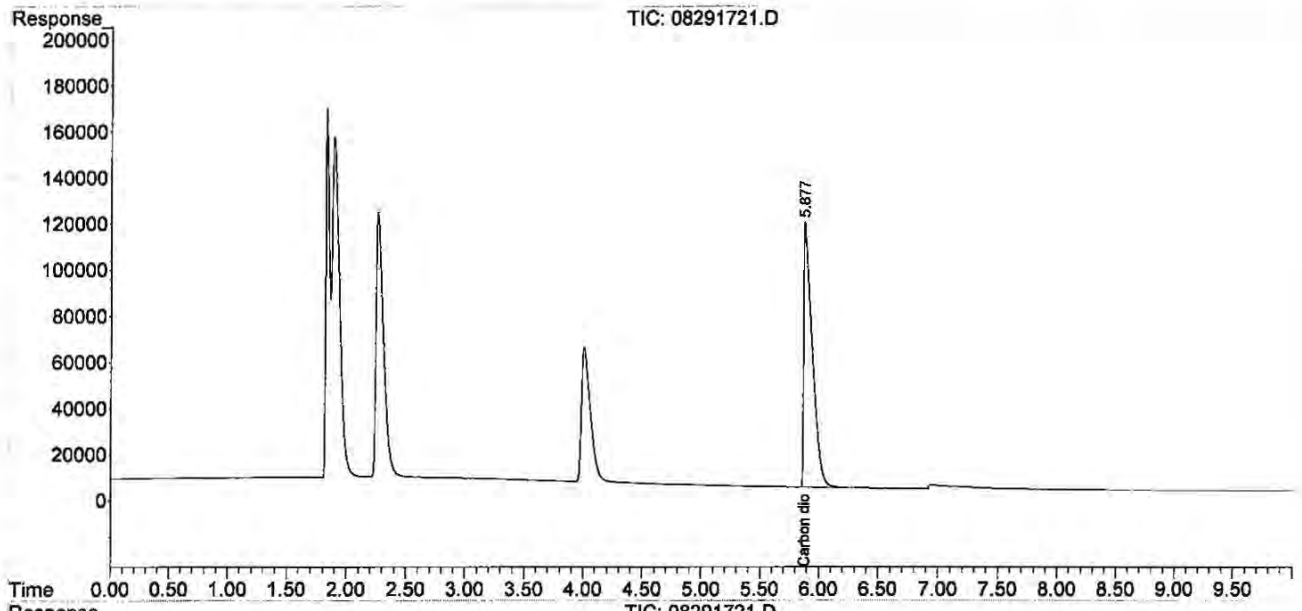
(f)=RT Delta > 1/2 Window (m)=manual int.

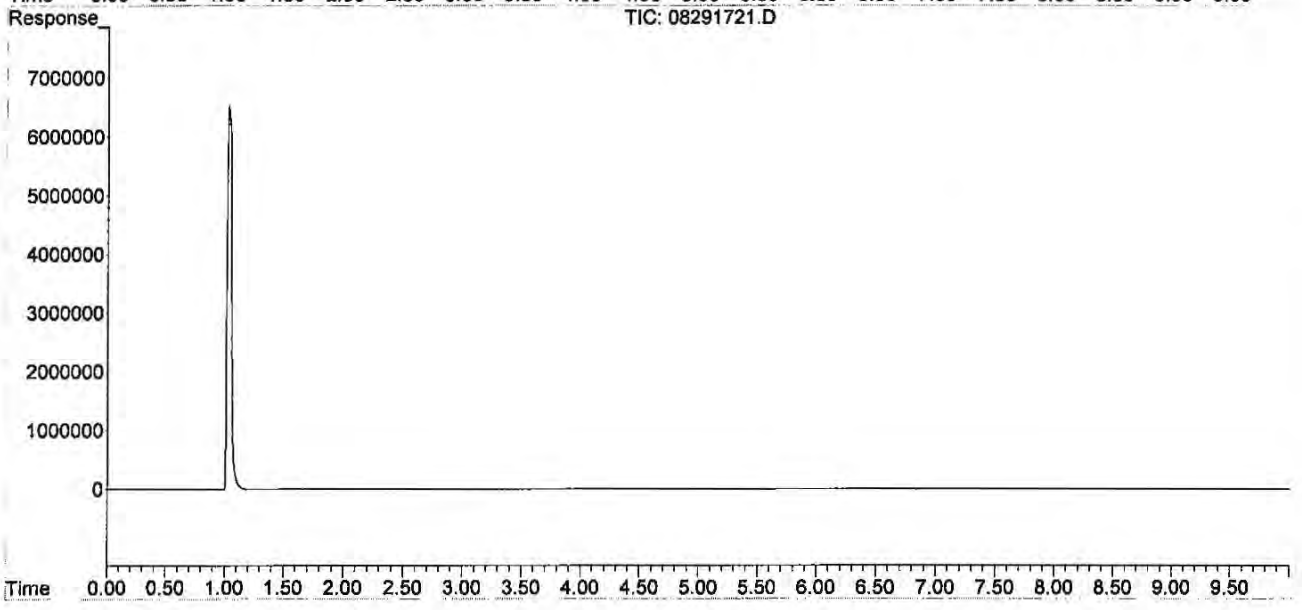
Quantitation Report (QT Reviewed)

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.

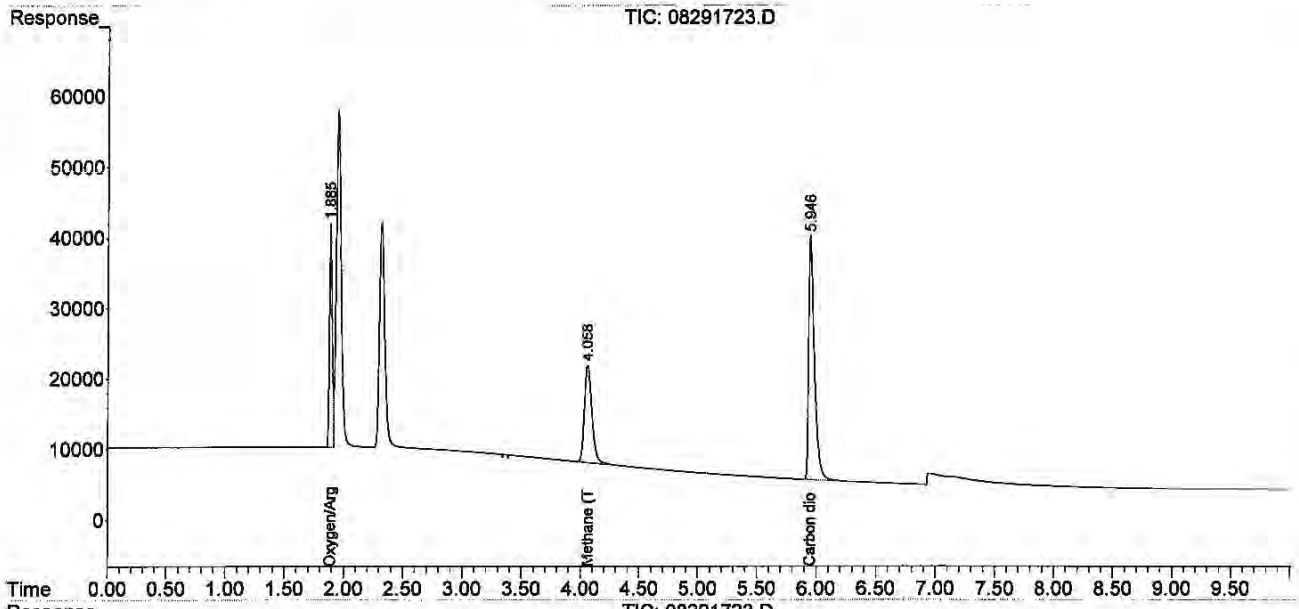
9/4/17

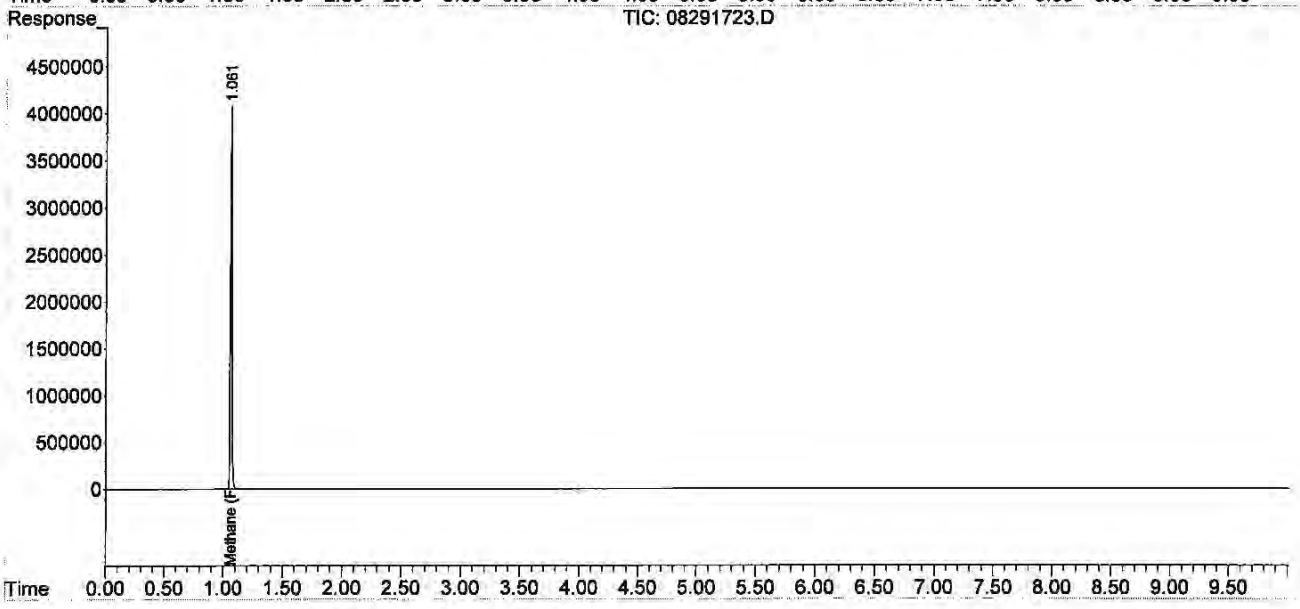
Quantitation Report (QT Reviewed)

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 :



## *ALS Environmental*

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1904812
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 08/21/19
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 | Inj. Vol. | Carbon Dioxide |
|---|---|---|
| std s32-06271901 | 0.100 | 5301.805 |
| ACTUAL | | 5000.00 |
| %Difference | | 6.0% |
| MCS 0.1ml | 0.100 | 26.576 |
| RB 0.1ml | 0.100 | 0.000 |
| LCS TCD 0.1ml | 0.100 | 1123.317 |
| LCSD TCD 0.1ml | 0.100 | 1072.695 |
| P1904812-001 0.1ml | 0.100 | 5477.858 |
| P1904812-002 0.1ml | 0.100 | 6530.618 |
| P1904812-003 0.1ml | 0.100 | 6693.369 |
| P1904812-004 0.1ml | 0.100 | 7314.005 |

**FINAL HEAD SPACE RESULT (ppm)**

| | Carbon Dioxide |
|---|---|
| **WWt.** | 44.10 |
| **HENRY'S CONSTANT** | 1.42E+03 |
| **RL** | 100.00 |
| MCS 0.1ml | 265.760 |
| LCS TCD 0.1ml | 11233.170 |
| LCSD TCD 0.1ml | 10726.950 |
| P1904812-001 0.1ml | 54778.580 |
| P1904812-002 0.1ml | 65306.180 |
| P1904812-003 0.1ml | 66933.690 |
| P1904812-004 0.1ml | 73140.050 |

| | |
|---|---|
| std s32-06271901 | 4960.912 |
| ACTUAL | 5000.00 |
| %Difference | 0.8% |





00971823

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 12:36:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 12:58:17 2019
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 | 1.957f | 550590 | 0.116 | ppm | |
| 2) | Carbon monoxide | 1.957f | 550590 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.038 | 1244489 | 5301.805 | ppm | m |
| 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 | |

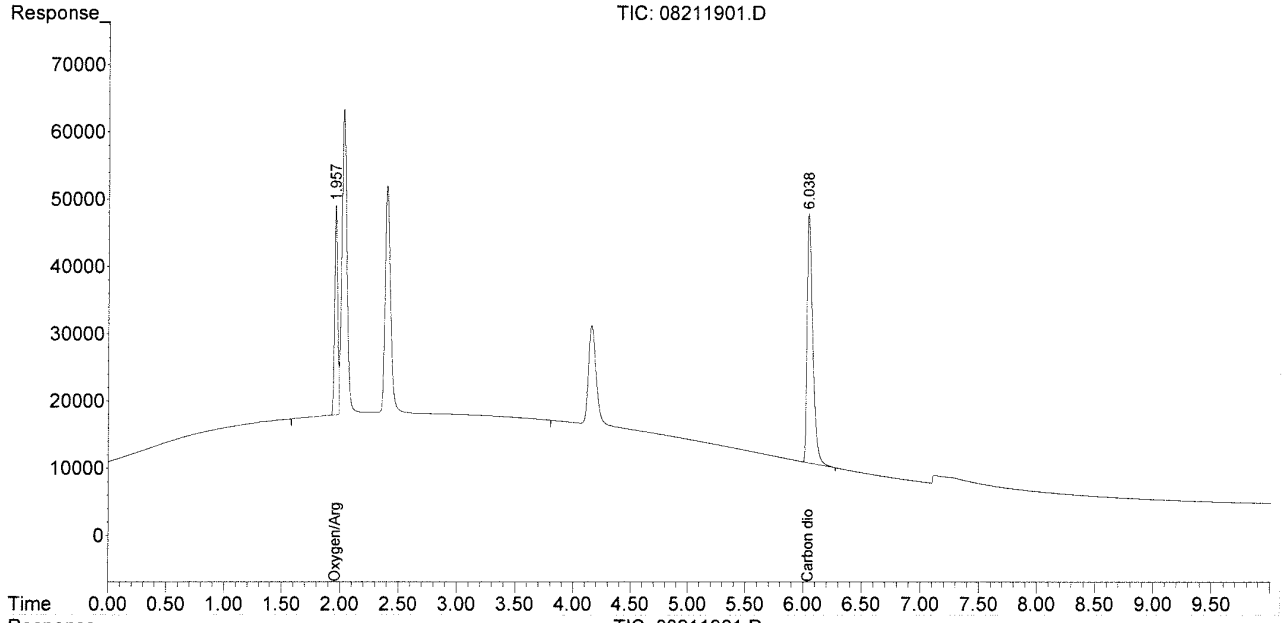
(f)=RT Delta > 1/2 Window (m)=manual int.

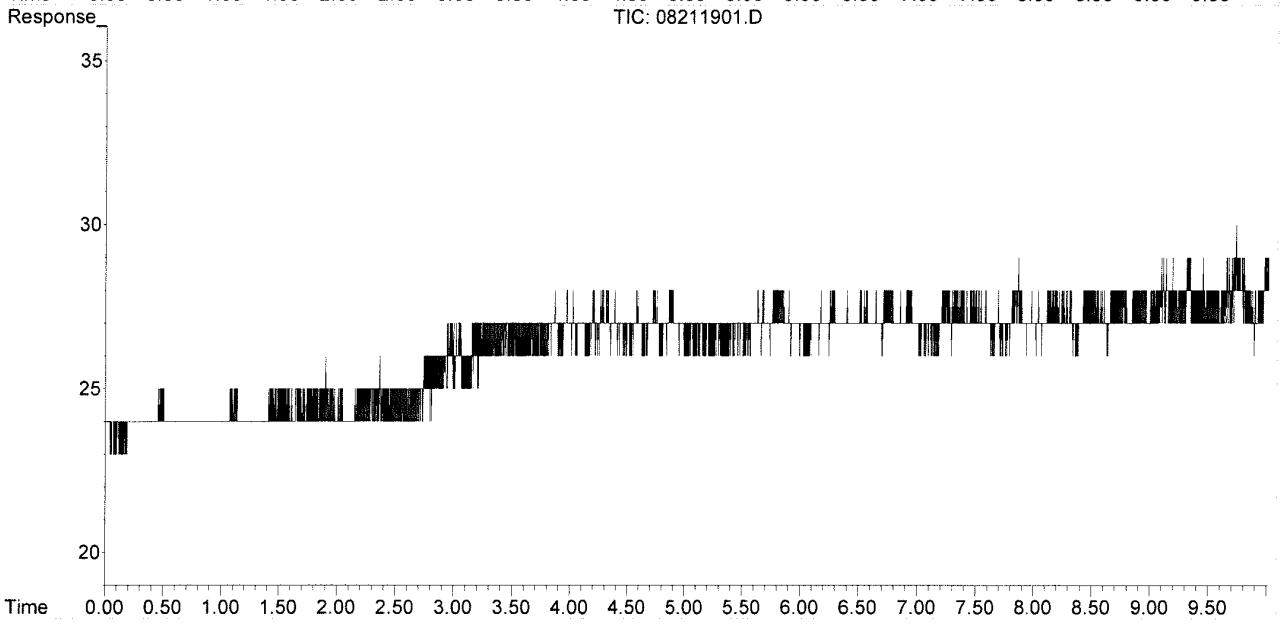
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 12:36:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 12:58:17 2019
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 :



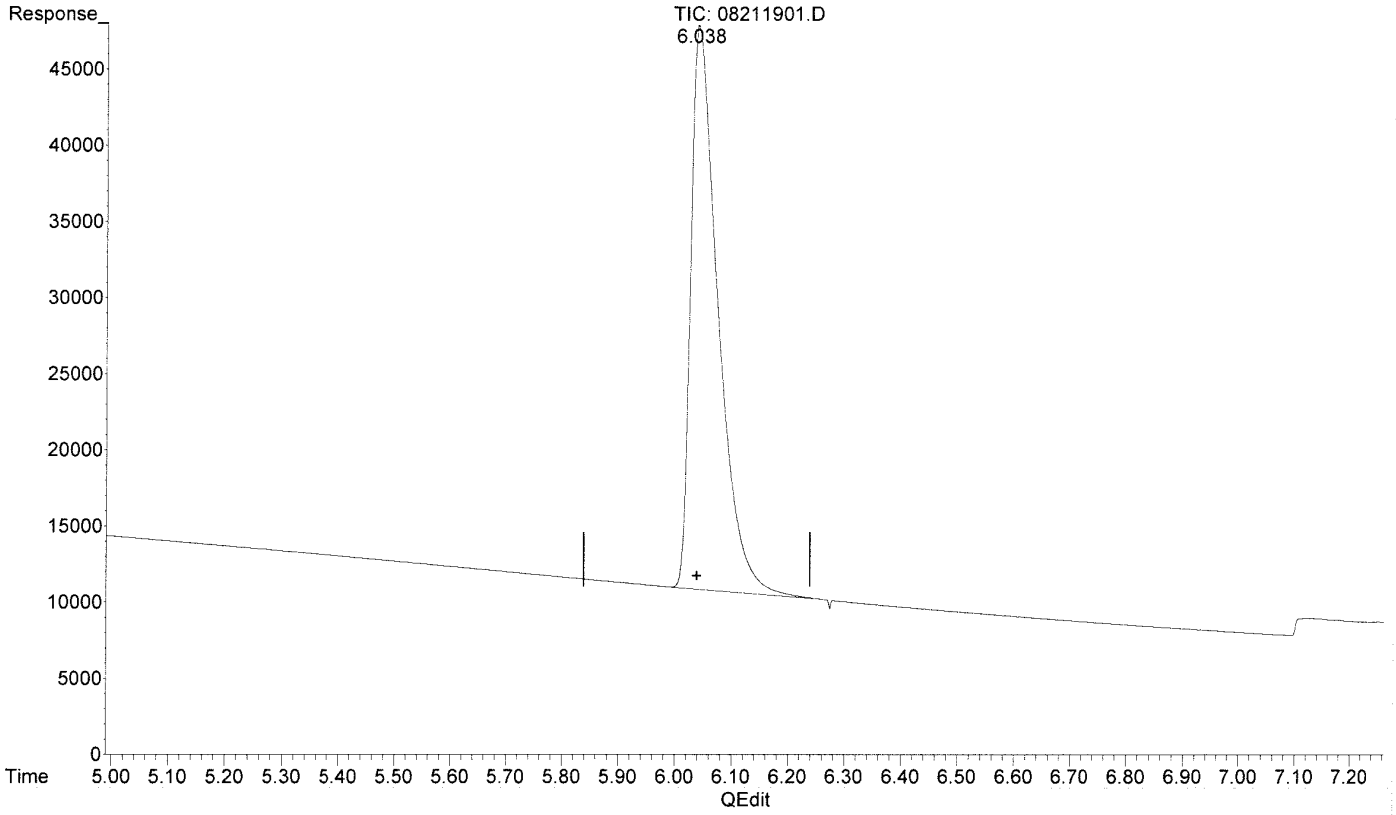



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211901.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 12:36:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 12:58:17 2019
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 :




(4) Carbon dioxide

6.038min 5301.805 ppm m

response 1244489

MK 8/22/19 no problem BLC

MK 8/22/19

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:23:48
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:42:39 2019
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 | 607968 | 0.128 | ppm | |
| 2) | Carbon monoxide | 1.964f | 607968 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.047 | 1164471 | 4960.912 | ppm | m |
| 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 | |

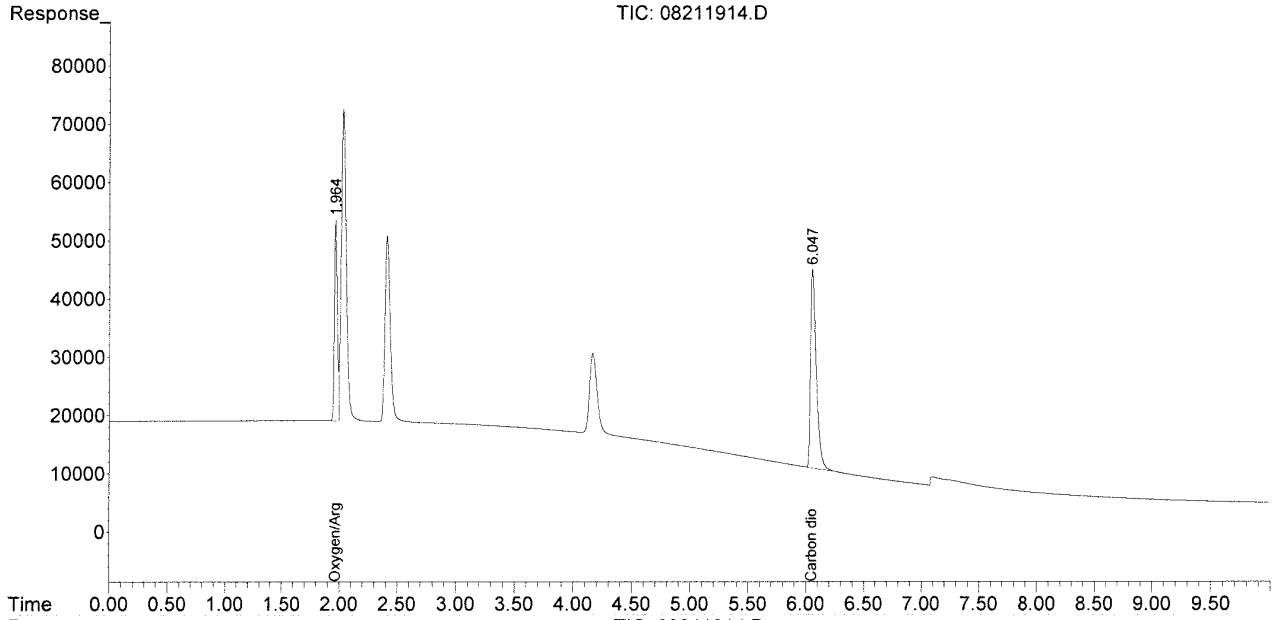
(f)=RT Delta > 1/2 Window (m)=manual int.

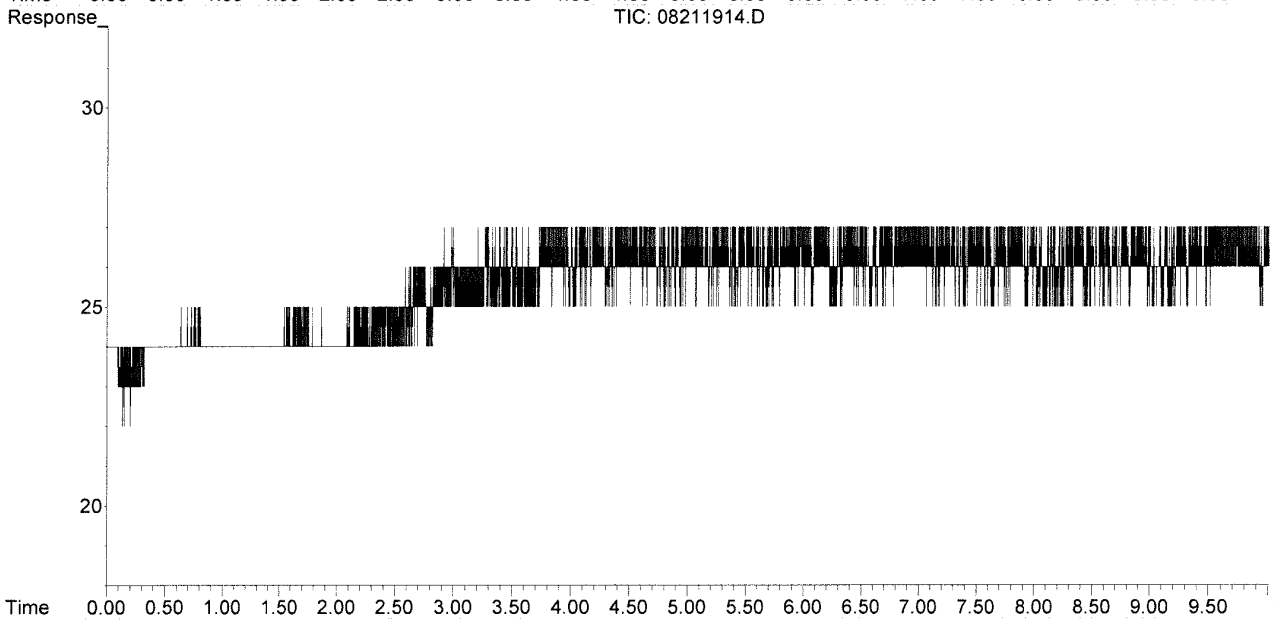
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:23:48
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:42:39 2019
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 :



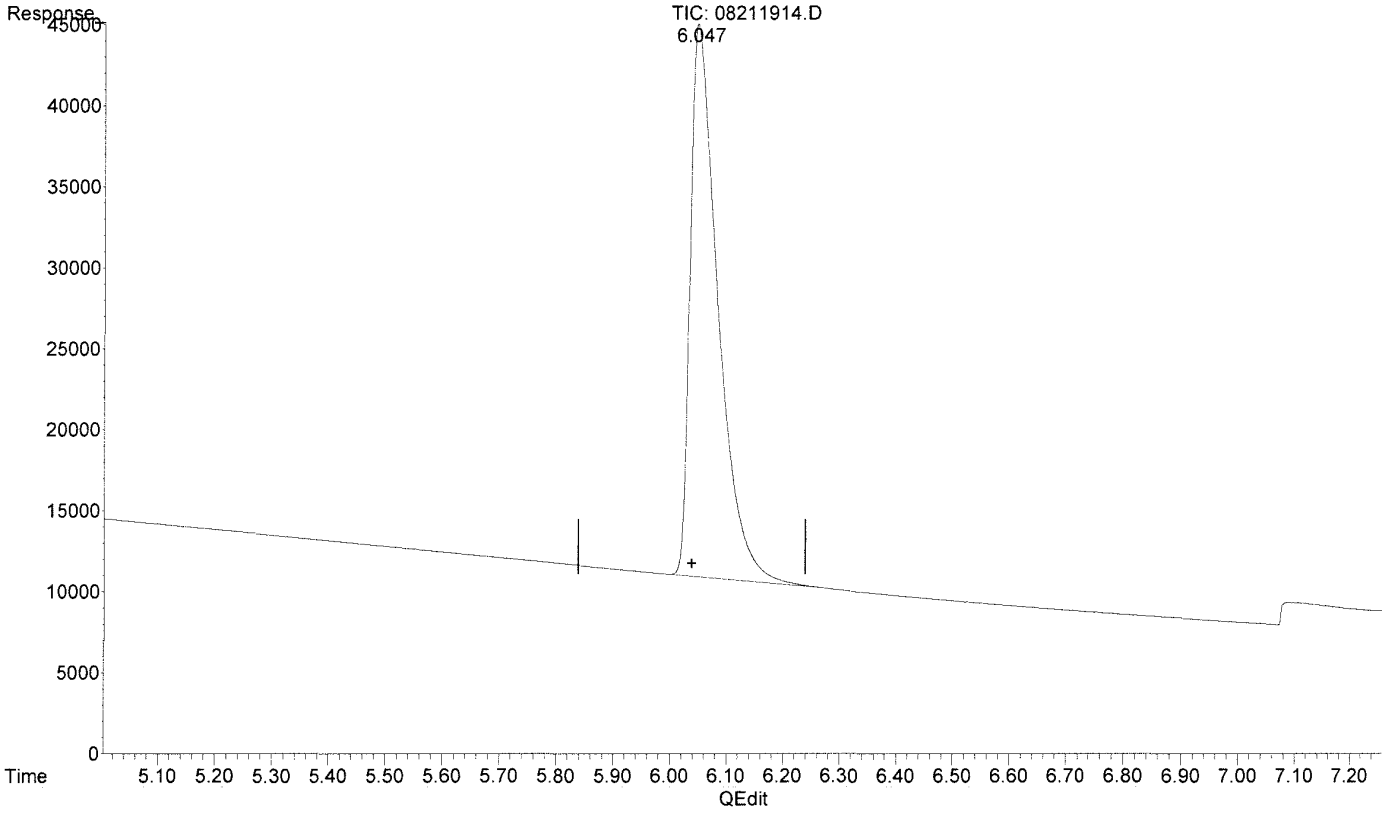



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211914.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:23:48
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:42:39 2019
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 :




(4) Carbon dioxide

6.047min 4960.912 ppm m

response 1164471

MR 8/12/19

(+) = Expected Retention Time

# Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 29-Aug-17, 07:58:00 | 08291701.D | std s30-06161601 | | MC | RSKBOTH.M | Pass |
| 2 | 29-Aug-17, 08:11:02 | 08291702.D | mb 0.5ml | | MC | RSKBOTH.M | Pass |
| 3 | 29-Aug-17, 08:24:13 | 08291703.D | 4089-001 0.5ml | | MC | RSKBOTH.M | |
| 4 | 29-Aug-17, 08:39:29 | 08291704.D | 4089-002 0.5ml | | MC | RSKBOTH.M | |
| 5 | 29-Aug-17, 08:53:38 | 08291705.D | 4089-003 0.5ml | | MC | RSKBOTH.M | |
| 6 | 29-Aug-17, 09:33:52 | 08291706.D | 4089-004 0.5ml | | MC | RSKBOTH.M | |
| 7 | 29-Aug-17, 09:50:51 | 08291707.D | 4089-005 0.5ml | | MC | RSKBOTH.M | |
| 8 | 29-Aug-17, 10:07:54 | 08291708.D | 4089-006 0.5ml | | MC | RSKBOTH.M | |
| 9 | 29-Aug-17, 10:42:34 | 08291709.D | 4089-007 0.5ml | | MC | RSKBOTH.M | |
| 10 | 29-Aug-17, 11:06:01 | 08291710.D | 4089-008 0.5ml | | MC | RSKBOTH.M | |
| 11 | 29-Aug-17, 11:23:53 | 08291711.D | 4089-009 0.5ml | | MC | RSKBOTH.M | |
| 12 | 29-Aug-17, 11:37:17 | 08291712.D | lcs s30-05241604 | | MC | RSKBOTH.M | Pass |
| 13 | 29-Aug-17, 11:50:31 | 08291713.D | lcs s30-05241604 | | MC | RSKBOTH.M | Pass |
| 14 | 29-Aug-17, 12:29:45 | 08291714.D | std s30-06161601 | | MC | RSKBOTH.M | Pass |
| 15 | 29-Aug-17, 14:07:01 | 08291715.D | 25ppm s32-08291701 0.25ml | | MC | RSKBOTH.M | Curve |
| 16 | 29-Aug-17, 14:22:12 | 08291716.D | 100ppm s32-08291702 0.2ml | | MC | RSKBOTH.M | Curve |
| 17 | 29-Aug-17, 14:53:00 | 08291717.D | 250ppm s32-08291702 0.5ml | | MC | RSKBOTH.M | Curve |
| 18 | 29-Aug-17, 15:07:43 | 08291718.D | mis inject | | MC | RSKBOTH.M | |
| 19 | 29-Aug-17, 15:23:21 | 08291719.D | 2500ppm s32-08231701 50ul | | MC | RSKBOTH.M | Curve |
| 20 | 29-Aug-17, 15:44:54 | 08291720.D | 5000ppm s32-08231701 0.1ml | | MC | RSKBOTH.M | Curve |
| 21 | 29-Aug-17, 16:00:09 | 08291721.D | 25000ppm s32-08231701 0.5ml | | MC | RSKBOTH.M | Curve |
| 22 | 29-Aug-17, 16:15:43 | 08291722.D | mb 0.1ml | | MC | RSKBOTH.M | Pass |
| 23 | 29-Aug-17, 16:35:37 | 08291723.D | icv s30-07071701 | | MC | RSKBOTH.M | Pass |

# Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_08\21\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 21-Aug-19, 12:36:43 | 08211901.D | std s32-06271901 | | WH | RSKBOTH.M | |
| 2 | 21-Aug-19, 13:00:26 | 08211902.D | RB 0.1ml | | WH | RSKBOTH.M | |
| 3 | 21-Aug-19, 13:24:01 | 08211903.D | MCS 0.1ml | | WH | RSKBOTH.M | |
| 4 | 21-Aug-19, 13:43:39 | 08211904.D | LCS TCD 0.1ml | | WH | RSKBOTH.M | |
| 5 | 21-Aug-19, 13:58:05 | 08211905.D | LCSD TCD 0.1ml | | WH | RSKBOTH.M | bad injection |
| 6 | 21-Aug-19, 14:12:37 | 08211906.D | LCSD TCD 0.1ml | | WH | RSKBOTH.M | |
| 7 | 21-Aug-19, 14:30:30 | 08211907.D | P1904812-001 0.1ml | | WH | RSKBOTH.M | |
| 8 | 21-Aug-19, 14:44:38 | 08211908.D | P1904812-002 0.1ml | | WH | RSKBOTH.M | |
| 9 | 21-Aug-19, 15:04:09 | 08211909.D | P1904812-003 0.1ml | | WH | RSKBOTH.M | |
| 10 | 21-Aug-19, 15:17:26 | 08211910.D | P1904812-004 0.1ml | | WH | RSKBOTH.M | |
| 11 | 21-Aug-19, 15:40:37 | 08211911.D | P1904835-001 0.1ml | | WH | RSKBOTH.M | |
| 12 | 21-Aug-19, 15:53:59 | 08211912.D | P1904835-002 0.1ml | | WH | RSKBOTH.M | |
| 13 | 21-Aug-19, 16:07:07 | 08211913.D | P1904835-003 0.1ml | | WH | RSKBOTH.M | |
| 14 | 21-Aug-19, 16:23:48 | 08211914.D | std s32-06271901 | | WH | RSKBOTH.M | |
| 15 | 21-Aug-19, 17:32:29 | 08211915.D | MS | | WH | RSKBOTH.M | |
| 16 | 21-Aug-19, 17:51:58 | 08211916.D | P1904835-002ms 0.1ml | | WH | RSKBOTH.M | |
| 17 | 21-Aug-19, 18:05:02 | 08211917.D | P1904835-002msd 0.1ml | | WH | RSKBOTH.M | |
| 18 | 21-Aug-19, 18:38:43 | 08211918.D | std s32-06271901 | | WH | RSKBOTH.M | |

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 12:24:42
Operator : WH
Sample : P1904812-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:06:38 2019
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 |

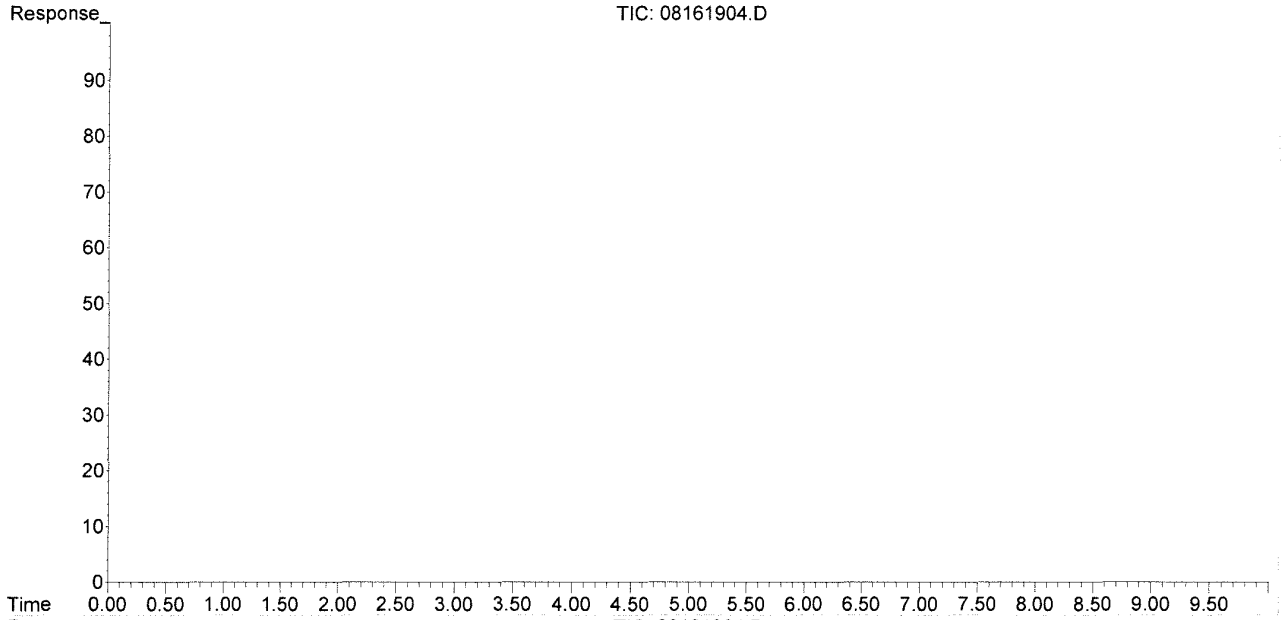
(f)=RT Delta > 1/2 Window (m)=manual int.

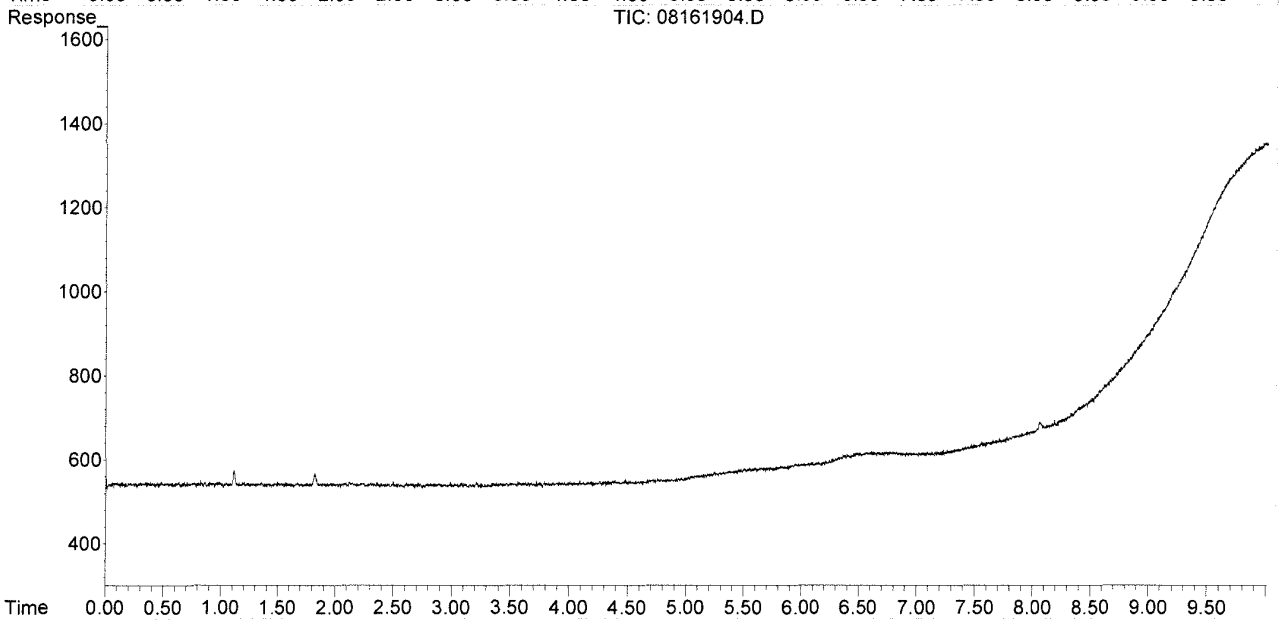
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 12:24:42
Operator : WH
Sample : P1904812-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:06:38 2019
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\2019_08\16\
Data File : 08161905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 12:38:28
Operator : WH
Sample : P1904812-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:06:57 2019
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 | 69471 | 7.659 | 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 |

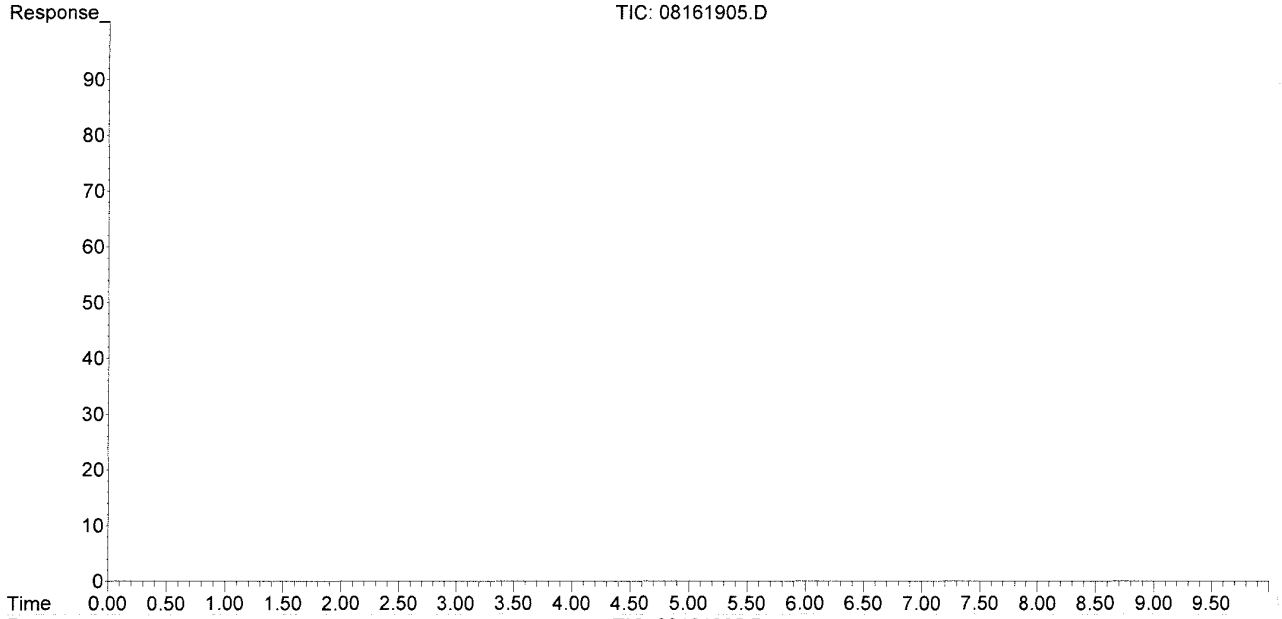
(f)=RT Delta > 1/2 Window (m)=manual int.

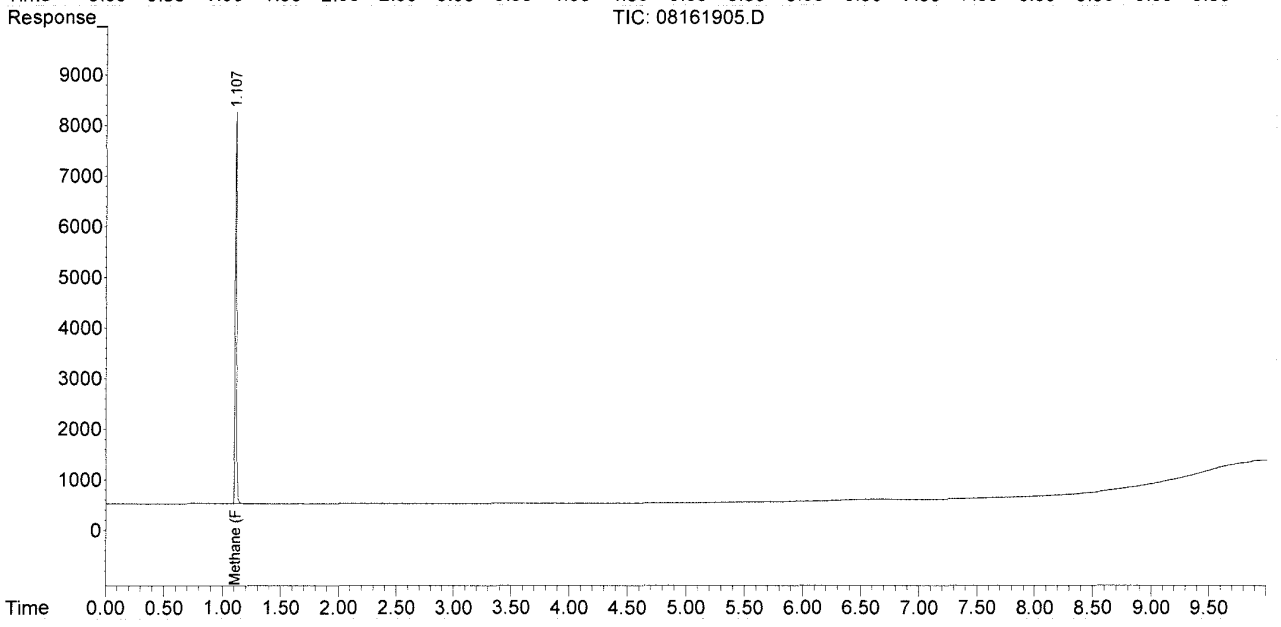
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 12:38:28
Operator : WH
Sample : P1904812-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:06:57 2019
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\2019_08\16\
Data File : 08161906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 12:51:19
Operator : WH
Sample : P1904812-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:07:19 2019
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 |

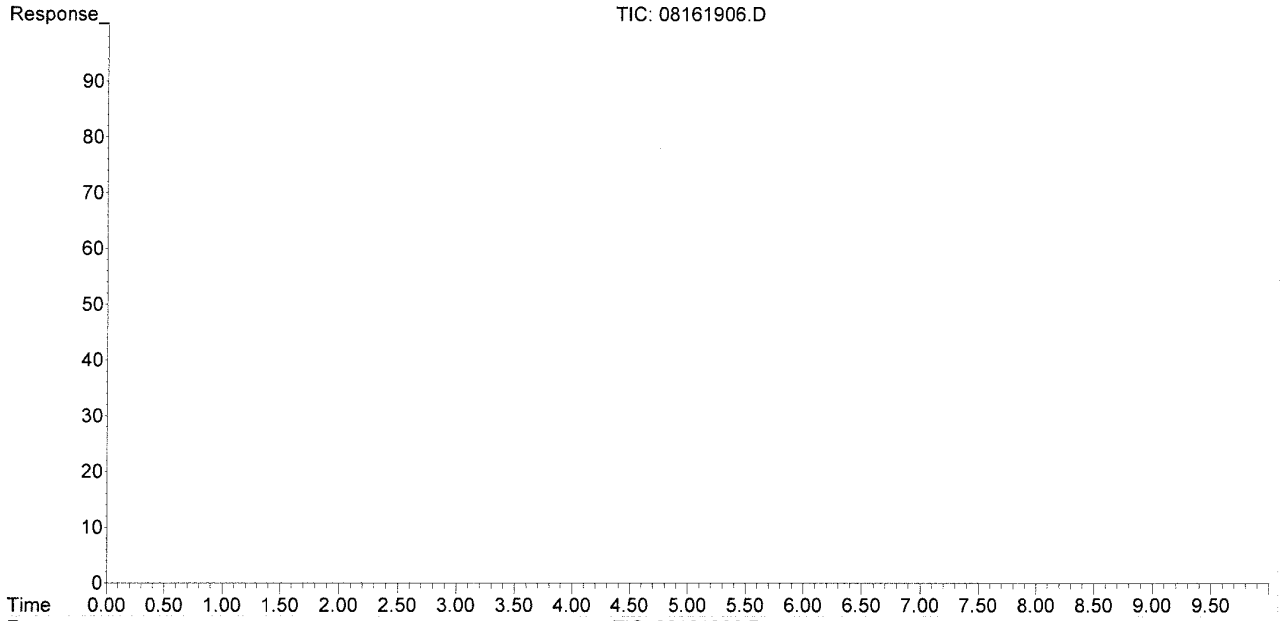
(f)=RT Delta > 1/2 Window (m)=manual int.

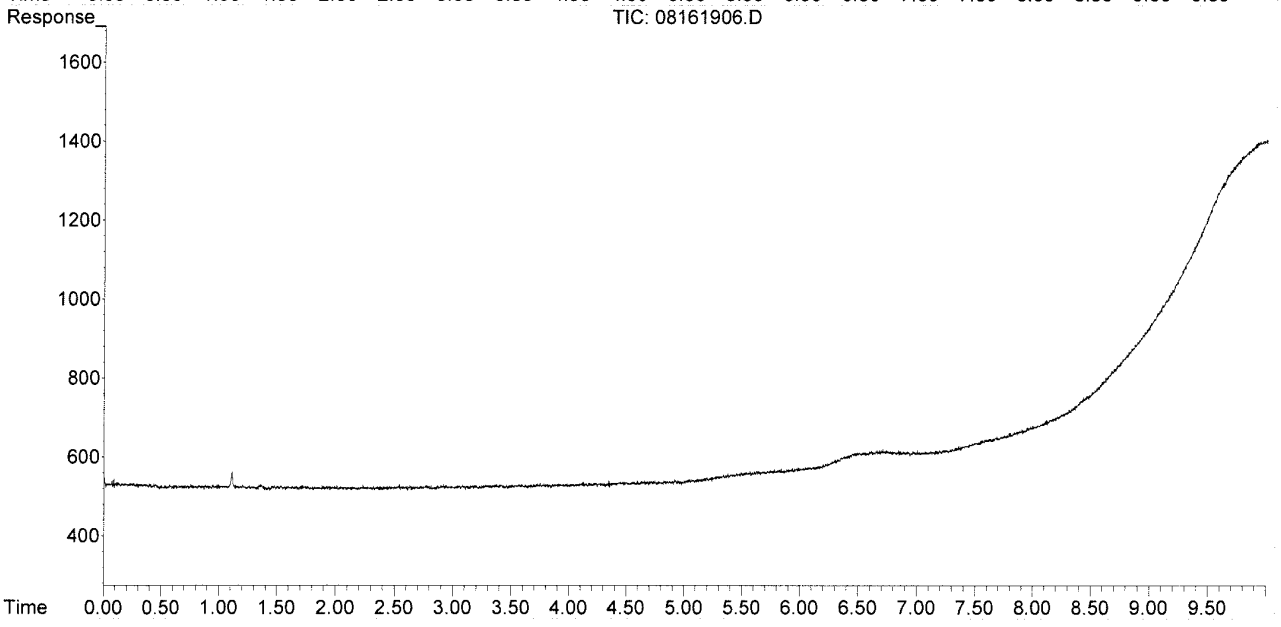
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 12:51:19
Operator : WH
Sample : P1904812-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:07:19 2019
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\2019_08\16\
Data File : 08161907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 13:31:04
Operator : WH
Sample : P1904812-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:07:39 2019
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) | 1.109 | 36497 | 4.024 | 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 |

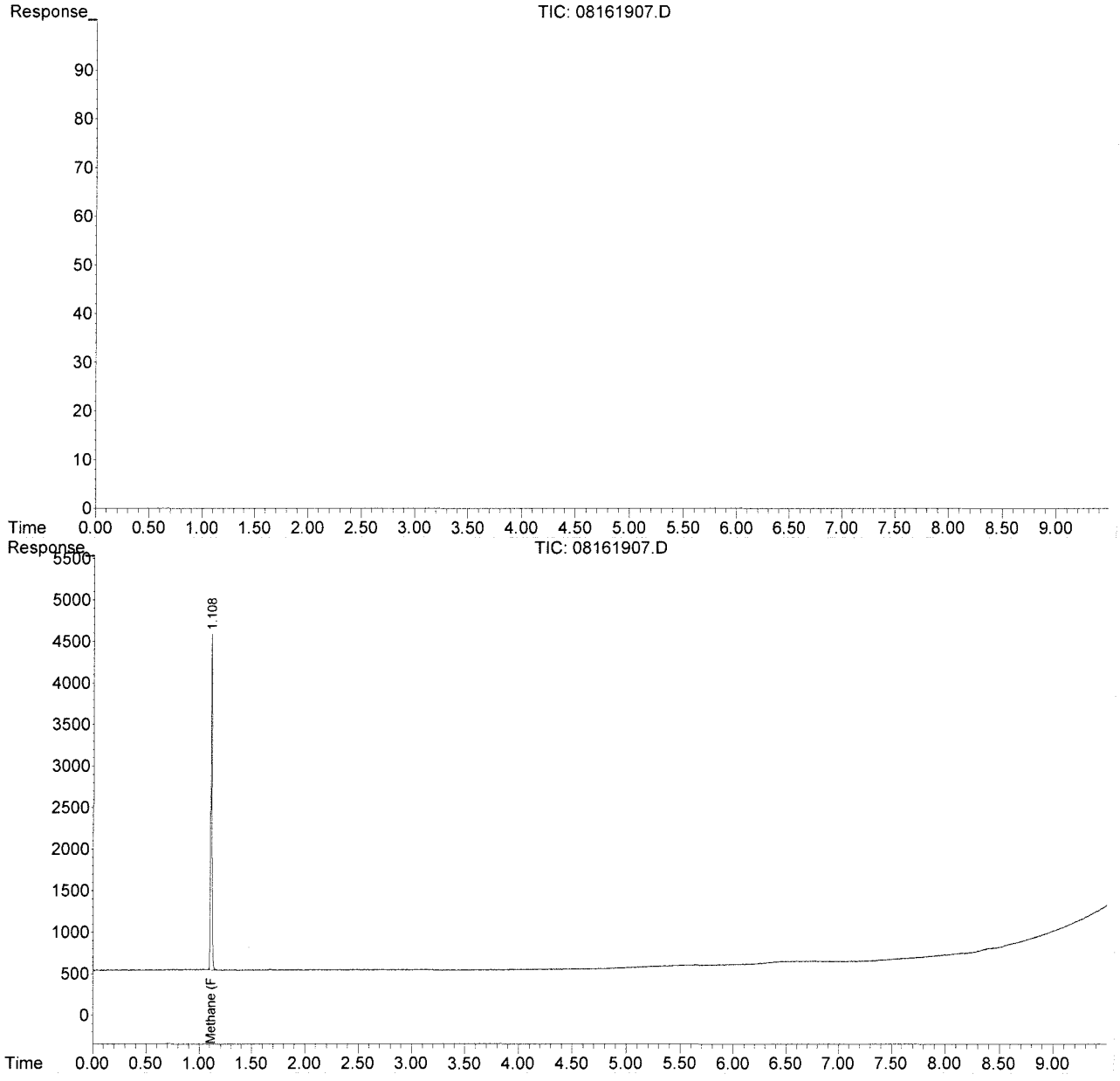
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161907.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 13:31:04
Operator : WH
Sample : P1904812-004 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:07:39 2019
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\2019_08\16\
Data File : 08161903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 11:56:27
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 16 15:43:35 2019
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 | 551 | 0.061 | 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 | |

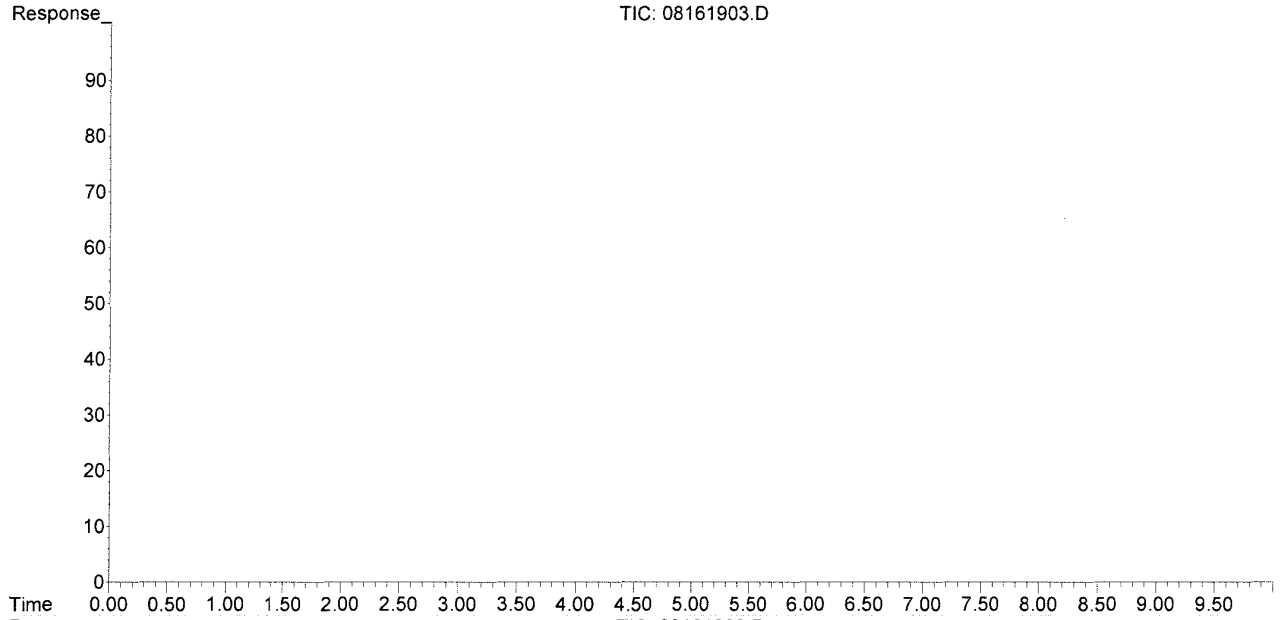
(f)=RT Delta > 1/2 Window (m)=manual int.

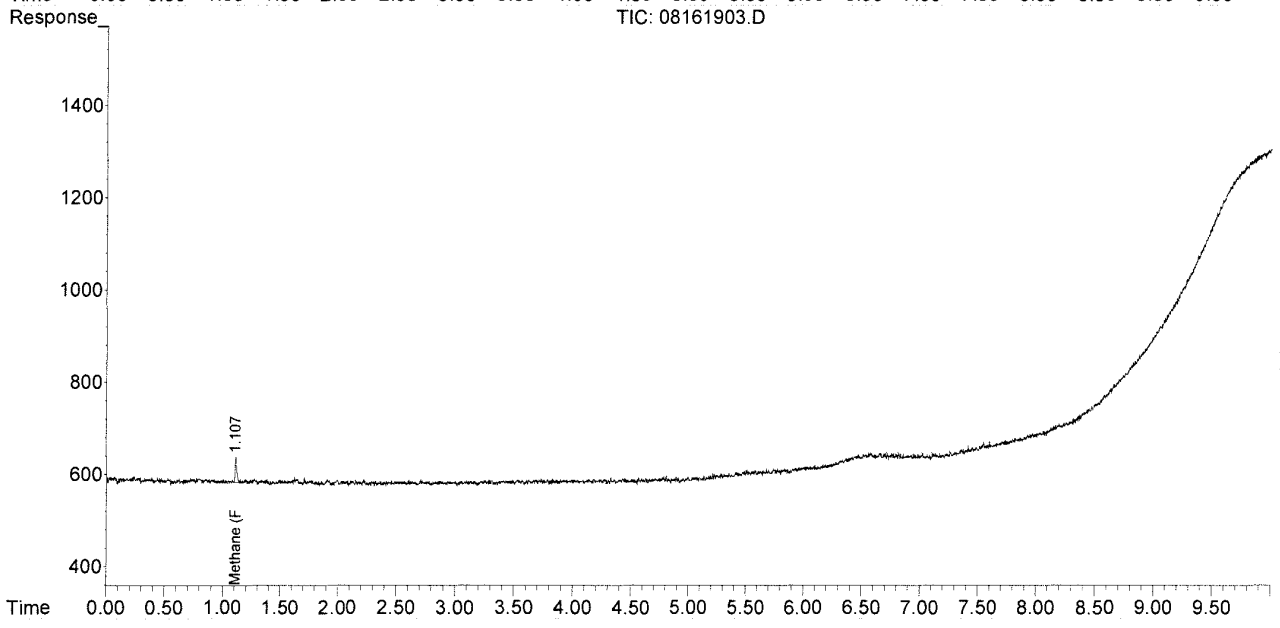
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 11:56:27
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 16 15:43:35 2019
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 :



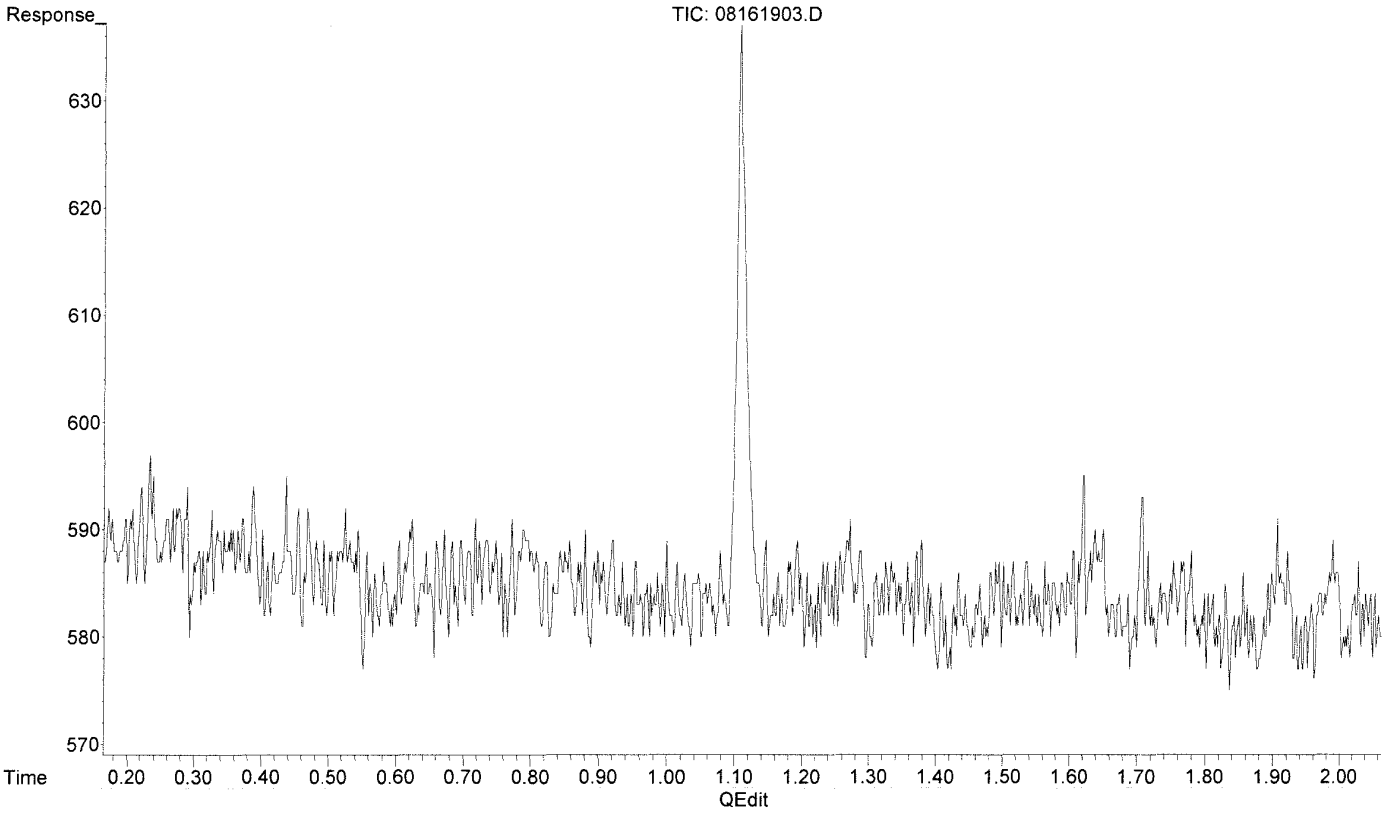



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161903.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 11:56:27
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 16 15:43:35 2019
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)

1.115min 0.000 ppm

response 0

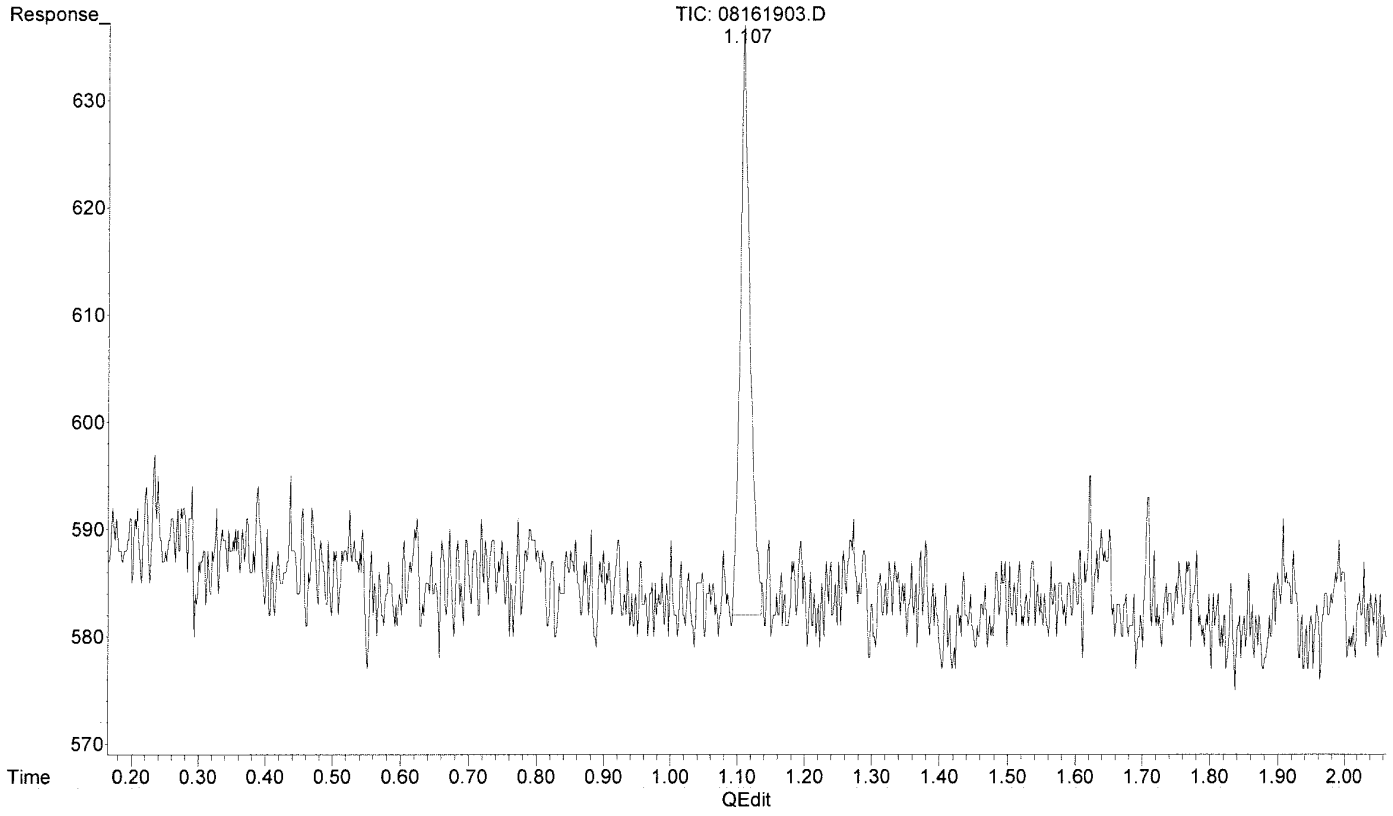
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161903.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 11:56:27
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 16 15:43:35 2019
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)

1.107min 0.061 ppm m

response 551

ww 8/16/19 mp

MR 8/16/19

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 14:23:21
Operator : WH
Sample : lcs fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 14:39:24 2019
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) | 1.110 | 11480 | 1.266 | ppm |
| 7) | Ethylene | 1.671 | 17469 | 1.044 | ppm |
| 8) | Ethane | 1.932 | 20384 | 1.203 | ppm |
| 9) | Propylene | 4.311 | 24120 | 1.029 | ppm |
| 10) | Propane | 4.434 | 30805 | 1.238 | ppm |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm |
| 12) | Isobutane | 6.651 | 46789 | 1.758 | ppm |
| 13) | n-Butane | 6.651 | 46789 | 1.758 | ppm |

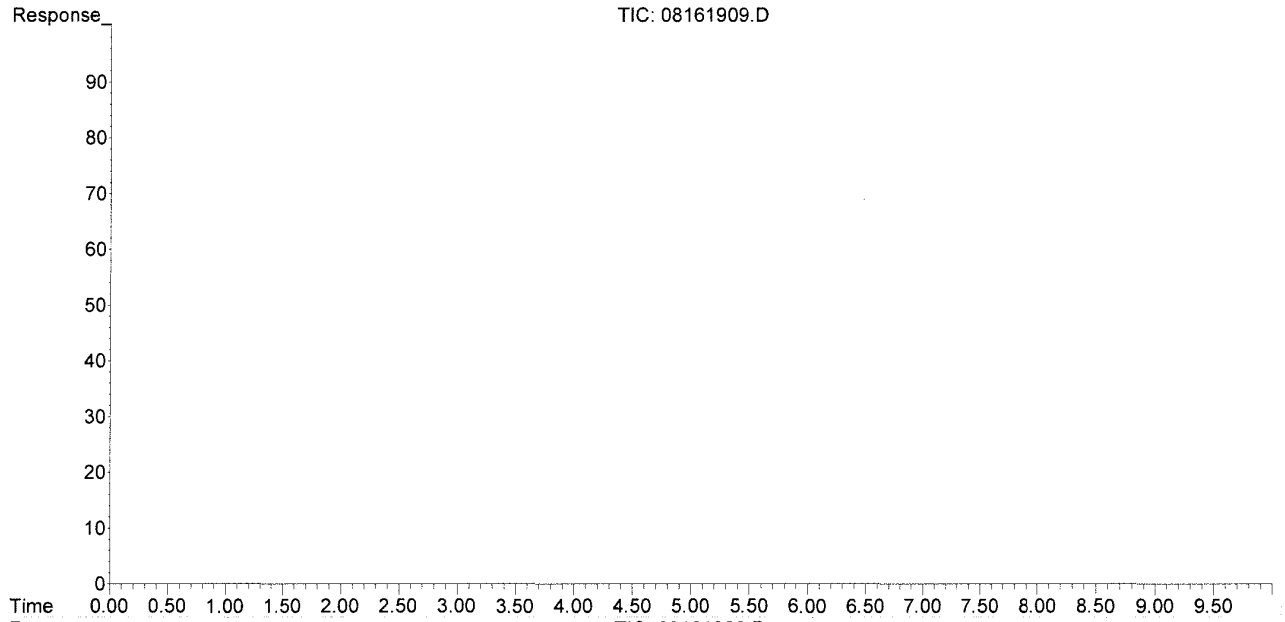
(f)=RT Delta > 1/2 Window (m)=manual int.

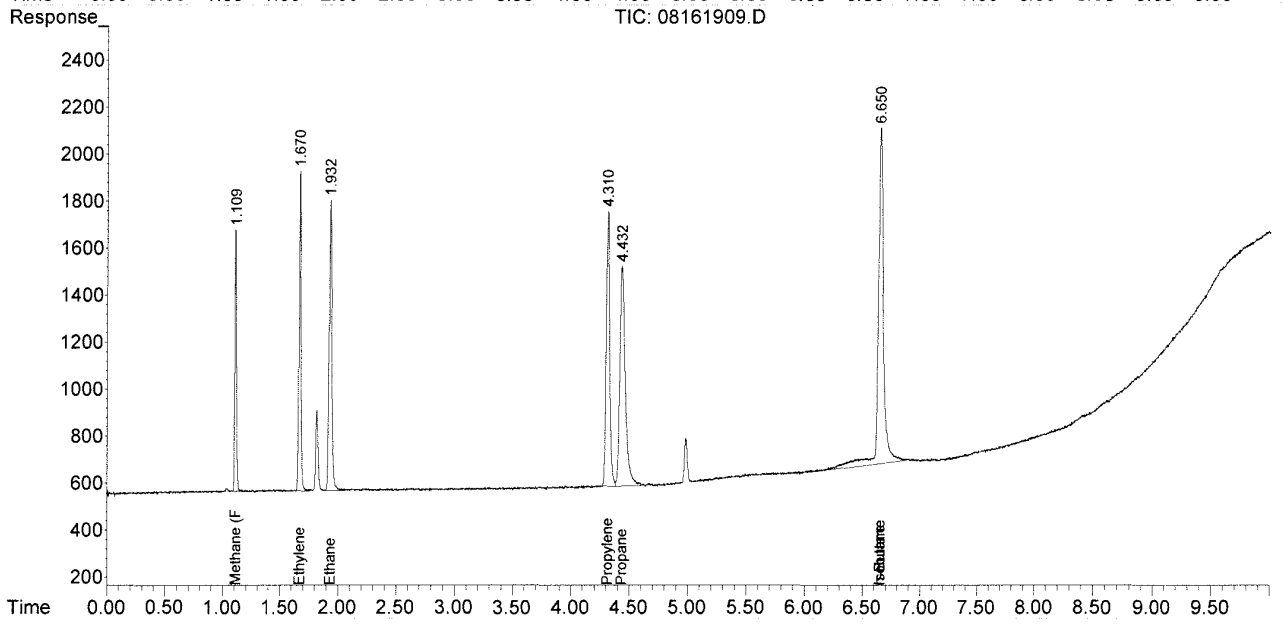
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 14:23:21
Operator : WH
Sample : lcs fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 14:39:24 2019
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\2019_08\16\
Data File : 08161910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 14:40:17
Operator : WH
Sample : lcsd fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 15:05:02 2019
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) | 1.109 | 11829 | 1.304 | ppm |
| 7) | Ethylene | 1.670 | 16885 | 1.009 | ppm |
| 8) | Ethane | 1.932 | 19927 | 1.176 | ppm |
| 9) | Propylene | 4.309 | 23694 | 1.011 | ppm |
| 10) | Propane | 4.432 | 30446 | 1.224 | ppm |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm |
| 12) | Isobutane | 6.647 | 39476 | 1.483 | ppm |
| 13) | n-Butane | 6.647 | 39476 | 1.483 | ppm |

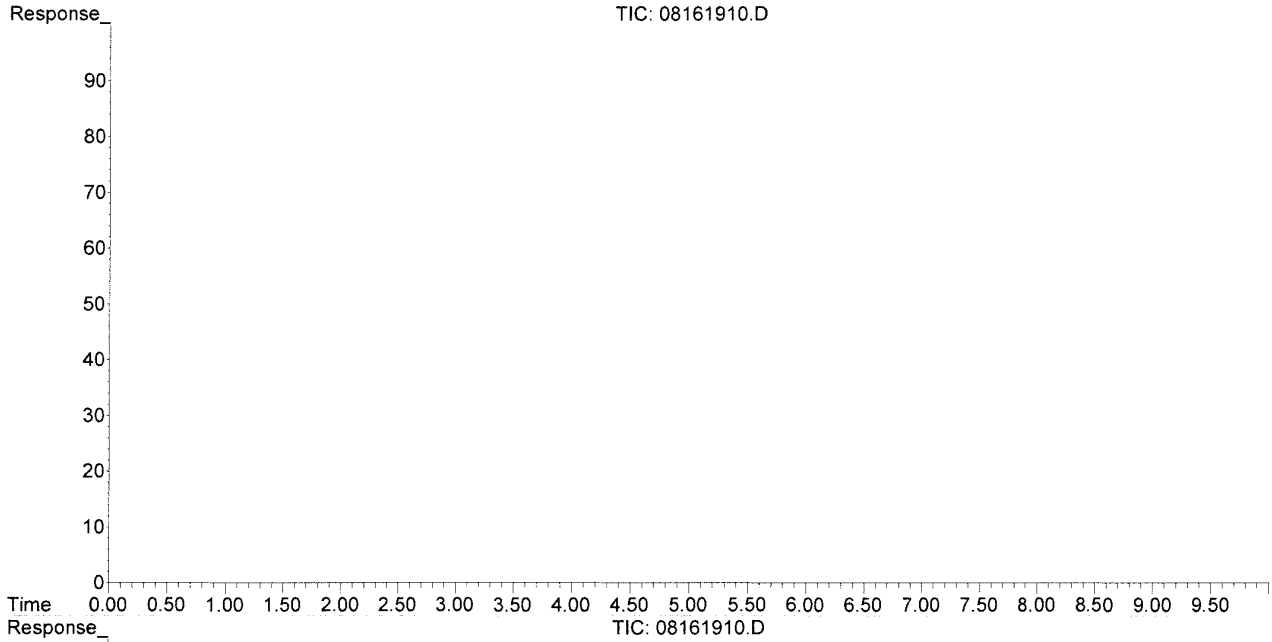
(f)=RT Delta > 1/2 Window (m)=manual int.

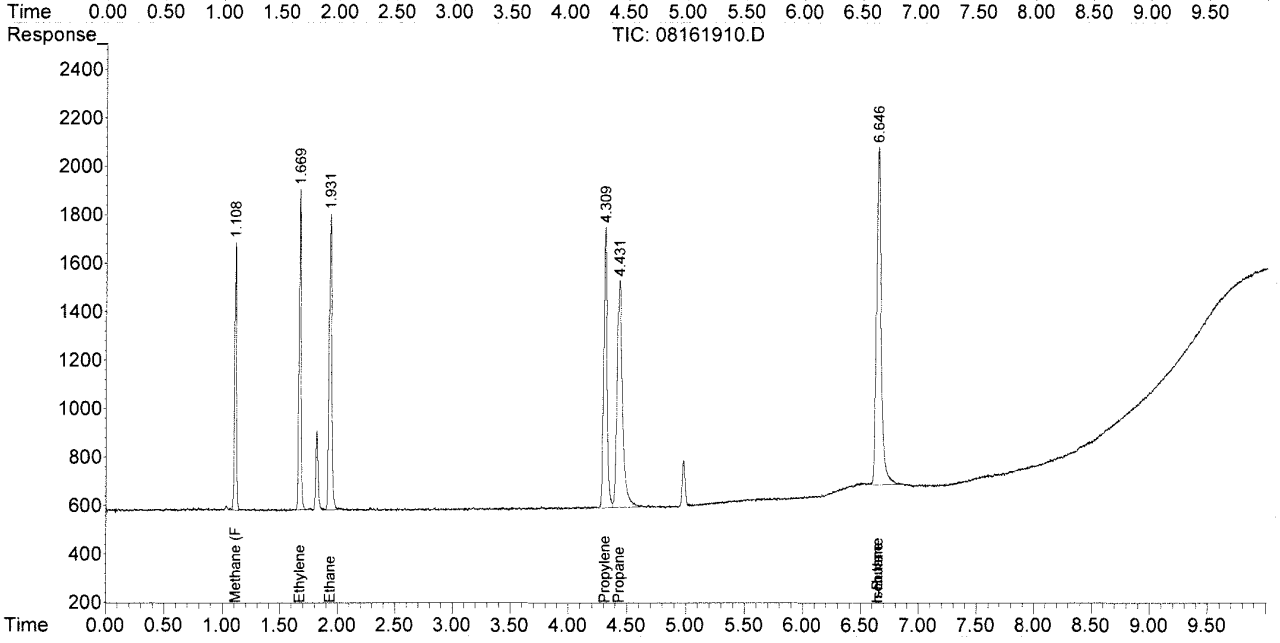
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 14:40:17
Operator : WH
Sample : lcsd fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 15:05:02 2019
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

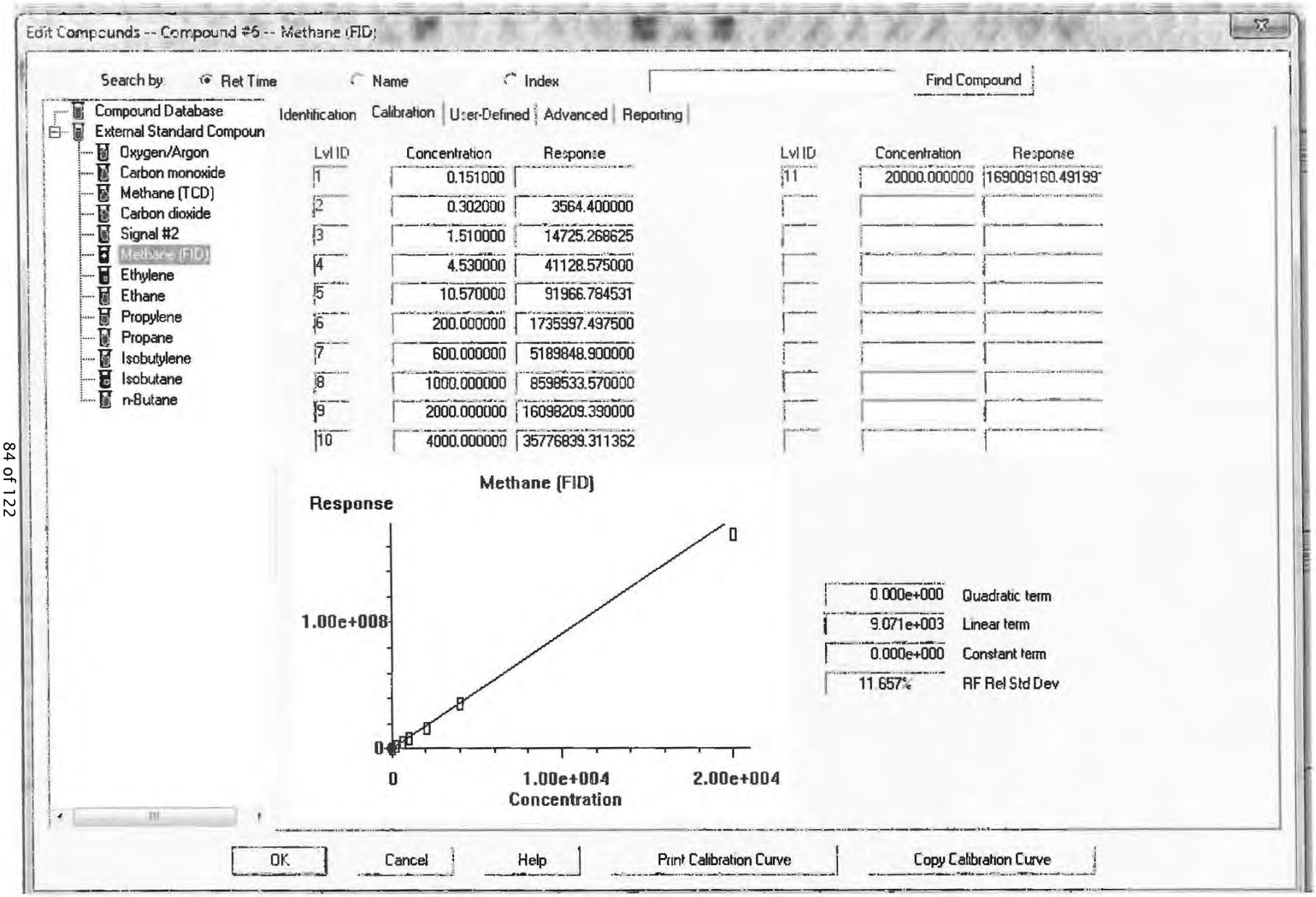
| | Compound | 1 | 2 | 3 | 4 | 5 | 6 | Avg | | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | Oxygen/Argon | 3.739 | | 1.014 | | | 0.001 | 0.793 | E6 | 189.17 |
| 2) | Carbon monoxide | 3.739 | | 1.014 | | | 0.001 | 0.594 | E6 | 221.92 |
| 3) | Methane (TCD) | | | | | | 2.161 | 0.951 | E2 | 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
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



00971849

Edit Compounds -- Compound #7 -- Ethylene

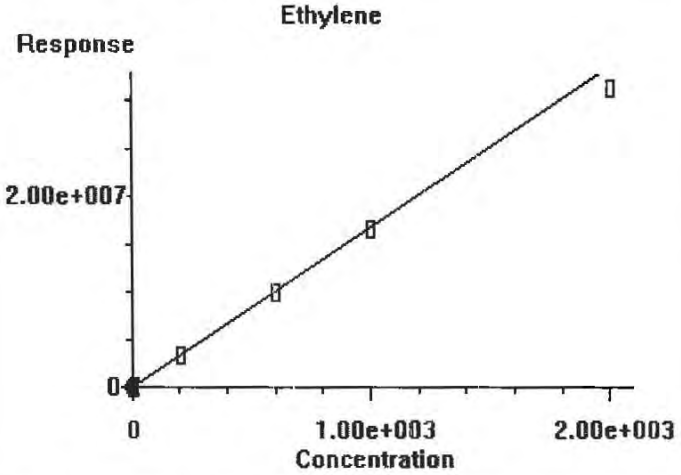
Search by: Ret Time | Name | Index | Find Compound

- 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

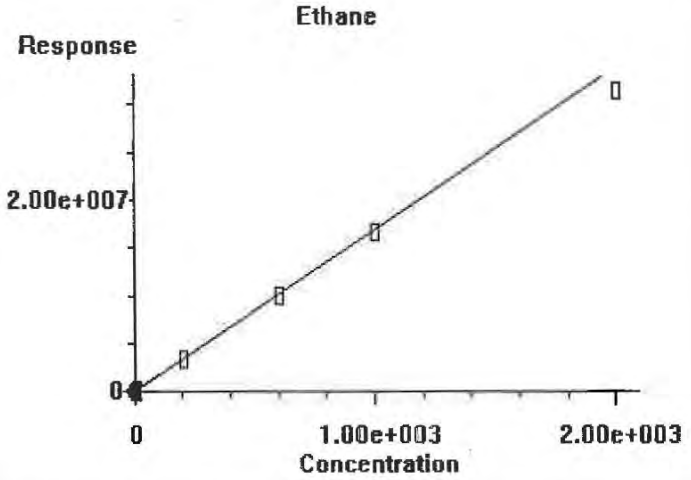
Search by: Ret Time | Name | Index — Find Compound

- 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

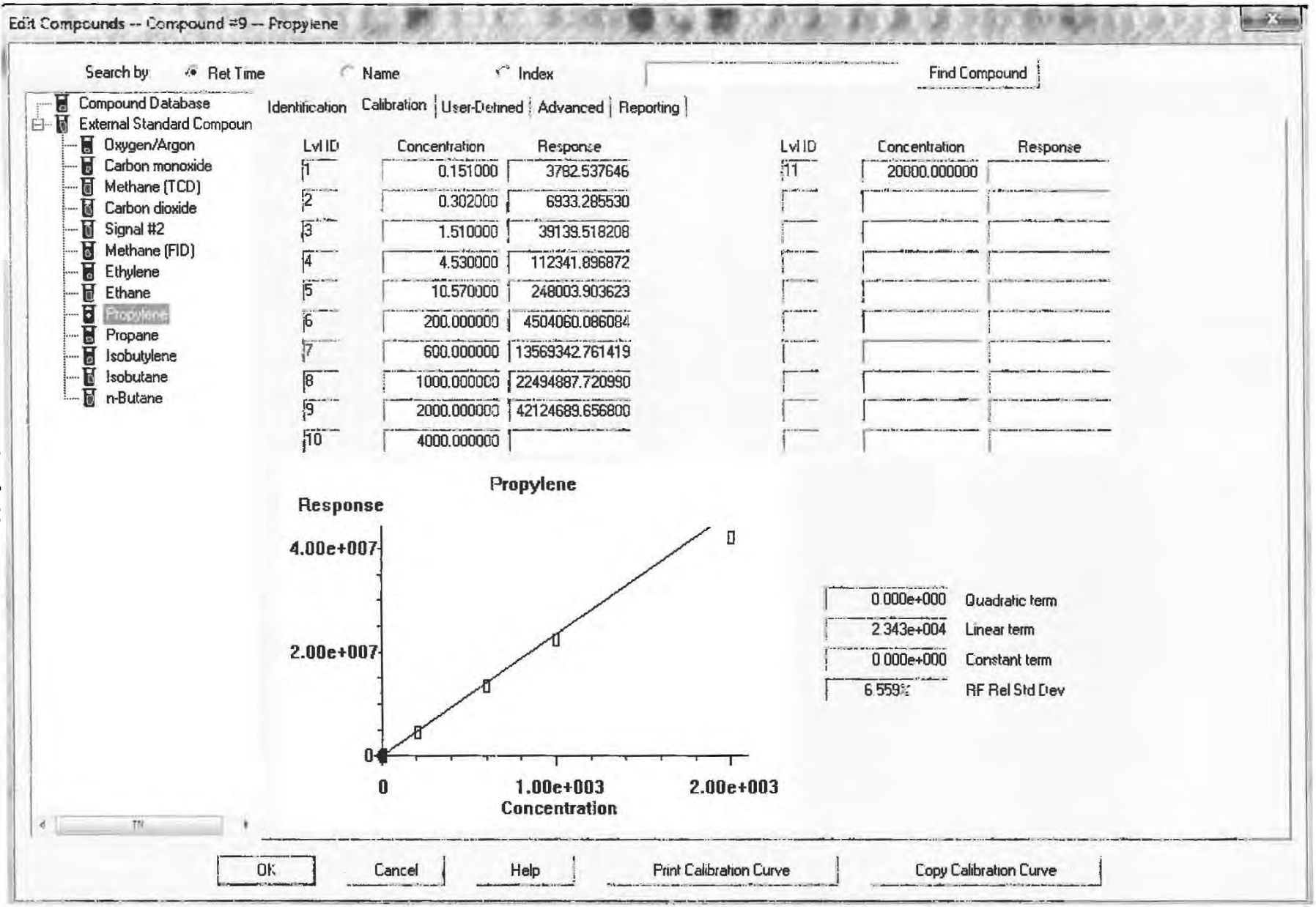
| Lvl ID | Concentration | Response |
|---|---|---|
| 1 | 0.151000 | 2689.928008 |
| 2 | 0.302000 | 5060.331943 |
| 3 | 1.510000 | 26943.667500 |
| 4 | 4.530000 | 78353.525045 |
| 5 | 10.570000 | 178840.731148 |
| 6 | 200.000000 | 3350442.319129 |
| 7 | 600.000000 | 10048964.218029 |
| 8 | 1000.000000 | 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
11 20000.000000
Propylene
Response
4.00e+007
2.00e+007
0
0
1.00e+003
2.00e+003
Concentration
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

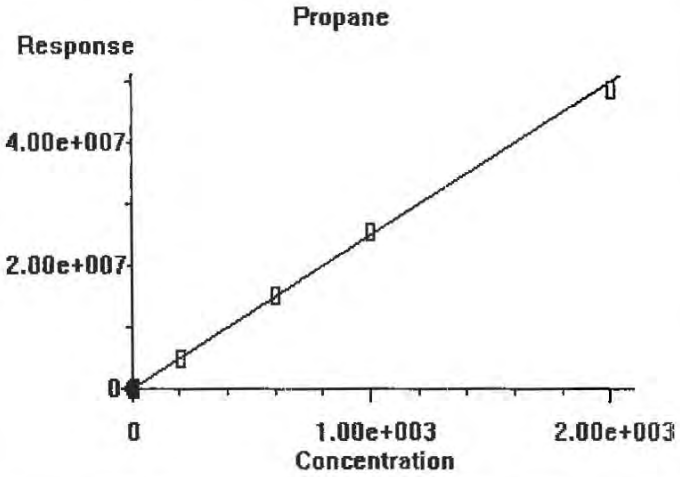
Search by: Ret Time | Name | Index — Find Compound

- 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.

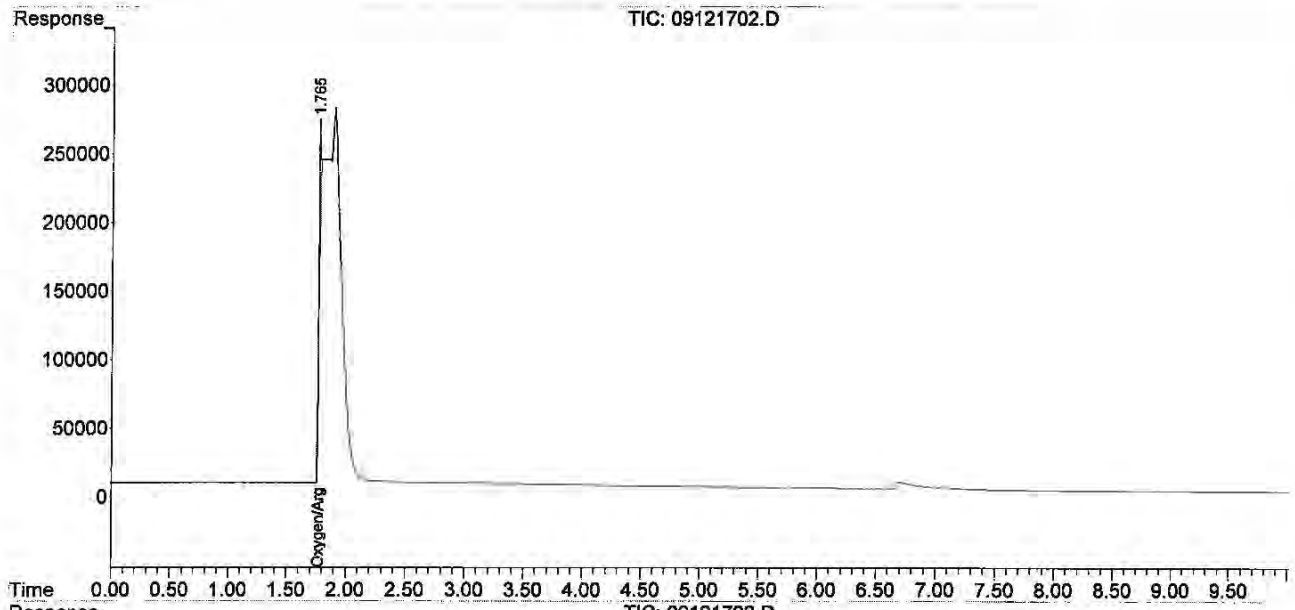
9/13/17

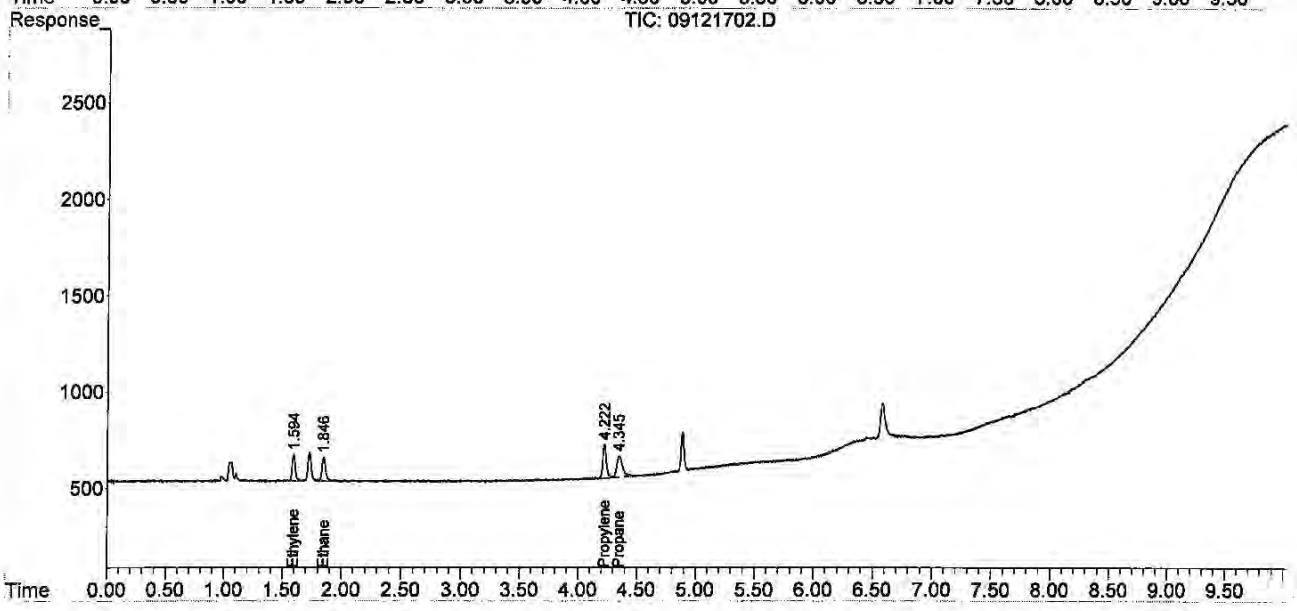
Quantitation Report (QT Reviewed)

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 :



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 | |

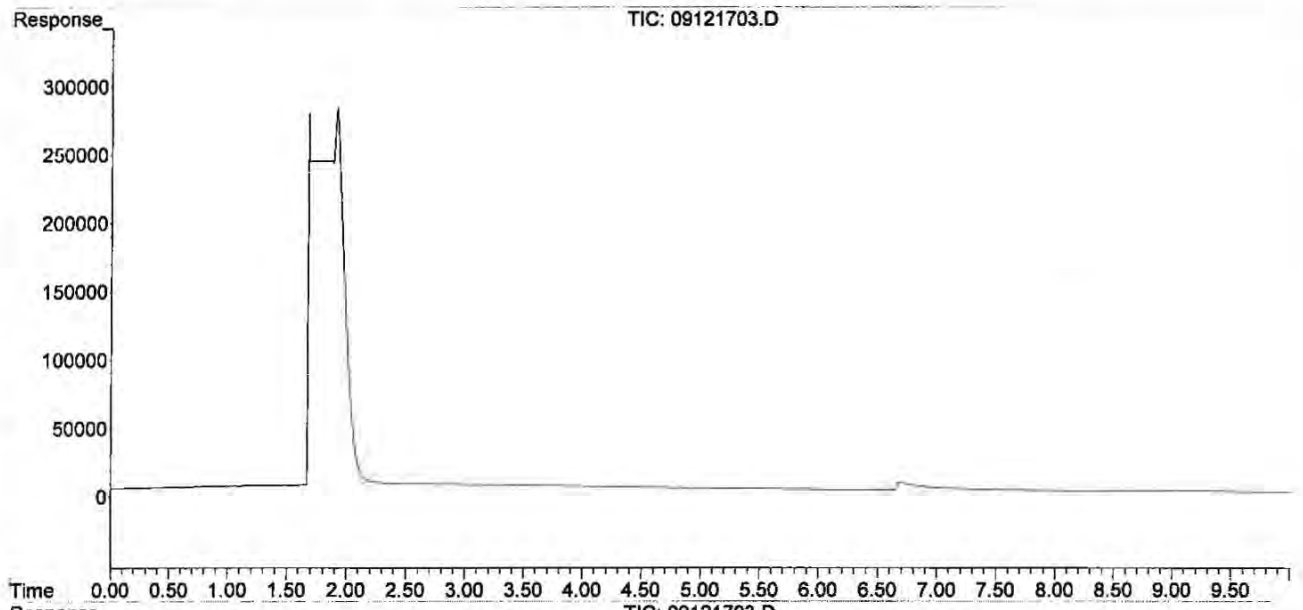
(f)=RT Delta > 1/2 Window (m)=manual int.

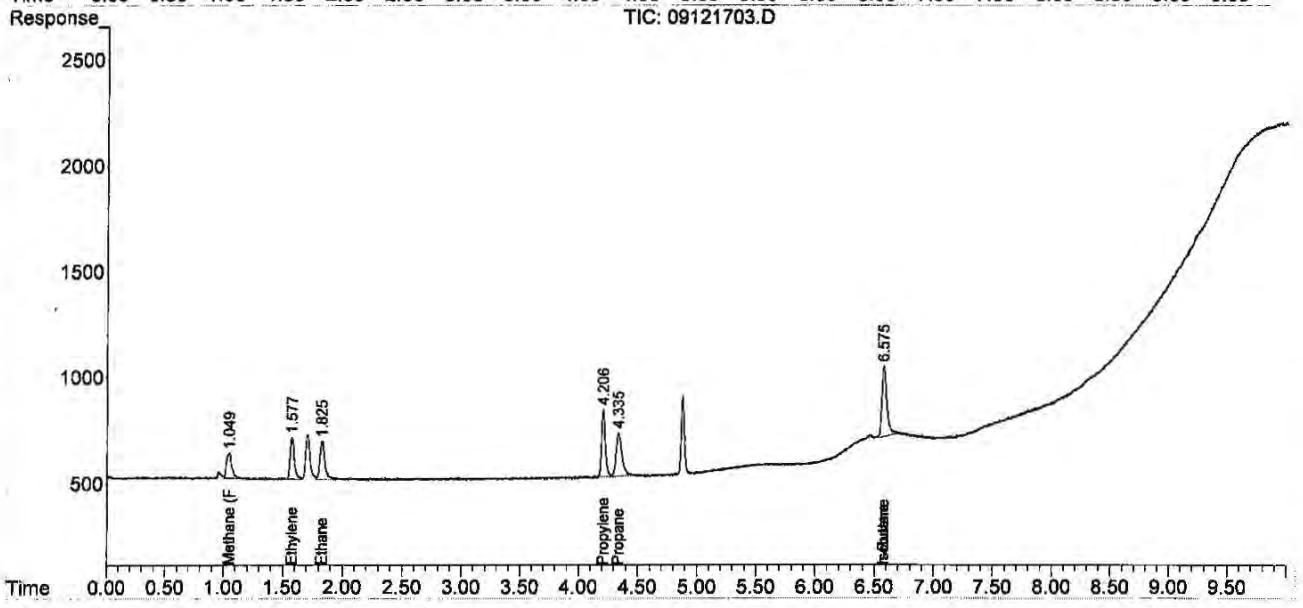
Quantitation Report (QT Reviewed)

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 :



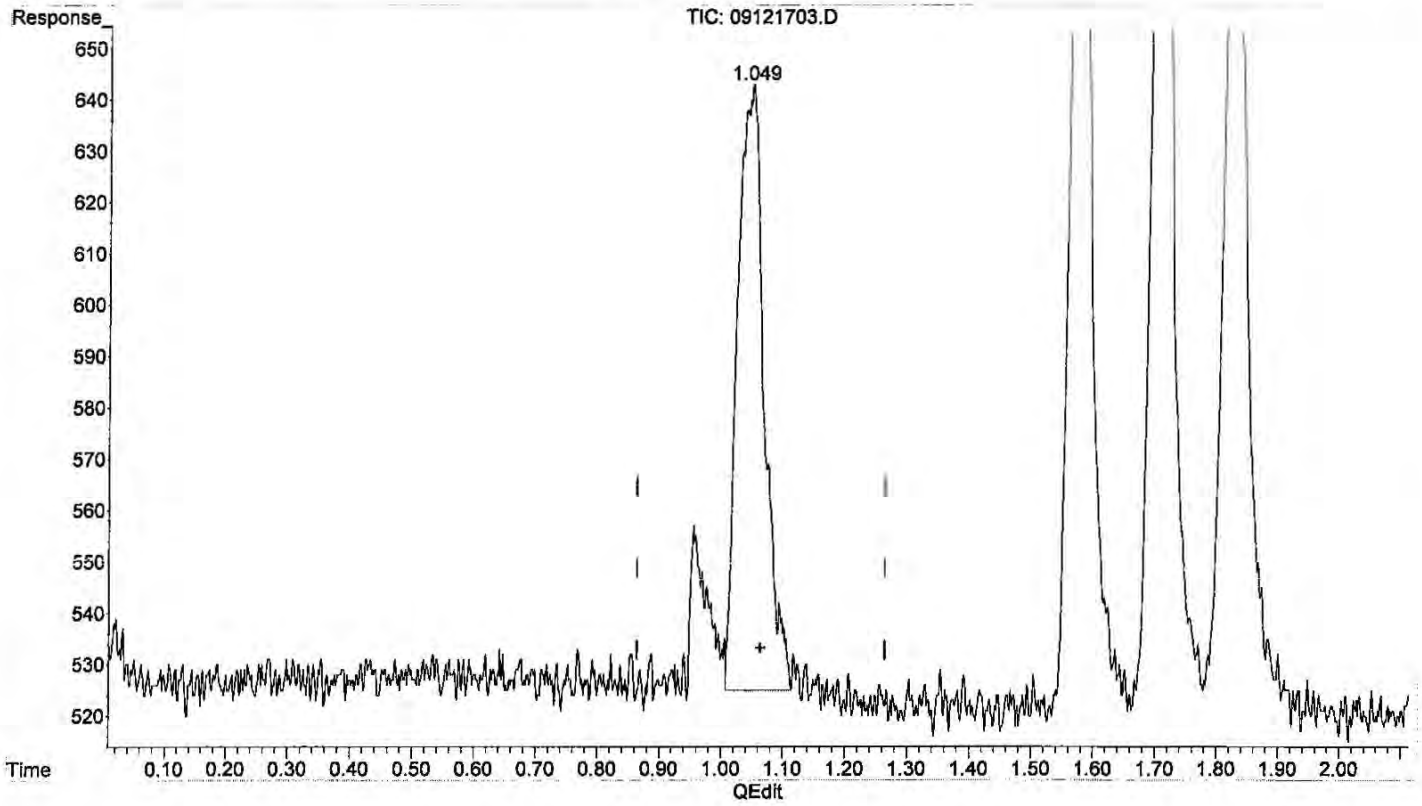



Quantitation Report (Qedit)

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 |

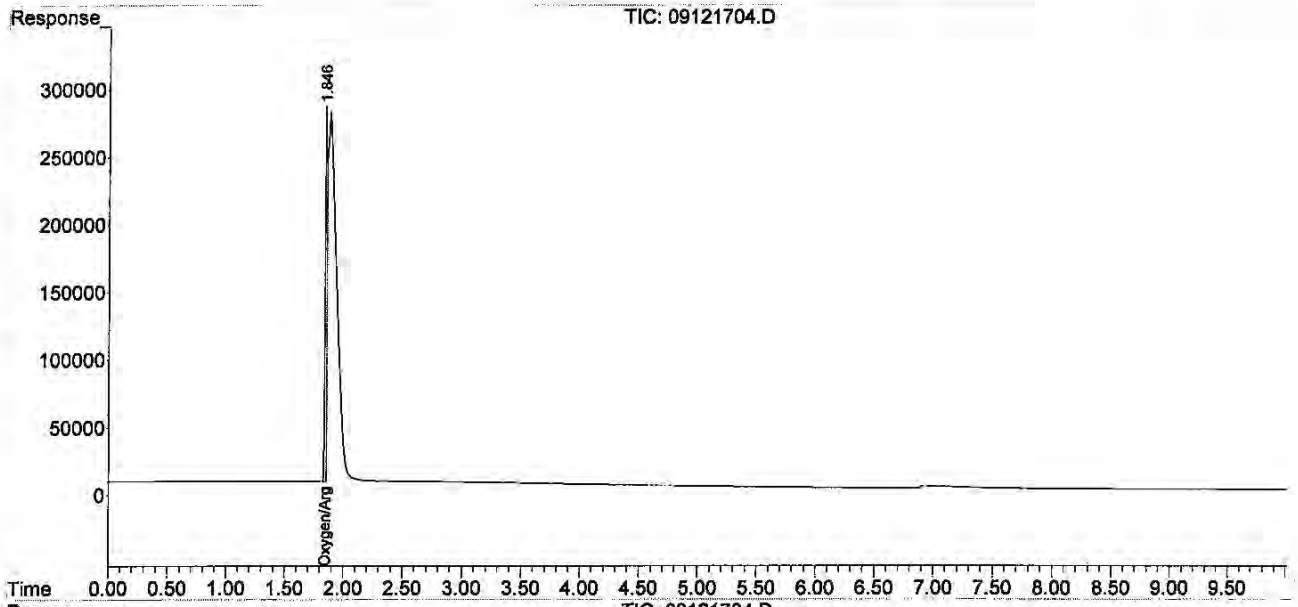
(f)=RT Delta > 1/2 Window (m)=manual int.

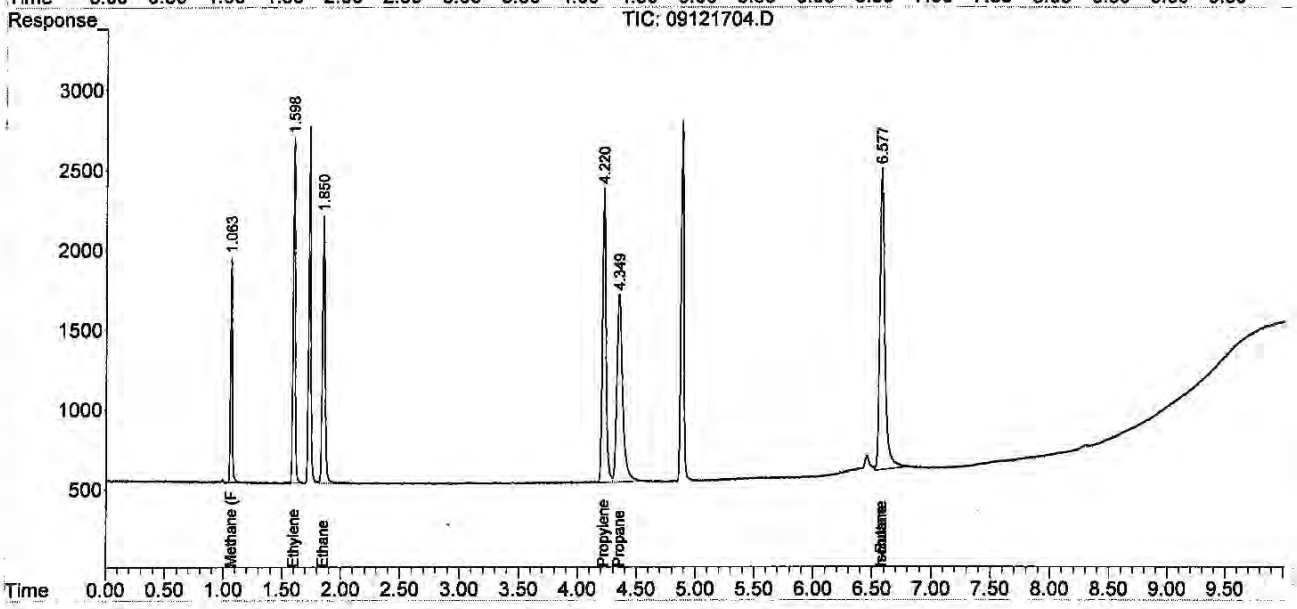
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

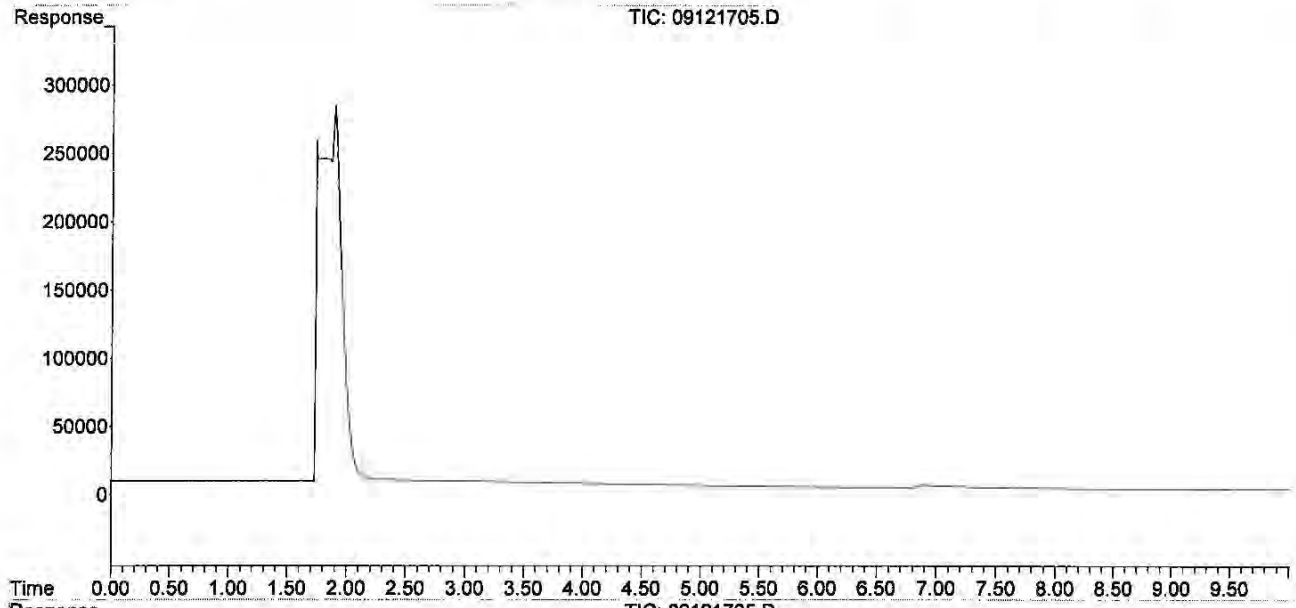
(f)=RT Delta > 1/2 Window (m)=manual int.

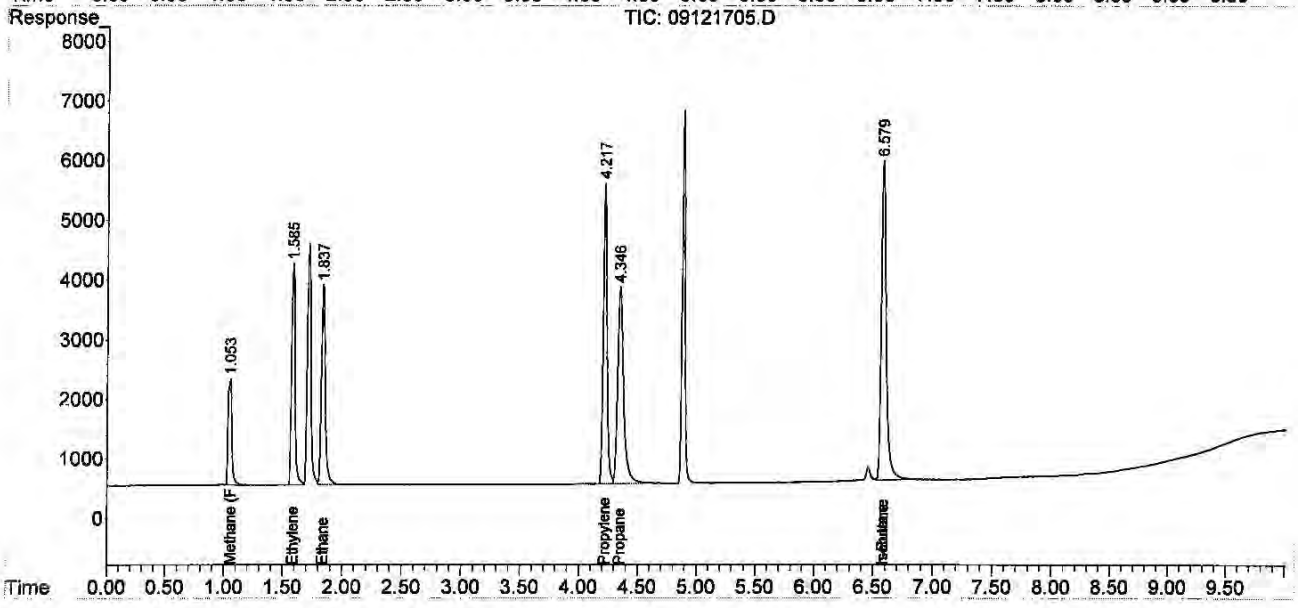
Quantitation Report (QT Reviewed)

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 |

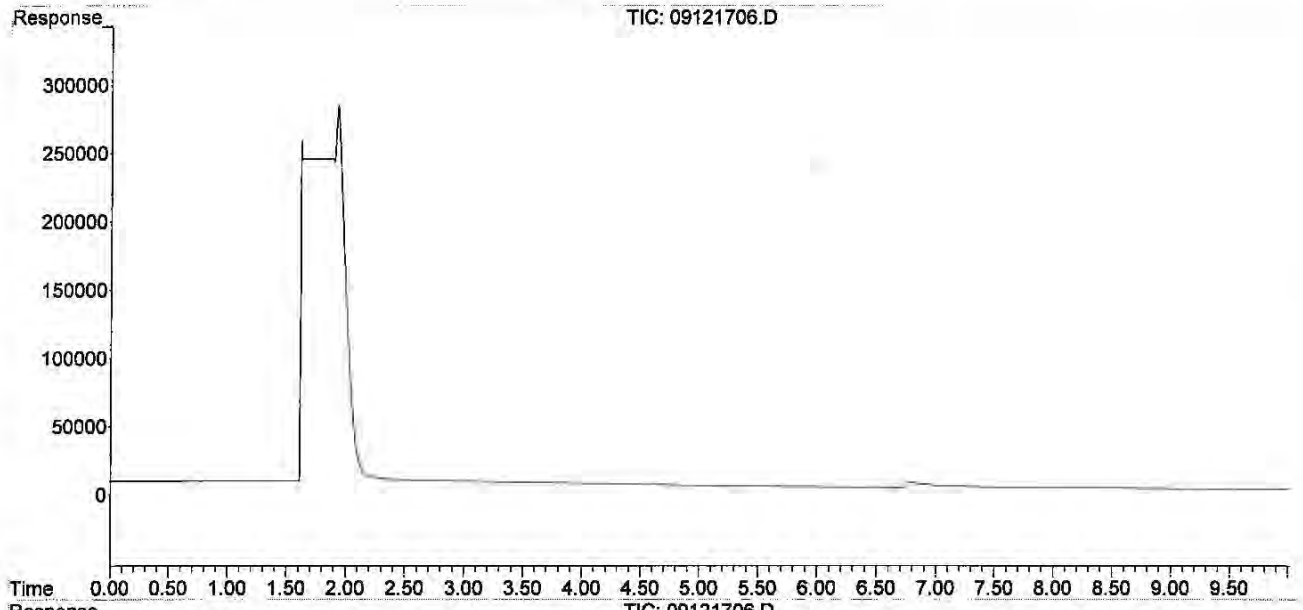
(f)=RT Delta > 1/2 Window (m)=manual int.

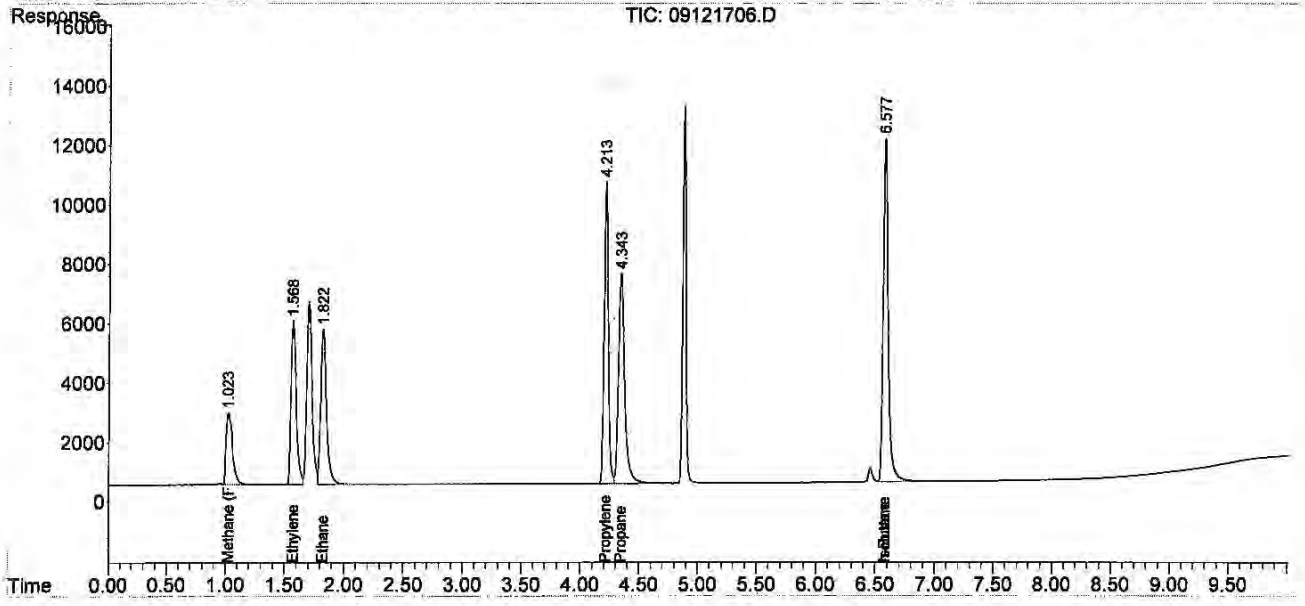
Quantitation Report (QT Reviewed)

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 |

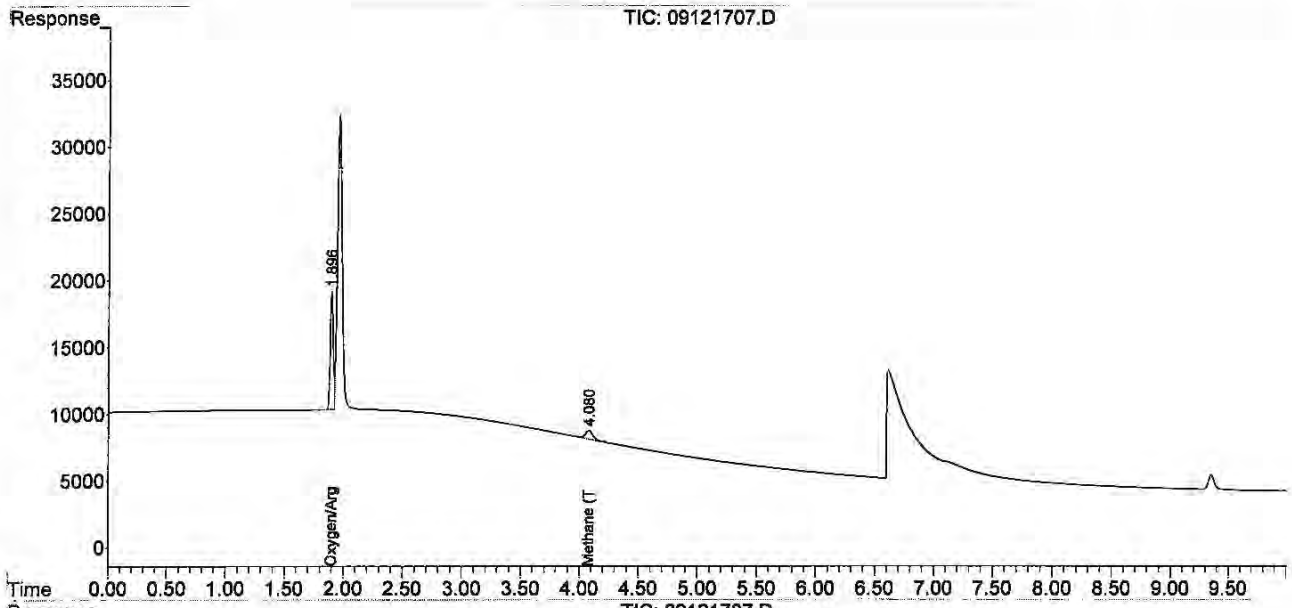
(f)=RT Delta > 1/2 Window (m)=manual int.

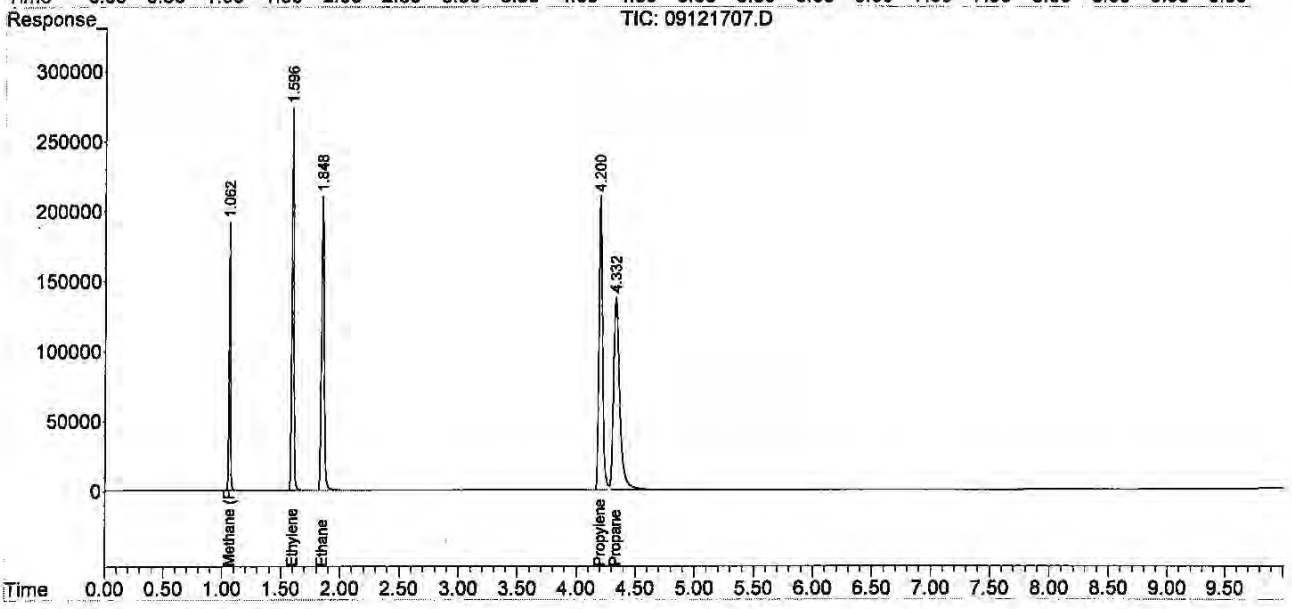
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

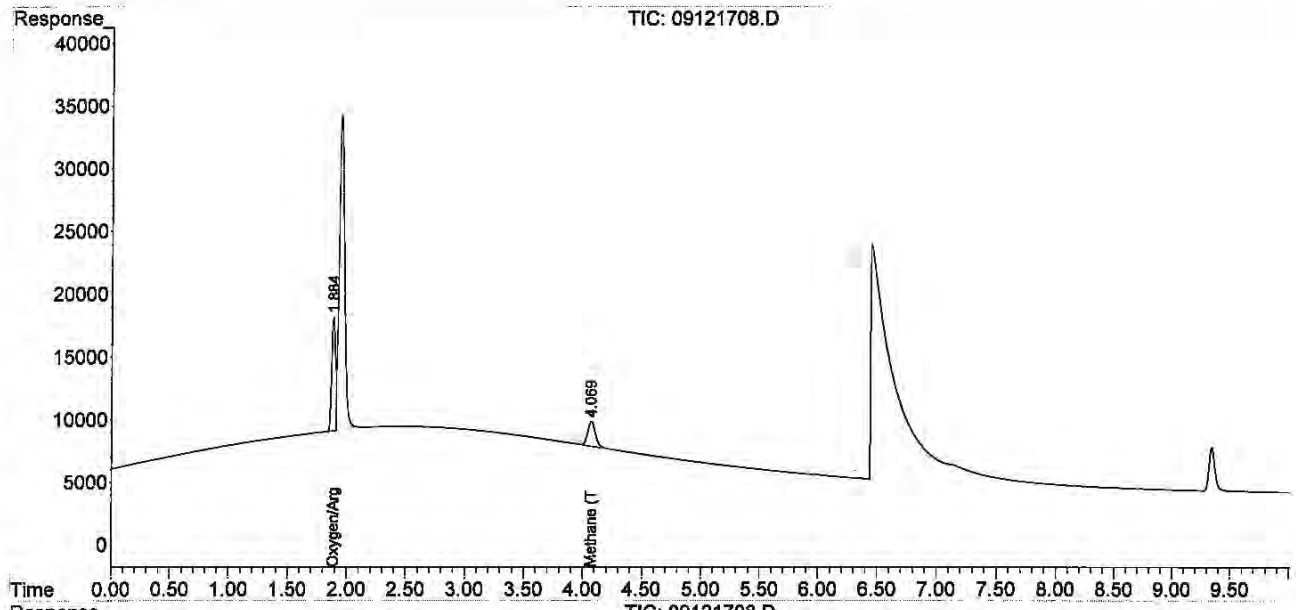
(f)=RT Delta > 1/2 Window (m)=manual int.

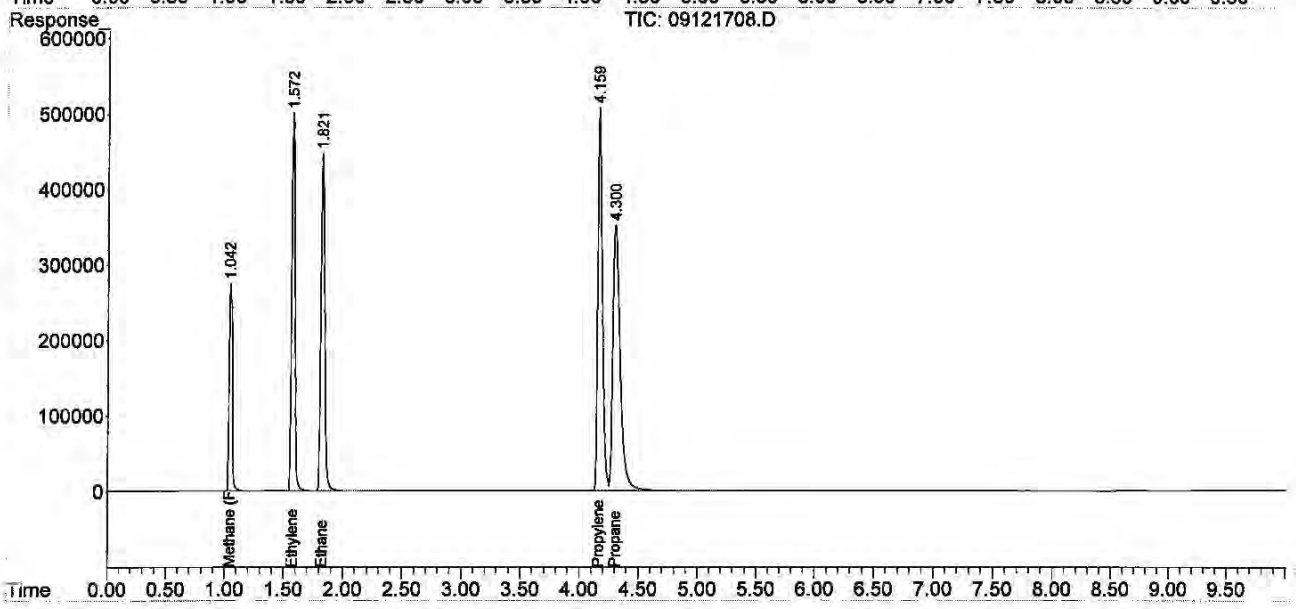
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

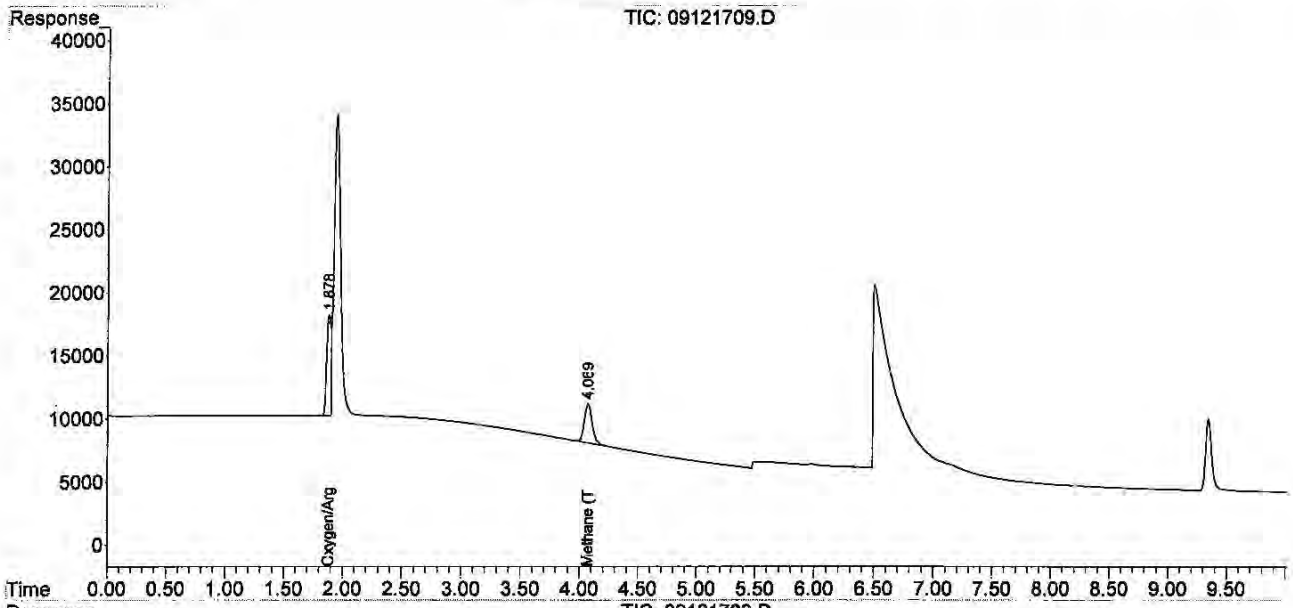
(f)=RT Delta > 1/2 Window (m)=manual int.

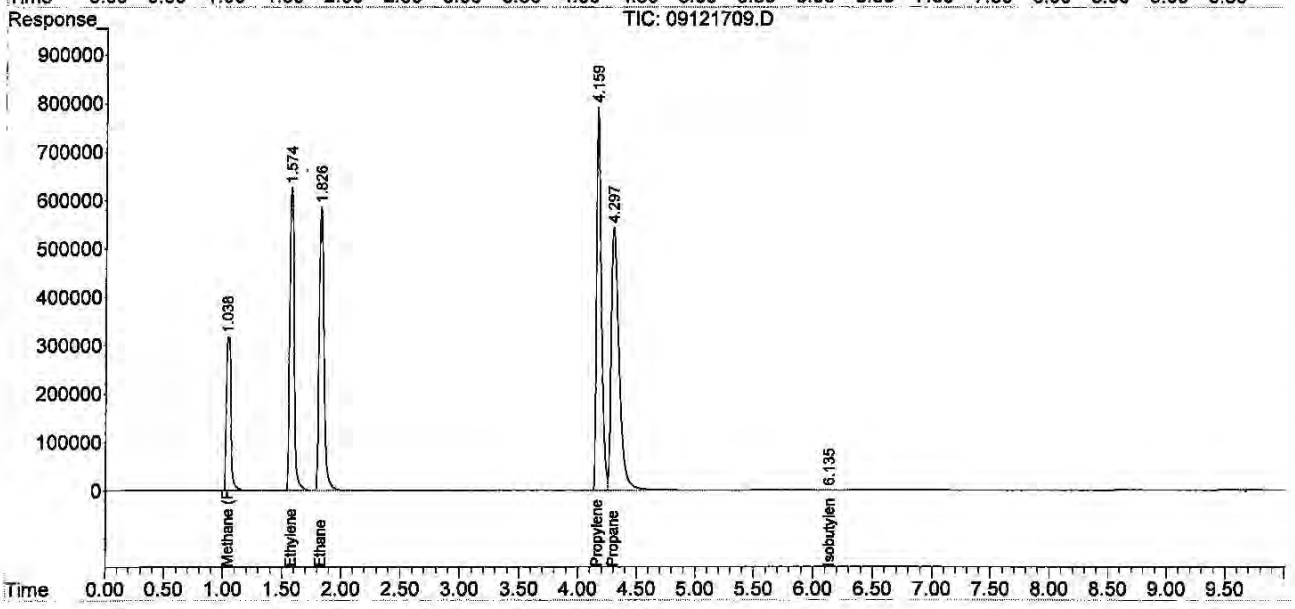
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 | |

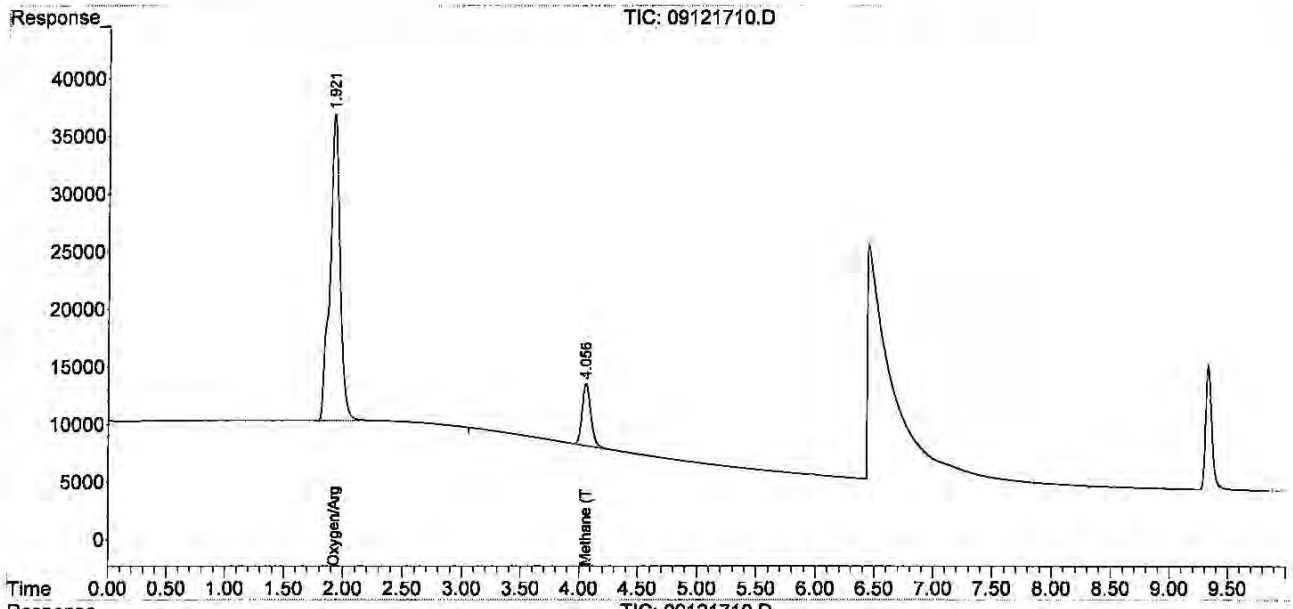
(f)=RT Delta > 1/2 Window (m)=manual int.

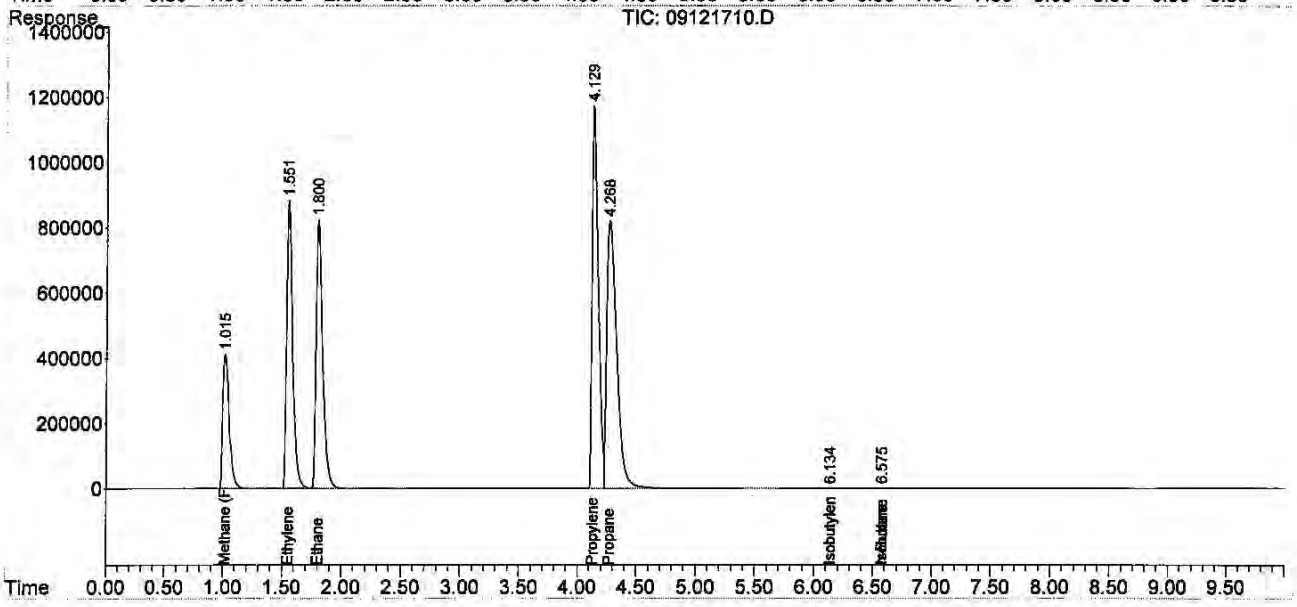
Quantitation Report (QT Reviewed)

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 :



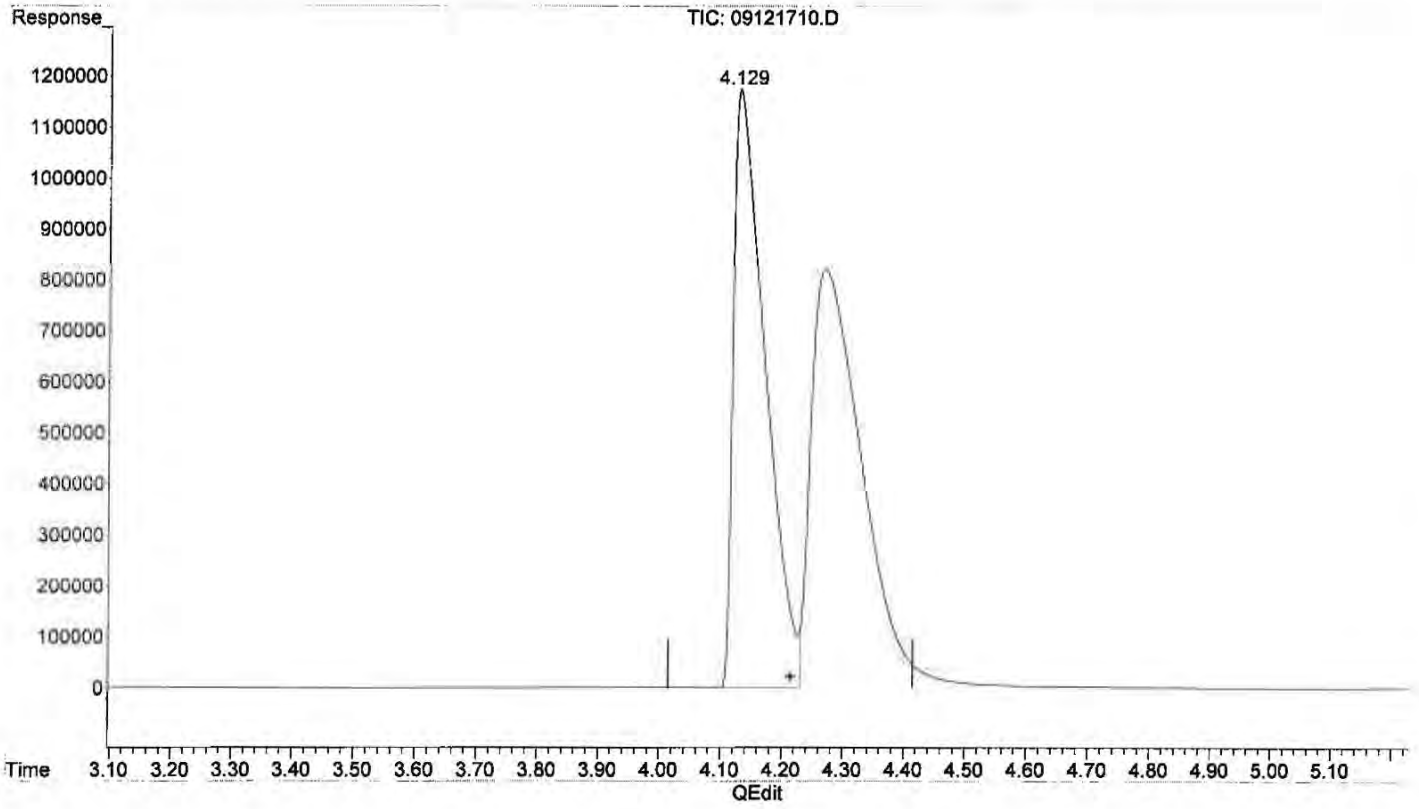



Quantitation Report (Qedit)

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 | |

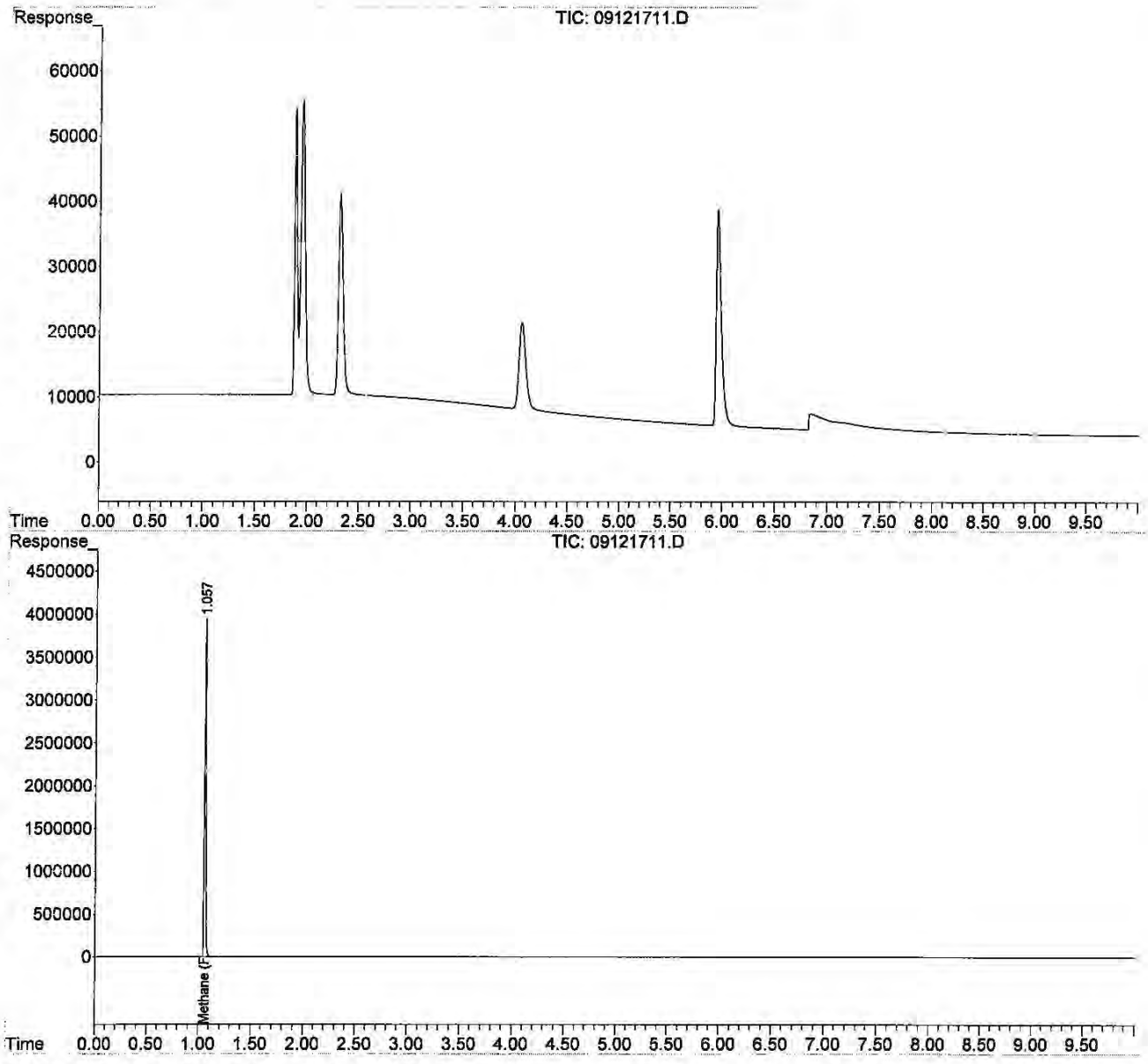
(f)=RT Delta > 1/2 Window (m)=manual int.

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



Quantitation Report (QT Reviewed)

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 | |

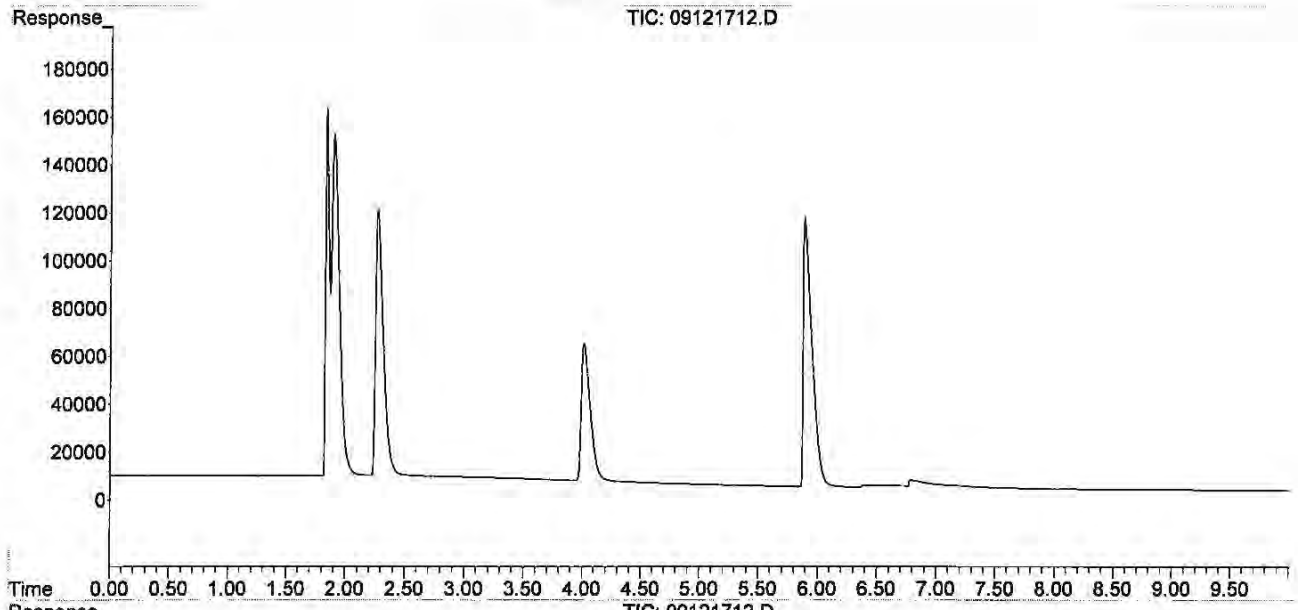
(f)=RT Delta > 1/2 Window (m)=manual int.

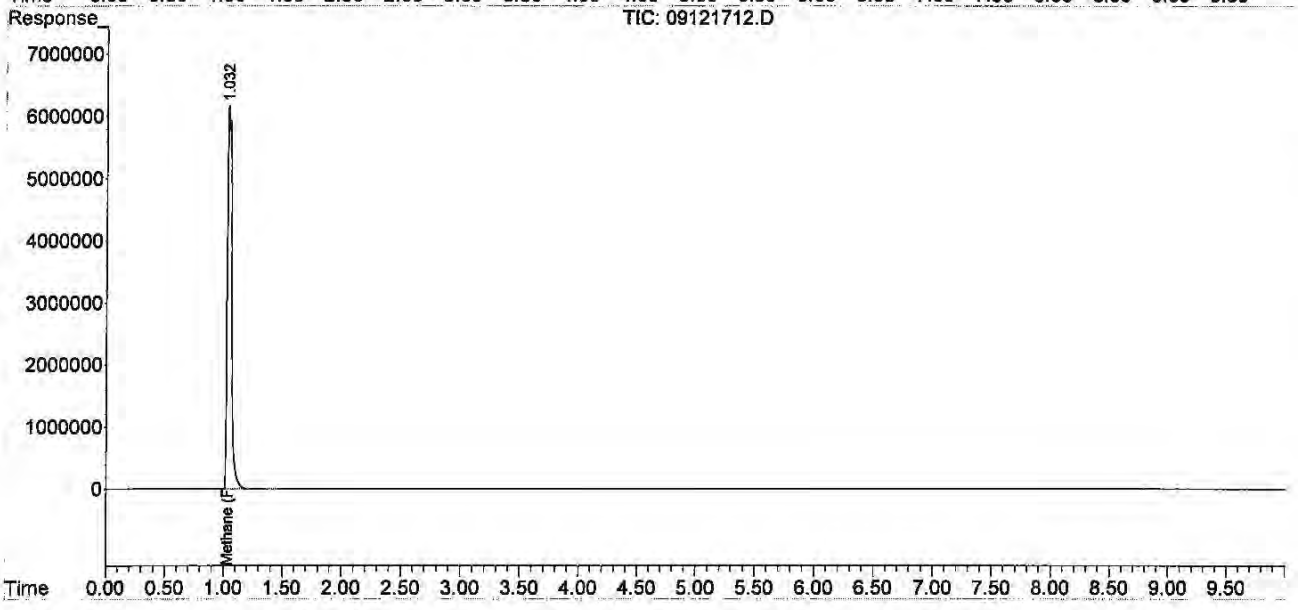
Quantitation Report (QT Reviewed)

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 | ~~1.510~~ 1.50 101.1 |
| 7) | Ethylene | 1.598 | 24153 | 1.443 | ppm | ~~1.490~~ 1.50 96.2 |
| 8) | Ethane | 1.850 | 24488 | 1.445 | ppm | ~~1.510~~ 1.50 96.3 |
| 9) | Propylene | 4.221 | 36004 | 1.537 | ppm | ~~1.490~~ 1.50 102.5 |
| 10) | Propane | 4.350 | 37738 | 1.517 | ppm | ~~1.511~~ 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 | |

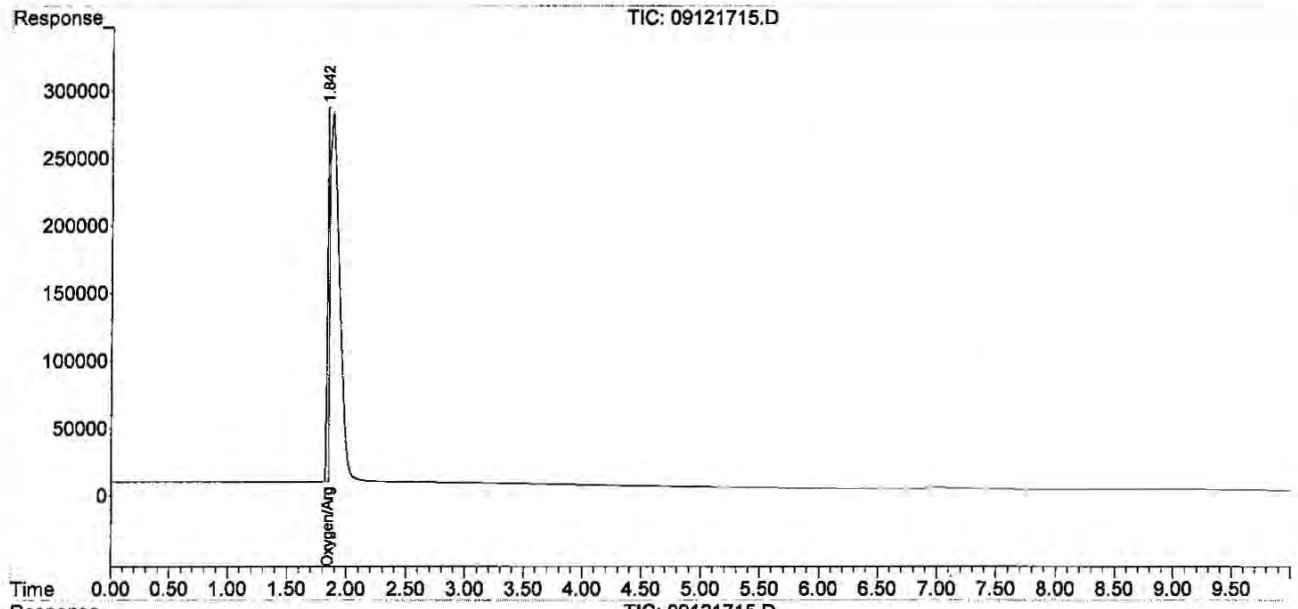
(f)=RT Delta > 1/2 Window (m)=manual int.

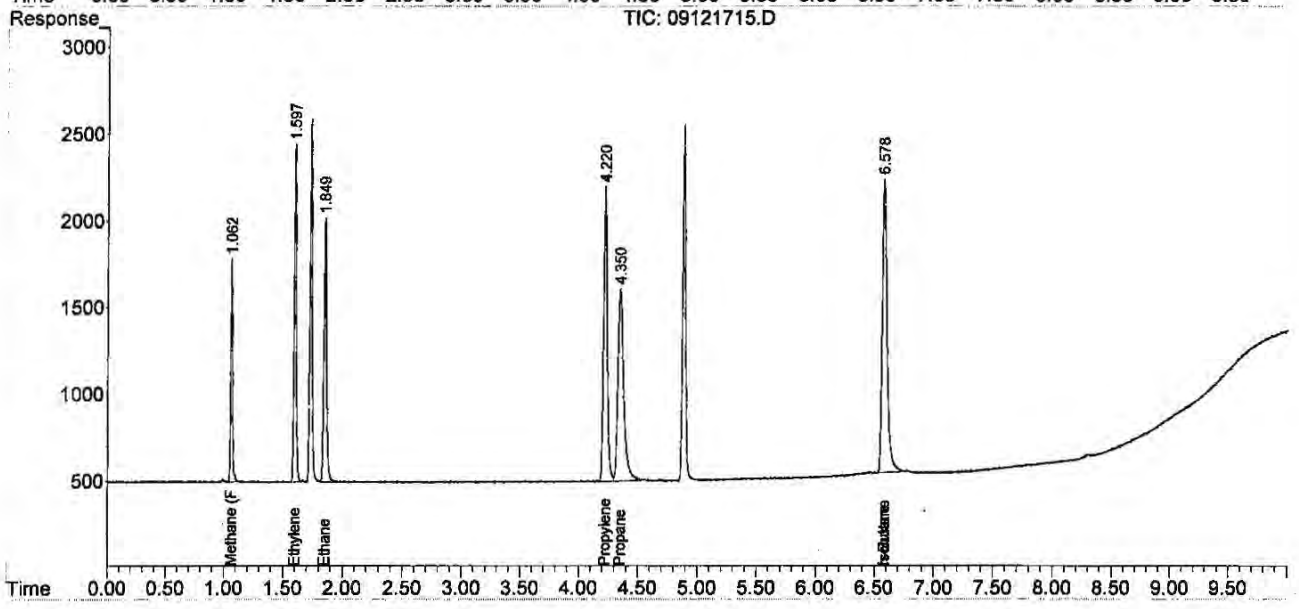
Quantitation Report (QT Reviewed)

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 :



## *ALS Environmental*

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1904812
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 08/16/19
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 | Inj. Vol. | Methane | Ethylene | Ethane |
|---|---|---|---|---|
| STD s32-05221901 | 0.100 | 93.106 | 102.508 | 104.410 |
| ACTUAL | | 101.50 | 100.90 | 101.40 |
| %Difference | | 8.3% | 1.6% | 3.0% |
| mcs 0.1ml | 0.100 | 0.061 | 0.000 | 0.000 |
| rb 0.1ml | 0.100 | 0.000 | 0.000 | 0.000 |
| lcs fid | 0.100 | 1.266 | 1.044 | 1.203 |
| lcsd fid | 0.100 | 1.304 | 1.009 | 1.176 |
| P1904812-001 0.1ml | 0.100 | 0.000 | 0.000 | 0.000 |
| P1904812-002 0.1ml | 0.100 | 7.659 | 0.000 | 0.000 |
| P1904812-003 0.1ml | 0.100 | 0.000 | 0.000 | 0.000 |
| P1904812-004 0.1ml | 0.100 | 4.024 | 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 | 0.610 | 0.000 | 0.000 |
| lcs fid | 12.660 | 10.440 | 12.030 |
| lcsd fid | 13.040 | 10.090 | 11.760 |
| P1904812-001 0.1ml | 0.000 | 0.000 | 0.000 |
| P1904812-002 0.1ml | 76.590 | 0.000 | 0.000 |
| P1904812-003 0.1ml | 0.000 | 0.000 | 0.000 |
| P1904812-004 0.1ml | 40.240 | 0.000 | 0.000 |

| | | | |
|---|---|---|---|
| STD s32-05221901 | 87.567 | 96.854 | 98.856 |
| ACTUAL | 101.50 | 100.90 | 101.40 |
| %Difference | 13.7% | 4.0% | 2.5% |





00971881

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 11:28:22
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 11:42:15 2019
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) | 1.105 | 844535 | 93.106 | ppm |
| 7) | Ethylene | 1.665 | 1715405 | 102.508 | ppm |
| 8) | Ethane | 1.925 | 1769763 | 104.410 | ppm |
| 9) | Propylene | 4.299 | 2544051 | 108.574 | ppm |
| 10) | Propane | 4.423 | 2686669 | 107.984 | 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 |

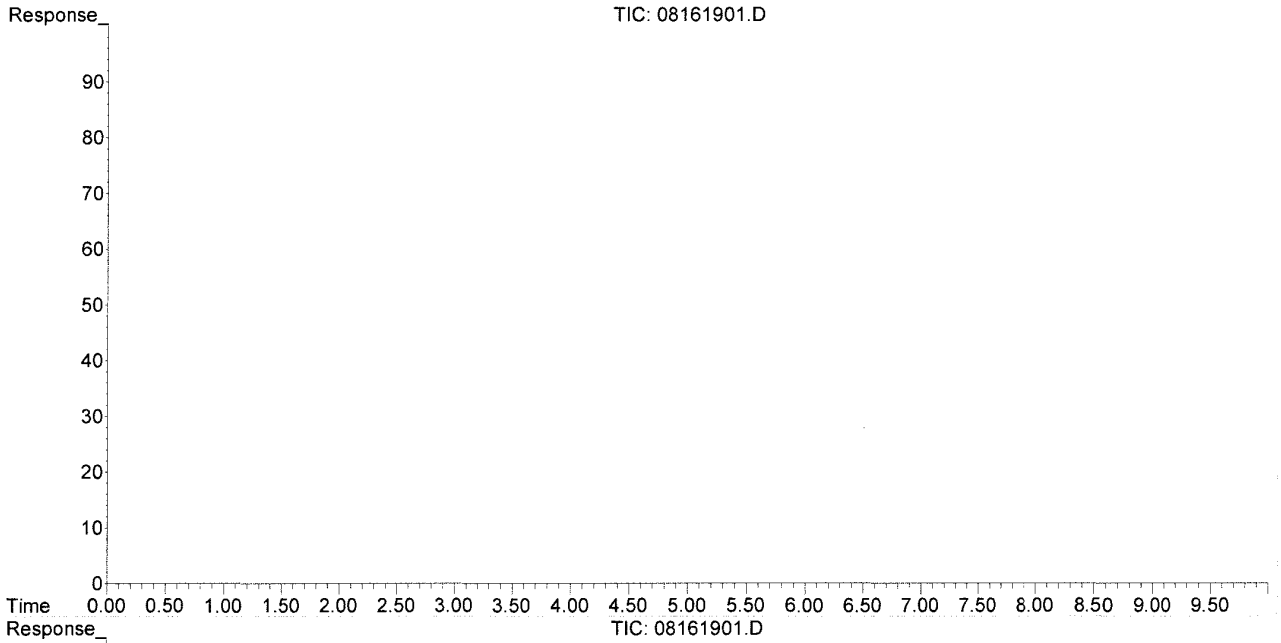
(f)=RT Delta > 1/2 Window (m)=manual int.

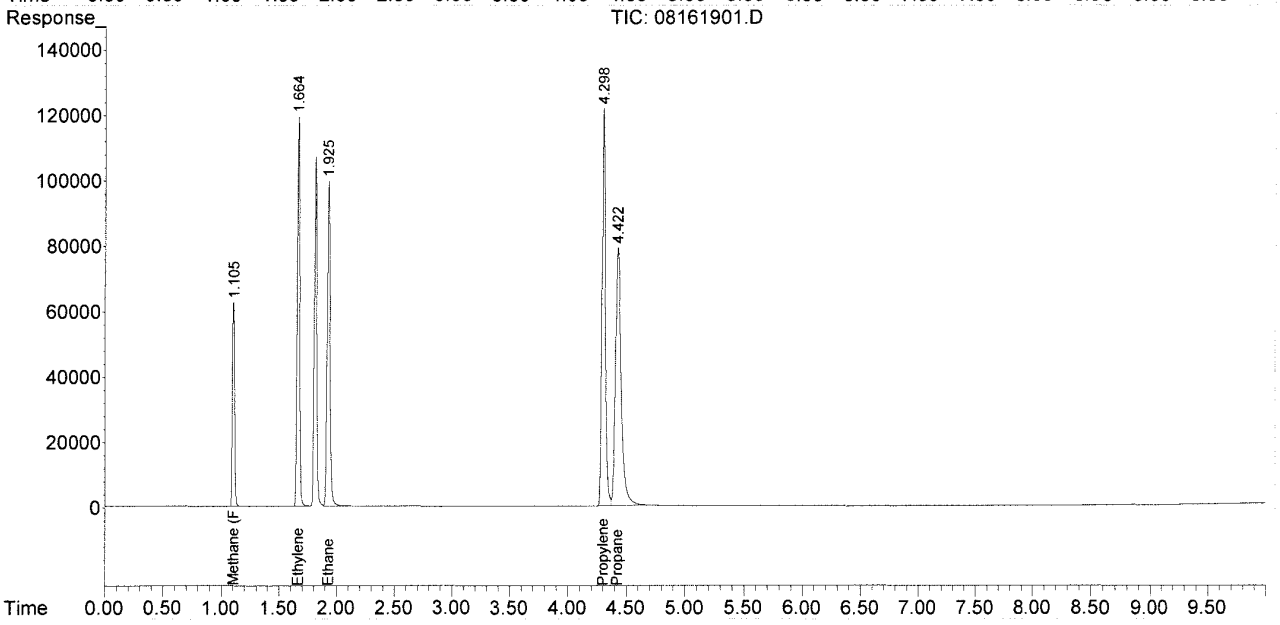
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 11:28:22
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 11:42:15 2019
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\2019_08\16\
Data File : 08161915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 15:55:03
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:11:04 2019
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 | 794290 | 87.567 | ppm |
| 7) | Ethylene | 1.642 | 1620790 | 96.854 | ppm |
| 8) | Ethane | 1.896 | 1675621 | 98.856 | ppm |
| 9) | Propylene | 4.284 | 2405433 | 102.658 | ppm |
| 10) | Propane | 4.409 | 2549575 | 102.474 | 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 |

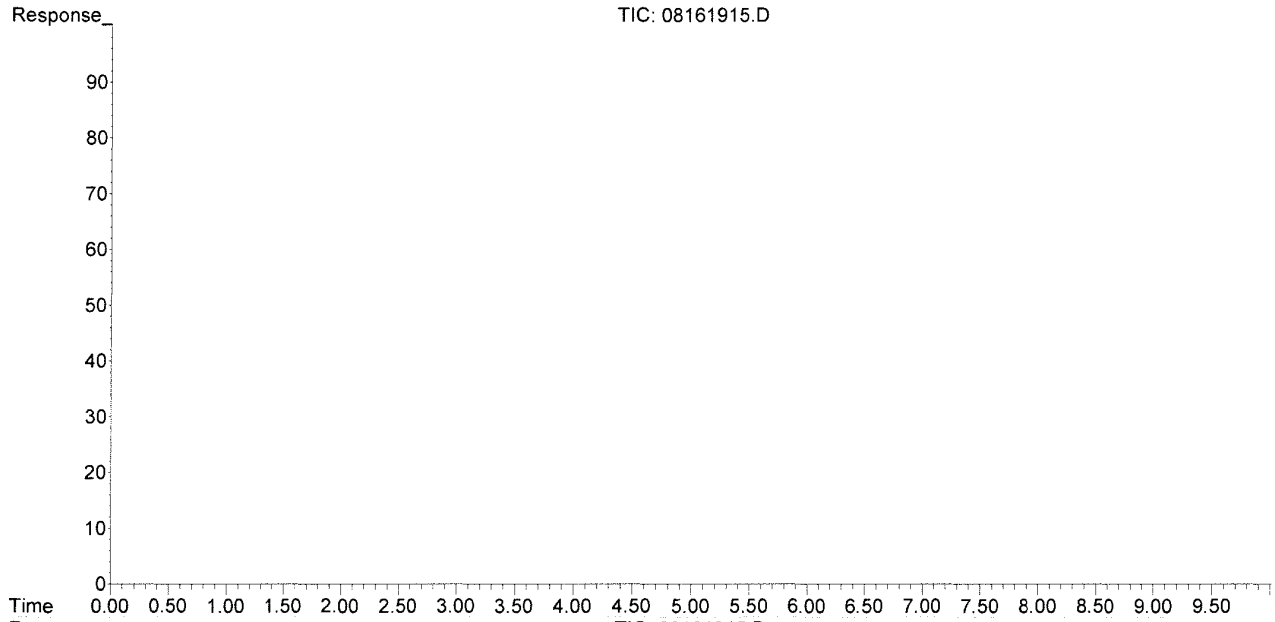
(f)=RT Delta > 1/2 Window (m)=manual int.

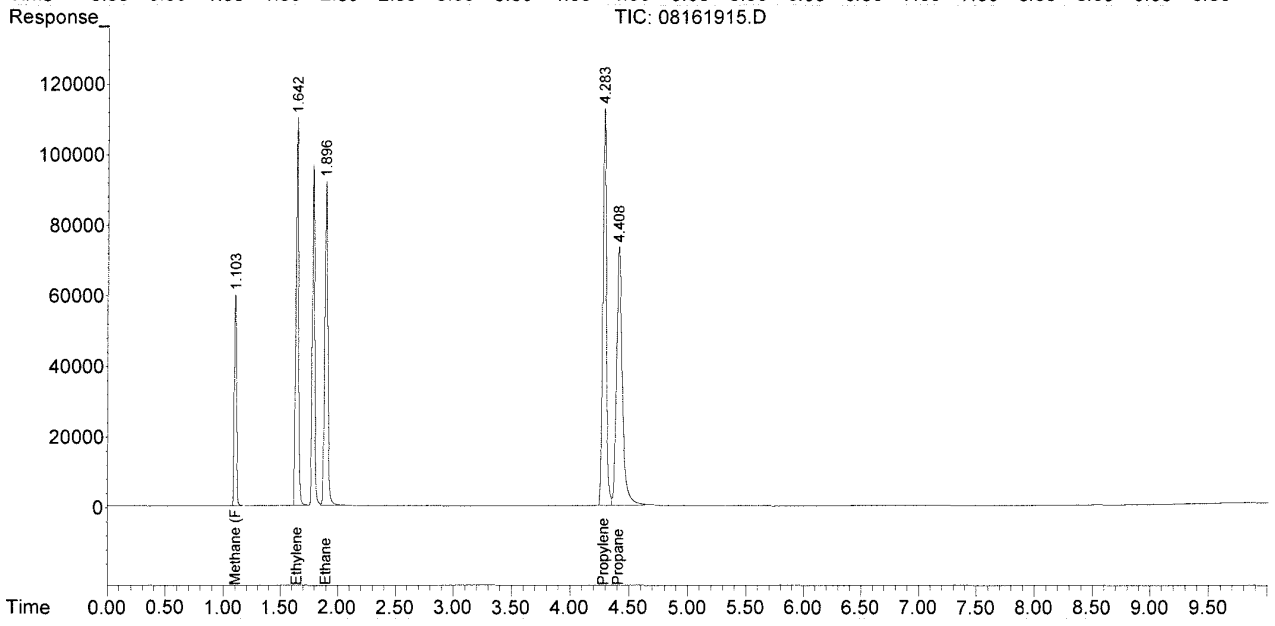
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\16\
Data File : 08161915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 16-Aug-2019, 15:55:03
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 16 16:11:04 2019
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 :



# 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\2019_08\16\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 16-Aug-19, 11:28:22 | 08161901.D | STD s32-05221901 | | WH | RSKBOTH.M | |
| 2 | 16-Aug-19, 11:43:39 | 08161902.D | rb 0.1ml | | WH | RSKBOTH.M | |
| 3 | 16-Aug-19, 11:56:27 | 08161903.D | mcs 0.1ml | | WH | RSKBOTH.M | |
| 4 | 16-Aug-19, 12:24:42 | 08161904.D | P1904812-001 0.1ml | | WH | RSKBOTH.M | |
| 5 | 16-Aug-19, 12:38:28 | 08161905.D | P1904812-002 0.1ml | | WH | RSKBOTH.M | |
| 6 | 16-Aug-19, 12:51:19 | 08161906.D | P1904812-003 0.1ml | | WH | RSKBOTH.M | |
| 7 | 16-Aug-19, 13:31:04 | 08161907.D | P1904812-004 0.1ml | | WH | RSKBOTH.M | |
| 8 | 16-Aug-19, 13:47:21 | 08161908.D | xlcs fid | | WH | RSKBOTH.M | |
| 9 | 16-Aug-19, 14:23:21 | 08161909.D | lcs fid | | WH | RSKBOTH.M | |
| 10 | 16-Aug-19, 14:40:17 | 08161910.D | lcsd fid | | WH | RSKBOTH.M | |
| 11 | 16-Aug-19, 14:54:41 | 08161911.D | J1904562-002 0.1ml | | WH | RSKBOTH.M | |
| 12 | 16-Aug-19, 15:08:21 | 08161912.D | J1904562-003 0.1ml | | WH | RSKBOTH.M | |
| 13 | 16-Aug-19, 15:29:32 | 08161913.D | J1904562-004 0.1ml | | WH | RSKBOTH.M | |
| 14 | 16-Aug-19, 15:42:22 | 08161914.D | J1904562-005 0.1ml | | WH | RSKBOTH.M | |
| 15 | 16-Aug-19, 15:55:03 | 08161915.D | STD s32-05221901 | | WH | RSKBOTH.M | |

# HS19080684 LHAAP46 Cover Page

ALS WO# HS19080684

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ALS Group USA, Corp
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**F :** +1 360 636 1068
**www.alsglobal.com**

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HS19080684 8260 Raw Data
HS19080684 Wet Chem Raw Data

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F: +1 281 530 5887
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# WorkOrder: HS19080684

**LHAAP-46**

**Aptim Environmental & Infrastucture, Inc.**

Susan Huang
2500 City West Blvd., Suite 1700
Houston TX 77042

**06-Sep-2019**

# HS19080684 LHAAP46 Final

ALS WO# HS19080684

10450 Stancliff Rd. Suite 210
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August 30, 2019

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19080684**

Laboratory Results for: **LHAAP-46**

Dear Susan,

ALS Environmental received 7 sample(s) on Aug 14, 2019 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 Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**Work Order:** HS19080684

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19080684-01 | 46WW05-190813 | Groundwater | | 13-Aug-2019 08:10 | 14-Aug-2019 08:44 | ☐ |
| HS19080684-02 | 46WW16-190813 | Groundwater | | 13-Aug-2019 09:10 | 14-Aug-2019 08:44 | ☐ |
| HS19080684-03 | LHSMW21-190813 | Groundwater | | 13-Aug-2019 10:15 | 14-Aug-2019 08:44 | ☐ |
| HS19080684-04 | 46WW08-190813 | Groundwater | | 13-Aug-2019 11:15 | 14-Aug-2019 08:44 | ☐ |
| HS19080684-05 | 46WW08-190813-FD | Groundwater | | 13-Aug-2019 11:15 | 14-Aug-2019 08:44 | ☐ |
| HS19080684-06 | 46WW06-190813 | Groundwater | | 13-Aug-2019 13:10 | 14-Aug-2019 08:44 | ☐ |
| HS19080684-07 | Trip Blank | Water | | 13-Aug-2019 00:00 | 14-Aug-2019 08:44 | ☐ |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
**Project:** LHAAP-46
**Work Order:**

## Work Order Comments

- The analysis for TOC was subcontracted to ALS Kelso, WA. Final report attached.

## Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK.175 was subcontracted to ALS Simi Valley, CA. Final report attached

## GCMS Volatiles by Method SW8260

### Batch ID: R344280

**Sample ID: 46WW16-190813(HS19080684-02MS)**

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MS may be due to sample matrix interference.

**Sample ID: 46WW16-190813 (HS19080684-02MSD)**

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

## WetChemistry by Method SW9056

### Batch ID: R344398

**Sample ID: 46WW16-190813 (HS19080684-02MS)**

- 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. (Chloride,Sulfate)

### Batch ID: R345140

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW05-190813
Collection Date: 13-Aug-2019 08:10

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-01
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| **1,1-Dichloroethane** | **0.66** | J | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 19:01 |
| **1,1-Dichloroethene** | **5.3** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 19:01 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW05-190813
Collection Date: 13-Aug-2019 08:10

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-01
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| **cis-1,2-Dichloroethene** | **4.8** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 19:01 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| **Trichloroethene** | **62** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 19:01 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:01 |
| **Vinyl chloride** | **1.2** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 19:01 |
| *Surr: 1,2-Dichloroethane-d4* | *88.0* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 19:01* |
| *Surr: 4-Bromofluorobenzene* | *98.8* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 19:01* |
| *Surr: Dibromofluoromethane* | *91.1* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 19:01* |
| *Surr: Toluene-d8* | *105* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 19:01* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **228** | | **4.00** | **10.0** | **10.0** | **mg/L** | 20 | 14-Aug-2019 17:54 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 14-Aug-2019 17:37 |
| **Sulfate** | **3,940** | | **10.0** | **25.0** | **25.0** | **mg/L** | 50 | 14-Aug-2019 20:57 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 28-Aug-2019 17:20 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 30-Aug-2019 14:51 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-46 WorkOrder:HS19080684
Sample ID: 46WW16-190813 Lab ID:HS19080684-02
Collection Date: 13-Aug-2019 09:10 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW16-190813
Collection Date: 13-Aug-2019 09:10

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-02
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:00 |
| *Surr: 1,2-Dichloroethane-d4* | *90.8* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 15:00* |
| *Surr: 4-Bromofluorobenzene* | *100* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 15:00* |
| *Surr: Dibromofluoromethane* | *93.1* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 15:00* |
| *Surr: Toluene-d8* | *103* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 15:00* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **299** | | **4.00** | **10.0** | **10.0** | **mg/L** | 20 | 27-Aug-2019 01:53 |
| Nitrogen, Nitrate (As N) | 0.100 | U | 0.0300 | 0.100 | 0.100 | mg/L | 1 | 14-Aug-2019 18:10 |
| **Sulfate** | **740** | | **4.00** | **10.0** | **10.0** | **mg/L** | 20 | 27-Aug-2019 01:53 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 28-Aug-2019 17:20 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 30-Aug-2019 14:51 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: LHSMW21-190813
Collection Date: 13-Aug-2019 10:15

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-03
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| **1,1-Dichloroethene** | **0.87** | J | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 15:48 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-46 WorkOrder:HS19080684
Sample ID: LHSMW21-190813 Lab ID:HS19080684-03
Collection Date: 13-Aug-2019 10:15 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| **cis-1,2-Dichloroethene** | **170** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 15:48 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| **trans-1,2-Dichloroethene** | **4.0** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 15:48 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| **Trichloroethene** | **41** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 15:48 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:48 |
| **Vinyl chloride** | **0.97** | J | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 14-Aug-2019 15:48 |
| *Surr: 1,2-Dichloroethane-d4* | *88.5* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 15:48* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 15:48* |
| *Surr: Dibromofluoromethane* | *90.5* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 15:48* |
| *Surr: Toluene-d8* | *101* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 15:48* |
| **ANIONS BY SW9056A** | | **Method:SW9056** | | | | | | Analyst: KMU |
| **Chloride** | **124** | | **4.00** | **10.0** | **10.0** | **mg/L** | 20 | 14-Aug-2019 19:34 |
| **Nitrogen, Nitrate (As N)** | **0.0605** | J | **0.0300** | **0.100** | **0.100** | **mg/L** | 1 | 14-Aug-2019 19:17 |
| **Sulfate** | **823** | | **4.00** | **10.0** | **10.0** | **mg/L** | 20 | 14-Aug-2019 19:34 |
| **SUBCONTRACT ANALYSIS - RSK** | | **Method:NA** | | | | | | Analyst: SUBCA |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 28-Aug-2019 17:20 |
| **SUBCONTRACT ANALYSIS - TOC ANALYSIS** | | **Method:NA** | | | | | | Analyst: SUBK |
| Subcontract Analysis | See Attached | | 0 | 0 | | NA | 1 | 30-Aug-2019 14:51 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW08-190813
Collection Date: 13-Aug-2019 11:15

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-04
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW08-190813
Collection Date: 13-Aug-2019 11:15

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-04
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:25 |
| *Surr: 1,2-Dichloroethane-d4* | *88.6* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 19:25* |
| *Surr: 4-Bromofluorobenzene* | *102* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 19:25* |
| *Surr: Dibromofluoromethane* | *91.8* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 19:25* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 19:25* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-46 WorkOrder:HS19080684
Sample ID: 46WW08-190813-FD Lab ID:HS19080684-05
Collection Date: 13-Aug-2019 11:15 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW08-190813-FD
Collection Date: 13-Aug-2019 11:15

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-05
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 19:49 |
| *Surr: 1,2-Dichloroethane-d4* | *89.7* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 19:49* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 19:49* |
| *Surr: Dibromofluoromethane* | *92.8* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 19:49* |
| *Surr: Toluene-d8* | *102* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 19:49* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW06-190813
Collection Date: 13-Aug-2019 13:10

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-06
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: 46WW06-190813
Collection Date: 13-Aug-2019 13:10

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-06
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 20:13 |
| *Surr: 1,2-Dichloroethane-d4* | *88.9* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 20:13* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 20:13* |
| *Surr: Dibromofluoromethane* | *92.0* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 20:13* |
| *Surr: Toluene-d8* | *101* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 20:13* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: Trip Blank
Collection Date: 13-Aug-2019 00:00

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-07
Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 30-Aug-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-46
Sample ID: Trip Blank
Collection Date: 13-Aug-2019 00:00

**ANALYTICAL REPORT**
WorkOrder:HS19080684
Lab ID:HS19080684-07
Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 14-Aug-2019 15:24 |
| *Surr: 1,2-Dichloroethane-d4* | *90.2* | | | **0** | *81-118* | *%REC* | *1* | *14-Aug-2019 15:24* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *14-Aug-2019 15:24* |
| *Surr: Dibromofluoromethane* | *92.6* | | | **0** | *80-119* | *%REC* | *1* | *14-Aug-2019 15:24* |
| *Surr: Toluene-d8* | *101* | | | **0** | *89-112* | *%REC* | *1* | *14-Aug-2019 15:24* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

## DATES REPORT

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID:** R344280 ( 0 ) | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Water | |
| HS19080684-07 | Trip Blank | 13 Aug 2019 00:00 | | | 14 Aug 2019 15:24 | 1 |
| **Batch ID:** R344280 ( 0 ) | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Groundwater | |
| HS19080684-01 | 46WW05-190813 | 13 Aug 2019 08:10 | | | 14 Aug 2019 19:01 | 1 |
| HS19080684-02 | 46WW16-190813 | 13 Aug 2019 09:10 | | | 14 Aug 2019 15:00 | 1 |
| HS19080684-03 | LHSMW21-190813 | 13 Aug 2019 10:15 | | | 14 Aug 2019 15:48 | 1 |
| HS19080684-04 | 46WW08-190813 | 13 Aug 2019 11:15 | | | 14 Aug 2019 19:25 | 1 |
| HS19080684-05 | 46WW08-190813-FD | 13 Aug 2019 11:15 | | | 14 Aug 2019 19:49 | 1 |
| HS19080684-06 | 46WW06-190813 | 13 Aug 2019 13:10 | | | 14 Aug 2019 20:13 | 1 |
| **Batch ID:** R344398 ( 0 ) | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19080684-01 | 46WW05-190813 | 13 Aug 2019 08:10 | | | 14 Aug 2019 20:57 | 50 |
| HS19080684-01 | 46WW05-190813 | 13 Aug 2019 08:10 | | | 14 Aug 2019 17:54 | 20 |
| HS19080684-01 | 46WW05-190813 | 13 Aug 2019 08:10 | | | 14 Aug 2019 17:37 | 1 |
| HS19080684-02 | 46WW16-190813 | 13 Aug 2019 09:10 | | | 14 Aug 2019 18:10 | 1 |
| HS19080684-03 | LHSMW21-190813 | 13 Aug 2019 10:15 | | | 14 Aug 2019 19:34 | 20 |
| HS19080684-03 | LHSMW21-190813 | 13 Aug 2019 10:15 | | | 14 Aug 2019 19:17 | 1 |
| **Batch ID:** R345140 ( 0 ) | **Test Name :** ANIONS BY SW9056A | | | | **Matrix:** Groundwater | |
| HS19080684-02 | 46WW16-190813 | 13 Aug 2019 09:10 | | | 27 Aug 2019 01:53 | 20 |
| **Batch ID:** R345155 ( 0 ) | **Test Name :** SUBCONTRACT ANALYSIS - RSK | | | | **Matrix:** Groundwater | |
| HS19080684-01 | 46WW05-190813 | 13 Aug 2019 08:10 | | | 28 Aug 2019 17:20 | 1 |
| HS19080684-02 | 46WW16-190813 | 13 Aug 2019 09:10 | | | 28 Aug 2019 17:20 | 1 |
| HS19080684-03 | LHSMW21-190813 | 13 Aug 2019 10:15 | | | 28 Aug 2019 17:20 | 1 |
| **Batch ID:** R345307 ( 0 ) | **Test Name :** SUBCONTRACT ANALYSIS - TOC ANALYSIS | | | | **Matrix:** Groundwater | |
| HS19080684-01 | 46WW05-190813 | 13 Aug 2019 08:10 | | | 30 Aug 2019 14:51 | 1 |
| HS19080684-02 | 46WW16-190813 | 13 Aug 2019 09:10 | | | 30 Aug 2019 14:51 | 1 |
| HS19080684-03 | LHSMW21-190813 | 13 Aug 2019 10:15 | | | 30 Aug 2019 14:51 | 1 |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 12:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210202** 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 |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 12:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210202** 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 | 1.0 | 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* | *44.14* | *1.0* | *50* | *0* | *88.3* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *51.44* | *1.0* | *50* | *0* | *103* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *46.04* | *1.0* | *50* | *0* | *92.1* | *80 - 119* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 12:36**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210202** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *51.39* | *1.0* | *50* | *0* | *103* | *89 - 112* | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 11:48**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210201** 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 | 19.56 | 1.0 | 20 | 0 | 97.8 | 78 - 124 | | | | |
| 1,1,1-Trichloroethane | 19.37 | 1.0 | 20 | 0 | 96.8 | 74 - 131 | | | | |
| 1,1,2,2-Tetrachloroethane | 20.72 | 1.0 | 20 | 0 | 104 | 71 - 121 | | | | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 20.07 | 1.0 | 20 | 0 | 100 | 70 - 136 | | | | |
| 1,1,2-Trichloroethane | 19.85 | 1.0 | 20 | 0 | 99.3 | 80 - 119 | | | | |
| 1,1-Dichloroethane | 20.48 | 1.0 | 20 | 0 | 102 | 77 - 125 | | | | |
| 1,1-Dichloroethene | 20.87 | 1.0 | 20 | 0 | 104 | 71 - 131 | | | | |
| 1,1-Dichloropropene | 18.84 | 1.0 | 20 | 0 | 94.2 | 78 - 125 | | | | |
| 1,2,3-Trichlorobenzene | 22.16 | 1.0 | 20 | 0 | 111 | 69 - 129 | | | | |
| 1,2,3-Trichloropropane | 20.42 | 1.0 | 20 | 0 | 102 | 73 - 122 | | | | |
| 1,2,4-Trichlorobenzene | 21.46 | 1.0 | 20 | 0 | 107 | 69 - 130 | | | | |
| 1,2,4-Trimethylbenzene | 19.11 | 1.0 | 20 | 0 | 95.5 | 76 - 124 | | | | |
| 1,2-Dibromo-3-chloropropane | 19.96 | 1.0 | 20 | 0 | 99.8 | 62 - 128 | | | | |
| 1,2-Dibromoethane | 19.95 | 1.0 | 20 | 0 | 99.8 | 77 - 121 | | | | |
| 1,2-Dichlorobenzene | 20.33 | 1.0 | 20 | 0 | 102 | 80 - 119 | | | | |
| 1,2-Dichloroethane | 19.44 | 1.0 | 20 | 0 | 97.2 | 73 - 128 | | | | |
| 1,2-Dichloropropane | 21.38 | 1.0 | 20 | 0 | 107 | 78 - 122 | | | | |
| 1,3,5-Trimethylbenzene | 18.57 | 1.0 | 20 | 0 | 92.8 | 75 - 124 | | | | |
| 1,3-Dichlorobenzene | 18.77 | 1.0 | 20 | 0 | 93.9 | 80 - 119 | | | | |
| 1,3-Dichloropropane | 19.87 | 1.0 | 20 | 0 | 99.4 | 80 - 119 | | | | |
| 1,4-Dichlorobenzene | 20.07 | 1.0 | 20 | 0 | 100 | 79 - 118 | | | | |
| 2,2-Dichloropropane | 20.72 | 1.0 | 20 | 0 | 104 | 60 - 139 | | | | |
| 2-Butanone | 40.71 | 2.0 | 40 | 0 | 102 | 56 - 143 | | | | |
| 2-Chlorotoluene | 18.72 | 1.0 | 20 | 0 | 93.6 | 79 - 122 | | | | |
| 2-Hexanone | 40.6 | 2.0 | 40 | 0 | 102 | 57 - 139 | | | | |
| 4-Chlorotoluene | 18.82 | 1.0 | 20 | 0 | 94.1 | 78 - 122 | | | | |
| 4-Isopropyltoluene | 18.36 | 1.0 | 20 | 0 | 91.8 | 77 - 127 | | | | |
| 4-Methyl-2-pentanone | 39.66 | 2.0 | 40 | 0 | 99.2 | 67 - 130 | | | | |
| Acetone | 41.52 | 2.0 | 40 | 0 | 104 | 39 - 160 | | | | |
| Benzene | 20.44 | 1.0 | 20 | 0 | 102 | 79 - 120 | | | | |
| Bromobenzene | 19.06 | 1.0 | 20 | 0 | 95.3 | 80 - 120 | | | | |
| Bromochloromethane | 20.15 | 1.0 | 20 | 0 | 101 | 78 - 123 | | | | |
| Bromodichloromethane | 20.1 | 1.0 | 20 | 0 | 100 | 79 - 125 | | | | |
| Bromoform | 19.46 | 1.0 | 20 | 0 | 97.3 | 66 - 130 | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 11:48**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210201** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 23.39 | 1.0 | 20 | 0 | 117 | 53 - 141 | | | | |
| Carbon disulfide | 42.28 | 2.0 | 40 | 0 | 106 | 64 - 133 | | | | |
| Carbon tetrachloride | 17.9 | 1.0 | 20 | 0 | 89.5 | 72 - 136 | | | | |
| Chlorobenzene | 19.23 | 1.0 | 20 | 0 | 96.2 | 82 - 118 | | | | |
| Chloroethane | 23.16 | 1.0 | 20 | 0 | 116 | 60 - 138 | | | | |
| Chloroform | 20.34 | 1.0 | 20 | 0 | 102 | 79 - 124 | | | | |
| Chloromethane | 20.47 | 1.0 | 20 | 0 | 102 | 50 - 139 | | | | |
| cis-1,2-Dichloroethene | 20.43 | 1.0 | 20 | 0 | 102 | 78 - 123 | | | | |
| cis-1,3-Dichloropropene | 21.05 | 1.0 | 20 | 0 | 105 | 75 - 124 | | | | |
| Dibromochloromethane | 19.45 | 1.0 | 20 | 0 | 97.2 | 74 - 126 | | | | |
| Dibromomethane | 20.02 | 1.0 | 20 | 0 | 100 | 79 - 123 | | | | |
| Dichlorodifluoromethane | 17.75 | 1.0 | 20 | 0 | 88.7 | 32 - 152 | | | | |
| Ethylbenzene | 18.75 | 1.0 | 20 | 0 | 93.7 | 79 - 121 | | | | |
| Hexachlorobutadiene | 23.22 | 1.0 | 20 | 0 | 116 | 66 - 134 | | | | |
| Isopropylbenzene | 18.35 | 1.0 | 20 | 0 | 91.8 | 72 - 131 | | | | |
| m,p-Xylene | 38.24 | 2.0 | 40 | 0 | 95.6 | 80 - 121 | | | | |
| Methylene chloride | 21.43 | 2.0 | 20 | 0 | 107 | 74 - 124 | | | | |
| Naphthalene | 20.43 | 1.0 | 20 | 0 | 102 | 61 - 128 | | | | |
| n-Butylbenzene | 19.06 | 1.0 | 20 | 0 | 95.3 | 75 - 128 | | | | |
| n-Propylbenzene | 18.44 | 1.0 | 20 | 0 | 92.2 | 76 - 126 | | | | |
| o-Xylene | 19.34 | 1.0 | 20 | 0 | 96.7 | 78 - 122 | | | | |
| sec-Butylbenzene | 18.05 | 1.0 | 20 | 0 | 90.2 | 77 - 126 | | | | |
| Styrene | 19.89 | 1.0 | 20 | 0 | 99.5 | 78 - 123 | | | | |
| tert-Butylbenzene | 17.98 | 1.0 | 20 | 0 | 89.9 | 78 - 124 | | | | |
| Tetrachloroethene | 17.83 | 1.0 | 20 | 0 | 89.1 | 74 - 129 | | | | |
| Toluene | 19.6 | 1.0 | 20 | 0 | 98.0 | 80 - 121 | | | | |
| trans-1,2-Dichloroethene | 20.48 | 1.0 | 20 | 0 | 102 | 75 - 124 | | | | |
| trans-1,3-Dichloropropene | 20.63 | 1.0 | 20 | 0 | 103 | 73 - 127 | | | | |
| Trichloroethene | 19.8 | 1.0 | 20 | 0 | 99.0 | 79 - 123 | | | | |
| Trichlorofluoromethane | 19.62 | 1.0 | 20 | 0 | 98.1 | 65 - 141 | | | | |
| Vinyl chloride | 21.29 | 1.0 | 20 | 0 | 106 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *50.89* | *1.0* | *50* | *0* | *102* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *51.83* | *1.0* | *50* | *0* | *104* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *51.4* | *1.0* | *50* | *0* | *103* | *80 - 119* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-190814** Units: **UG/L** Analysis Date: **14-Aug-2019 11:48**
Client ID: Run ID: **VOA6_344280** SeqNo: **5210201** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *47.89* | *1.0* | *50* | *0* | *95.8* | *89 - 112* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19080684-02MS** Units: **UG/L** Analysis Date: **14-Aug-2019 16:12**
Client ID: **46WW16-190813** Run ID: **VOA6_344280** SeqNo: **5210211** 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 | 17.48 | 1.0 | 20 | 0 | 87.4 | 78 - 124 | | | | |
| 1,1,1-Trichloroethane | 16.51 | 1.0 | 20 | 0 | 82.6 | 74 - 131 | | | | |
| 1,1,2,2-Tetrachloroethane | 18.66 | 1.0 | 20 | 0 | 93.3 | 71 - 121 | | | | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 18.88 | 1.0 | 20 | 0 | 94.4 | 70 - 136 | | | | |
| 1,1,2-Trichloroethane | 17.6 | 1.0 | 20 | 0 | 88.0 | 80 - 119 | | | | |
| 1,1-Dichloroethane | 16.01 | 1.0 | 20 | 0 | 80.0 | 77 - 125 | | | | |
| 1,1-Dichloroethene | 16.59 | 1.0 | 20 | 0 | 83.0 | 71 - 131 | | | | |
| 1,1-Dichloropropene | 17.36 | 1.0 | 20 | 0 | 86.8 | 78 - 125 | | | | |
| 1,2,3-Trichlorobenzene | 19.54 | 1.0 | 20 | 0 | 97.7 | 69 - 129 | | | | |
| 1,2,3-Trichloropropane | 18.36 | 1.0 | 20 | 0 | 91.8 | 73 - 122 | | | | |
| 1,2,4-Trichlorobenzene | 19.21 | 1.0 | 20 | 0 | 96.0 | 69 - 130 | | | | |
| 1,2,4-Trimethylbenzene | 18.82 | 1.0 | 20 | 0 | 94.1 | 76 - 124 | | | | |
| 1,2-Dibromo-3-chloropropane | 17.98 | 1.0 | 20 | 0 | 89.9 | 62 - 128 | | | | |
| 1,2-Dibromoethane | 17.37 | 1.0 | 20 | 0 | 86.9 | 77 - 121 | | | | |
| 1,2-Dichlorobenzene | 18.53 | 1.0 | 20 | 0 | 92.6 | 80 - 119 | | | | |
| 1,2-Dichloroethane | 15.72 | 1.0 | 20 | 0 | 78.6 | 73 - 128 | | | | |
| 1,2-Dichloropropane | 17.39 | 1.0 | 20 | 0 | 87.0 | 78 - 122 | | | | |
| 1,3,5-Trimethylbenzene | 19.23 | 1.0 | 20 | 0 | 96.2 | 75 - 124 | | | | |
| 1,3-Dichlorobenzene | 17.95 | 1.0 | 20 | 0 | 89.7 | 80 - 119 | | | | |
| 1,3-Dichloropropane | 17.13 | 1.0 | 20 | 0 | 85.6 | 80 - 119 | | | | |
| 1,4-Dichlorobenzene | 18.74 | 1.0 | 20 | 0 | 93.7 | 79 - 118 | | | | |
| 2,2-Dichloropropane | 16.59 | 1.0 | 20 | 0 | 82.9 | 60 - 139 | | | | |
| 2-Butanone | 41.79 | 2.0 | 40 | 0 | 104 | 56 - 143 | | | | |
| 2-Chlorotoluene | 18.52 | 1.0 | 20 | 0 | 92.6 | 79 - 122 | | | | |
| 2-Hexanone | 51.62 | 2.0 | 40 | 0 | 129 | 57 - 139 | | | | |
| 4-Chlorotoluene | 18.15 | 1.0 | 20 | 0 | 90.7 | 78 - 122 | | | | |
| 4-Isopropyltoluene | 19.1 | 1.0 | 20 | 0 | 95.5 | 77 - 127 | | | | |
| 4-Methyl-2-pentanone | 50.9 | 2.0 | 40 | 0 | 127 | 67 - 130 | | | | |
| Acetone | 33.15 | 2.0 | 40 | 0 | 82.9 | 39 - 160 | | | | |
| Benzene | 17.14 | 1.0 | 20 | 0 | 85.7 | 79 - 120 | | | | |
| Bromobenzene | 17.6 | 1.0 | 20 | 0 | 88.0 | 80 - 120 | | | | |
| Bromochloromethane | 15.55 | 1.0 | 20 | 0 | 77.7 | 78 - 123 | | | | S |
| Bromodichloromethane | 16.53 | 1.0 | 20 | 0 | 82.7 | 79 - 125 | | | | |
| Bromoform | 16.79 | 1.0 | 20 | 0 | 84.0 | 66 - 130 | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19080684-02MS** Units: **UG/L** Analysis Date: **14-Aug-2019 16:12**
Client ID: **46WW16-190813** Run ID: **VOA6_344280** SeqNo: **5210211** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 13.06 | 1.0 | 20 | 0 | 65.3 | 53 - 141 | | | | |
| Carbon disulfide | 48.23 | 2.0 | 40 | 0 | 121 | 64 - 133 | | | | |
| Carbon tetrachloride | 17.14 | 1.0 | 20 | 0 | 85.7 | 72 - 136 | | | | |
| Chlorobenzene | 17.43 | 1.0 | 20 | 0 | 87.2 | 82 - 118 | | | | |
| Chloroethane | 16.43 | 1.0 | 20 | 0 | 82.1 | 60 - 138 | | | | |
| Chloroform | 15.85 | 1.0 | 20 | 0 | 79.2 | 79 - 124 | | | | |
| Chloromethane | 10.94 | 1.0 | 20 | 0 | 54.7 | 50 - 139 | | | | |
| cis-1,2-Dichloroethene | 16.22 | 1.0 | 20 | 0 | 81.1 | 78 - 123 | | | | |
| cis-1,3-Dichloropropene | 16.88 | 1.0 | 20 | 0 | 84.4 | 75 - 124 | | | | |
| Dibromochloromethane | 16.94 | 1.0 | 20 | 0 | 84.7 | 74 - 126 | | | | |
| Dibromomethane | 16.32 | 1.0 | 20 | 0 | 81.6 | 79 - 123 | | | | |
| Dichlorodifluoromethane | 7.664 | 1.0 | 20 | 0 | 38.3 | 32 - 152 | | | | |
| Ethylbenzene | 18.41 | 1.0 | 20 | 0 | 92.0 | 79 - 121 | | | | |
| Hexachlorobutadiene | 20.68 | 1.0 | 20 | 0 | 103 | 66 - 134 | | | | |
| Isopropylbenzene | 18.69 | 1.0 | 20 | 0 | 93.4 | 72 - 131 | | | | |
| m,p-Xylene | 36.51 | 2.0 | 40 | 0 | 91.3 | 80 - 121 | | | | |
| Methylene chloride | 16.36 | 2.0 | 20 | 0 | 81.8 | 74 - 124 | | | | |
| Naphthalene | 18.23 | 1.0 | 20 | 0 | 91.1 | 61 - 128 | | | | |
| n-Butylbenzene | 19.41 | 1.0 | 20 | 0 | 97.1 | 75 - 128 | | | | |
| n-Propylbenzene | 19.41 | 1.0 | 20 | 0 | 97.1 | 76 - 126 | | | | |
| o-Xylene | 18.15 | 1.0 | 20 | 0 | 90.7 | 78 - 122 | | | | |
| sec-Butylbenzene | 19.26 | 1.0 | 20 | 0 | 96.3 | 77 - 126 | | | | |
| Styrene | 18.04 | 1.0 | 20 | 0 | 90.2 | 78 - 123 | | | | |
| tert-Butylbenzene | 19.08 | 1.0 | 20 | 0 | 95.4 | 78 - 124 | | | | |
| Tetrachloroethene | 18.39 | 1.0 | 20 | 0 | 91.9 | 74 - 129 | | | | |
| Toluene | 18.15 | 1.0 | 20 | 0 | 90.8 | 80 - 121 | | | | |
| trans-1,2-Dichloroethene | 15.98 | 1.0 | 20 | 0 | 79.9 | 75 - 124 | | | | |
| trans-1,3-Dichloropropene | 16.3 | 1.0 | 20 | 0 | 81.5 | 73 - 127 | | | | |
| Trichloroethene | 17.39 | 1.0 | 20 | 0 | 86.9 | 79 - 123 | | | | |
| Trichlorofluoromethane | 15.9 | 1.0 | 20 | 0 | 79.5 | 65 - 141 | | | | |
| Vinyl chloride | 13.77 | 1.0 | 20 | 0 | 68.8 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *45.59* | *1.0* | *50* | *0* | *91.2* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *50.91* | *1.0* | *50* | *0* | *102* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *46.9* | *1.0* | *50* | *0* | *93.8* | *80 - 119* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19080684-02MS** Units: **UG/L** Analysis Date: **14-Aug-2019 16:12**
Client ID: **46WW16-190813** Run ID: **VOA6_344280** SeqNo: **5210211** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *50.36* | *1.0* | *50* | *0* | *101* | *89 - 112* | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19080684-02MSD** Units: **UG/L** Analysis Date: **14-Aug-2019 16:36**
Client ID: **46WW16-190813** Run ID: **VOA6_344280** SeqNo: **5210212** 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 | 18.03 | 1.0 | 20 | 0 | 90.2 | 78 - 124 | 17.48 | 3.13 | 20 | |
| 1,1,1-Trichloroethane | 16.87 | 1.0 | 20 | 0 | 84.3 | 74 - 131 | 16.51 | 2.12 | 20 | |
| 1,1,2,2-Tetrachloroethane | 19.52 | 1.0 | 20 | 0 | 97.6 | 71 - 121 | 18.66 | 4.47 | 20 | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 18.71 | 1.0 | 20 | 0 | 93.5 | 70 - 136 | 18.88 | 0.89 | 20 | |
| 1,1,2-Trichloroethane | 18 | 1.0 | 20 | 0 | 90.0 | 80 - 119 | 17.6 | 2.23 | 20 | |
| 1,1-Dichloroethane | 16.22 | 1.0 | 20 | 0 | 81.1 | 77 - 125 | 16.01 | 1.33 | 20 | |
| 1,1-Dichloroethene | 16.61 | 1.0 | 20 | 0 | 83.1 | 71 - 131 | 16.59 | 0.135 | 20 | |
| 1,1-Dichloropropene | 17.68 | 1.0 | 20 | 0 | 88.4 | 78 - 125 | 17.36 | 1.83 | 20 | |
| 1,2,3-Trichlorobenzene | 21.26 | 1.0 | 20 | 0 | 106 | 69 - 129 | 19.54 | 8.45 | 20 | |
| 1,2,3-Trichloropropane | 19.27 | 1.0 | 20 | 0 | 96.3 | 73 - 122 | 18.36 | 4.84 | 20 | |
| 1,2,4-Trichlorobenzene | 20.38 | 1.0 | 20 | 0 | 102 | 69 - 130 | 19.21 | 5.91 | 20 | |
| 1,2,4-Trimethylbenzene | 19.4 | 1.0 | 20 | 0 | 97.0 | 76 - 124 | 18.82 | 3.05 | 20 | |
| 1,2-Dibromo-3-chloropropane | 19.27 | 1.0 | 20 | 0 | 96.3 | 62 - 128 | 17.98 | 6.91 | 20 | |
| 1,2-Dibromoethane | 18.34 | 1.0 | 20 | 0 | 91.7 | 77 - 121 | 17.37 | 5.46 | 20 | |
| 1,2-Dichlorobenzene | 19.4 | 1.0 | 20 | 0 | 97.0 | 80 - 119 | 18.53 | 4.6 | 20 | |
| 1,2-Dichloroethane | 16.43 | 1.0 | 20 | 0 | 82.2 | 73 - 128 | 15.72 | 4.41 | 20 | |
| 1,2-Dichloropropane | 18.22 | 1.0 | 20 | 0 | 91.1 | 78 - 122 | 17.39 | 4.68 | 20 | |
| 1,3,5-Trimethylbenzene | 19.46 | 1.0 | 20 | 0 | 97.3 | 75 - 124 | 19.23 | 1.18 | 20 | |
| 1,3-Dichlorobenzene | 18.41 | 1.0 | 20 | 0 | 92.0 | 80 - 119 | 17.95 | 2.53 | 20 | |
| 1,3-Dichloropropane | 18.32 | 1.0 | 20 | 0 | 91.6 | 80 - 119 | 17.13 | 6.72 | 20 | |
| 1,4-Dichlorobenzene | 19.3 | 1.0 | 20 | 0 | 96.5 | 79 - 118 | 18.74 | 2.92 | 20 | |
| 2,2-Dichloropropane | 16.9 | 1.0 | 20 | 0 | 84.5 | 60 - 139 | 16.59 | 1.86 | 20 | |
| 2-Butanone | 44.9 | 2.0 | 40 | 0 | 112 | 56 - 143 | 41.79 | 7.17 | 20 | |
| 2-Chlorotoluene | 18.87 | 1.0 | 20 | 0 | 94.4 | 79 - 122 | 18.52 | 1.91 | 20 | |
| 2-Hexanone | 54.85 | 2.0 | 40 | 0 | 137 | 57 - 139 | 51.62 | 6.08 | 20 | |
| 4-Chlorotoluene | 18.63 | 1.0 | 20 | 0 | 93.1 | 78 - 122 | 18.15 | 2.61 | 20 | |
| 4-Isopropyltoluene | 19.56 | 1.0 | 20 | 0 | 97.8 | 77 - 127 | 19.1 | 2.39 | 20 | |
| 4-Methyl-2-pentanone | 54.81 | 2.0 | 40 | 0 | 137 | 67 - 130 | 50.9 | 7.4 | 20 | S |
| Acetone | 34.89 | 2.0 | 40 | 0 | 87.2 | 39 - 160 | 33.15 | 5.13 | 20 | |
| Benzene | 17.51 | 1.0 | 20 | 0 | 87.6 | 79 - 120 | 17.14 | 2.14 | 20 | |
| Bromobenzene | 17.9 | 1.0 | 20 | 0 | 89.5 | 80 - 120 | 17.6 | 1.69 | 20 | |
| Bromochloromethane | 15.91 | 1.0 | 20 | 0 | 79.5 | 78 - 123 | 15.55 | 2.3 | 20 | |
| Bromodichloromethane | 17.08 | 1.0 | 20 | 0 | 85.4 | 79 - 125 | 16.53 | 3.29 | 20 | |
| Bromoform | 17.99 | 1.0 | 20 | 0 | 89.9 | 66 - 130 | 16.79 | 6.87 | 20 | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19080684-02MSD** Units: **UG/L** Analysis Date: **14-Aug-2019 16:36**
Client ID: **46WW16-190813** Run ID: **VOA6_344280** SeqNo: **5210212** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 12.21 | 1.0 | 20 | 0 | 61.0 | 53 - 141 | 13.06 | 6.71 | 20 | |
| Carbon disulfide | 48.74 | 2.0 | 40 | 0 | 122 | 64 - 133 | 48.23 | 1.04 | 20 | |
| Carbon tetrachloride | 17.45 | 1.0 | 20 | 0 | 87.2 | 72 - 136 | 17.14 | 1.78 | 20 | |
| Chlorobenzene | 18.14 | 1.0 | 20 | 0 | 90.7 | 82 - 118 | 17.43 | 3.96 | 20 | |
| Chloroethane | 15.33 | 1.0 | 20 | 0 | 76.6 | 60 - 138 | 16.43 | 6.95 | 20 | |
| Chloroform | 16.34 | 1.0 | 20 | 0 | 81.7 | 79 - 124 | 15.85 | 3.07 | 20 | |
| Chloromethane | 10.55 | 1.0 | 20 | 0 | 52.7 | 50 - 139 | 10.94 | 3.7 | 20 | |
| cis-1,2-Dichloroethene | 16.41 | 1.0 | 20 | 0 | 82.1 | 78 - 123 | 16.22 | 1.15 | 20 | |
| cis-1,3-Dichloropropene | 17.66 | 1.0 | 20 | 0 | 88.3 | 75 - 124 | 16.88 | 4.51 | 20 | |
| Dibromochloromethane | 17.81 | 1.0 | 20 | 0 | 89.1 | 74 - 126 | 16.94 | 5 | 20 | |
| Dibromomethane | 17.17 | 1.0 | 20 | 0 | 85.8 | 79 - 123 | 16.32 | 5.09 | 20 | |
| Dichlorodifluoromethane | 7.5 | 1.0 | 20 | 0 | 37.5 | 32 - 152 | 7.664 | 2.16 | 20 | |
| Ethylbenzene | 18.83 | 1.0 | 20 | 0 | 94.2 | 79 - 121 | 18.41 | 2.28 | 20 | |
| Hexachlorobutadiene | 22.04 | 1.0 | 20 | 0 | 110 | 66 - 134 | 20.68 | 6.36 | 20 | |
| Isopropylbenzene | 19.34 | 1.0 | 20 | 0 | 96.7 | 72 - 131 | 18.69 | 3.45 | 20 | |
| m,p-Xylene | 37.74 | 2.0 | 40 | 0 | 94.3 | 80 - 121 | 36.51 | 3.3 | 20 | |
| Methylene chloride | 16.57 | 2.0 | 20 | 0 | 82.9 | 74 - 124 | 16.36 | 1.32 | 20 | |
| Naphthalene | 19.95 | 1.0 | 20 | 0 | 99.8 | 61 - 128 | 18.23 | 9.04 | 20 | |
| n-Butylbenzene | 19.96 | 1.0 | 20 | 0 | 99.8 | 75 - 128 | 19.41 | 2.78 | 20 | |
| n-Propylbenzene | 19.61 | 1.0 | 20 | 0 | 98.0 | 76 - 126 | 19.41 | 1.02 | 20 | |
| o-Xylene | 18.75 | 1.0 | 20 | 0 | 93.8 | 78 - 122 | 18.15 | 3.27 | 20 | |
| sec-Butylbenzene | 19.61 | 1.0 | 20 | 0 | 98.0 | 77 - 126 | 19.26 | 1.78 | 20 | |
| Styrene | 18.71 | 1.0 | 20 | 0 | 93.6 | 78 - 123 | 18.04 | 3.67 | 20 | |
| tert-Butylbenzene | 19.42 | 1.0 | 20 | 0 | 97.1 | 78 - 124 | 19.08 | 1.75 | 20 | |
| Tetrachloroethene | 18.98 | 1.0 | 20 | 0 | 94.9 | 74 - 129 | 18.39 | 3.19 | 20 | |
| Toluene | 18.79 | 1.0 | 20 | 0 | 93.9 | 80 - 121 | 18.15 | 3.44 | 20 | |
| trans-1,2-Dichloroethene | 16.33 | 1.0 | 20 | 0 | 81.7 | 75 - 124 | 15.98 | 2.16 | 20 | |
| trans-1,3-Dichloropropene | 17.02 | 1.0 | 20 | 0 | 85.1 | 73 - 127 | 16.3 | 4.35 | 20 | |
| Trichloroethene | 17.8 | 1.0 | 20 | 0 | 89.0 | 79 - 123 | 17.39 | 2.36 | 20 | |
| Trichlorofluoromethane | 15.84 | 1.0 | 20 | 0 | 79.2 | 65 - 141 | 15.9 | 0.355 | 20 | |
| Vinyl chloride | 13.85 | 1.0 | 20 | 0 | 69.3 | 58 - 137 | 13.77 | 0.63 | 20 | |
| *Surr: 1,2-Dichloroethane-d4* | *45.6* | *1.0* | *50* | *0* | *91.2* | *81 - 118* | *45.59* | *0.0116* | *20* | |
| *Surr: 4-Bromofluorobenzene* | *50.87* | *1.0* | *50* | *0* | *102* | *85 - 114* | *50.91* | *0.065* | *20* | |
| *Surr: Dibromofluoromethane* | *46.13* | *1.0* | *50* | *0* | *92.3* | *80 - 119* | *46.9* | *1.65* | *20* | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344280 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19080684-02MSD** Units: **UG/L** Analysis Date: **14-Aug-2019 16:36**
Client ID: **46WW16-190813** Run ID: **VOA6_344280** SeqNo: **5210212** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *50.22* | *1.0* | *50* | *0* | *100* | *89 - 112* | *50.36* | *0.286* | *20* | |

**The following samples were analyzed in this batch:** HS19080684-01 HS19080684-02 HS19080684-03 HS19080684-04 HS19080684-05 HS19080684-06 HS19080684-07

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID: R344398 ( 0 )** **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

**MBLK** Sample ID: **WBLKW1-081419** Units: **mg/L** Analysis Date: **14-Aug-2019 14:14**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212625** 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 |
| Sulfate | 0.500 | 0.500 | | | | | | | | U |

**LCS** Sample ID: **WLCSW1-081419** Units: **mg/L** Analysis Date: **14-Aug-2019 14:30**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212626** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.04 | 0.500 | 20 | 0 | 100 | 80 - 120 | | | | |
| Nitrogen, Nitrate (As N) | 3.989 | 0.100 | 4 | 0 | 99.7 | 80 - 120 | | | | |
| Sulfate | 20.25 | 0.500 | 20 | 0 | 101 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW1-081419** Units: **mg/L** Analysis Date: **14-Aug-2019 14:47**
Client ID: Run ID: **ICS-Integrion_344398** SeqNo: **5212627** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.02 | 0.500 | 20 | 0 | 100 | 80 - 120 | 20.04 | 0.11 | 20 | |
| Nitrogen, Nitrate (As N) | 3.981 | 0.100 | 4 | 0 | 99.5 | 80 - 120 | 3.989 | 0.186 | 20 | |
| Sulfate | 20.09 | 0.500 | 20 | 0 | 100 | 80 - 120 | 20.25 | 0.787 | 20 | |

**MS** Sample ID: **HS19080684-02MS** Units: **mg/L** Analysis Date: **14-Aug-2019 18:27**
Client ID: **46WW16-190813** Run ID: **ICS-Integrion_344398** SeqNo: **5212633** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 302 | 0.500 | 10 | 299.4 | 26.1 | 80 - 120 | | | | SEO |
| Nitrogen, Nitrate (As N) | 2.05 | 0.100 | 2 | 0 | 103 | 80 - 120 | | | | |
| Sulfate | 709.1 | 0.500 | 10 | 717.8 | -86.9 | 80 - 120 | | | | SEO |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R344398 ( 0 ) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

**MSD** Sample ID: **HS19080684-02MSD** Units: **mg/L** Analysis Date: **14-Aug-2019 18:44**
Client ID: **46WW16-190813** Run ID: **ICS-Integrion_344398** SeqNo: **5212634** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 303.5 | 0.500 | 10 | 299.4 | 40.4 | 80 - 120 | 302 | 0.475 | 20 | SEO |
| Nitrogen, Nitrate (As N) | 2.066 | 0.100 | 2 | 0 | 103 | 80 - 120 | 2.05 | 0.768 | 20 | |
| Sulfate | 714 | 0.500 | 10 | 717.8 | -37.3 | 80 - 120 | 709.1 | 0.697 | 20 | SEO |

**The following samples were analyzed in this batch:** HS19080684-01 HS19080684-02 HS19080684-03

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID: R345140 ( 0 )** **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

**MBLK** Sample ID: **WBLKW2-082619** Units: **mg/L** Analysis Date: **27-Aug-2019 01:03**
Client ID: Run ID: **ICS-Integrion_345140** SeqNo: **5228131** 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 |
| Sulfate | 0.500 | 0.500 | | | | | | | | U |

**LCS** Sample ID: **WLCSW2-082619** Units: **mg/L** Analysis Date: **27-Aug-2019 01:20**
Client ID: Run ID: **ICS-Integrion_345140** SeqNo: **5228132** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.18 | 0.500 | 20 | 0 | 101 | 80 - 120 | | | | |
| Sulfate | 20.38 | 0.500 | 20 | 0 | 102 | 80 - 120 | | | | |

**LCSD** Sample ID: **WLCSDW2-082619** Units: **mg/L** Analysis Date: **27-Aug-2019 01:37**
Client ID: Run ID: **ICS-Integrion_345140** SeqNo: **5228133** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 20.09 | 0.500 | 20 | 0 | 100 | 80 - 120 | 20.18 | 0.437 | 20 | |
| Sulfate | 20.26 | 0.500 | 20 | 0 | 101 | 80 - 120 | 20.38 | 0.586 | 20 | |

**MS** Sample ID: **HS19080842-03MS** Units: **mg/L** Analysis Date: **27-Aug-2019 14:27**
Client ID: Run ID: **ICS-Integrion_345140** SeqNo: **5228148** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 254.1 | 5.00 | 100 | 160.1 | 94.0 | 80 - 120 | | | | |
| Sulfate | 115.3 | 5.00 | 100 | 18.89 | 96.4 | 80 - 120 | | | | |

**MS** Sample ID: **HS19080684-02MS** Units: **mg/L** Analysis Date: **27-Aug-2019 02:10**
Client ID: **46WW16-190813** Run ID: **ICS-Integrion_345140** SeqNo: **5228135** PrepDate: DF: **20**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 490 | 10.0 | 200 | 299.4 | 95.3 | 80 - 120 | | | | |
| Sulfate | 918.5 | 10.0 | 200 | 739.6 | 89.5 | 80 - 120 | | | | |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** HS19080684

**QC BATCH REPORT**

**Batch ID:** R345140 ( 0 ) **Instrument:** ICS-Integrion **Method:** ANIONS BY SW9056A

**MSD** Sample ID: **HS19080842-03MSD** Units: **mg/L** Analysis Date: **27-Aug-2019 14:44**
Client ID: Run ID: **ICS-Integrion_345140** SeqNo: **5228149** PrepDate: DF: **10**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 254.7 | 5.00 | 100 | 160.1 | 94.6 | 80 - 120 | 254.1 | 0.256 | 20 | |
| Sulfate | 115.7 | 5.00 | 100 | 18.89 | 96.9 | 80 - 120 | 115.3 | 0.404 | 20 | |

**MSD** Sample ID: **HS19080684-02MSD** Units: **mg/L** Analysis Date: **27-Aug-2019 02:26**
Client ID: **46WW16-190813** Run ID: **ICS-Integrion_345140** SeqNo: **5228136** PrepDate: DF: **20**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 492.6 | 10.0 | 200 | 299.4 | 96.6 | 80 - 120 | 490 | 0.517 | 20 | |
| Sulfate | 923.9 | 10.0 | 200 | 739.6 | 92.2 | 80 - 120 | 918.5 | 0.582 | 20 | |

**The following samples were analyzed in this batch:** HS19080684-02

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**WorkOrder:** **HS19080684**

**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 | 19-028-0 | 27-Mar-2020 |
| California | 2919, 2019-2020 | 30-Apr-2020 |
| Dept of Defense | ANAB L2231 | 20-Dec-2021 |
| Kansas | E-10352 2019-2020 | 31-Jul-2020 |
| Kentucky | 123043, 2019-2020 | 30-Apr-2020 |
| Louisiana | 03087, 2019-2020 | 30-Jun-2020 |
| Maryland | 343, 2019-2020 | 30-Jun-2020 |
| North Carolina | 624-2019 | 31-Dec-2019 |
| North Dakota | R-193 2019 | 30-Apr-2020 |
| Oklahoma | 2019-141 | 31-Aug-2020 |
| Oklahoma | 2018-156 | 31-Aug-2019 |
| Texas | TX104704231-19-23 | 30-Apr-2020 |

**ALS Houston, US** Date: 30-Aug-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** LHAAP-46
**Work Order:** HS19080684

**SAMPLE TRACKING**

| Lab Samp ID | Client Sample ID | Action | Date | Person | New Location |
|---|---|---|---|---|---|
| HS19080684-01 | 46WW05-190813 | Login | 8/14/2019 11:16:57 AM | NDR | WET330 |
| HS19080684-01 | 46WW05-190813 | Login | 8/14/2019 11:16:57 AM | NDR | VOA172 |
| HS19080684-01 | 46WW05-190813 | Login | 8/14/2019 11:16:57 AM | NDR | Sub |
| HS19080684-01 | 46WW05-190813 | Login | 8/14/2019 11:16:57 AM | NDR | Sub |

**ALS Houston, US** Date: 30-Aug-19

## Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19080684
Date/Time Received: **14-Aug-2019 08:44**
Received by: **PMG**

Checklist completed by: *Nilesh D. Ranchod* eSignature 14-Aug-2019 Date
Reviewed by: *RJ Modashia* eSignature 14-Aug-2019 Date

Matrices: **Groundwater/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 ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:LHAAP46-AUG2019-ALS |
| Samplers name present on COC? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| 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): | 4.1c U/C | IR25 |
| Cooler(s)/Kit(s): | 24707 | |
| Date/Time sample(s) sent to storage: | 8/14/19 13:00 | |

| | | | |
|---|---|---|---|
| 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: | | | |

Login Notes:

Client Contacted: Date Contacted: Person Contacted:
Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of

COC ID: LHAAP46-AUG2019-ALS

TURNAROUND TIME:

RUSH:

| PROJECT/CLIENT INFO | | | | LABORATORY | | | | OTHER INFO | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Name | Longhorn AAP | | | Lab Name | ALS Laboratories | | | Email Invoice To | FedInvoices@aptim.com | | |
| Project Number | 501032 | | | Lab Contact | RJ Modashia | | | | | | |
| | LHAAP-46 | | | Email | RJ.Modashia@alsglobal.com | | | Email Report To | Susan.Huang@aptim.com | | |
| Address | 1203-B East Grand Avenue | | | Address | 10450 Stancliff Rd., Suite 210 | | | Mail Reports To | Susan Huang | | |
| | PMB 202 | | | | | | | Address | 4005 Port Chicago Highway, Suite 200 | | |
| City | Marshall | State | TX | City | Houston | State | TX | City | Concord | State | CA |
| Postal Code | 75670 | Country | USA | Postal Code | 77099 | Country | USA | Postal Code | 94520 | 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

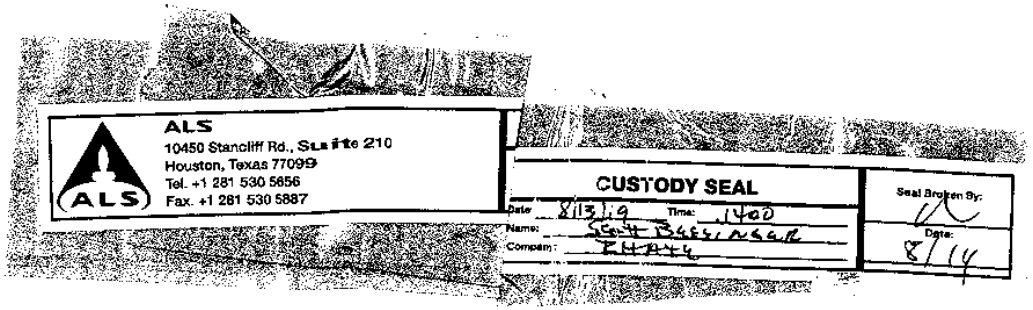
| Sample ID | Location | Start Depth | End Depth | Depth Unit | Field Matrix | Date | Time (24hr) | # Of Cont. | Sample Container and Preservatives | 3-40 ml VOA/HCL | 3-40 ml VOA/HCL | 3-40 ml VOA/Cool to 6 deg C | 2-40ml Amber/H2SO4 | 1-250ml /Cool to 6 deg C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | ANALYSIS | Vocs by 8260B | MEE by RSK175 | CO2 by RSK175 | TOC by Sm5310C | Anions (chloride/sulfate/nitrate) by 9056 |
| 46mw05-190813 | LHAAP 46 | 38.45 | 38.66 | | WG | 8/13/19 | 0810 | 12 | | X | X | X | X | X |
| 46mw16-190813 | LHAAP 46 | 37.95 | 38.18 | | WG | 8/13/19 | 0910 | 12 | | X | X | X | X | X |
| 46mw16-190813-MS | LHAAP 46 | 37.95 | 38.18 | | WG | 8/13/19 | 0910 | 12 | | X | X | X | X | X |
| 46mw16-190813-MSD | LHAAP 46 | 37.95 | 38.18 | | WG | 8/13/19 | 0910 | 12 | | X | X | X | X | X |
| CHSmw21-190813 | LHAAP 46 | 20.55 | 20.75 | | WG | 8/13/19 | 1015 | 12 | | X | X | X | X | X |
| 46mw08-190813 | LHAAP 46 | 20.59 | 20.82 | | WG | 8/13/19 | 1115 | 3 | | X | | | | |
| 46mw08-190813-FD | LHAAP 46 | 20.59 | 20.82 | | WG | 8/13/19 | 1115 | 3 | | X | | | | |
| 46mw06-190813 | LHAAP 46 | 39.80 | 40.04 | | WG | 8/13/19 | 1310 | 3 | | X | | | | |
| Trip Blank | LHAAP 46 | | | | WG | 8/13/19 | | 2 | | X | | | | |

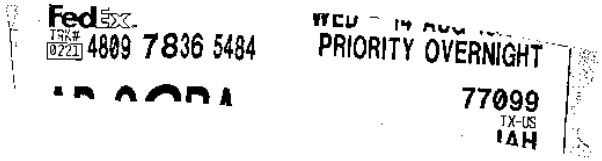
Aptim Environmental & Infrastucture, Inc.
LHAAP-46

HS1908068 4

| ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME |
|---|---|---|---|---|
| | Scott Berry / LHAAP | 8/13/19 1400 | ALS | 8/14/19 08:44 |

24707 CK. 4.15 #21 $16.00


ALS
10450 Stanciff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Date: 8/13/19
Time: 1400
Name: Scott Bassinger
Company: EHA+L
Seal Broken By:
Date: 8/14


FedEx
TRK# 0221 4809 7836 5484
PRIORITY OVERNIGHT
77099
TX-US
IAH

ALS Environmental
ALS Group USA, Corp
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**www.alsglobal.com**

August 30, 2019

**Analytical Report for Service Request No:** K1907526

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

**RE: HS19080684**

Dear RJ,

Enclosed are the results of the sample(s) submitted to our laboratory August 15, 2019
For your reference, these analyses have been assigned our service request number **K1907526.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Kelley Lovejoy

Kelley Lovejoy
Project Manager


RIGHT SOLUTIONS | RIGHT PARTNER

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**www.alsglobal.com**

# Table of Contents

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    General Chemistry

## Acronyms

| | |
|---|---|
| ASTM | American Society for Testing and Materials |
| A2LA | American Association for Laboratory Accreditation |
| CARB | California Air Resources Board |
| CAS Number | Chemical Abstract Service registry Number |
| CFC | Chlorofluorocarbon |
| CFU | Colony-Forming Unit |
| DEC | Department of Environmental Conservation |
| DEQ | Department of Environmental Quality |
| DHS | Department of Health Services |
| DOE | Department of Ecology |
| DOH | Department of Health |
| EPA | U. S. Environmental Protection Agency |
| ELAP | Environmental Laboratory Accreditation Program |
| GC | Gas Chromatography |
| GC/MS | Gas Chromatography/Mass Spectrometry |
| LOD | Limit of Detection |
| LOQ | Limit of Quantitation |
| LUFT | Leaking Underground Fuel Tank |
| M | Modified |
| MCL | Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA. |
| MDL | Method Detection Limit |
| MPN | Most Probable Number |
| MRL | Method Reporting Limit |
| NA | Not Applicable |
| NC | Not Calculated |
| NCASI | National Council of the Paper Industry for Air and Stream Improvement |
| ND | Not Detected |
| NIOSH | National Institute for Occupational Safety and Health |
| PQL | Practical Quantitation Limit |
| RCRA | Resource Conservation and Recovery Act |
| SIM | Selected Ion Monitoring |
| TPH | Total Petroleum Hydrocarbons |
| tr | Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL. |

## Inorganic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| E | The result is an estimate amount because the value exceeded the instrument calibration range. |
| J | The result is an estimated value. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |
| H | The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory. |

## Metals Data Qualifiers

| | |
|---|---|
| # | The control limit criteria is not applicable. See case narrative. |
| J | The result is an estimated value. |
| E | The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample. |
| M | The duplicate injection precision was not met. |
| N | The Matrix Spike sample recovery is not within control limits. See case narrative. |
| S | The reported value was determined by the Method of Standard Additions (MSA). |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| W | The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a matrix interference. |
| X | See case narrative. |
| + | The correlation coefficient for the MSA is less than 0.995. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Organic Data Qualifiers

| | |
|---|---|
| * | The result is an outlier. See case narrative. |
| # | The control limit criteria is not applicable. See case narrative. |
| A | A tentatively identified compound, a suspected aldol-condensation product. |
| B | The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards. |
| C | The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data. |
| D | The reported result is from a dilution. |
| E | The result is an estimated value. |
| J | The result is an estimated value. |
| N | The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed. |
| P | The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results. |
| U | The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution. |
| i | The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference. |
| X | See case narrative. |
| Q | See case narrative. One or more quality control criteria was outside the limits. |

## Additional Petroleum Hydrocarbon Specific Qualifiers

| | |
|---|---|
| F | The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard. |
| L | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard. |
| H | The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard. |
| O | The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard. |
| Y | The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard. |
| Z | The chromatographic fingerprint does not resemble a petroleum product. |

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso**
**State Certifications, Accreditations, and Licenses**

| Agency | Web Site | Number |
|---|---|---|
| Alaska DEH | http://dec.alaska.gov/eh/lab/cs/csapproval.htm | UST-040 |
| Arizona DHS | http://www.azdhs.gov/lab/license/env.htm | AZ0339 |
| Arkansas - DEQ | http://www.adeq.state.ar.us/techsvs/labcert.htm | 88-0637 |
| California DHS (ELAP) | http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx | 2795 |
| DOD ELAP | http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm | L16-58-R4 |
| Florida DOH | http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm | E87412 |
| Hawaii DOH | http://health.hawaii.gov/ | - |
| ISO 17025 | http://www.pjlabs.com/ | L16-57 |
| Louisiana DEQ | http://www.deq.louisiana.gov/page/la-lab-accreditation | 03016 |
| Maine DHS | http://www.maine.gov/dhhs/ | WA01276 |
| Minnesota DOH | http://www.health.state.mn.us/accreditation | 053-999-457 |
| Nevada DEP | http://ndep.nv.gov/bsdw/labservice.htm | WA01276 |
| New Jersey DEP | http://www.nj.gov/dep/enforcement/oqa.html | WA005 |
| New York - DOH | https://www.wadsworth.org/regulatory/elap | 12060 |
| North Carolina DEQ | https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification | 605 |
| Oklahoma DEQ | http://www.deq.state.ok.us/CSDnew/labcert.htm | 9801 |
| Oregon – DEQ (NELAP) | http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx | WA100010 |
| South Carolina DHEC | http://www.scdhec.gov/environment/EnvironmentalLabCertification/ | 61002 |
| Texas CEQ | http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html | T104704427 |
| Washington DOE | http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html | C544 |
| Wyoming (EPA Region 8) | https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water- | - |
| Kelso Laboratory Website | www.alsglobal.com | NA |

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

# Case Narrative

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

**Client:** ALS Environmental - US
**Project:** HS19080684
**Sample Matrix:** Ground Water

**Service Request:** K1907526
**Date Received:** 08/15/2019

## CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

**Sample Receipt:**

Three ground water samples were received for analysis at ALS Environmental on 08/15/2019. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**General Chemistry:**

No significant anomalies were noted with this analysis.

Approved by Kelley Lovejoy Date 08/30/2019

# Chain of Custody

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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K1907526

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

**SAMPLING STATE:** **Texas** **COC ID:** **11976**

**SUBCONTRACT TO:**

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

**Phone:** +1 360 501 3312

**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:** | HS19080684 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| 1. | **HS19080684-01** | **46WW05-190813** | **Groundwater** | **13 Aug 2019 08:10** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 28 Aug 2019 |
| 2. | **HS19080684-02** | **46WW16-190813** | **Groundwater** | **13 Aug 2019 09:10** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 28 Aug 2019 |
| 3. | **HS19080684-03** | **LHSMW21-190813** | **Groundwater** | **13 Aug 2019 10:15** |
| | TOC Analysis with DOD Level IV/EQuIS APTIM EDD | | | 28 Aug 2019 |

**Comments:** Please analyze for the analysis listed above.
Send report to the emails shown above.
**MS/MSD FOR Sample # 02**

**QC Level:** DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 8/14/19 1800

Received By: _____ Date/Time: 8/15/19 0930

Cooler ID(s): _____ Temperature(s): _____

RIGHT SOLUTIONS | RIGHT PARTNER

PC 14L

# Cooler Receipt and Preservation Form

Client ALS - Houston Service Request *K19* 07526

Received: 8/15/19 Opened: 8/15/19 By: BR Unloaded: 8/15/19 By: BR

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* 2 front *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 2 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

| Raw Cooler Temp | Corrected Cooler Temp | Raw Temp Blank | Corrected Temp Blank | Corr. Factor | Thermometer ID | Cooler/COC ID (NA) | Tracking Number NA | Filed |
|---|---|---|---|---|---|---|---|---|
| 0.0 | -0.4 | 1.9 | 1.5 | -0.4 | 393 | | 4809 8347 1050 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

| Sample ID on Bottle | Sample ID on COC | Identified by: |
|---|---|---|
| | | |
| | | |
| | | |

| Sample ID | Bottle Count Bottle Type | Out of Temp | Head-space | Broke | pH | Reagent | Volume added | Reagent Lot Number | Initials | Time |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

***Notes, Discrepancies, & Resolutions:*** _____

# General Chemistry

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

**ALS Group USA, Corp.**
**dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907526 |
| **Project:** | HS19080684 | **Date Collected:** | 08/13/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 08/15/19 |
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |

**Carbon, Total Organic**

| Sample Name | Lab Code | Result | LOQ | LOD | MDL | Dil. | Date Analyzed | Q |
|---|---|---|---|---|---|---|---|---|
| 46WW05-190813 | K1907526-001 | **11.6** | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 15:38 | |
| 46WW16-190813 | K1907526-002 | **2.73** | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 16:06 | |
| LHSMW21-190813 | K1907526-003 | **1.95** | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 17:03 | |
| Method Blank | K1907526-MB | ND U | 0.50 | 0.20 | 0.07 | 1 | 08/28/19 09:03 | |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907526 |
| **Project** | HS19080684 | **Date Collected:** | 08/13/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 08/15/19 |
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |

## Replicate Sample Summary
## Carbon, Total Organic

| Sample Name: | Lab Code: | LOQ | LOD | MDL | Sample Result | Duplicate Result | Average | RPD | RPD Limit | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|---|
| 46WW05-190813 | K1907526-001DUP | 0.50 | 0.20 | 0.07 | 11.6 | 11.4 | 11.5 | 1 | 10 | 08/28/19 |
| 46WW16-190813 | K1907526-002DUP | 0.50 | 0.20 | 0.07 | 2.73 | 2.63 | 2.68 | 4 | 10 | 08/28/19 |
| LHSMW21-190813 | K1907526-003DUP | 0.50 | 0.20 | 0.07 | 1.95 | 1.93 | 1.94 | 1 | 10 | 08/28/19 |

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

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907526 |
| **Project:** | HS19080684 | **Date Collected:** | 08/13/19 |
| **Sample Matrix:** | Ground Water | **Date Received:** | 08/15/19 |
| | | **Date Analyzed:** | 08/28/19 |
| | | **Date Extracted:** | NA |

## Matrix Spike Summary
## Carbon, Total Organic

| | | | |
|---|---|---|---|
| **Sample Name:** | 46WW16-190813 | **Units:** | mg/L |
| **Lab Code:** | K1907526-002 | **Basis:** | NA |
| **Analysis Method:** | SM 5310 C | | |
| **Prep Method:** | None | | |

**Matrix Spike**
K1907526-002MS

| Analyte Name | Sample Result | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Carbon, Total Organic | 2.73 | 28.4 | 25.0 | 102 | 83-117 |

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

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | ALS Environmental - US | **Service Request:** | K1907526 |
| **Project:** | HS19080684 | **Date Analyzed:** | 08/28/19 |
| **Sample Matrix:** | Ground Water | **Date Extracted:** | NA |

**Lab Control Sample Summary**
**Carbon, Total Organic**

| | | | |
|---|---|---|---|
| **Analysis Method:** | SM 5310 C | **Units:** | mg/L |
| **Prep Method:** | None | **Basis:** | NA |
| | | **Analysis Lot:** | 648997 |

| Sample Name | Lab Code | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|---|
| Lab Control Sample | K1907526-LCS | 25.0 | 25.0 | 100 | 83-117 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:** K1907526
**Project:** HS19080684

## Continuing Calibration Verification (CCV) Summary

### Carbon, Total Organic

**Analysis Method:** SM 5310 C **Units:** mg/L

| | Analysis Lot | Lab Code | Date Analyzed | True Value | Measured Value | Percent Recovery | Acceptance Limits |
|---|---|---|---|---|---|---|---|
| CCV1 | 648997 | KQ1912157-01 | 08/28/19 13:44 | 25.0 | 25.6 | 102 | 90-110 |
| CCV2 | 648997 | KQ1912157-02 | 08/28/19 18:28 | 25.0 | 25.0 | 100 | 90-110 |

**ALS Group USA, Corp.**
**dba ALS Environmental**

QA/QC Report

**Client:** ALS Environmental - US **Service Request:**K1907526
**Project:** HS19080684

## Continuing Calibration Blank (CCB) Summary
### Carbon, Total Organic

**Analysis Method:** SM 5310 C **Units:**mg/L

| | Analysis Lot | Lab Code | Date Analyzed | LOQ | LOD | MDL | Result | Q |
|---|---|---|---|---|---|---|---|---|
| CCB1 | 648997 | KQ1912157-03 | 08/28/19 13:59 | 0.50 | 0.20 | 0.07 | 0.37 | J |
| CCB2 | 648997 | KQ1912157-04 | 08/28/19 18:43 | 0.50 | 0.20 | 0.07 | ND | U |

# Raw Data

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

# General Chemistry

**ALS Environmental—Kelso Laboratory**
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Work Request # Original (K190 ) 7294, 7303, 7495, 7279, 7469, 7474, 7476, 7552, 7535, 7548, 7526, 7311, 7413, 7440, 7456,

Tier: I II II I IV II II IV II II IV I

Date Analyzed: 8/27/19

Analyst: HLM/BCD

Analysis: TOC/DOC

TOC: 648995, 648996, 648997,

Run # DOC: 648998

## DATA QUALITY REPORT
## INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

| | | |
|---|---|---|
| 1. | Is the method name and number correct and appropriate? | (yes)/no/NA |
| 2. | Holding times met for all analyses and for all samples? | (yes)/no/NA |
| 3. | Are calculations correct? | (yes)/no/NA |
| 4. | Is the reporting basis correct? (Dry Weight) | yes/no/(NA) |
| 5. | All quality control criteria met? | (yes)/no |
| 6. | Is the calibration curve correlation coefficient ≥ 0.995? | (yes)/no/NA |
| 7. | MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency? | (yes)/no/NA |
| 8. | Are ICVs, CCVs, and CCBs all within acceptance limits? | (yes)/no/NA |
| 9. | Are results for methods blanks all ND? | yes/no/NA |
| 10. | Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.) | (yes)/no/NA |
| 11. | Are all exceptions explained? | (yes)/no/NA |
| 12. | Have all applicable service requests been reviewed? | (yes)/no/NA |
| 13. | Are all samples labeled correctly? | (yes)/no/NA |
| 14. | Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample, Form V) | (yes)/no/NA |
| 15. | Are detection limits and units reported correctly? | (yes)/no/NA |
| 16. | Is the unused space on the benchsheet crossed out? | (yes)/no/NA |
| 17. | Was analysis turned in by the due date? (n-2) (If not record SR#) | yes/(no)/NA |

**COMMENTS:**
K1907548-2,2D & K1907311-3,3D present high percent RPD. However, they are less than 5x the MRL.

Final Approved by: _____ Date: 8/29/19

DQREPORT

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648995 **Method/Testcode:** 415.1/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907294-001 | Carbon, Total Organic | N/A | | Drinking Water | 1.38 mg/L | 10 ml | 1.38 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 15:07 | N | I |
| K1907294-002 | Carbon, Total Organic | N/A | | Drinking Water | 0.72 mg/L | 10 ml | 0.72 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 16:05 | N | I |
| K1907303-001 | Carbon, Total Organic | N/A | | Water | 2.69 mg/L | 10 ml | 2.69 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 16:33 | N | II |
| K1907303-002 | Carbon, Total Organic | N/A | | Water | 2.65 mg/L | 10 ml | 2.65 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 17:01 | N | II |
| K1907303-003 | Carbon, Total Organic | N/A | | Water | 3.48 mg/L | 10 ml | 3.48 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 17:29 | N | II |
| K1907303-004 | Carbon, Total Organic | N/A | | Water | 1.78 mg/L | 10 ml | 36 mg/L | 20 | 2 | 10 | | | 8/27/19 18:26 | N | II |
| K1907495-001 | Carbon, Total Organic | N/A | | Water | 0.45 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 18:54 | N | II |
| K1907495-002 | Carbon, Total Organic | N/A | | Water | 9.14 mg/L | 10 ml | 9.14 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 19:22 | N | II |
| K1907495-008 | Carbon, Total Organic | N/A | | Water | 0.58 mg/L | 10 ml | 0.58 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 19:50 | N | II |
| K1907495-009 | Carbon, Total Organic | N/A | | Water | 0.58 mg/L | 10 ml | 0.58 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 20:19 | N | II |
| K1907495-010 | Carbon, Total Organic | N/A | | Water | 8.97 mg/L | 10 ml | 8.97 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 20:47 | N | II |
| K1907495-011 | Carbon, Total Organic | N/A | | Water | 10.02 mg/L | 10 ml | 10.0 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 21:15 | N | II |
| K1907495-012 | Carbon, Total Organic | N/A | | Water | 3.52 mg/L | 10 ml | 3.52 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 21:43 | N | II |
| K1907495-013 | Carbon, Total Organic | N/A | | Water | 5.18 mg/L | 10 ml | 5.18 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 22:11 | N | II |
| K1907495-014 | Carbon, Total Organic | N/A | | Water | 0.56 mg/L | 10 ml | 0.56 mg/L | 1 | 0.07 | 0.50 | | | 8/27/19 22:39 | N | II |
| K1907495-022 | Carbon, Total Organic | N/A | | Water | 0.24 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 00:05 | N | II |
| K1907495-023 | Carbon, Total Organic | N/A | | Water | 1.00 mg/L | 10 ml | 1.00 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 00:33 | N | II |
| K1907495-024 | Carbon, Total Organic | N/A | | Water | 1.17 mg/L | 10 ml | 1.17 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 01:01 | N | II |
| K1907495-027 | Carbon, Total Organic | N/A | | Water | 0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 01:30 | N | II |
| K1907495-028 | Carbon, Total Organic | N/A | | Water | 3.84 mg/L | 10 ml | 3.84 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 01:58 | N | II |
| KQ1912155-01 | Carbon, Total Organic | MS | K1907294-001 | Drinking Water | 26.82 mg/L | 10 ml | 26.8 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/27/19 15:35 | N | I |
| KQ1912155-02 | Carbon, Total Organic | CCV | | Drinking Water | 25.31 mg/L | 10 ml | 25.3 mg/L | 1 | | | | | 8/27/19 13:53 | N | I |
| KQ1912155-03 | Carbon, Total Organic | CCV | | Drinking Water | 24.78 mg/L | 10 ml | 24.8 mg/L | 1 | | | | | 8/27/19 17:57 | N | I |
| KQ1912155-04 | Carbon, Total Organic | CCV | | Drinking Water | 24.97 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/27/19 23:07 | N | I |
| KQ1912155-05 | Carbon, Total Organic | CCV | | Drinking Water | 24.55 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 03:50 | N | I |
| KQ1912155-06 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 14:08 | N | I |
| KQ1912155-07 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 18:11 | N | I |
| KQ1912155-08 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:21 | N | I |
| KQ1912155-09 | Carbon, Total Organic | CCB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 04:04 | N | I |
| KQ1912155-10 | Carbon, Total Organic | MB | | Drinking Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 14:23 | N | I |
| KQ1912155-11 | Carbon, Total Organic | LCS | | Drinking Water | 25.16 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/27/19 14:38 | N | I |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

8/29/19

HLM 8/29/19

Printed 8/29/19 10:49

Results Summary

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648995 **Method/Testcode:** 415.1/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912155-12 | Carbon, Total Organic | DUP | K1907294-001 | Drinking Water | 1.34 mg/L | 10 ml | 1.34 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/27/19 15:07 | N | I |
| KQ1912155-13 | Carbon, Total Organic | DUP | K1907294-002 | Drinking Water | 0.71 mg/L | 10 ml | 0.71 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 16:05 | N | I |
| KQ1912155-14 | Carbon, Total Organic | DUP | K1907303-001 | Water | 2.67 mg/L | 10 ml | 2.67 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 16:33 | N | II |
| KQ1912155-15 | Carbon, Total Organic | DUP | K1907303-002 | Water | 2.68 mg/L | 10 ml | 2.68 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/27/19 17:01 | N | II |
| KQ1912155-16 | Carbon, Total Organic | DUP | K1907303-003 | Water | 3.49 mg/L | 10 ml | 3.49 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 17:29 | N | II |
| KQ1912155-17 | Carbon, Total Organic | DUP | K1907303-004 | Water | 1.87 mg/L | 10 ml | 37 mg/L | 20 | 2 | 10 | | 5 | 8/27/19 18:26 | N | II |
| KQ1912155-18 | Carbon, Total Organic | DUP | K1907495-001 | Water | 0.42 mg/L | 10 ml | 0.42 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/27/19 18:54 | N | II |
| KQ1912155-19 | Carbon, Total Organic | DUP | K1907495-002 | Water | 9.45 mg/L | 10 ml | 9.45 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/27/19 19:22 | N | II |
| KQ1912155-20 | Carbon, Total Organic | DUP | K1907495-008 | Water | 0.50 mg/L | 10 ml | 0.50 mg/L | 1 | 0.07 | 0.50 | | 14 | 8/27/19 19:50 | N | II |
| KQ1912155-21 | Carbon, Total Organic | DUP | K1907495-009 | Water | 0.55 mg/L | 10 ml | 0.55 mg/L | 1 | 0.07 | 0.50 | | 5 | 8/27/19 20:19 | N | II |
| KQ1912155-22 | Carbon, Total Organic | DUP | K1907495-010 | Water | 8.57 mg/L | 10 ml | 8.57 mg/L | 1 | 0.07 | 0.50 | | 5 | 8/27/19 20:47 | N | II |
| KQ1912155-23 | Carbon, Total Organic | DUP | K1907495-011 | Water | 10.20 mg/L | 10 ml | 10.2 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/27/19 21:15 | N | II |
| KQ1912155-24 | Carbon, Total Organic | DUP | K1907495-012 | Water | 3.53 mg/L | 10 ml | 3.53 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 21:43 | N | II |
| KQ1912155-25 | Carbon, Total Organic | DUP | K1907495-013 | Water | 5.20 mg/L | 10 ml | 5.20 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/27/19 22:11 | N | II |
| KQ1912155-26 | Carbon, Total Organic | DUP | K1907495-014 | Water | 0.47 mg/L | 10 ml | 0.47 mg/L J | 1 | 0.07 | 0.50 | | 17 | 8/27/19 22:39 | N | II |
| KQ1912155-27 | Carbon, Total Organic | DUP | K1907495-022 | Water | 0.15 mg/L | 10 ml | 0.15 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 00:05 | N | II |
| KQ1912155-28 | Carbon, Total Organic | DUP | K1907495-023 | Water | 1.02 mg/L | 10 ml | 1.02 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 00:33 | N | II |
| KQ1912155-29 | Carbon, Total Organic | DUP | K1907495-024 | Water | 1.16 mg/L | 10 ml | 1.16 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 01:01 | N | II |
| KQ1912155-30 | Carbon, Total Organic | DUP | K1907495-027 | Water | 0.00 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | NC | 8/28/19 01:30 | N | II |
| KQ1912155-31 | Carbon, Total Organic | DUP | K1907495-028 | Water | 3.65 mg/L | 10 ml | 3.65 mg/L | 1 | 0.07 | 0.50 | | 5 | 8/28/19 01:58 | N | II |



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648996 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907279-001 | Carbon, Total Organic | N/A | | Ground Water | 8.96 mg/L | 10 ml | 8.96 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 02:54 | N | I |
| K1907279-002 | Carbon, Total Organic | N/A | | Ground Water | 15.68 mg/L | 10 ml | 15.7 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 03:22 | N | I |
| K1907279-003 | Carbon, Total Organic | N/A | | Ground Water | 27.94 mg/L | 10 ml | 27.9 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 04:19 | N | I |
| K1907279-004 | Carbon, Total Organic | N/A | | Ground Water | 22.36 mg/L | 10 ml | 22.4 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 04:47 | N | I |
| K1907279-005 | Carbon, Total Organic | N/A | | Ground Water | 27.15 mg/L | 10 ml | 54.3 mg/L | 2 | 0.2 | 1.0 | | | 8/28/19 05:16 | N | I |
| K1907469-001 | Carbon, Total Organic | N/A | | Ground Water | 7.63 mg/L | 10 ml | 7.63 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 05:44 | N | IV |
| K1907469-002 | Carbon, Total Organic | N/A | | Ground Water | 1.50 mg/L | 10 ml | 1.50 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 06:12 | N | IV |
| K1907469-003 | Carbon, Total Organic | N/A | | Ground Water | 1.37 mg/L | 10 ml | 1.37 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 07:09 | N | IV |
| K1907469-004 | Carbon, Total Organic | N/A | | Ground Water | 3.84 mg/L | 10 ml | 3.84 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 07:37 | N | IV |
| K1907474-001 | Carbon, Total Organic | N/A | | Water | 1.20 mg/L | 10 ml | 1.20 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 09:32 | N | II |
| K1907476-001 | Carbon, Total Organic | N/A | | Water | 7.99 mg/L | 10 ml | 799 mg/L | 100 | 7 | 50 | | | 8/28/19 14:14 | N | II |
| K1907476-002 | Carbon, Total Organic | N/A | | Water | 5.02 mg/L | 10 ml | 502 mg/L | 100 | 7 | 50 | | | 8/28/19 14:42 | N | II |
| K1907476-003 | Carbon, Total Organic | N/A | | Water | 3.43 mg/L | 10 ml | 343 mg/L | 100 | 7 | 50 | | | 8/28/19 15:10 | N | II |
| K1907495-032 | Carbon, Total Organic | N/A | | Water | 3.80 mg/L | 10 ml | 3.80 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 02:26 | N | II |
| K1907532-001 | Carbon, Total Organic | N/A | | Water | 18.99 mg/L | 10 ml | 19.0 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 10:56 | N | IV |
| K1907535-001 | Carbon, Total Organic | N/A | | Water | 4.96 mg/L | 10 ml | 4.96 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 08:05 | N | II |
| K1907548-001 | Carbon, Total Organic | N/A | | Water | 9.19 mg/L | 10 ml | 9.19 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 11:24 | N | II |
| K1907548-002 | Carbon, Total Organic | N/A | | Water | 0.80 mg/L | 10 ml | 0.80 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 11:52 | N | II |
| K1907548-003 | Carbon, Total Organic | N/A | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 12:20 | N | II |
| K1907548-004 | Carbon, Total Organic | N/A | | Water | 24.51 mg/L | 10 ml | 24.5 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 12:48 | N | II |
| K1907548-005 | Carbon, Total Organic | N/A | | Water | 25.75 mg/L | 10 ml | 25.7 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 13:16 | N | II |
| KQ1912156-01 | Carbon, Total Organic | MS | K1907469-002 | Ground Water | 26.88 mg/L | 10 ml | 26.9 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/28/19 06:40 | N | IV |
| KQ1912156-02 | Carbon, Total Organic | N/A | | Water | 1.50 mg/L | 10 mL | 1.50 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 06:12:00 | N | II |
| KQ1912156-03 | Carbon, Total Organic | MS | KQ1912156-02 | Water | 26.88 mg/L | 10 mL | 26.9 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/28/19 06:40:00 | N | II |
| KQ1912156-04 | Carbon, Total Organic | DUP | KQ1912156-02 | Water | 1.49 mg/L | 10 mL | 1.49 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 06:12:00 | N | II |
| KQ1912156-05 | Carbon, Total Organic | CCV | | Water | 24.97 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/27/19 23:07 | N | II |
| KQ1912156-05 | Carbon, Total Organic | CCV | | Water | 24.97 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/27/19 23:07 | N | II |
| KQ1912156-06 | Carbon, Total Organic | CCV | | Water | 24.55 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 03:50 | N | II |
| KQ1912156-06 | Carbon, Total Organic | CCV | | Water | 24.55 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 03:50 | N | II |
| KQ1912156-07 | Carbon, Total Organic | CCV | | Water | 24.50 mg/L | 10 ml | 24.5 mg/L | 1 | | | | | 8/28/19 08:33 | N | II |
| KQ1912156-07 | Carbon, Total Organic | CCV | | Water | 24.50 mg/L | 10 ml | 24.5 mg/L | 1 | | | | | 8/28/19 08:33 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648996 **Method/Testcode:** 415.1/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912156-08 | Carbon, Total Organic | CCV | | Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | II |
| KQ1912156-08 | Carbon, Total Organic | CCV | | Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | II |
| KQ1912156-09 | Carbon, Total Organic | CCV | | Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | II |
| KQ1912156-09 | Carbon, Total Organic | CCV | | Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | II |
| KQ1912156-10 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:21 | N | II |
| KQ1912156-10 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:21 | N | II |
| KQ1912156-11 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 04:04 | N | II |
| KQ1912156-11 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 04:04 | N | II |
| KQ1912156-12 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 08:48 | N | II |
| KQ1912156-12 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 08:48 | N | II |
| KQ1912156-13 | Carbon, Total Organic | CCB | | Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | II |
| KQ1912156-13 | Carbon, Total Organic | CCB | | Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | II |
| KQ1912156-14 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | II |
| KQ1912156-14 | Carbon, Total Organic | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | II |
| KQ1912156-15 | Carbon, Total Organic | MB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:36 | N | II |
| KQ1912156-15 | Carbon, Total Organic | MB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/27/19 23:36 | N | II |
| KQ1912156-16 | Carbon, Total Organic | LCS | | Water | 25.18 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/27/19 23:50 | N | II |
| KQ1912156-16 | Carbon, Total Organic | LCS | | Water | 25.18 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/27/19 23:50 | N | II |
| KQ1912156-17 | Carbon, Total Organic | DUP | K1907495-032 | Water | 3.81 mg/L | 10 ml | 3.81 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 02:26 | N | II |
| KQ1912156-18 | Carbon, Total Organic | DUP | K1907279-001 | Ground Water | 9.02 mg/L | 10 ml | 9.02 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 02:54 | N | I |
| KQ1912156-19 | Carbon, Total Organic | DUP | K1907279-002 | Ground Water | 15.77 mg/L | 10 ml | 15.8 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 03:22 | N | I |
| KQ1912156-20 | Carbon, Total Organic | DUP | K1907279-003 | Ground Water | 27.51 mg/L | 10 ml | 27.5 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 04:19 | N | I |
| KQ1912156-21 | Carbon, Total Organic | DUP | K1907279-004 | Ground Water | 22.40 mg/L | 10 ml | 22.4 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 04:47 | N | I |
| KQ1912156-22 | Carbon, Total Organic | DUP | K1907279-005 | Ground Water | 27.48 mg/L | 10 ml | 55.0 mg/L | 2 | 0.2 | 1.0 | | 1 | 8/28/19 05:16 | N | I |
| KQ1912156-23 | Carbon, Total Organic | DUP | K1907469-001 | Ground Water | 7.41 mg/L | 10 ml | 7.41 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/28/19 05:44 | N | IV |
| KQ1912156-24 | Carbon, Total Organic | DUP | K1907469-002 | Ground Water | 1.49 mg/L | 10 ml | 1.49 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 06:12 | N | IV |
| KQ1912156-25 | Carbon, Total Organic | DUP | K1907469-003 | Ground Water | 1.41 mg/L | 10 ml | 1.41 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/28/19 07:09 | N | IV |
| KQ1912156-26 | Carbon, Total Organic | DUP | K1907469-004 | Ground Water | 3.77 mg/L | 10 ml | 3.77 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 07:37 | N | IV |
| KQ1912156-27 | Carbon, Total Organic | DUP | K1907535-001 | Water | 4.94 mg/L | 10 ml | 4.94 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 08:05 | N | II |
| KQ1912156-28 | Carbon, Total Organic | DUP | K1907532-001 | Water | 18.54 mg/L | 10 ml | 18.5 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 10:56 | N | IV |
| KQ1912156-29 | Carbon, Total Organic | DUP | K1907548-001 | Water | 9.23 mg/L | 10 ml | 9.23 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 11:24 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648996 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912156-30 | Carbon, Total Organic | DUP | K1907548-002 | Water | 0.70 mg/L | 10 ml | 0.70 mg/L | 1 | 0.07 | 0.50 | | 13* | 8/28/19 11:52 | N | II |
| KQ1912156-31 | Carbon, Total Organic | DUP | K1907548-003 | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | NC | 8/28/19 12:20 | N | II |
| KQ1912156-32 | Carbon, Total Organic | DUP | K1907548-004 | Water | 25.17 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | | 3 | 8/28/19 12:48 | N | II |
| KQ1912156-33 | Carbon, Total Organic | DUP | K1907548-005 | Water | 26.07 mg/L | 10 ml | 26.1 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 13:16 | N | II |
| KQ1912156-34 | Carbon, Total Organic | DUP | K1907476-001 | Water | 7.99 mg/L | 10 ml | 799 mg/L | 100 | 7 | 50 | | <1 | 8/28/19 14:14 | N | II |
| KQ1912156-35 | Carbon, Total Organic | DUP | K1907476-002 | Water | 4.93 mg/L | 10 ml | 493 mg/L | 100 | 7 | 50 | | 2 | 8/28/19 14:42 | N | II |
| KQ1912156-36 | Carbon, Total Organic | DUP | K1907476-003 | Water | 3.26 mg/L | 10 ml | 326 mg/L | 100 | 7 | 50 | | 5 | 8/28/19 15:10 | N | II |
| KQ1912156-37 | Carbon, Total Organic | DUP | K1907474-001 | Water | 1.10 mg/L | 10 ml | 1.10 mg/L | 1 | 0.07 | 0.50 | | 9 | 8/28/19 09:32 | N | II |



8/28/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648997 **Method/Testcode:** SM 5310 C/TOC T

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907526-001 | Carbon, Total Organic | N/A | | Ground Water | 11.56 mg/L | 10 ml | 11.6 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 15:38 | N | IV |
| K1907526-002 | Carbon, Total Organic | N/A | | Ground Water | 2.73 mg/L | 10 ml | 2.73 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 16:06 | Y | IV |
| K1907526-003 | Carbon, Total Organic | N/A | | Ground Water | 1.95 mg/L | 10 ml | 1.95 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 17:03 | N | IV |
| KQ1912157-01 | Carbon, Total Organic | CCV | | Ground Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | IV |
| KQ1912157-02 | Carbon, Total Organic | CCV | | Ground Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | IV |
| KQ1912157-03 | Carbon, Total Organic | CCB | | Ground Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | IV |
| KQ1912157-04 | Carbon, Total Organic | CCB | | Ground Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | IV |
| KQ1912157-05 | Carbon, Total Organic | MB | | Ground Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 09:03 | N | IV |
| KQ1912157-06 | Carbon, Total Organic | LCS | | Ground Water | 24.98 mg/L | 10 ml | 25.0 mg/L | 1 | 0.07 | 0.50 | 100 | | 8/28/19 09:17 | N | IV |
| KQ1912157-07 | Carbon, Total Organic | MS | K1907526-002 | Ground Water | 28.35 mg/L | 10 ml | 28.4 mg/L | 1 | 0.07 | 0.50 | 102 | | 8/28/19 16:34 | N | IV |
| KQ1912157-08 | Carbon, Total Organic | DUP | K1907526-001 | Ground Water | 11.42 mg/L | 10 ml | 11.4 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 15:38 | N | IV |
| KQ1912157-09 | Carbon, Total Organic | DUP | K1907526-002 | Ground Water | 2.63 mg/L | 10 ml | 2.63 mg/L | 1 | 0.07 | 0.50 | | 4 | 8/28/19 16:06 | N | IV |
| KQ1912157-10 | Carbon, Total Organic | DUP | K1907526-003 | Ground Water | 1.93 mg/L | 10 ml | 1.93 mg/L | 1 | 0.07 | 0.50 | | 1 | 8/28/19 17:03 | N | IV |



8/29/19

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648998 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KQ1912158-10 | Carbon, Dissolved Organic (DOC) | LCS | | Water | 25.17 mg/L | 10 ml | 25.2 mg/L | 1 | 0.07 | 0.50 | 101 | | 8/28/19 19:12 | N | II |
| KQ1912158-11 | Carbon, Dissolved Organic (DOC) | MS | K1907440-001 | Water | 25.65 mg/L | 10 ml | 25.7 mg/L | 1 | 0.07 | 0.50 | 103 | | 8/28/19 22:16 | N | II |
| KQ1912158-12 | Carbon, Dissolved Organic (DOC) | DUP | K1907311-001 | Water | 5.02 mg/L | 10 ml | 5.02 mg/L | 1 | 0.07 | 0.50 | | 6 | 8/28/19 17:32 | N | II |
| KQ1912158-13 | Carbon, Dissolved Organic (DOC) | DUP | K1907311-002 | Water | 4.96 mg/L | 10 ml | 4.96 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 18:00 | N | II |
| KQ1912158-14 | Carbon, Dissolved Organic (DOC) | DUP | K1907311-003 | Water | 0.75 mg/L | 10 ml | 0.75 mg/L | 1 | 0.07 | 0.50 | | 13* | 8/28/19 19:27 | N | II |
| KQ1912158-15 | Carbon, Dissolved Organic (DOC) | DUP | K1907413-001 | Water | 3.38 mg/L | 10 ml | 3.38 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 19:55 | N | II |
| KQ1912158-16 | Carbon, Dissolved Organic (DOC) | DUP | K1907413-002 | Water | 6.14 mg/L | 10 ml | 6.14 mg/L | 1 | 0.07 | 0.50 | | <1 | 8/28/19 20:23 | N | II |
| KQ1912158-17 | Carbon, Dissolved Organic (DOC) | DUP | K1907456-001 | Water | 9.84 mg/L | 10 ml | 19.7 mg/L | 2 | 0.2 | 1.0 | | <1 | 8/28/19 21:20 | N | I |
| KQ1912158-18 | Carbon, Dissolved Organic (DOC) | DUP | K1907456-002 | Water | 6.93 mg/L | 10 ml | 6.93 mg/L | 1 | 0.07 | 0.50 | | 2 | 8/28/19 21:48 | N | I |
| KQ1912158-19 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-001 | Water | 0.09 mg/L | 10 ml | 0.09 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 23:00 | N | II |
| KQ1912158-20 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-002 | Water | 0.23 mg/L | 10 ml | 0.23 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 23:28 | N | II |
| KQ1912158-21 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-003 | Water | 0.43 mg/L | 10 ml | 0.43 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/28/19 23:57 | N | II |
| KQ1912158-22 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-004 | Water | 0.34 mg/L | 10 ml | 0.34 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/29/19 00:25 | N | II |
| KQ1912158-23 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-005 | Water | 0.26 mg/L | 10 ml | 0.26 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/29/19 00:53 | N | II |
| KQ1912158-24 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-006 | Water | 0.43 mg/L | 10 ml | 0.43 mg/L J | 1 | 0.07 | 0.50 | | NC | 8/29/19 01:21 | N | II |
| KQ1912158-25 | Carbon, Dissolved Organic (DOC) | DUP | K1907440-007 | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | NC | 8/29/19 01:49 | N | II |



# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.



HLM 8/29/19

# Analytical Results Summary

**Instrument Name:** K-TOC-03 **Analyst:** BDITZLER **Analysis Lot:** 648998 **Method/Testcode:** SM 5310 C/TOC D

| Lab Code | Target Analytes | QC | Parent Sample | Matrix | Raw Result | Sample Amt. | Final Result | Dil | MDL | PQL | % Rec | % RSD | Date Analyzed | QC? | Tier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K1907311-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 5.31 mg/L | 10 ml | 5.31 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 17:32 | N | II |
| K1907311-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 4.91 mg/L | 10 ml | 4.91 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 18:00 | N | II |
| K1907311-003 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.85 mg/L | 10 ml | 0.85 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 19:27 | N | II |
| K1907413-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 3.36 mg/L | 10 ml | 3.36 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 19:55 | N | II |
| K1907413-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 6.13 mg/L | 10 ml | 6.13 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 20:23 | N | II |
| K1907440-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.08 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 23:00 | N | II |
| K1907440-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.18 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 23:28 | N | II |
| K1907440-003 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.42 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 23:57 | N | II |
| K1907440-004 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.36 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 00:25 | N | II |
| K1907440-005 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.25 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 00:53 | N | II |
| K1907440-006 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 0.41 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 01:21 | N | II |
| K1907440-007 | Carbon, Dissolved Organic (DOC) | N/A | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 01:49 | N | II |
| K1907456-001 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 9.88 mg/L | 10 ml | 19.8 mg/L | 2 | 0.2 | 1.0 | | | 8/28/19 21:20 | N | I |
| K1907456-002 | Carbon, Dissolved Organic (DOC) | N/A | | Water | 7.09 mg/L | 10 ml | 7.09 mg/L | 1 | 0.07 | 0.50 | | | 8/28/19 21:48 | N | I |
| KQ1912158-01 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 25.61 mg/L | 10 ml | 25.6 mg/L | 1 | | | | | 8/28/19 13:44 | N | II |
| KQ1912158-02 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 24.96 mg/L | 10 ml | 25.0 mg/L | 1 | | | | | 8/28/19 18:28 | N | II |
| KQ1912158-03 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 24.58 mg/L | 10 ml | 24.6 mg/L | 1 | | | | | 8/28/19 22:31 | N | II |
| KQ1912158-04 | Carbon, Dissolved Organic (DOC) | CCV | | Water | 24.13 mg/L | 10 ml | 24.1 mg/L | 1 | | | | | 8/29/19 02:45 | N | II |
| KQ1912158-05 | Carbon, Dissolved Organic (DOC) | CCB | | Water | 0.37 mg/L | 10 ml | 0.37 mg/L J | 1 | 0.07 | 0.50 | | | 8/28/19 13:59 | N | II |
| KQ1912158-06 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:43 | N | II |
| KQ1912158-07 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 22:46 | N | II |
| KQ1912158-08 | Carbon, Dissolved Organic (DOC) | CCB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/29/19 03:00 | N | II |
| KQ1912158-09 | Carbon, Dissolved Organic (DOC) | MB | | Water | -0.03 mg/L | 10 ml | 0.50 mg/L U | 1 | 0.07 | 0.50 | | | 8/28/19 18:57 | N | II |

# indicates Final Result is not yet adjusted for Solids because it has not yet been determined.

8/29/19

Printed 8/29/19 12:09

Results Summary



HLM 8.29.19

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | ccv | 1 | 25.338 | 0.0305 | 25.3073 | 25.30731 | 25.3 | 8/27/2019 |
| 3 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 4 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 5 | lcs | 1 | 25.193 | 0.0305 | 25.1628 | 25.16281 | 25.2 | 8/27/2019 |
| 6 | K1907294-001 | 1 | 1.410 | 0.0305 | 1.3796 | 1.37961 | 1.38 | 8/27/2019 |
| 7 | K1907294-001 | 1 | 1.374 | 0.0305 | 1.3437 | 1.34371 | 1.3 | 8/27/2019 |
| 8 | KQ1912155-01 | 1 | 26.851 | 0.0305 | 26.8200 | 26.82001 | 27 | 8/27/2019 |
| 9 | K1907294-002 | 1 | 0.748 | 0.0305 | 0.7173 | 0.71731 | 0.72 | 8/27/2019 |
| 10 | K1907294-002 | 1 | 0.745 | 0.0305 | 0.7145 | 0.71451 | 0.71 | 8/27/2019 |
| 11 | K1907303-001 | 1 | 2.717 | 0.0305 | 2.6869 | 2.68691 | 2.7 | 8/27/2019 |
| 12 | K1907303-001 | 1 | 2.702 | 0.0305 | 2.6713 | 2.67131 | 2.67 | 8/27/2019 |
| 13 | K1907303-002 | 1 | 2.680 | 0.0305 | 2.6494 | 2.64941 | 2.65 | 8/27/2019 |
| 14 | K1907303-002 | 1 | 2.714 | 0.0305 | 2.6834 | 2.68341 | 2.68 | 8/27/2019 |
| 15 | K1907303-003 | 1 | 3.508 | 0.0305 | 3.4776 | 3.47761 | 3.5 | 8/27/2019 |
| 16 | K1907303-003 | 1 | 3.520 | 0.0305 | 3.4894 | 3.48941 | 3.5 | 8/27/2019 |
| 17 | ccv | 1 | 24.813 | 0.0305 | 24.7827 | 24.78271 | 24.78 | 8/27/2019 |
| 18 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 19 | K1907303-004 | 20 | 1.806 | 0.0305 | 1.7752 | 35.5042 | 35.5 | 8/27/2019 |
| 20 | K1907303-004 | 20 | 1.899 | 0.0305 | 1.8681 | 37.3622 | 37.36 | 8/27/2019 |
| 21 | K1907495-001 | 1 | 0.484 | 0.0305 | 0.4537 | 0.45371 | <0.5 | 8/27/2019 |
| 22 | K1907495-001 | 1 | 0.454 | 0.0305 | 0.4237 | 0.42371 | <0.5 | 8/27/2019 |
| 23 | K1907495-002 | 1 | 9.167 | 0.0305 | 9.1366 | 9.13661 | 9.1 | 8/27/2019 |
| 24 | K1907495-002 | 1 | 9.476 | 0.0305 | 9.4457 | 9.44571 | 9.45 | 8/27/2019 |
| 25 | K1907495-008 | 1 | 0.611 | 0.0305 | 0.5801 | 0.58011 | 0.58 | 8/27/2019 |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | date | time |
|---|---|---|
| Analyzed By: BLD | Date Analyzed 8/27/19 | |
| Reviewed By: | Date Reviewed 8/28/19 | |

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 26 | K1907495-008 | 1 | 0.533 | 0.0305 | 0.5029 | 0.50291 | 0.50 | 8/27/2019 |
| 27 | K1907495-009 | 1 | 0.615 | 0.0305 | 0.5845 | 0.58451 | 0.58 | 8/27/2019 |
| 28 | K1907495-009 | 1 | 0.584 | 0.0305 | 0.5539 | 0.55391 | 0.6 | 8/27/2019 |
| 29 | K1907495-010 | 1 | 9.004 | 0.0305 | 8.9738 | 8.97381 | 9.0 | 8/27/2019 |
| 30 | K1907495-010 | 1 | 8.605 | 0.0305 | 8.5740 | 8.57401 | 8.6 | 8/27/2019 |
| 31 | K1907495-011 | 1 | 10.055 | 0.0305 | 10.0242 | 10.02421 | 10.0 | 8/27/2019 |
| 32 | K1907495-011 | 1 | 10.234 | 0.0305 | 10.2034 | 10.20341 | 10.2 | 8/27/2019 |
| 33 | K1907495-012 | 1 | 3.546 | 0.0305 | 3.5158 | 3.51581 | 3.5 | 8/27/2019 |
| 34 | K1907495-012 | 1 | 3.559 | 0.0305 | 3.5280 | 3.52801 | 3.5 | 8/27/2019 |
| 35 | K1907495-013 | 1 | 5.215 | 0.0305 | 5.1845 | 5.18451 | 5.2 | 8/27/2019 |
| 36 | K1907495-013 | 1 | 5.226 | 0.0305 | 5.1952 | 5.19521 | 5.2 | 8/27/2019 |
| 37 | K1907495-014 | 1 | 0.595 | 0.0305 | 0.5642 | 0.56421 | 0.6 | 8/27/2019 |
| 38 | K1907495-014 | 1 | 0.505 | 0.0305 | 0.4745 | 0.47451 | <0.5 | 8/27/2019 |
| 39 | ccv | 1 | 24.997 | 0.0305 | 24.9664 | 24.96641 | 25.0 | 8/27/2019 |
| 40 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 41 | K1907495-022 | 1 | 0.269 | 0.0305 | 0.2383 | 0.23831 | <0.5 | 8/28/2019 |
| 42 | K1907495-022 | 1 | 0.176 | 0.0305 | 0.1457 | 0.14571 | <0.5 | 8/28/2019 |
| 43 | K1907495-023 | 1 | 1.033 | 0.0305 | 1.0029 | 1.00291 | 1.0 | 8/28/2019 |
| 44 | K1907495-023 | 1 | 1.048 | 0.0305 | 1.0171 | 1.01711 | 1.0 | 8/28/2019 |
| 45 | K1907495-024 | 1 | 1.203 | 0.0305 | 1.1723 | 1.17231 | 1.2 | 8/28/2019 |
| 46 | K1907495-024 | 1 | 1.192 | 0.0305 | 1.1611 | 1.16111 | 1.2 | 8/28/2019 |
| 47 | K1907495-027 | 1 | 0.058 | 0.0305 | 0.0274 | 0.02741 | <0.5 | 8/28/2019 |
| 48 | K1907495-027 | 1 | 0.028 | 0.0305 | -0.0022 | -0.00219 | <0.5 | 8/28/2019 |
| 49 | K1907495-028 | 1 | 3.874 | 0.0305 | 3.8430 | 3.84301 | 3.8 | 8/28/2019 |
| 50 | K1907495-028 | 1 | 3.683 | 0.0305 | 3.6523 | 3.65231 | 3.7 | 8/28/2019 |

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| Analyzed By: KP | Date Analyzed 8/27/19 |
| Reviewed By: | Date Reviewed 8/29/19 |

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 51 | ccv | 1 | 24.582 | 0.0305 | 24.5510 | 24.55101 | 24.55 | 8/28/2019 |
| 52 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 53 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 54 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 55 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 56 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 57 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 58 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 59 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 60 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 61 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 62 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 63 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 64 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 65 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 66 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 67 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 68 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 69 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 70 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 71 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 72 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 73 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 74 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 75 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

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| Analyzed By: BCP | Date Analyzed 8/27/19 |
| Reviewed By: | Date Reviewed 8/28/19 |

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | ccv | 1 | 24.997 | 0.0305 | 24.9664 | 24.96641 | 25.0 | 8/27/2019 |
| 3 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 4 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/27/2019 |
| 5 | lcs | 1 | 25.212 | 0.0305 | 25.1816 | 25.18161 | 25.2 | 8/27/2019 |
| 6 | K1907495-032 | 1 | 3.832 | 0.0305 | 3.8016 | 3.80161 | 3.80 | 8/28/2019 |
| 7 | K1907495-032 | 1 | 3.841 | 0.0305 | 3.8107 | 3.81071 | 3.8 | 8/28/2019 |
| 8 | K1907279-001 | 1 | 8.989 | 0.0305 | 8.9584 | 8.95841 | 9 | 8/28/2019 |
| 9 | K1907279-001 | 1 | 9.054 | 0.0305 | 9.0232 | 9.02321 | 9.02 | 8/28/2019 |
| 10 | K1907279-002 | 1 | 15.714 | 0.0305 | 15.6834 | 15.68341 | 15.68 | 8/28/2019 |
| 11 | K1907279-002 | 1 | 15.798 | 0.0305 | 15.7678 | 15.76781 | 15.8 | 8/28/2019 |
| 12 | ccv | 1 | 24.582 | 0.0305 | 24.5510 | 24.55101 | 24.55 | 8/28/2019 |
| 13 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 14 | K1907279-003 | 1 | 27.966 | 0.0305 | 27.9355 | 27.93551 | 27.94 | 8/28/2019 |
| 15 | K1907279-003 | 1 | 27.543 | 0.0305 | 27.5126 | 27.51261 | 27.5 | 8/28/2019 |
| 16 | K1907279-004 | 1 | 22.388 | 0.0305 | 22.3574 | 22.35741 | 22.4 | 8/28/2019 |
| 17 | K1907279-004 | 1 | 22.432 | 0.0305 | 22.4012 | 22.40121 | 22.40 | 8/28/2019 |
| 18 | K1907279-005 | 2 | 27.184 | 0.0305 | 27.1531 | 54.30622 | 54.3 | 8/28/2019 |
| 19 | K1907279-005 | 2 | 27.515 | 0.0305 | 27.4843 | 54.96862 | 55.0 | 8/28/2019 |
| 20 | K1907469-001 | 1 | 7.657 | 0.0305 | 7.6264 | 7.62641 | 7.63 | 8/28/2019 |
| 21 | K1907469-001 | 1 | 7.445 | 0.0305 | 7.4140 | 7.41401 | 7.41 | 8/28/2019 |
| 22 | K1907469-002 | 1 | 1.526 | 0.0305 | 1.4956 | 1.49561 | 1.5 | 8/28/2019 |
| 23 | K1907469-002 | 1 | 1.520 | 0.0305 | 1.4891 | 1.48911 | 1.5 | 8/28/2019 |
| 24 | KQ1912156-01 | 1 | 26.907 | 0.0305 | 26.8763 | 26.87631 | 26.88 | 8/28/2019 |
| 25 | K1907469-003 | 1 | 1.401 | 0.0305 | 1.3703 | 1.37031 | 1.37 | 8/28/2019 |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | | date time |
|---|---|---|
| Analyzed By: BCP | Date Analyzed | 8/27/19 |
| Reviewed By: | Date Reviewed | 8/29/19 |

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# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 26 | K1907469-003 | 1 | 1.445 | 0.0305 | 1.4145 | 1.41451 | 1.41 | 8/28/2019 |
| 27 | K1907469-004 | 1 | 3.869 | 0.0305 | 3.8381 | 3.83811 | 3.84 | 8/28/2019 |
| 28 | K1907469-004 | 1 | 3.799 | 0.0305 | 3.7683 | 3.76831 | 3.8 | 8/28/2019 |
| 29 | K1907535-001 | 1 | 4.990 | 0.0305 | 4.9596 | 4.95961 | 5.0 | 8/28/2019 |
| 30 | K1907535-001 | 1 | 4.973 | 0.0305 | 4.9426 | 4.94261 | 4.9 | 8/28/2019 |
| 31 | ccv | 1 | 24.526 | 0.0305 | 24.4954 | 24.49541 | 24.5 | 8/28/2019 |
| 32 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 33 | K1907474-001 | 1 | 1.233 | 0.0305 | 1.2028 | 1.20281 | 1.2 | 8/28/2019 |
| 34 | K1907474-001 | 1 | 1.126 | 0.0305 | 1.0953 | 1.09531 | 1.1 | 8/28/2019 |
| 35 | K1907532-001 | 1 | 19.024 | 0.0305 | 18.9934 | 18.99341 | 19.0 | 8/28/2019 |
| 36 | K1907532-001 | 1 | 18.569 | 0.0305 | 18.5380 | 18.53801 | 18.5 | 8/28/2019 |
| 37 | K1907548-001 | 1 | 9.223 | 0.0305 | 9.1929 | 9.19291 | 9.2 | 8/28/2019 |
| 38 | K1907548-001 | 1 | 9.263 | 0.0305 | 9.2321 | 9.23211 | 9.2 | 8/28/2019 |
| 39 | K1907548-002 | 1 | 0.835 | 0.0305 | 0.8049 | 0.80491 | 0.8 | 8/28/2019 |
| 40 | K1907548-002 | 1 | 0.735 | 0.0305 | 0.7040 | 0.70401 | 0.7 | 8/28/2019 |
| 41 | K1907548-003 | 1 | 0.004 | 0.0305 | -0.0264 | -0.02639 | <0.5 | 8/28/2019 |
| 42 | K1907548-003 | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 43 | K1907548-004 | 1 | 24.545 | 0.0305 | 24.5148 | 24.51481 | 24.5 | 8/28/2019 |
| 44 | K1907548-004 | 1 | 25.196 | 0.0305 | 25.1656 | 25.16561 | 25.2 | 8/28/2019 |
| 45 | K1907548-005 | 1 | 25.776 | 0.0305 | 25.7453 | 25.74531 | 25.7 | 8/28/2019 |
| 46 | K1907548-005 | 1 | 26.098 | 0.0305 | 26.0678 | 26.06781 | 26.1 | 8/28/2019 |
| 47 | ccv | 1 | 25.643 | 0.0305 | 25.6127 | 25.61271 | 25.6 | 8/28/2019 |
| 48 | ccb | 1 | 0.396 | 0.0305 | 0.3659 | 0.36591 | <0.5 | 8/28/2019 |
| 49 | K1907476-001 | 100 | 8.022 | 0.0305 | 7.9913 | 799.131 | 799.1 | 8/28/2019 |
| 50 | K1907476-001 | 100 | 8.016 | 0.0305 | 7.9857 | 798.571 | 798.6 | 8/28/2019 |

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| Analyzed By: BCD | Date Analyzed 8/27/19 |
| Reviewed By: | Date Reviewed 8/29/19 |

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 51 | K1907476-002 | 100 | 5.054 | 0.0305 | 5.0237 | 502.371 | 502.37 | 8/28/2019 |
| 52 | K1907476-002 | 100 | 4.962 | 0.0305 | 4.9317 | 493.171 | 493.2 | 8/28/2019 |
| 53 | K1907476-003 | 100 | 3.458 | 0.0305 | 3.4272 | 342.721 | 342.7 | 8/28/2019 |
| 54 | K1907476-003 | 100 | 3.293 | 0.0305 | 3.2627 | 326.271 | 326.3 | 8/28/2019 |
| 55 | ccv | 1 | 24.986 | 0.0305 | 24.9559 | 24.95591 | 25.0 | 8/28/2019 |
| 56 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 57 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 58 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 59 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 60 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 61 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 62 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 63 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 64 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 65 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 66 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 67 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 68 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 69 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 70 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 71 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 72 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 73 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 74 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 75 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

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| Analyzed By: | FCD | Date Analyzed | 8/27/19 |
| Reviewed By: | | Date Reviewed | 8/29/19 |



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# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 3 | lcs | 1 | 25.013 | 0.0305 | 24.9829 | 24.98291 | 25.0 | 8/28/2019 |
| 4 | ccv | 1 | 25.643 | 0.0305 | 25.6127 | 25.61271 | 25.6 | 8/28/2019 |
| 5 | ccb | 1 | 0.396 | 0.0305 | 0.3659 | 0.36591 | <0.5 | 8/28/2019 |
| 6 | K1907526-001 | 1 | 11.595 | 0.0305 | 11.5646 | 11.56461 | 11.56 | 8/28/2019 |
| 7 | K1907526-001 | 1 | 11.450 | 0.0305 | 11.4199 | 11.41991 | 11.4 | 8/28/2019 |
| 8 | K1907526-002 | 1 | 2.758 | 0.0305 | 2.7275 | 2.72751 | 3 | 8/28/2019 |
| 9 | K1907526-002 | 1 | 2.660 | 0.0305 | 2.6299 | 2.62991 | 2.63 | 8/28/2019 |
| 10 | KQ1912157-07 | 1 | 28.381 | 0.0305 | 28.3507 | 28.35071 | 28.35 | 8/28/2019 |
| 11 | K1907526-003 | 1 | 1.985 | 0.0305 | 1.9545 | 1.95451 | 2.0 | 8/28/2019 |
| 12 | K1907526-003 | 1 | 1.958 | 0.0305 | 1.9278 | 1.92781 | 1.93 | 8/28/2019 |
| 13 | ccv | 1 | 24.986 | 0.0305 | 24.9559 | 24.95591 | 24.96 | 8/28/2019 |
| 14 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 15 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 16 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 17 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 18 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 19 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 20 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 21 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 22 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 23 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 24 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 25 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | | date time |
|---|---|---|
| Analyzed By: BCP | Date Analyzed | 8/27/19 |
| | | |
| Reviewed By: | Date Reviewed | 8/29/19 |



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# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| CBA | RB | 1 | | | 0.0000 | 0 | <0.5 | |
| 2 | ccv | 1 | 25.643 | 0.0305 | 25.6127 | 25.61271 | 25.6 | 8/28/2019 |
| 3 | ccb | 1 | 0.396 | 0.0305 | 0.3659 | 0.36591 | <0.5 | 8/28/2019 |
| 4 | K1907311-001 | 1 | 5.341 | 0.0305 | 5.3104 | 5.31041 | 5.3 | 8/28/2019 |
| 5 | K1907311-001 | 1 | 5.055 | 0.0305 | 5.0249 | 5.02491 | 5.0 | 8/28/2019 |
| 6 | K1907311-002 | 1 | 4.944 | 0.0305 | 4.9134 | 4.91341 | 4.91 | 8/28/2019 |
| 7 | K1907311-002 | 1 | 4.989 | 0.0305 | 4.9580 | 4.95801 | 5.0 | 8/28/2019 |
| 8 | ccv | 1 | 24.986 | 0.0305 | 24.9559 | 24.95591 | 25 | 8/28/2019 |
| 9 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 10 | mb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 11 | lcs | 1 | 25.197 | 0.0305 | 25.1666 | 25.16661 | 25.2 | 8/28/2019 |
| 12 | K1907311-003 | 1 | 0.879 | 0.0305 | 0.8482 | 0.84821 | 0.85 | 8/28/2019 |
| 13 | K1907311-003 | 1 | 0.778 | 0.0305 | 0.7475 | 0.74751 | 0.75 | 8/28/2019 |
| 14 | K1907413-001 | 1 | 3.392 | 0.0305 | 3.3611 | 3.36111 | 3.36 | 8/28/2019 |
| 15 | K1907413-001 | 1 | 3.406 | 0.0305 | 3.3755 | 3.37551 | 3.4 | 8/28/2019 |
| 16 | K1907413-002 | 1 | 6.163 | 0.0305 | 6.1322 | 6.13221 | 6.1 | 8/28/2019 |
| 17 | K1907413-002 | 1 | 6.166 | 0.0305 | 6.1357 | 6.13571 | 6.14 | 8/28/2019 |
| 18 | K1907456-001 | 2 | 9.913 | 0.0305 | 9.8826 | 19.76522 | 19.8 | 8/28/2019 |
| 19 | K1907456-001 | 2 | 9.871 | 0.0305 | 9.8401 | 19.68022 | 19.7 | 8/28/2019 |
| 20 | K1907456-002 | 1 | 7.116 | 0.0305 | 7.0850 | 7.08501 | 7.09 | 8/28/2019 |
| 21 | K1907456-002 | 1 | 6.958 | 0.0305 | 6.9278 | 6.92781 | 6.93 | 8/28/2019 |
| 22 | KQ1912158-11 | 1 | 25.683 | 0.0305 | 25.6522 | 25.65221 | 25.7 | 8/28/2019 |
| 23 | ccv | 1 | 24.608 | 0.0305 | 24.5778 | 24.57781 | 24.6 | 8/28/2019 |
| 24 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/28/2019 |
| 25 | K1907440-001 | 1 | 0.106 | 0.0305 | 0.0754 | 0.07541 | <0.5 | 8/28/2019 |

ICAL Date 10/20/16 ICAL ID#:11-GEN-05-51A

LCS =24.0 ppm APG 4013 Lot #010615 (REF# 11-GEN-05-50N)

CCV = 25.0 ppm (Ref.#11-GEN-05-52E)

Spike: 0.05 ml of 5000 ppm stock ----> 10.0 ml =25.0 ppm x Dilution Factor (Ref.# 11-GEN-05-51M)

| | date | time |
|---|---|---|
| Analyzed By: BCP | Date Analyzed 8/27/19 | |
| | | |
| Reviewed By: | Date Reviewed 8/28/19 | |



08272019 648998

# ALS ENVIRONMENTAL

Matrix: WATER

Analysis: Total Organic Carbon (WATER) Method:Oxidation EPA 415.1/9060/5310C

| Printout | Sample # | Dil. Factor | Solution Conc.,mg/L | Blank Correction, mg/L | Net mg/L | TOC mg/L | Reported TOC mg/L | |
|---|---|---|---|---|---|---|---|---|
| 26 | K1907440-001 | 1 | 0.116 | 0.0305 | 0.0859 | 0.08591 | <0.5 | 8/28/2019 |
| 27 | K1907440-002 | 1 | 0.212 | 0.0305 | 0.1816 | 0.18161 | <0.5 | 8/28/2019 |
| 28 | K1907440-002 | 1 | 0.258 | 0.0305 | 0.2271 | 0.22711 | <0.5 | 8/28/2019 |
| 29 | K1907440-003 | 1 | 0.447 | 0.0305 | 0.4166 | 0.41661 | <0.5 | 8/28/2019 |
| 30 | K1907440-003 | 1 | 0.458 | 0.0305 | 0.4276 | 0.42761 | <0.5 | 8/28/2019 |
| 31 | K1907440-004 | 1 | 0.391 | 0.0305 | 0.3609 | 0.36091 | <0.5 | 8/29/2019 |
| 32 | K1907440-004 | 1 | 0.373 | 0.0305 | 0.3422 | 0.34221 | <0.5 | 8/29/2019 |
| 33 | K1907440-005 | 1 | 0.280 | 0.0305 | 0.2497 | 0.24971 | <0.5 | 8/29/2019 |
| 34 | K1907440-005 | 1 | 0.287 | 0.0305 | 0.2560 | 0.25601 | <0.5 | 8/29/2019 |
| 35 | K1907440-006 | 1 | 0.444 | 0.0305 | 0.4133 | 0.41331 | <0.5 | 8/29/2019 |
| 36 | K1907440-006 | 1 | 0.459 | 0.0305 | 0.4284 | 0.42841 | <0.5 | 8/29/2019 |
| 37 | K1907440-007 | 1 | 0.002 | 0.0305 | -0.0289 | -0.02889 | <0.5 | 8/29/2019 |
| 38 | K1907440-007 | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/29/2019 |
| 39 | ccv | 1 | 24.156 | 0.0305 | 24.1256 | 24.12561 | 24.1 | 8/29/2019 |
| 40 | ccb | 1 | 0.000 | 0.0305 | -0.0305 | -0.03049 | <0.5 | 8/29/2019 |
| 41 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 42 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 43 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 44 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 45 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 46 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 47 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 48 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 49 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |
| 50 | | 1 | | 0.0000 | 0.0000 | 0 | <0.5 | |

| | | | |
|---|---|---|---|
| Analyzed By: | BCP | Date Analyzed | 8/27/19 |
| Reviewed By: | | Date Reviewed | 8/30/19 |

| | | | |
|---|---|---|---|
| 0.396 | OBSERVATIONS | 13 | ABOVE |
| 0.000 | STD Deviatior | 0.10994 | 0 |
| 0.000 | AVERAGE | 0.03049 | 0 |
| 0.000 | UCL | 0.14043 | 0 |
| 0.000 | LCL | -0.07945 | 0 |
| 0.000 | | | 0 |
| 0.000 | | | 0 |
| 0.000 | OBSERVATIONS | 0 | 0 |
| 0.000 | STD Deviatior | 0.00000 | 0 |
| 0.000 | AVERAGE | #DIV/0! | 0 |
| 0.000 | UCL | #DIV/0! | 0 |
| 0.000 | LCL | #DIV/0! | 0 |
| 0.000 | | | 0 |
| | | | 0 |
| | OBSERVATIONS | 0 | 0 |
| | STD Deviatior | 0.00000 | 0 |
| | AVERAGE | #DIV/0! | 0 |
| | UCL | #DIV/0! | 0 |
| | LCL | #DIV/0! | 0 |
| | | | 0 |
| | | | 0 |
| | OBSERVATIONS | 0 | 0 |
| | STD Deviatior | #DIV/0! | 0 |
| | AVERAGE | #DIV/0! | 0 |
| | | | 0 |
| | | | 0 |
| | | | 0 |
| | | | 0 |
| | | | 0 |
| | | | 0 |



HLM 8/29/19

# Schedule: 08272019

**Version:** 6
**Instrument:** Fusion1
**Last Saved by:** Fusion1 (Fusion1)
**Last Saved on:** 2019/08/27 13:17 - Tuesday

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Clean) | Clean | Clean | | 1 | True | Ready |
| (Blank) | Blank | Reagent/Acid Blank | | 1 | True | Ready |
| D | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 1 | Sample | MB1 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 2 | Sample | ICS | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 3 | Sample | K1907294-001.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 4 | Sample | K1907294-001.02 ms | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 5 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 6 | Sample | K1907294-002.02 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 7 | Sample | K1907303-001.05 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 8 | Sample | K1907303-002.05 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 9 | Sample | K1907303-003.05 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 10 | Sample | K1907303-004.05 20x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 11 | Sample | K1907495-001.16 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 12 | Sample | K1907495-002.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 13 | Sample | K1907495-008.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 14 | Sample | K1907495-009.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 15 | Sample | K1907495-010.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 16 | Sample | K1907495-011.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 17 | Sample | K1907495-012.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 18 | Sample | K1907495-013.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 19 | Sample | K1907495-014.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 20 | Sample | MB2 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [24.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 21 | Sample | K1907495-022.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 22 | Sample | K1907495-023.16 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 23 | Sample | K1907495-024.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 24 | Sample | K1907495-027.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 25 | Sample | K1907495-028.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 26 | Sample | K1907495-032.15 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 27 | Sample | K1907279-001.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 28 | Sample | K1907279-002.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 29 | Sample | K1907279-003.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 30 | Sample | K1907279-004.03 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 31 | Sample | K1907279-005.03 2x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 32 | Sample | K1907469-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 33 | Sample | K1907469-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 34 | Sample | K1907469-002.01 ms | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 35 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 36 | Sample | K1907469-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 37 | Sample | K1907469-004.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 38 | Sample | K1907535-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |

# Schedule: 08272019

| Position | Sample Type | Sample ID | Method ID (Calibration ID) | Reps | Use | State |
|---|---|---|---|---|---|---|
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 39 | Sample | MB3 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [25.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 40 | Sample | K1907474-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 41 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 4 | True | Ready |
| 42 | Sample | K1907532-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 43 | Sample | K1907548-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 44 | Sample | K1907548-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 45 | Sample | K1907548-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 46 | Sample | K1907548-004.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 47 | Sample | K1907548-005.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 48 | Sample | K1907476-001.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 49 | Sample | K1907476-002.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 50 | Sample | K1907476-003.01 100x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 51 | Sample | K1907526-001.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 52 | Sample | K1907526-002.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 53 | Sample | K1907526-002.01 ms | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 54 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 55 | Sample | K1907526-003.01 | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 56 | Sample | K1907311-001.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 57 | Sample | K1907311-002.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 58 | Sample | MB4 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| C | Check Standard | [TOC] LCS [25.0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 59 | Sample | K1907311-003.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 60 | Sample | K1907413-001.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 61 | Sample | K1907413-002.02 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 62 | Sample | FB 8/20/19 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 63 | Sample | FB 8/21/19 | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 64 | Sample | K1907456-001.05 doc 2x | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 65 | Sample | K1907456-002.05 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 66 | Sample | K1907440-001.01 ms doc | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| 67 | Sample | K1907440-001.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 68 | Sample | K1907440-002.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 69 | Sample | K1907440-003.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 70 | Sample | K1907440-004.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 71 | Sample | K1907440-005.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 72 | Sample | K1907440-006.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 73 | Sample | K1907440-007.01 doc | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| 74 | Sample | RB | CAS_salt_010711 (CAS_salt_010711) | 2 | True | Ready |
| B | Check Standard | [TOC] CCV 25 ppm [25 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| D | Check Standard | [TOC] CCB [0 ppm] | CAS_salt_010711 (CAS_salt_010711) | 1 | True | Ready |
| | | | | | False | |

# Fusion Report - 08272019
# Tuesday, August 27, 2019 11:36 AM

(View - Reps, Unused Reps, Meta-Data, Signature, History)
Printed on 2019/08/29 08:26 - Thursday

## Report Summary Information

| | | | |
|---|---|---|---|
| Company Location: | Gen Chem Lab | | |
| Schedule Name: | 08272019 | Engine Version: | 1.1.5.1 |
| Instrument Name: | Fusion1 | Firmware Version: | 1.2.0696 |
| Report Version: | 1 of 1 | Connection: | RS232 COM1 |
| Report Creation by Operators (schedule version): | Fusion1 (Fusion1) (v2)<br>Fusion1 (Fusion1) (v3)<br>Fusion1 (Fusion1) (v4)<br>Fusion1 (Fusion1) (v5)<br>Fusion1 (Fusion1) (v6) | | |
| Comment: | | | |

## Report Results

**Sample Type**: Clean — From Schedule Version 2

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/08/27 11:36 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 13.50 | 16.84 | 3.34 | 49.67 | 05:23 |
| 2 | TC Clean | 17.98 | 21.18 | 3.19 | 50.18 | 04:04 |
| 3 | TC Clean | 3.37 | 6.59 | 3.21 | 50.15 | 03:48 |
| 4 | TC Clean | 2.31 | 5.62 | 3.32 | 50.12 | 03:48 |

**Sample Type**: Clean — From Schedule Version 3

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◈ | (clean) | | Clean | 2019/08/27 12:01 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.56 | 14.85 | 3.28 | 49.64 | 05:11 |
| 2 | TC Clean | 5.73 | 8.97 | 3.24 | 50.12 | 04:02 |
| 3 | TC Clean | 2.82 | 6.05 | 3.24 | 50.13 | 03:46 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | TC Clean | 1.97 | 5.36 | 3.39 | 50.08 | 03:44 |

**Sample Type**: Clean

From Schedule Version 4

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◆ | (clean) | | Clean | 2019/08/27 12:23 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.24 | 14.58 | 3.34 | 49.68 | 05:13 |
| | | | | | | |
| 2 | TC Clean | 5.34 | 8.58 | 3.23 | 50.09 | 04:00 |
| 3 | TC Clean | 3.52 | 6.67 | 3.14 | 50.12 | 03:54 |
| 4 | TC Clean | 2.30 | 5.63 | 3.33 | 50.13 | 03:55 |

**Sample Type**: Blank (Creating v1288)

From Schedule Version 5

| | Pos | Analysis Type | Sample ID | Start Time |
|---|---|---|---|---|
| ◆ | (blank) | | Reagent/Acid Blank | 2019/08/27 13:05 |

| Rep # | Base Analysis Type | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|
| 1 | IC Clean | 11.45 | 14.84 | 3.39 | 49.56 | 05:20 |
| | | | | | | |
| 2 | TC Clean | 8.98 | 12.24 | 3.26 | 50.07 | 04:03 |
| 3 | TC Clean | 3.79 | 7.03 | 3.24 | 50.15 | 03:47 |
| 4 | TC Clean | 2.19 | 5.50 | 3.31 | 50.05 | 03:44 |
| | | | | | | |
| 5 | Reagent Blank | 5.35 | 8.65 | 3.30 | 50.07 | 05:02 |
| | | | | | | |
| 6 | Acid Blank | 1.50 | 4.71 | 3.21 | 49.58 | 05:25 |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | D | TOC | RB | 0.5233 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 13:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.5233 | 5.2326 | 12.42 | 15.70 | 3.28 | 50.22 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.3378 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 13:53 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.3378 | 253.3780 | 181.45 | 184.62 | 3.16 | 50.27 | 10:34 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 14:08 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 8.26 | 11.52 | 3.25 | 50.29 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 1 | TOC | MB1 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 14:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 7.08 | 10.64 | 3.57 | 50.32 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 25.1933 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 14:38 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.1933 | 251.9328 | 180.47 | 183.99 | 3.52 | 50.34 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 2 | TOC | ICS | 0.2834 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 14:52 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2834 | 2.8342 | 10.80 | 14.22 | 3.42 | 50.34 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 3 | TOC | K1907294-001.02 | 1.3921 ppm | 0.0254 ppm | 1.8300% | 2019/08/27 15:07 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.4101 | 14.1012 | 18.44 | 21.67 | 3.23 | 50.35 | 10:32 |
| 2 | TOC | 1.3742 | 13.7418 | 18.20 | 21.55 | 3.35 | 50.33 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 4 | TOC | K1907294-001.02 ms | 26.8505 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 15:35 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 26.8505 | 268.5053 | 191.13 | 194.58 | 3.45 | 50.37 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 5 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 15:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 7.71 | 11.16 | 3.45 | 50.38 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) | CAS_salt_010711 | CAS_salt_010711 |

(v1288) (v4) (v30)

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 6 | TOC | K1907294-002.02 | 0.7464 ppm | 0.0020 ppm | 0.2700% | 2019/08/27 16:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.7478 | 7.4777 | 13.95 | 17.30 | 3.35 | 50.37 | 10:23 |
| 2 | TOC | 0.7450 | 7.4497 | 13.93 | 17.31 | 3.38 | 50.37 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 7 | TOC | K1907303-001.05 | 2.7096 ppm | 0.0110 ppm | 0.4100% | 2019/08/27 16:33 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.7174 | 27.1744 | 27.32 | 30.55 | 3.23 | 50.37 | 10:26 |
| 2 | TOC | 2.7018 | 27.0182 | 27.21 | 30.66 | 3.45 | 50.40 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 8 | TOC | K1907303-002.05 | 2.6969 ppm | 0.0241 ppm | 0.8900% | 2019/08/27 17:01 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.6799 | 26.7987 | 27.06 | 30.42 | 3.36 | 50.43 | 10:28 |
| 2 | TOC | 2.7139 | 27.1391 | 27.30 | 30.55 | 3.26 | 50.40 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 9 | TOC | K1907303-003.05 | 3.5140 ppm | 0.0083 ppm | 0.2400% | 2019/08/27 17:29 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.5081 | 35.0811 | 32.69 | 36.07 | 3.38 | 50.49 | 10:25 |
| 2 | TOC | 3.5199 | 35.1989 | 32.77 | 36.19 | 3.43 | 50.52 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.8132 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 17:57 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.8132 | 248.1320 | 177.89 | 181.34 | 3.45 | 50.53 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 18:11 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 7.18 | 10.55 | 3.38 | 50.50 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 10 | TOC | K1907303-004.05 20x | 1.8522 ppm | 0.0657 ppm | 3.5500% | 2019/08/27 18:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.8057 | 18.0568 | 21.13 | 24.47 | 3.34 | 50.39 | 10:26 |
| 2 | TOC | 1.8986 | 18.9864 | 21.76 | 24.92 | 3.16 | 50.35 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 11 | TOC | K1907495-001.16 | 0.4692 ppm | 0.0213 ppm | 4.5300% | 2019/08/27 18:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4842 | 4.8422 | 12.16 | 15.37 | 3.21 | 50.28 | 10:28 |
| 2 | TOC | 0.4542 | 4.5416 | 11.96 | 15.22 | 3.27 | 50.28 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 12 | TOC | K1907495-002.15 | 9.3217 ppm | 0.2186 ppm | 2.3400% | 2019/08/27 19:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.1671 | 91.6711 | 71.10 | 74.39 | 3.29 | 50.27 | 10:29 |
| 2 | TOC | 9.4762 | 94.7619 | 73.20 | 76.67 | 3.47 | 50.21 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 13 | TOC | K1907495-008.15 | 0.5720 ppm | 0.0546 ppm | 9.5400% | 2019/08/27 19:50 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.6106 | 6.1062 | 13.02 | 16.23 | 3.21 | 50.25 | 10:27 |
| 2 | TOC | 0.5334 | 5.3342 | 12.49 | 15.70 | 3.21 | 50.22 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 14 | TOC | K1907495-009.15 | 0.5997 ppm | 0.0217 ppm | 3.6100% | 2019/08/27 20:19 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.6150 | 6.1504 | 13.05 | 16.19 | 3.14 | 50.20 | 10:25 |
| 2 | TOC | 0.5844 | 5.8439 | 12.84 | 16.27 | 3.43 | 50.15 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 15 | TOC | K1907495-010.15 | 8.8044 ppm | 0.2827 ppm | 3.2100% | 2019/08/27 20:47 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.0043 | 90.0433 | 69.99 | 73.32 | 3.32 | 50.12 | 10:26 |
| 2 | TOC | 8.6045 | 86.0450 | 67.28 | 70.56 | 3.28 | 50.10 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 16 | TOC | K1907495-011.15 | 10.1443 ppm | 0.1267 ppm | 1.2500% | 2019/08/27 21:15 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 10.0547 | 100.5472 | 77.12 | 80.29 | 3.17 | 50.09 | 10:28 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 10.2339 | 102.3386 | 78.34 | 81.81 | 3.47 | 50.05 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 17 | TOC | K1907495-012.15 | 3.5524 ppm | 0.0086 ppm | 0.2400% | 2019/08/27 21:43 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.5463 | 35.4626 | 32.94 | 36.31 | 3.37 | 50.06 | 10:26 |
| 2 | TOC | 3.5585 | 35.5849 | 33.03 | 36.27 | 3.24 | 50.06 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 18 | TOC | K1907495-013.15 | 5.2203 ppm | 0.0076 ppm | 0.1500% | 2019/08/27 22:11 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.2150 | 52.1496 | 44.27 | 47.63 | 3.36 | 50.07 | 10:28 |
| 2 | TOC | 5.2257 | 52.2571 | 44.34 | 47.52 | 3.17 | 50.08 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 19 | TOC | K1907495-014.15 | 0.5498 ppm | 0.0634 ppm | 11.5400% | 2019/08/27 22:39 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.5947 | 5.9471 | 12.91 | 16.18 | 3.27 | 50.09 | 10:27 |
| 2 | TOC | 0.5050 | 5.0499 | 12.30 | 15.64 | 3.34 | 50.09 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.9969 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 23:07 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.9969 | 249.9691 | 179.14 | 182.23 | 3.09 | 50.12 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 23:21 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.67 | 9.98 | 3.31 | 50.11 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 20 | TOC | MB2 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/27 23:36 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.26 | 9.63 | 3.37 | 50.13 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [24.0 ppm] | 0 / infinity ( NA / NA ) | 25.2121 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/27 23:50 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.2121 | 252.1214 | 180.60 | 184.07 | 3.47 | 50.15 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 21 | TOC | K1907495-022.15 | 0.2225 ppm | 0.0655 ppm | 29.4500% | 2019/08/28 00:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2688 | 2.6883 | 10.70 | 14.15 | 3.46 | 50.14 | 10:28 |
| 2 | TOC | 0.1762 | 1.7617 | 10.07 | 13.25 | 3.18 | 50.17 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 22 | TOC | K1907495-023.16 | 1.0405 ppm | 0.0100 ppm | 0.9600% | 2019/08/28 00:33 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.0334 | 10.3342 | 15.89 | 19.39 | 3.50 | 50.19 | 10:31 |
| 2 | TOC | 1.0476 | 10.4757 | 15.98 | 19.38 | 3.40 | 50.20 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 23 | TOC | K1907495-024.15 | 1.1972 ppm | 0.0079 ppm | 0.6600% | 2019/08/28 01:01 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.2028 | 12.0284 | 17.04 | 20.38 | 3.34 | 50.22 | 10:30 |
| 2 | TOC | 1.1916 | 11.9165 | 16.96 | 20.15 | 3.19 | 50.25 | 10:24 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 24 | TOC | K1907495-027.15 | 0.0431 ppm | 0.0209 ppm | 48.6200% | 2019/08/28 01:30 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0579 | 0.5787 | 9.27 | 12.61 | 3.34 | 50.28 | 10:28 |
| 2 | TOC | 0.0283 | 0.2826 | 9.06 | 12.50 | 3.43 | 50.28 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 25 | TOC | K1907495-028.15 | 3.7781 ppm | 0.1348 ppm | 3.5700% | 2019/08/28 01:58 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.8735 | 38.7346 | 35.17 | 38.47 | 3.30 | 50.30 | 10:29 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 3.6828 | 36.8283 | 33.87 | 37.23 | 3.36 | 50.31 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 26 | TOC | K1907495-032.15 | 3.8366 ppm | 0.0065 ppm | 0.1700% | 2019/08/28 02:26 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.8321 | 38.3206 | 34.88 | 38.36 | 3.47 | 50.34 | 10:26 |
| 2 | TOC | 3.8412 | 38.4120 | 34.95 | 38.29 | 3.35 | 50.33 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 27 | TOC | K1907279-001.03 | 9.0213 ppm | 0.0458 ppm | 0.5100% | 2019/08/28 02:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.9889 | 89.8886 | 69.89 | 73.15 | 3.26 | 50.37 | 10:25 |
| 2 | TOC | 9.0537 | 90.5368 | 70.33 | 73.49 | 3.16 | 50.38 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◆ | 28 | TOC | K1907279-002.03 | 15.7561 ppm | 0.0597 ppm | 0.3800% | 2019/08/28 03:22 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 15.7139 | 157.1387 | 115.54 | 118.67 | 3.14 | 50.41 | 10:26 |
| 2 | TOC | 15.7983 | 157.9829 | 116.11 | 119.41 | 3.30 | 50.40 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◆ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.5815 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 03:50 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.5815 | 245.8146 | 176.32 | 179.74 | 3.42 | 50.42 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 04:04 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.67 | 10.05 | 3.39 | 50.45 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 29 | TOC | K1907279-003.03 | 27.7546 ppm | 0.2991 ppm | 1.0800% | 2019/08/28 04:19 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 27.9660 | 279.6604 | 198.70 | 202.13 | 3.43 | 50.44 | 10:26 |
| 2 | TOC | 27.5431 | 275.4308 | 195.83 | 199.16 | 3.32 | 50.46 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 30 | TOC | K1907279-004.03 | 22.4098 ppm | 0.0309 ppm | 0.1400% | 2019/08/28 04:47 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 22.3879 | 223.8791 | 160.84 | 164.30 | 3.46 | 50.49 | 10:26 |
| 2 | TOC | 22.4317 | 224.3167 | 161.14 | 164.46 | 3.32 | 50.48 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 31 | TOC | K1907279-005.03 2x | 27.3492 ppm | 0.2342 ppm | 0.8600% | 2019/08/28 05:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 27.1836 | 271.8362 | 193.39 | 196.68 | 3.28 | 50.51 | 10:28 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 27.5148 | 275.1480 | 195.64 | 199.06 | 3.42 | 50.51 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 32 | TOC | K1907469-001.01 | 7.5507 ppm | 0.1502 ppm | 1.9900% | 2019/08/28 05:44 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.6569 | 76.5694 | 60.85 | 63.98 | 3.14 | 50.52 | 10:29 |
| 2 | TOC | 7.4445 | 74.4450 | 59.41 | 62.69 | 3.28 | 50.53 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 33 | TOC | K1907469-002.01 | 1.5228 ppm | 0.0046 ppm | 0.3000% | 2019/08/28 06:12 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.5261 | 15.2606 | 19.23 | 22.53 | 3.30 | 50.56 | 10:30 |
| 2 | TOC | 1.5196 | 15.1958 | 19.19 | 22.36 | 3.17 | 50.57 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 34 | TOC | K1907469-002.01 ms | 26.9068 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 06:40 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 26.9068 | 269.0681 | 191.52 | 194.76 | 3.24 | 50.59 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 35 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 06:54 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.80 | 10.18 | 3.39 | 50.61 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 36 | TOC | K1907469-003.01 | 1.4229 ppm | 0.0313 ppm | 2.2000% | 2019/08/28 07:09 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.4008 | 14.0084 | 18.38 | 21.71 | 3.33 | 50.66 | 10:27 |
| 2 | TOC | 1.4450 | 14.4504 | 18.68 | 22.02 | 3.33 | 50.63 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 37 | TOC | K1907469-004.01 | 3.8337 ppm | 0.0494 ppm | 1.2900% | 2019/08/28 07:37 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.8686 | 38.6860 | 35.13 | 38.34 | 3.20 | 50.64 | 10:27 |
| 2 | TOC | 3.7988 | 37.9877 | 34.66 | 38.05 | 3.39 | 50.64 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 38 | TOC | K1907535-001.01 | 4.9816 ppm | 0.0121 ppm | 0.2400% | 2019/08/28 08:05 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.9901 | 49.9015 | 42.75 | 46.02 | 3.27 | 50.65 | 10:27 |
| 2 | TOC | 4.9731 | 49.7306 | 42.63 | 45.92 | 3.29 | 50.63 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.5259 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 08:33 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.5259 | 245.2592 | 175.94 | 179.31 | 3.36 | 50.63 | 10:33 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 08:48 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.32 | 9.77 | 3.45 | 50.58 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 39 | TOC | MB3 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 09:03 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 5.77 | 9.14 | 3.36 | 50.57 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [25.0 ppm] | 0 / infinity ( NA / NA ) | 25.0134 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 09:17 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.0134 | 250.1341 | 179.25 | 182.57 | 3.31 | 50.52 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 40 | TOC | K1907474-001.01 | 1.1796 ppm | 0.0760 ppm | 6.4500% | 2019/08/28 09:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.2333 | 12.3334 | 17.24 | 20.61 | 3.36 | 50.45 | 10:30 |
| 2 | TOC | 1.1258 | 11.2579 | 16.52 | 19.77 | 3.25 | 50.39 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 41 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 10:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 5.96 | 9.28 | 3.31 | 50.35 | 10:25 |
| 2 | TOC | 0.0000 | 0.0000 | 6.50 | 9.62 | 3.12 | 50.31 | 10:29 |
| 3 | TOC | 0.0000 | 0.0000 | 6.19 | 9.44 | 3.25 | 50.27 | 10:26 |
| 4 | TOC | 0.0000 | 0.0000 | 6.40 | 9.51 | 3.11 | 50.31 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 42 | TOC | K1907532-001.01 | 18.7962 ppm | 0.3220 ppm | 1.7100% | 2019/08/28 10:56 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 19.0239 | 190.2386 | 138.01 | 141.21 | 3.20 | 50.24 | 10:27 |
| 2 | TOC | 18.5685 | 185.6849 | 134.92 | 138.03 | 3.11 | 50.28 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 43 | TOC | K1907548-001.01 | 9.2430 ppm | 0.0277 ppm | 0.3000% | 2019/08/28 11:24 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.2234 | 92.2339 | 71.48 | 74.65 | 3.16 | 50.30 | 10:30 |
| 2 | TOC | 9.2626 | 92.6258 | 71.75 | 74.97 | 3.23 | 50.24 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 44 | TOC | K1907548-002.01 | 0.7850 ppm | 0.0714 ppm | 9.0900% | 2019/08/28 11:52 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.8354 | 8.3543 | 14.54 | 17.89 | 3.35 | 50.27 | 10:25 |
| 2 | TOC | 0.7345 | 7.3451 | 13.86 | 17.07 | 3.21 | 50.32 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ◈ | 45 | TOC | K1907548-003.01 | 0.0020 ppm | 0.0029 ppm | 141.4200% | 2019/08/28 12:20 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0041 | 0.0410 | 8.90 | 12.14 | 3.24 | 50.28 | 10:29 |
| 2 | TOC | 0.0000 | 0.0000 | 8.74 | 12.06 | 3.31 | 50.32 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 46 | TOC | K1907548-004.01 | 24.8707 ppm | 0.4602 ppm | 1.8500% | 2019/08/28 12:48 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 24.5453 | 245.4527 | 175.48 | 178.69 | 3.21 | 50.34 | 10:26 |
| 2 | TOC | 25.1961 | 251.9613 | 179.90 | 183.24 | 3.34 | 50.32 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 47 | TOC | K1907548-005.01 | 25.9371 ppm | 0.2280 ppm | 0.8800% | 2019/08/28 13:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 25.7758 | 257.7583 | 183.84 | 187.39 | 3.55 | 50.35 | 10:28 |
| 2 | TOC | 26.0983 | 260.9832 | 186.03 | 189.59 | 3.57 | 50.35 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 25.6432 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 13:44 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 25.6432 | 256.4320 | 183.53 | 186.81 | 3.29 | 50.29 | 10:30 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB

From Schedule Version 6

| | | | Concentration | | | Min / Max | | | | |
|---|---|---|---|---|---|---|---|---|---|---|

| | Pos | BAT | (ppm) | Dil | Sample ID | (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.3964 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 13:59 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.3964 | 3.9637 | 12.15 | 15.51 | 3.36 | 50.39 | 10:31 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 48 | TOC | K1907476-001.01 100x | 8.0190 ppm | 0.0040 ppm | 0.0500% | 2019/08/28 14:14 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 8.0218 | 80.2185 | 63.32 | 66.69 | 3.37 | 50.36 | 10:28 |
| 2 | TOC | 8.0162 | 80.1625 | 63.29 | 66.63 | 3.34 | 50.31 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 49 | TOC | K1907476-002.01 100x | 5.0082 ppm | 0.0651 ppm | 1.3000% | 2019/08/28 14:42 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.0542 | 50.5423 | 43.18 | 46.51 | 3.33 | 50.29 | 10:27 |
| 2 | TOC | 4.9622 | 49.6216 | 42.56 | 45.87 | 3.32 | 50.39 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 50 | TOC | K1907476-003.01 100x | 3.3754 ppm | 0.1164 ppm | 3.4500% | 2019/08/28 15:10 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.4577 | 34.5772 | 32.34 | 35.75 | 3.40 | 50.34 | 10:29 |
| 2 | TOC | 3.2932 | 32.9317 | 31.23 | 34.68 | 3.45 | 50.37 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 51 | TOC | K1907526-001.01 | 11.5228 ppm | 0.1023 ppm | 0.8900% | 2019/08/28 15:38 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 11.5951 | 115.9510 | 87.58 | 90.92 | 3.34 | 50.45 | 10:27 |
| 2 | TOC | 11.4504 | 114.5043 | 86.60 | 89.87 | 3.27 | 50.45 | 10:31 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 52 | TOC | K1907526-002.01 | 2.7092 ppm | 0.0690 ppm | 2.5500% | 2019/08/28 16:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 2.7580 | 27.5795 | 27.59 | 30.96 | 3.37 | 50.40 | 10:29 |
| 2 | TOC | 2.6604 | 26.6043 | 26.93 | 30.23 | 3.30 | 50.53 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 53 | TOC | K1907526-002.01 ms | 28.3812 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 16:34 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 28.3812 | 283.8119 | 201.52 | 204.94 | 3.41 | 50.50 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 54 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 16:49 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 8.24 | 11.67 | 3.44 | 50.45 | 10:34 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 55 | TOC | K1907526-003.01 | 1.9716 ppm | 0.0189 ppm | 0.9600% | 2019/08/28 17:03 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 1.9850 | 19.8497 | 22.35 | 25.79 | 3.44 | 50.60 | 10:29 |
| 2 | TOC | 1.9583 | 19.5830 | 22.17 | 25.54 | 3.38 | 50.57 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | | Analysis | | | Std. Dev. | | |
|---|---|---|---|---|---|---|---|

| | Pos | Type | Sample ID | Result (ppmC) | (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 56 | TOC | K1907311-001.02 doc | 5.1982 ppm | 0.2019 ppm | 3.8800% | 2019/08/28 17:32 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 5.3409 | 53.4092 | 45.13 | 48.48 | 3.35 | 50.57 | 10:29 |
| 2 | TOC | 5.0554 | 50.5541 | 43.19 | 46.50 | 3.31 | 50.55 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 57 | TOC | K1907311-002.02 doc | 4.9662 ppm | 0.0316 ppm | 0.6400% | 2019/08/28 18:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 4.9439 | 49.4389 | 42.43 | 45.75 | 3.32 | 50.67 | 10:31 |
| 2 | TOC | 4.9885 | 49.8853 | 42.74 | 46.09 | 3.36 | 50.64 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.9864 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 18:28 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.9864 | 249.8645 | 179.07 | 182.27 | 3.20 | 50.58 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 18:43 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 7.59 | 10.97 | 3.39 | 50.46 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria | Do Nothing | CAS_salt_010711 | CAS_salt_010711 | 0 ppmC |

| | | |
|---|---|---|
| met. | (v4) | (v30) |

**Sample Type**: Sample — From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 58 | TOC | MB4 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 18:57 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.95 | 10.36 | 3.41 | 50.39 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> LCS — From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | C | TOC | 25.0000 | 1:1 | [TOC] LCS [25.0 ppm] | 0 / infinity ( NA / NA ) | 25.1971 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 19:12 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| C | TOC | 25.0 ppm | 1 | 25.1971 | 251.9711 | 180.50 | 183.78 | 3.28 | 50.31 | 10:32 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos C |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 25 ppmC |

**Sample Type**: Sample — From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 59 | TOC | K1907311-003.02 doc | 0.8284 ppm | 0.0713 ppm | 8.6000% | 2019/08/28 19:27 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.8787 | 8.7874 | 14.84 | 18.12 | 3.28 | 50.22 | 10:25 |
| 2 | TOC | 0.7780 | 7.7797 | 14.15 | 17.51 | 3.36 | 50.18 | 10:25 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 60 | TOC | K1907413-001.02 doc | 3.3988 ppm | 0.0102 ppm | 0.3000% | 2019/08/28 19:55 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 3.3916 | 33.9158 | 31.90 | 35.11 | 3.21 | 50.14 | 10:27 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | TOC | 3.4060 | 34.0601 | 31.99 | 35.20 | 3.21 | 50.11 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 61 | TOC | K1907413-002.02 doc | 6.1644 ppm | 0.0025 ppm | 0.0400% | 2019/08/28 20:23 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 6.1627 | 61.6267 | 50.70 | 53.94 | 3.24 | 50.10 | 10:26 |
| 2 | TOC | 6.1662 | 61.6620 | 50.73 | 54.00 | 3.27 | 50.14 | 10:27 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 62 | TOC | FB 8/20/19 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 20:51 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 7.66 | 10.80 | 3.14 | 50.14 | 10:33 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 63 | TOC | FB 8/21/19 | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 21:06 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.71 | 10.04 | 3.33 | 50.15 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 64 | TOC | K1907456-001.05 doc 2x | 9.8919 ppm | 0.0301 ppm | 0.3000% | 2019/08/28 21:20 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 9.9131 | 99.1314 | 76.16 | 79.59 | 3.42 | 50.20 | 10:25 |
| 2 | TOC | 9.8706 | 98.7057 | 75.87 | 79.36 | 3.48 | 50.27 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 65 | TOC | K1907456-002.05 doc | 7.0369 ppm | 0.1112 ppm | 1.5800% | 2019/08/28 21:48 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 7.1155 | 71.1553 | 57.17 | 60.57 | 3.40 | 50.35 | 10:29 |
| 2 | TOC | 6.9583 | 69.5834 | 56.11 | 59.38 | 3.27 | 50.51 | 10:27 |

**Dilution**: 1:10

**Blank Contribution**: (TC) 8.8732 (IC) (v1288)

**Method**: CAS_salt_010711 (v4)

**Calibration**: CAS_salt_010711 (v30)

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 66 | TOC | K1907440-001.01 ms doc | 25.6827 ppm | 0.0000 ppm | 0.0000% | 2019/08/28 22:16 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 25.6827 | 256.8273 | 183.21 | 186.45 | 3.25 | 50.62 | 10:32 |

**Dilution**: 1:10

**Blank Contribution**: (TC) 8.8732 (IC) (v1288)

**Method**: CAS_salt_010711 (v4)

**Calibration**: CAS_salt_010711 (v30)

**Sample Type**: Check Standard --> CCV 25 ppm

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.6083 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 22:31 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.6083 | 246.0827 | 176.50 | 179.76 | 3.26 | 50.62 | 10:30 |

**Completion State**: Success - Criteria met.

**Success Action**: Do Nothing

**Method**: CAS_salt_010711 (v4)

**Calibration**: CAS_salt_010711 (v30)

**STD Conc - Pos B**: 50 ppmC

**Sample Type**: Check Standard --> CCB

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/28 22:46 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 7.17 | 10.32 | 3.15 | 50.54 | 10:32 |

**Completion State**: Success - Criteria met.

**Success Action**: Do Nothing

**Method**: CAS_salt_010711 (v4)

**Calibration**: CAS_salt_010711 (v30)

**STD Conc - Pos D**: 0 ppmC

**Sample Type**: Sample

From Schedule Version 6

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 67 | TOC | K1907440-001.01 doc | 0.1111 ppm | 0.0074 ppm | 6.6600% | 2019/08/28 23:00 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.1059 | 1.0590 | 9.59 | 12.83 | 3.24 | 50.52 | 10:26 |
| 2 | TOC | 0.1164 | 1.1636 | 9.66 | 12.83 | 3.16 | 50.51 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 68 | TOC | K1907440-002.01 doc | 0.2349 ppm | 0.0322 ppm | 13.7000% | 2019/08/28 23:28 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2121 | 2.1212 | 10.31 | 13.64 | 3.33 | 50.48 | 10:29 |
| 2 | TOC | 0.2576 | 2.5764 | 10.62 | 13.84 | 3.22 | 50.48 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 69 | TOC | K1907440-003.01 doc | 0.4526 ppm | 0.0078 ppm | 1.7300% | 2019/08/28 23:57 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4471 | 4.4709 | 11.91 | 15.15 | 3.24 | 50.45 | 10:26 |
| 2 | TOC | 0.4581 | 4.5814 | 11.98 | 15.24 | 3.25 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 70 | TOC | K1907440-004.01 doc | 0.3820 ppm | 0.0132 ppm | 3.4600% | 2019/08/29 00:25 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.3914 | 3.9140 | 11.53 | 14.83 | 3.30 | 50.45 | 10:27 |
| 2 | TOC | 0.3727 | 3.7269 | 11.40 | 14.66 | 3.26 | 50.44 | 10:28 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 71 | TOC | K1907440-005.01 doc | 0.2833 ppm | 0.0045 ppm | 1.5800% | 2019/08/29 00:53 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.2802 | 2.8018 | 10.78 | 14.10 | 3.33 | 50.44 | 10:25 |
| 2 | TOC | 0.2865 | 2.8651 | 10.82 | 14.13 | 3.31 | 50.45 | 10:26 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 72 | TOC | K1907440-006.01 doc | 0.4514 ppm | 0.0106 ppm | 2.3500% | 2019/08/29 01:21 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.4438 | 4.4385 | 11.89 | 15.19 | 3.31 | 50.44 | 10:31 |
| 2 | TOC | 0.4589 | 4.5888 | 11.99 | 15.21 | 3.22 | 50.44 | 10:22 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 73 | TOC | K1907440-007.01 doc | 0.0008 ppm | 0.0011 ppm | 141.4200% | 2019/08/29 01:49 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0016 | 0.0159 | 8.88 | 12.29 | 3.40 | 50.46 | 10:25 |
| 2 | TOC | 0.0000 | 0.0000 | 8.81 | 12.06 | 3.25 | 50.46 | 10:30 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

| | Pos | Analysis Type | Sample ID | Result (ppmC) | Std. Dev. (ppmC) | RSD | Start Time |
|---|---|---|---|---|---|---|---|
| ◈ | 74 | TOC | RB | 0.0000 ppm | 0.0000 ppm | 0.0000% | 2019/08/29 02:17 |

| Rep # | Base Analysis Type | ppm | µg | Adjusted (Abs) | NDIR (Abs) | Baseline (Abs) | Pressure (psig) | Run Time |
|---|---|---|---|---|---|---|---|---|
| 1 | TOC | 0.0000 | 0.0000 | 6.09 | 9.34 | 3.25 | 50.46 | 10:30 |
| 2 | TOC | 0.0000 | 0.0000 | 6.27 | 9.57 | 3.30 | 50.46 | 10:29 |

| Dilution | Blank Contribution | Method | Calibration |
|---|---|---|---|
| 1:10 | (TC) 8.8732 (IC) (v1288) | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) |

**Sample Type**: Check Standard --> CCV 25 ppm

From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | B | TOC | 25.0000 | 1:2 | [TOC] CCV 25 ppm [25 ppm] | 0 / infinity ( NA / NA ) | 24.1561 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/29 02:45 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| B | TOC | 25 ppm | 1 | 24.1561 | 241.5615 | 173.43 | 176.77 | 3.34 | 50.46 | 10:28 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos B |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 50 ppmC |

**Sample Type**: Check Standard --> CCB From Schedule Version 6

| | Pos | BAT | Concentration (ppm) | Dil | Sample ID | Min / Max (% dev) | Result | Std. Dev. | RSD | Start Time |
|---|---|---|---|---|---|---|---|---|---|---|
| ◈ | D | TOC | 0.0000 | 1:1 | [TOC] CCB [0 ppm] | 0 / infinity ( NA / NA ) | 0.0000 ppm (PASS) | 0.0000 ppm | 0% | 2019/08/29 03:00 |

| Pos | Base Analysis Type | ID | Rep # | ppm | µg | Adjusted | NDIR | Baseline | Pressure | Run Time |
|---|---|---|---|---|---|---|---|---|---|---|
| D | TOC | 0 ppm | 1 | 0.0000 | 0.0000 | 6.38 | 9.72 | 3.34 | 50.48 | 10:29 |

| Completion State | Success Action | Method | Calibration | STD Conc - Pos D |
|---|---|---|---|---|
| Success - Criteria met. | Do Nothing | CAS_salt_010711 (v4) | CAS_salt_010711 (v30) | 0 ppmC |

## Meta Data Used in this Report

### Blanks

| Version | Reagent (Abs) | Acid (Abs) | DI IC (Abs) | DI TC (Abs) | DI TOC (Abs) | Save Time | Operator |
|---|---|---|---|---|---|---|---|
| v1287 | 2.0470 | 1.9200 | 0.0000 | 0.0000 | 0.0000 | 2019/08/22 18:03 | Fusion1 (Fusion1) |
| v1288 | 1.7847 | 1.4960 | 0.0000 | 0.0000 | 0.0000 | 2019/08/27 13:39 | Fusion1 (Fusion1) |

### Calibrations

**Name: CAS_salt_010711 (TOC)**

Version: v30

Ver Creation: 2019/03/05 17:42

Comment:

Operator: Fusion1 (Fusion1)

Basic Analysis Type: TOC

Calibration curve formula: TOC: y = 6.788x + 9.463

$r^2$ value: TOC: $r^2$ = 0.99963

**Basic Analysis Type**: TOC

| Sample ID | Y Raw Value | X Expected | Message | End Time |
|---|---|---|---|---|
| DI Water | 7.8970 | 0.0000 | | 2019/03/05 16:15 |
| 0.500 ppm | 11.5280 | 0.5000 | | 2019/03/05 16:29 |
| 1.0 ppm | 14.9760 | 1.0000 | | 2019/03/05 16:44 |

| | | | | |
|---|---|---|---|---|
| 5.0 ppm | 43.6500 | 5.0000 | | 2019/03/05 16:58 |
| 10 ppm | 79.6020 | 10.0000 | | 2019/03/05 17:12 |
| 25 ppm | 183.3580 | 25.0000 | | 2019/03/05 17:26 |
| 50 ppm | 346.3230 | 50.0000 | | 2019/03/05 17:40 |

**Methods**

**Name: CAS_salt_010711 (TOC)**

Version: v4 Operator: Fusion1 (Fusion1)

Ver Creation: 2019/02/21 17:57

Comment:

| Parameter | Value |
|---|---|
| SampleVolume | 10.0 mL |
| Dilution | 1:10 |
| AcidVolume | 0.5 ml |
| ReagentVolume | 2.0 ml |
| UVReactorPrerinse | Off |
| UVReactorPrerinseVolume | 5.0 |
| NumberOfUVReactorPrerinses | 1 |
| ICSpargeTime | 1.00 mins |
| DetectorSweepFlow | 500 ml/min |
| PreSpargeTime | 2.00 mins |
| SystemFlow | 500 ml/min |

| Advanced Parameter | Value |
|---|---|
| NeedleRinseVolume | 5.0 ml |
| VialPrimeVolume | 2.0 ml |
| ICSamplePrimeVolume | 2.0 ml |
| ICSpargeRinseVolume | 12.0 ml |
| BaselineStabilizeTime | 0.70 min |
| DetectorPressureFlow | 150 ml/min |
| SyringeSpeedWaste | 10 |
| SyringeSpeedAcid | 7 |
| SyringeSpeedReagent | 7 |
| SyringeSpeedDIWater | 7 |
| NDIRPressurization | 60 psig |
| SyringeSpeedSampleDispense | 5 |
| SyringeSpeedSampleAspirate | 4 |
| SyringeSpeedUVDispense | 5 |
| SyringeSpeedUVAspirate | 5 |
| SyringeSpeedICDispense | 5 |
| SyringeSpeedICAspirate | 5 |
| NDIRPressureStabilize | 1.75 min |
| SampleMixing | Off |
| SampleMixingCycles | 1 |
| SampleMixingVolume | 10.0 |
| LowLevelFilterNDIR | Off |

## Acceptance / Approval

**Electronic Signatures**

| Report Version | User Name | Acceptance | Reason | Date |
|---|---|---|---|---|

# Report History

**Report History**

| Report Version | User Name | System Reason | User Reason | Date |
|---|---|---|---|---|
| 1 | Fusion1 (Fusion1) | Schedule completed | Schedule completed | 2019/08/29 03:17 |

StarLIMS Run: 648995, 648996, 648997, 648998

Analysis: DOC/TOC

Method: SM 5310 C, 9060A, 415.1, 9060

CCV: 11-GEN-05-79K 50 ppm LCS: 11-GEN-05-79J 25.0 ppm

ICAL Date: 3/6/19

ICAL ID: 11-GEN-05-76H

ICS ID: 11-GEN-05-78M

ICS TV: 25.0 ppm ICS % R < 1

Spike ID: 11-GEN-05-77J 0.05 ml of 5000 ppm stock ---> 10.0 ml = 25.0 ppm x dilution factor

Sodium Persulfate: 11-GEN-05-80D

21 % H3PO4: 11-GEN-05-80C

Equipment ID: K-TOC-03

PIPETTE ID: 124276B, 129001F, N11314F, Marge

FILTER ID: 100559

| | |
|---|---|
| Analyzed By: BD | Date Analyzed: 8/29/19 |
| Reviewed By: | Date Reviewed: 8/29/19 |

# LABORATORY REPORT

August 28, 2019

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

**RE: HS19080684**

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on August 15, 2019. For your reference, these analyses have been assigned our service request number P1904835.

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 Hayden Akers at 2:46 pm, Aug 28, 2019*

Hayden Akers
Project Manager

Client: ALS Laboratory Group
Project: HS19080684

Service Request No: P1904835

## CASE NARRATIVE

The samples were received intact under chain of custody on August 15, 2019 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.

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

| Sample Identification(s) | Analyte(s) |
|---|---|
| P1904835-002, 002MSD, 003 | Carbon dioxide |

The percent recovery was outside of the DOD control limits for the Matrix Spike Duplicate. The relative percent difference was outside of the laboratory's control limits for the Matrix Spike and its duplicate. However all quality control parameters were met for the Laboratory control sample and its duplicate.

Client: ALS Laboratory Group Service Request No: P1904835
Project: HS19080684

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## CASE NARRATIVE

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.

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*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 | 2018027 |
| Minnesota DOH (NELAP) | http://www.health.state.mn.us/accreditation | 1521096 |
| 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 | 4068-006 |
| 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 | T104704413-19-10 |
| Utah DOH (NELAP) | http://health.utah.gov/lab/lab_cert_env | CA016272019-10 |
| 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: HS19080684

Service Request: P1904835

Date Received: 8/15/2019
Time Received: 09:10

| Client Sample ID | Lab Code | Matrix | Date Collected | Time Collected | RSK 175 - Gases | RSK 175 - CO2 |
|---|---|---|---|---|---|---|
| 46WW05-190813 | P1904835-001 | Water | 8/13/2019 | 08:10 | X | X |
| 46WW16-190813 | P1904835-002 | Water | 8/13/2019 | 09:10 | X | X |
| LHSMW21-190813 | P1904835-003 | Water | 8/13/2019 | 10:15 | X | X |

P1904835

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

**SAMPLING STATE:** **Texas** **COC ID:** **11975**

**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:** | HS19080684 |
| **TSR:** | Sonia West |

| | LAB SAMPLE ID | CLIENT SAMPLE ID | MATRIX | COLLECT DATE |
|---|---|---|---|---|
| | ANALYSIS REQUESTED | | | DUE DATE |
| 1. | **HS19080684-01** | **46WW05-190813** | **Groundwater** | **13 Aug 2019 08:10** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 28 Aug 2019 |
| 2. | **HS19080684-02** | **46WW16-190813** | **Groundwater** | **13 Aug 2019 09:10** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 28 Aug 2019 |
| 3. | **HS19080684-03** | **LHSMW21-190813** | **Groundwater** | **13 Aug 2019 10:15** |
| | MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | | | 28 Aug 2019 |

**Comments:** Please analyze for the analysis listed above.
Send report to the emails shown above.
**MS/MSD For sample # 02 **

**QC Level:** DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 8/14/19 1800

Received By: _____ Date/Time: 8/15/19 0910

Cooler ID(s): _____ Temperature(s): _____ 1°C cor

P1904835

10450 Stancliff Rd, Ste 210
Houston, TX 77099
**T:** +1 281 530 5656
**F:** +1 281 530 5887
**www.alsglobal.com**

# Purchase Order

**PO: HS19080684**

**VENDOR:**

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:** | 11975 |
| **TSR:** | Sonia West |

| Item | Catalog No | Unit Price | Quantity | Ext Price |
|---|---|---|---|---|
| 1. MEE + CO2. DOD IV. Equis EDD. EQuIS 5.0 - Longhorn | NA | $41.25 | 3 | $123.75 |
| | | | **Order Total:** | $123.75 |

RIGHT SOLUTIONS | RIGHT PARTNER

# ALS Environmental
## Sample Acceptance Check Form

Client: ALS Laboratory Group  Work order: P1904835
Project: HS19080684
Sample(s) received on: 8/15/19  Date opened: 8/15/19  by: DENISE.POSADA

***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 | | | |
| 8 | Were **custody seals** on outside of cooler/Box/Container? | ☒ | ☐ | ☐ |
| | Location of seal(s)? _____ 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 |
|---|---|---|---|---|---|---|
| P1904835-001.01 | 40ml VOA HCL | | 1 | | A | wh 8/22/19 |
| P1904835-001.02 | 40ml VOA HCL | | | | A | |
| P1904835-001.03 | 40ml VOA HCL | | | | A | |
| P1904835-001.04 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904835-001.05 | 40mL VOA NP | | | | A | |
| P1904835-001.06 | 40mL VOA NP | | | | A | |
| P1904835-002.01 | 40ml VOA HCL | | 1 | | A | wh 8/22/19 |
| P1904835-002.02 | 40ml VOA HCL | | 1 | | A | wh 8/22/19 |
| P1904835-002.03 | 40ml VOA HCL | | 1 | | A | wh 8/22/19 |
| P1904835-002.04 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904835-002.05 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904835-002.06 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904835-002.07 | 40ml VOA HCL | | | | A | |
| P1904835-002.08 | 40ml VOA HCL | | | | A | |
| P1904835-002.09 | 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: P1904835
Project: HS19080684
Sample(s) received on: 8/15/19  Date opened: 8/15/19  by: DENISE.POSADA

| Lab Sample ID | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|---|---|---|---|---|---|---|
| P1904835-002.10 | 40ml VOA HCL | | | | A | |
| P1904835-002.11 | 40ml VOA HCL | | | | A | |
| P1904835-002.12 | 40ml VOA HCL | | | | A | |
| P1904835-002.13 | 40mL VOA NP | | | | A | |
| P1904835-002.14 | 40mL VOA NP | | | | A | |
| P1904835-002.15 | 40mL VOA NP | | | | A | |
| P1904835-002.16 | 40mL VOA NP | | | | A | |
| P1904835-002.17 | 40mL VOA NP | | | | A | |
| P1904835-002.18 | 40mL VOA NP | | | | A | |
| P1904835-003.01 | 40ml VOA HCL | | 1 | | A | wh 8/22/19 |
| P1904835-003.02 | 40ml VOA HCL | | | | A | |
| P1904835-003.03 | 40ml VOA HCL | | | | A | |
| P1904835-003.04 | 40mL VOA NP | | 7 | | A | wh 8/21/19 |
| P1904835-003.05 | 40mL VOA NP | | | | A | |
| P1904835-003.06 | 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**

RESULTS OF ANALYSIS



**Client:** **ALS Laboratory Group**
**Client Project ID:** **HS19080684** ALS Project ID: P1904835

## Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 8/13/19
Date Received: 8/15/19
Date Analyzed: 8/21/19

| Client Sample ID | ALS Sample ID | Injection Volume ml(s) | **Result µg/L** | LOQ µg/L | LOD µg/L | MDL µg/L | Data Qualifier |
|---|---|---|---|---|---|---|---|
| 46WW05-190813 | P1904835-001 | 0.10 | **340,000** | 1,000 | 860 | 370 | **B** |
| 46WW16-190813 | P1904835-002 | 0.10 | **99,000** | 1,000 | 860 | 370 | **B** |
| LHSMW21-190813 | P1904835-003 | 0.10 | **64,000** | 1,000 | 860 | 370 | **B** |
| Method Control Sample | P190821-MB | 0.10 | **580** | 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 control sample.

# ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY



**Client:** **ALS Laboratory Group**
**Client Sample ID:** **46WW16-190813**
**Client Project ID:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P1904835-002MS
P1904835-002DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/13/19
Date Received: 8/15/19
Date Analyzed: 8/21/19
Volume(s) Analyzed: 0.10 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 | 22,900 | 98,700 | 125,000 | 117,000 | **115** | **80** | 80-122 | 36 | 30 | **R, B** |

R = Duplicate precision not met.
B = Analyte detected in both the sample and associated method control sample.

# ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY



**Client:** **ALS Laboratory Group**
**Client Sample ID:** **Duplicate Lab Control Sample**
**Client Project ID:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P190821-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 8/21/19
Volume(s) Analyzed: NA ml(s)

| 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 | 24,500 | 23,400 | **107** | **102** | 80-122 | 5 | 12 | |

[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:** **46WW05-190813**
**Client Project ID:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P1904835-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/13/19
Date Received: 8/15/19
Date Analyzed: 8/22/19
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 | **12** | 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:** **46WW16-190813**
**Client Project ID:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P1904835-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/13/19
Date Received: 8/15/19
Date Analyzed: 8/22/19
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 | **1.1** | 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:** **LHSMW21-190813**
**Client Project ID:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P1904835-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/13/19
Date Received: 8/15/19
Date Analyzed: 8/22/19
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:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P190822-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: 8/22/19
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

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY



**Client:** **ALS Laboratory Group**
**Client Sample ID:** **46WW16-190813**
**Client Project ID:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P1904835-002MS
P1904835-002DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 8/13/19
Date Received: 8/15/19
Date Analyzed: 8/22/19
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 | 169 | 1.06 | 143 | 141 | **84** | **83** | 73-125 | 1 | 30 | |
| 74-85-1 | Ethene | 294 | ND | 295 | 288 | **100** | **98** | 72-133 | 2 | 30 | |
| 74-84-0 | Ethane | 317 | ND | 288 | 283 | **91** | **89** | 74-131 | 2 | 30 | |

# ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY



**Client:** **ALS Laboratory Group**
**Client Sample ID:** **Duplicate Lab Control Sample**
**Client Project ID:** **HS19080684**

ALS Project ID: P1904835
ALS Sample ID: P190822-LCS
P190822-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: 8/22/19
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 | 2.52 | 2.53 | 2.47 | **100** | **98** | 73-125 | 2 | 26 | |
| 74-85-1 | Ethene | 4.40 | 4.45 | 4.33 | **101** | **98** | 72-133 | 3 | 11 | |
| 74-84-0 | Ethane | 4.72 | 4.67 | 4.56 | **99** | **97** | 74-131 | 2 | 10 | |

[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\2019_08\21\
Data File : 08211911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:40:37
Operator : WH
Sample : P1904835-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:02:55 2019
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 | 1.970f | 311389 | 0.065 | ppm |
| 2) | Carbon monoxide | 1.970f | 311389 | N.D. | ppm |
| 3) | Methane (TCD) | 3.941 | 12363 | 1307.193 | ppm |
| 4) | Carbon dioxide | 6.010 | 3654338 | 15568.315 | 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 |

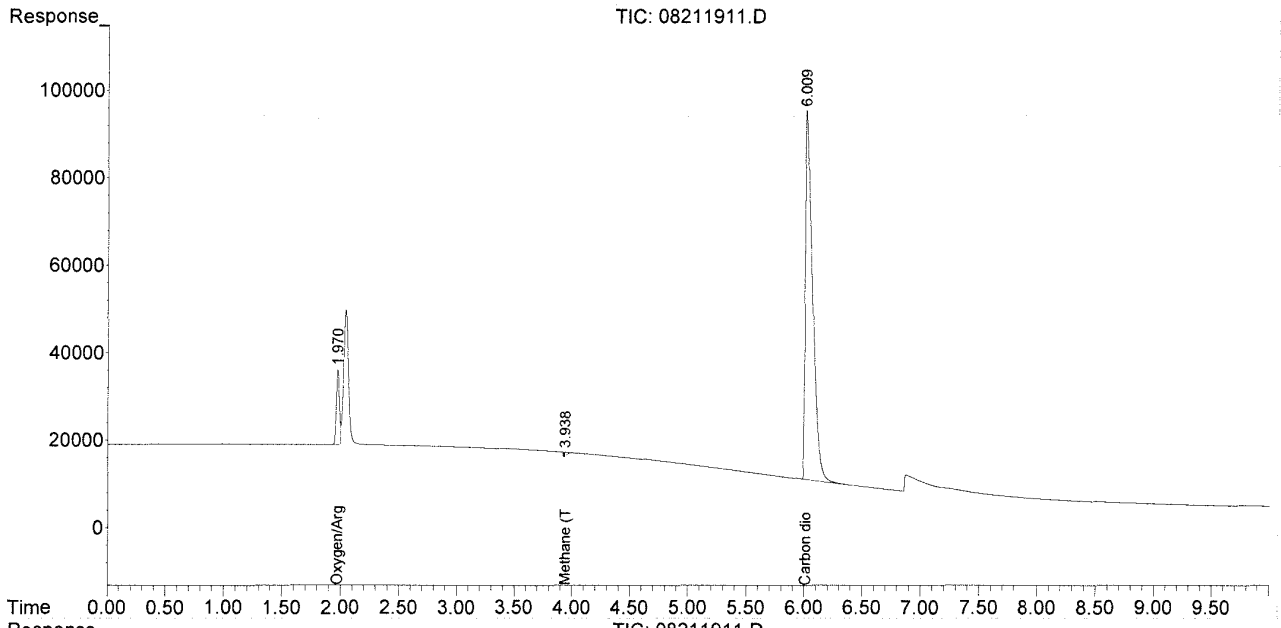
(f)=RT Delta > 1/2 Window (m)=manual int.

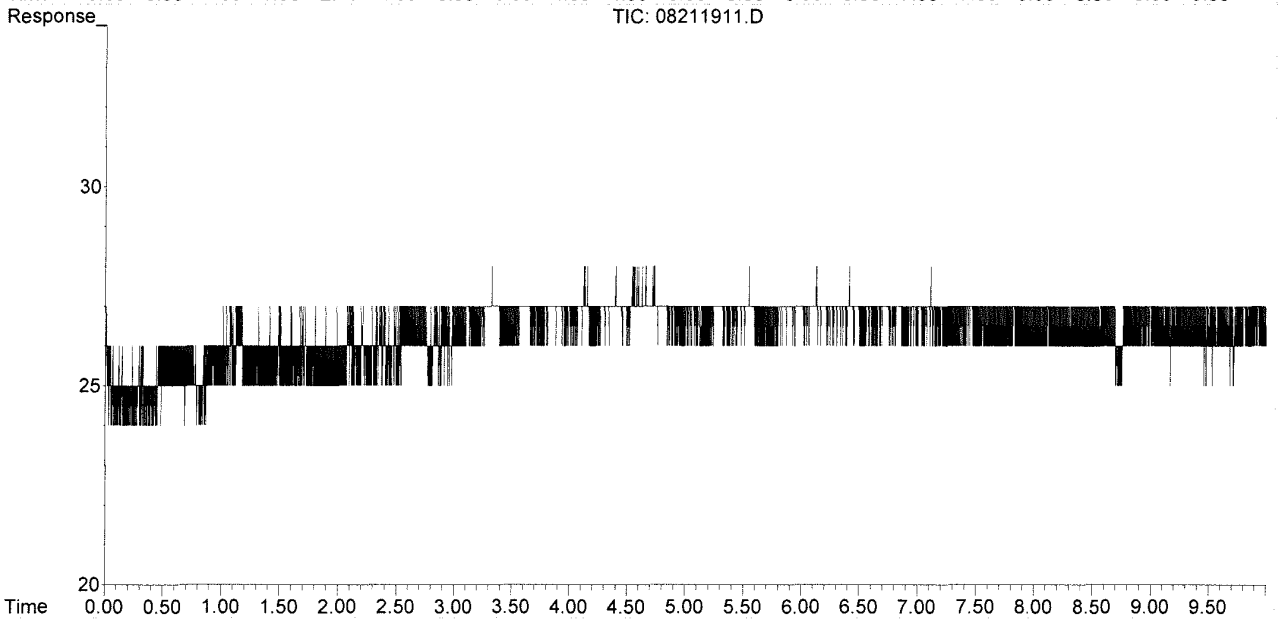
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211911.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:40:37
Operator : WH
Sample : P1904835-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:02:55 2019
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\2019_08\21\
Data File : 08211912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:53:59
Operator : WH
Sample : P1904835-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:13 2019
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 | 1.974f | 209677 | 0.044 | ppm | |
| 2) | Carbon monoxide | 1.974f | 209677 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.051 | 1061575 | 4522.554 | ppm | m |
| 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 | |

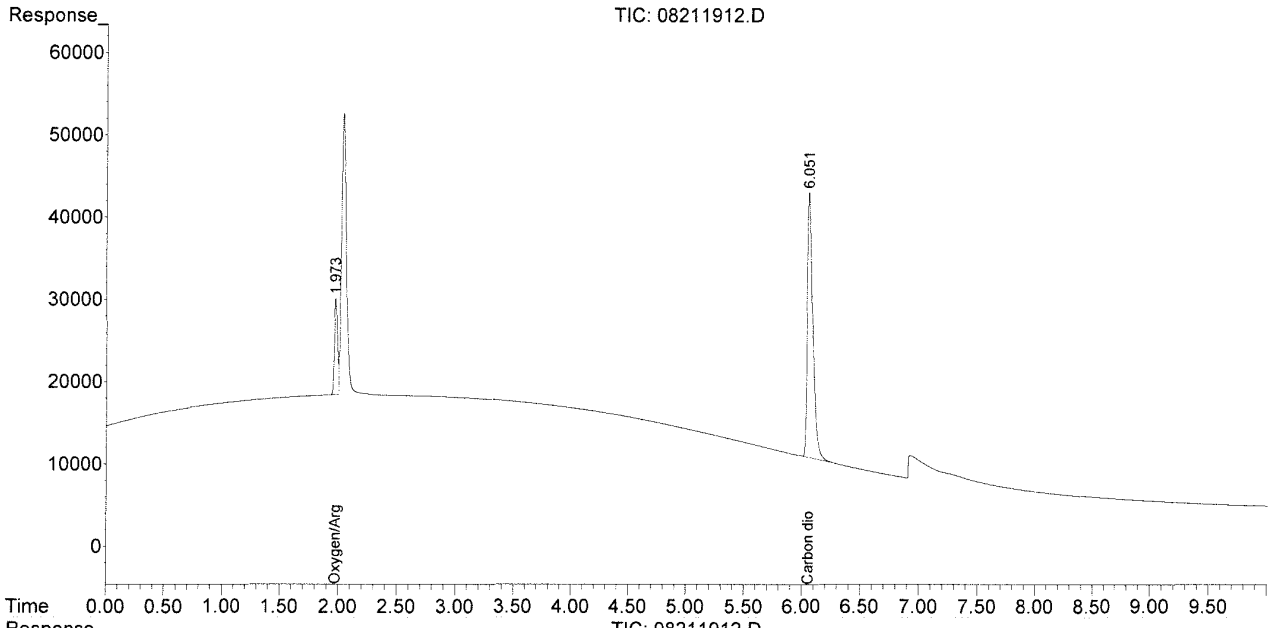
(f)=RT Delta > 1/2 Window (m)=manual int.

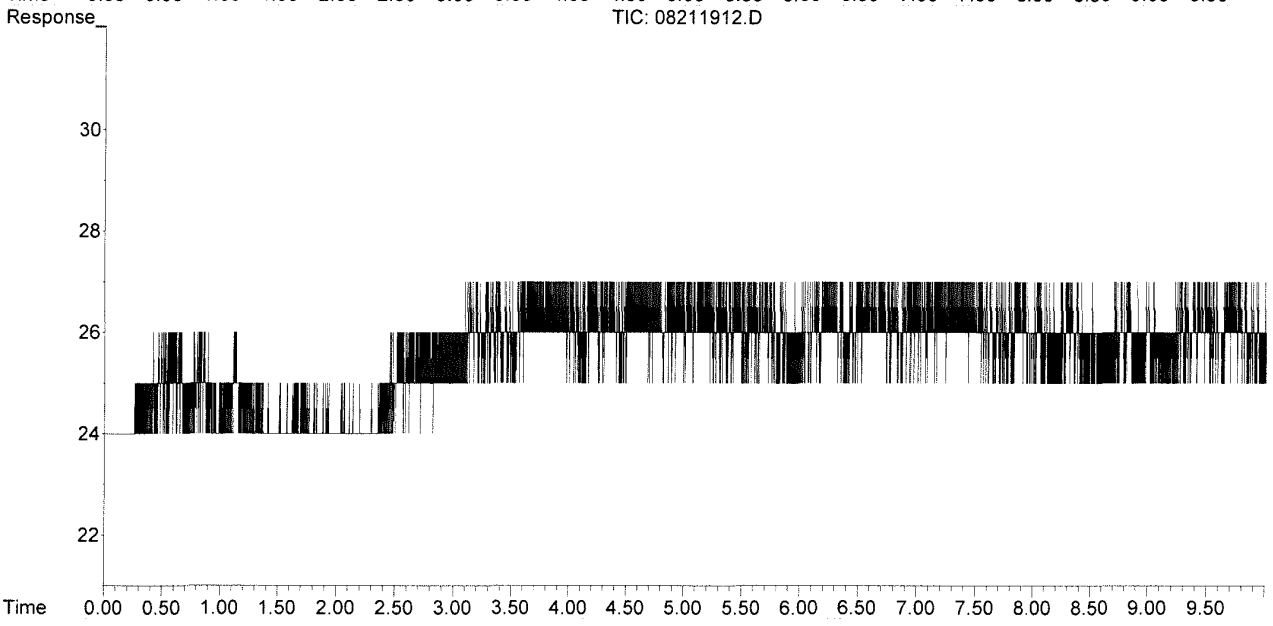
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211912.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:53:59
Operator : WH
Sample : P1904835-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:13 2019
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 :



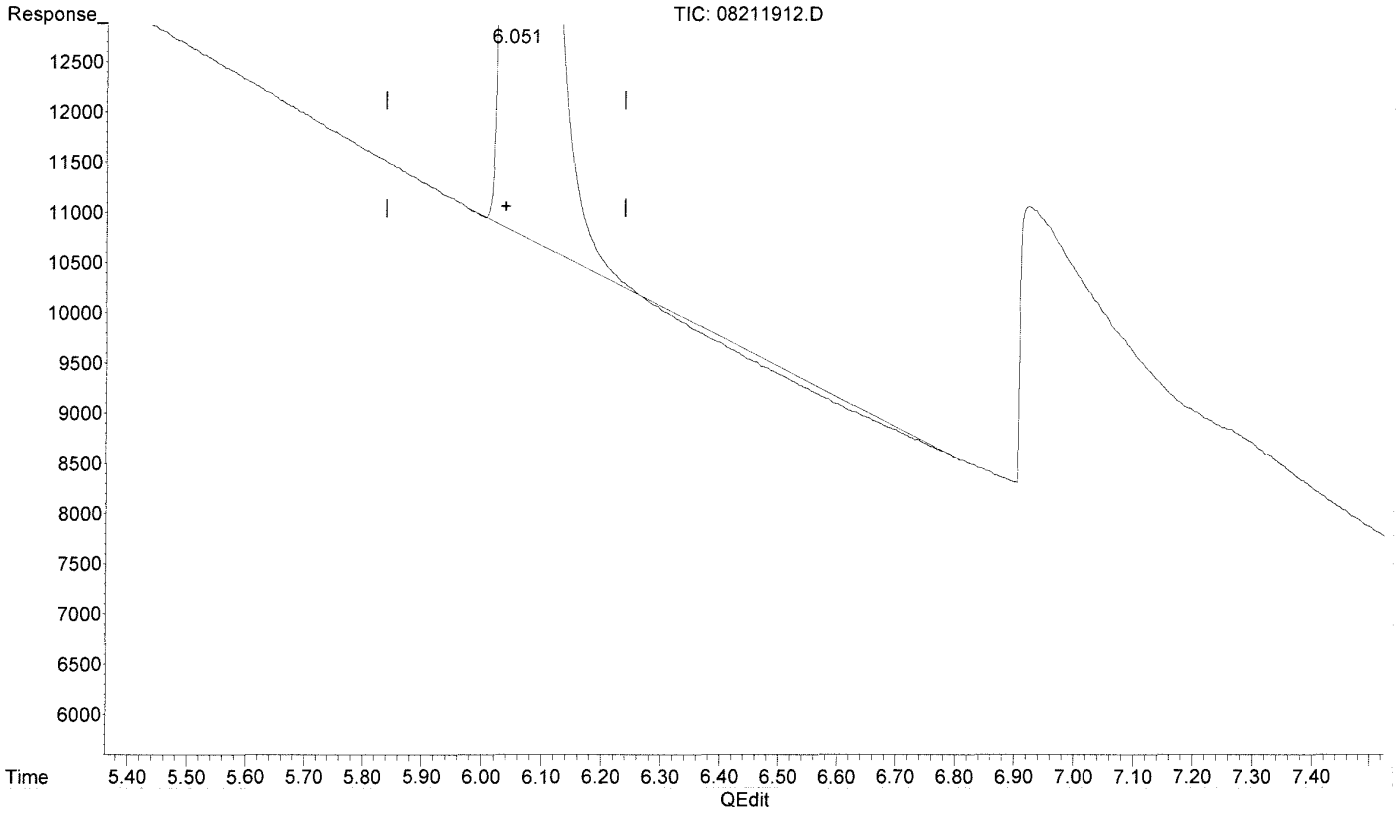



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211912.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:53:59
Operator : WH
Sample : P1904835-002 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:13 2019
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 :




(4) Carbon dioxide

6.052min 4437.337 ppm

response 1041573

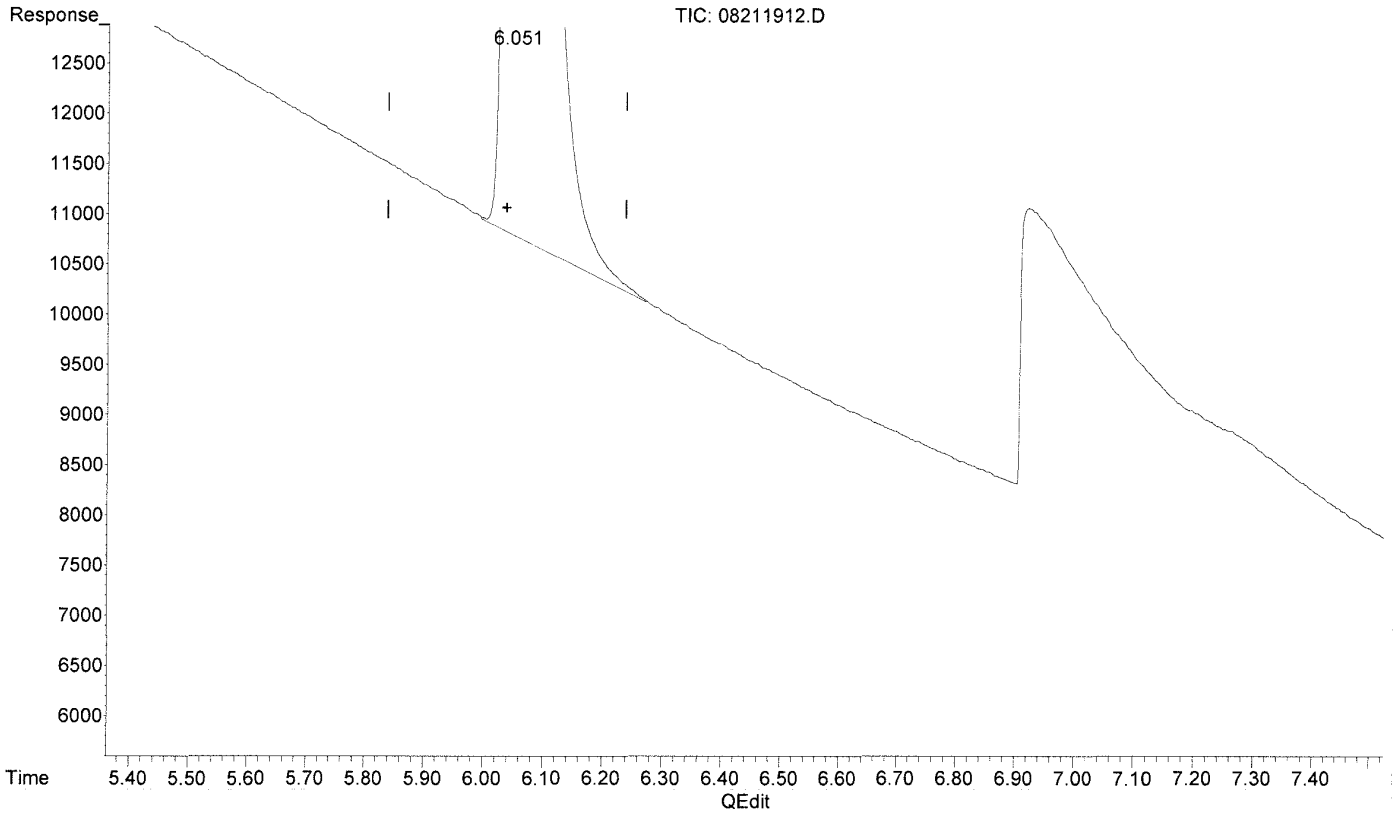
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211912.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 15:53:59
Operator : WH
Sample : P1904835-002 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:13 2019
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 :




(4) Carbon dioxide

6.051min 4522.554 ppm m

response 1061575

MR 8/22/19

(+) = Expected Retention Time

RS082817_CO2.M Wed Aug 21 17:03:32 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:07:07
Operator : WH
Sample : P1904835-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:50 2019
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 | 1.893 | 909813 | 0.191 | ppm | |
| 2) | Carbon monoxide | 1.893 | 909813 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.060 | 684837 | 2917.561 | ppm | m |
| 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 | |

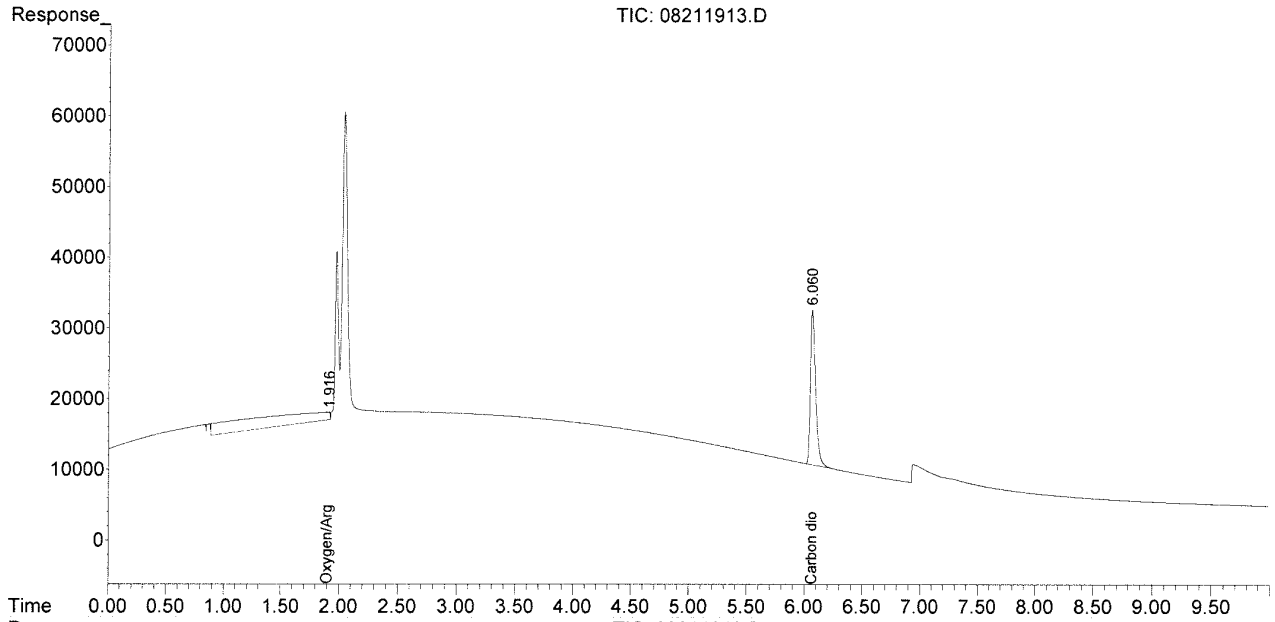
(f)=RT Delta > 1/2 Window (m)=manual int.

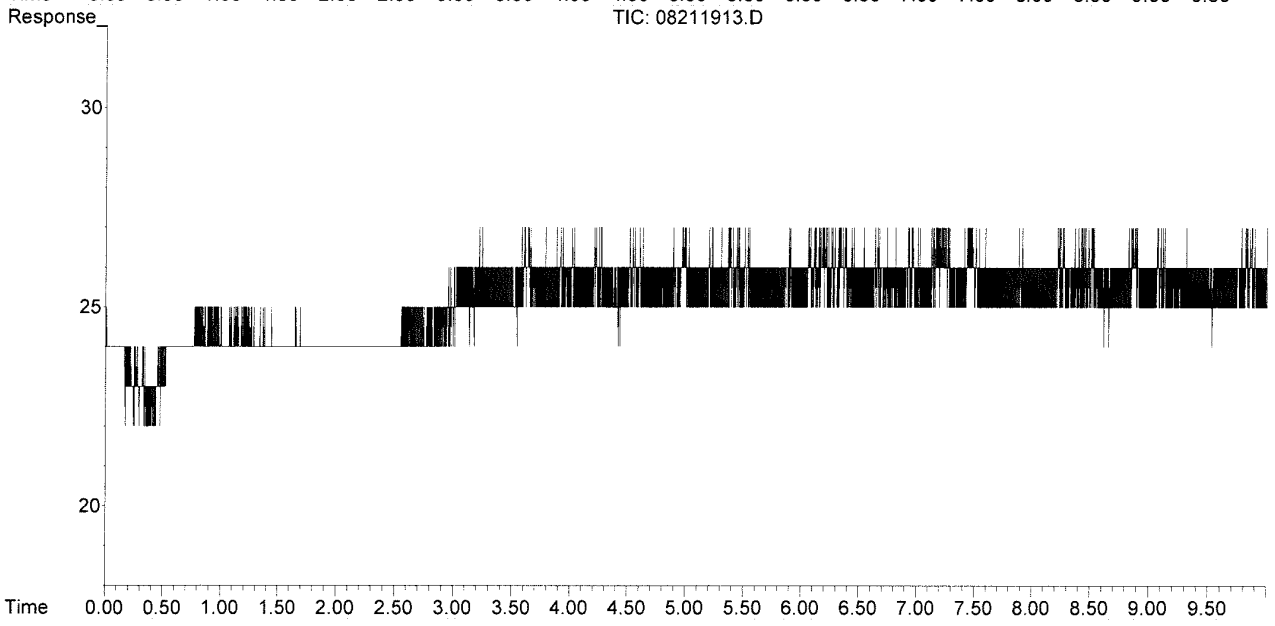
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:07:07
Operator : WH
Sample : P1904835-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:50 2019
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 :



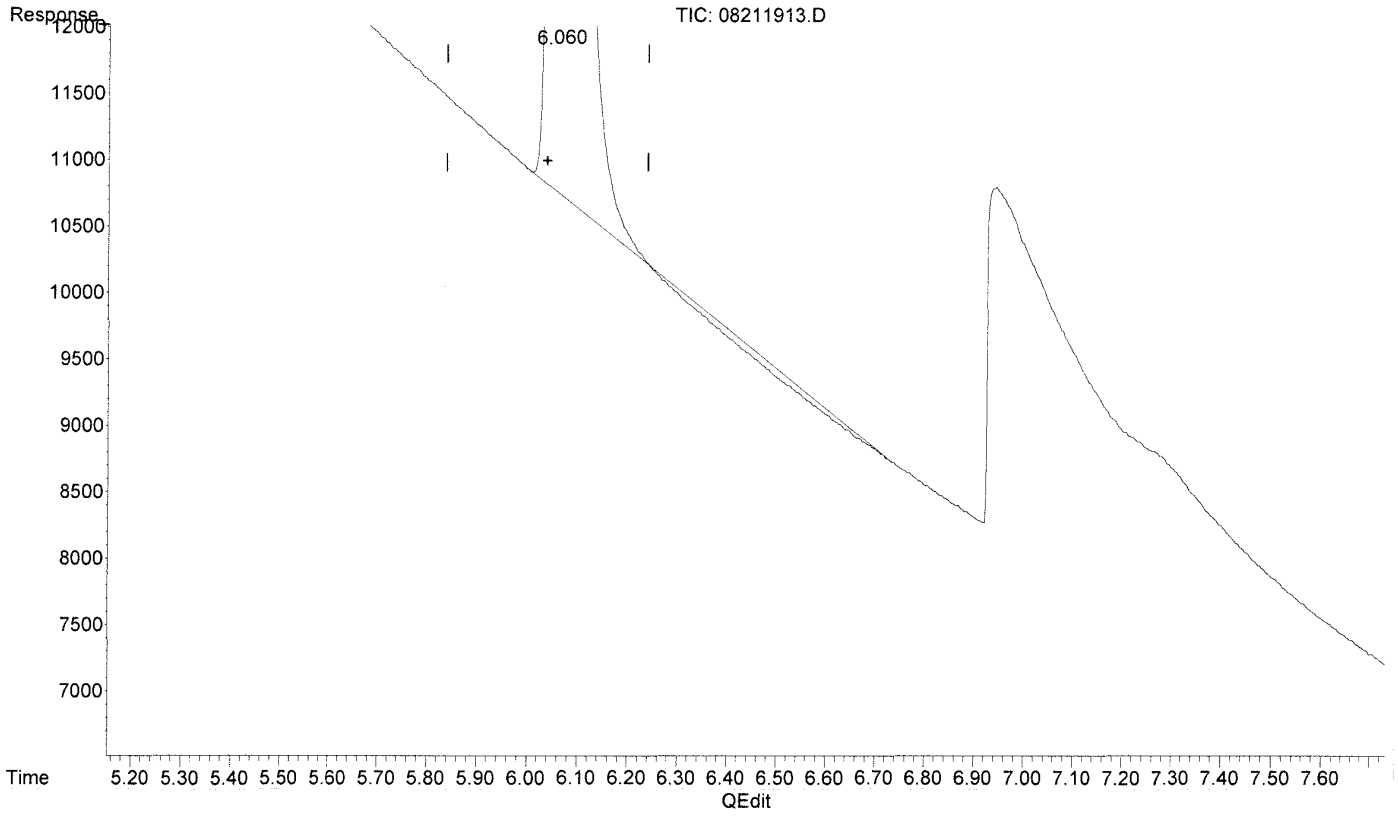



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211913.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:07:07
Operator : WH
Sample : P1904835-003 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:50 2019
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 :




(4) Carbon dioxide

6.061min 2865.343 ppm

response 672580

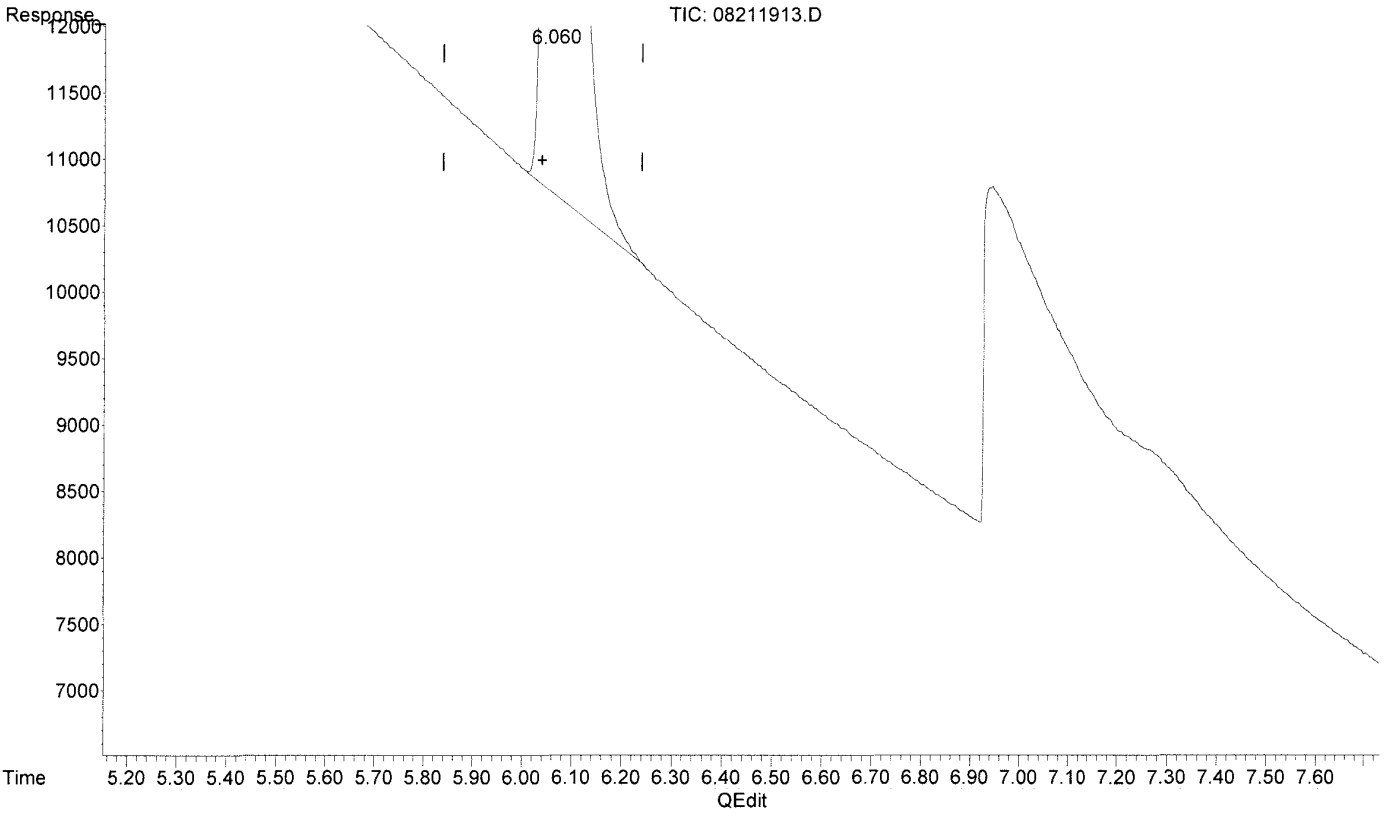
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211913.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:07:07
Operator : WH
Sample : P1904835-003 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 17:03:50 2019
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 :




(4) Carbon dioxide

6.060min 2917.561 ppm m

response 684837

MR 8/22/19

(+) = Expected Retention Time
RS082817_CO2.M Wed Aug 21 17:04:06 2019

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:24:01
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 21 13:41:54 2019
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 | 1.975f | 146912 | 0.031 | ppm | |
| 2) | Carbon monoxide | 1.975f | 146912 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.073 | 6238 | 26.576 | ppm | m |
| 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 | |

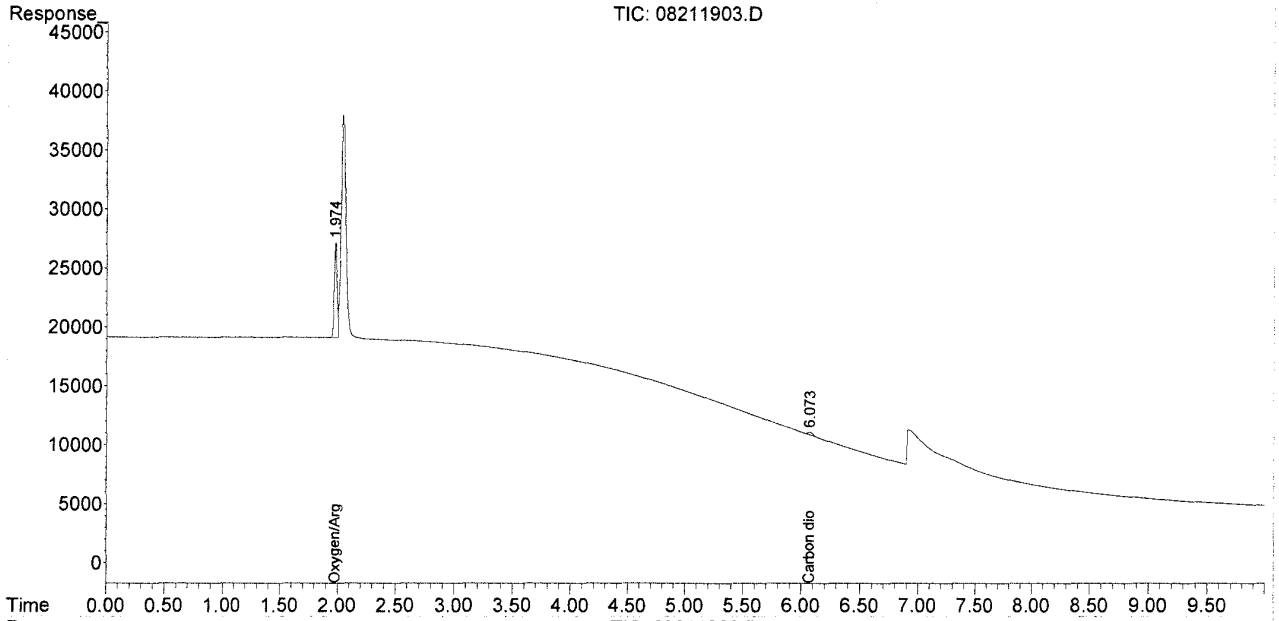
(f)=RT Delta > 1/2 Window (m)=manual int.

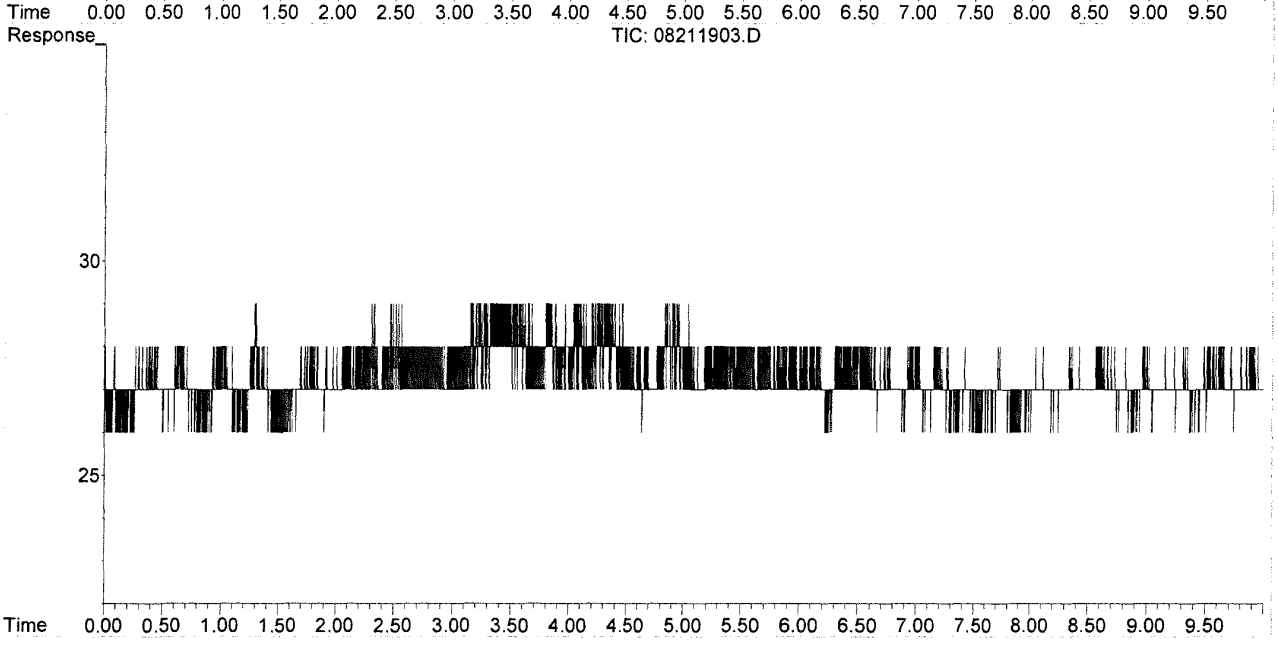
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:24:01
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 21 13:41:54 2019
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 :



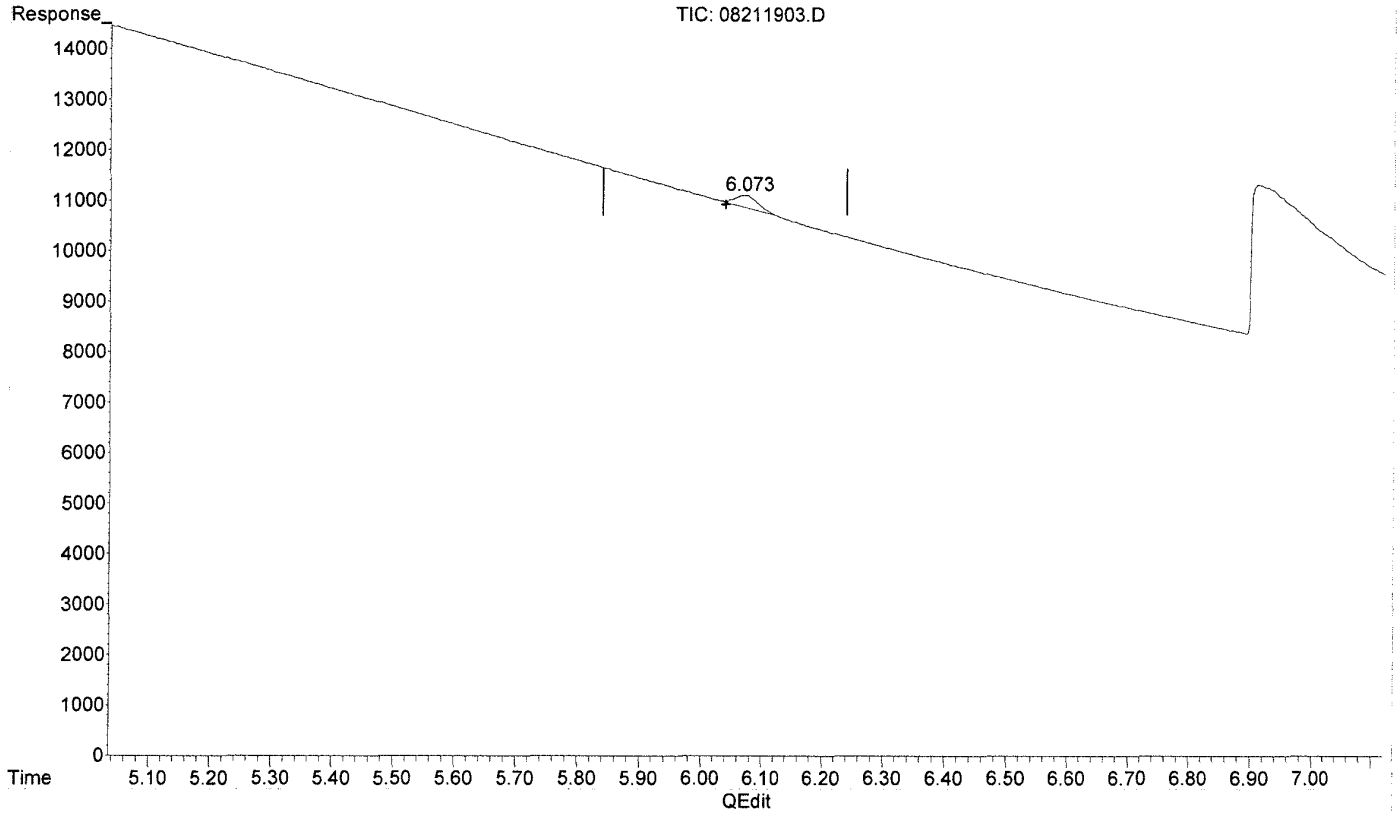



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211903.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:24:01
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 21 13:41:54 2019
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 :




(4) Carbon dioxide

6.073min 26.576 ppm m

response 6238

MK 8/22/19

LM 8/21/19 no peaks BL

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 17:51:58
Operator : WH
Sample : P1904835-002ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 15:44:11 2019
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 | 1094119 | 0.230 | ppm |
| 2) | Carbon monoxide | 1.953f | 1094119 | N.D. | ppm |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm |
| 4) | Carbon dioxide | 6.047 | 1343649 | 5724.251 | 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 |

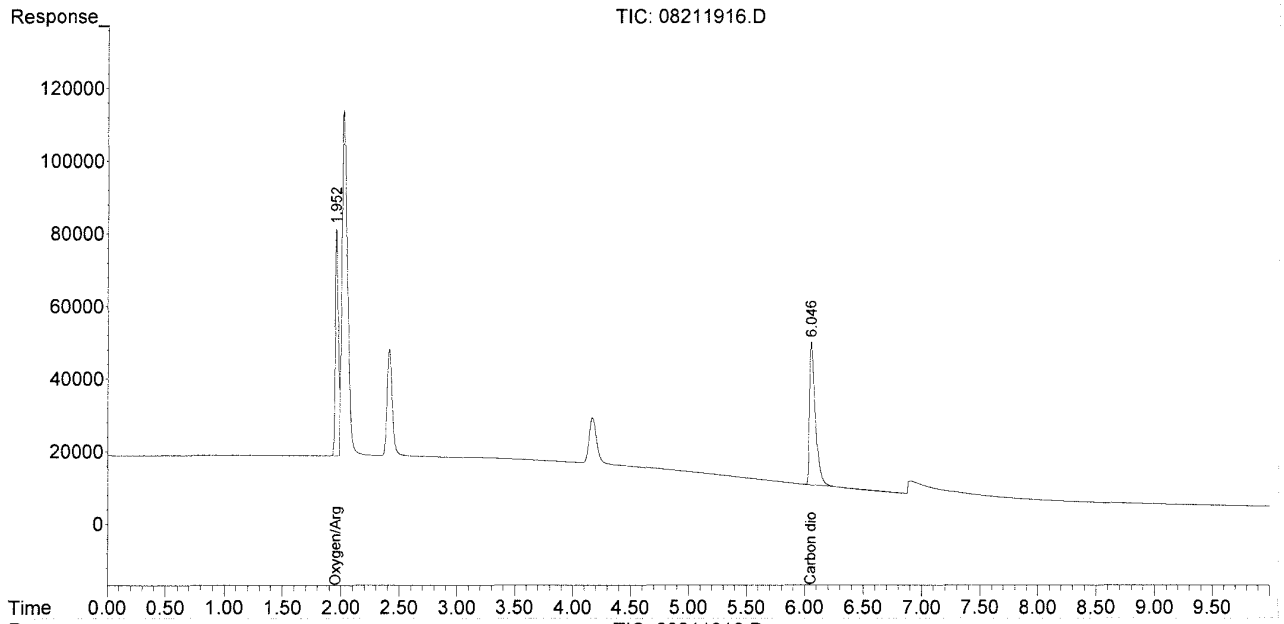
(f)=RT Delta > 1/2 Window (m)=manual int.

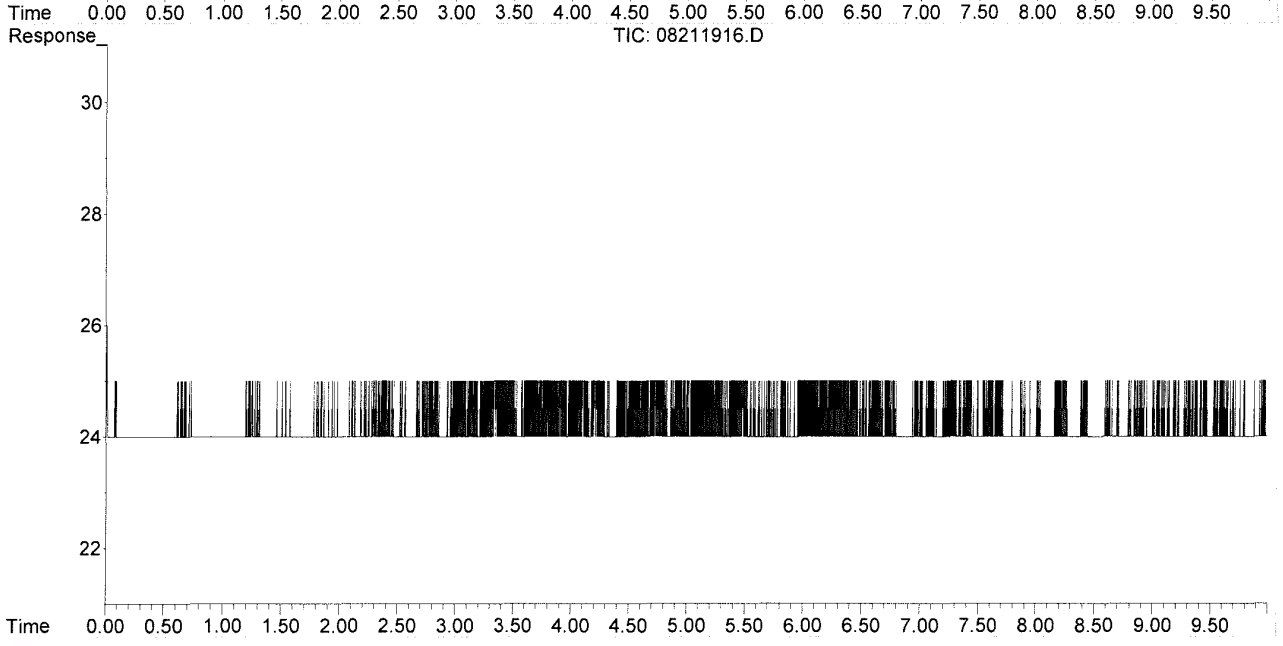
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211916.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 17:51:58
Operator : WH
Sample : P1904835-002ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 15:44:11 2019
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\2019_08\21\
Data File : 08211917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 18:05:02
Operator : WH
Sample : P1904835-002msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 15:44:32 2019
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 | 1.952f | 2250765 | 0.473 | ppm | |
| 2) | Carbon monoxide | 1.952f | 2250765 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.048 | 1255027 | 5346.702 | ppm | m |
| 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 | |

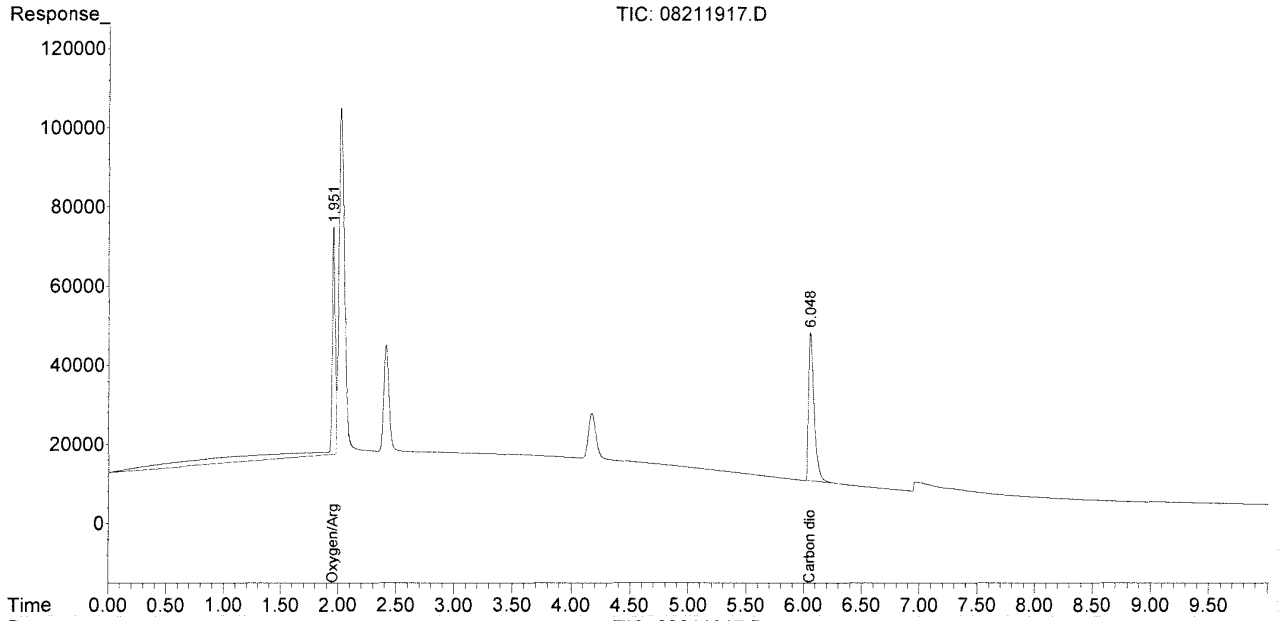
(f)=RT Delta > 1/2 Window (m)=manual int.

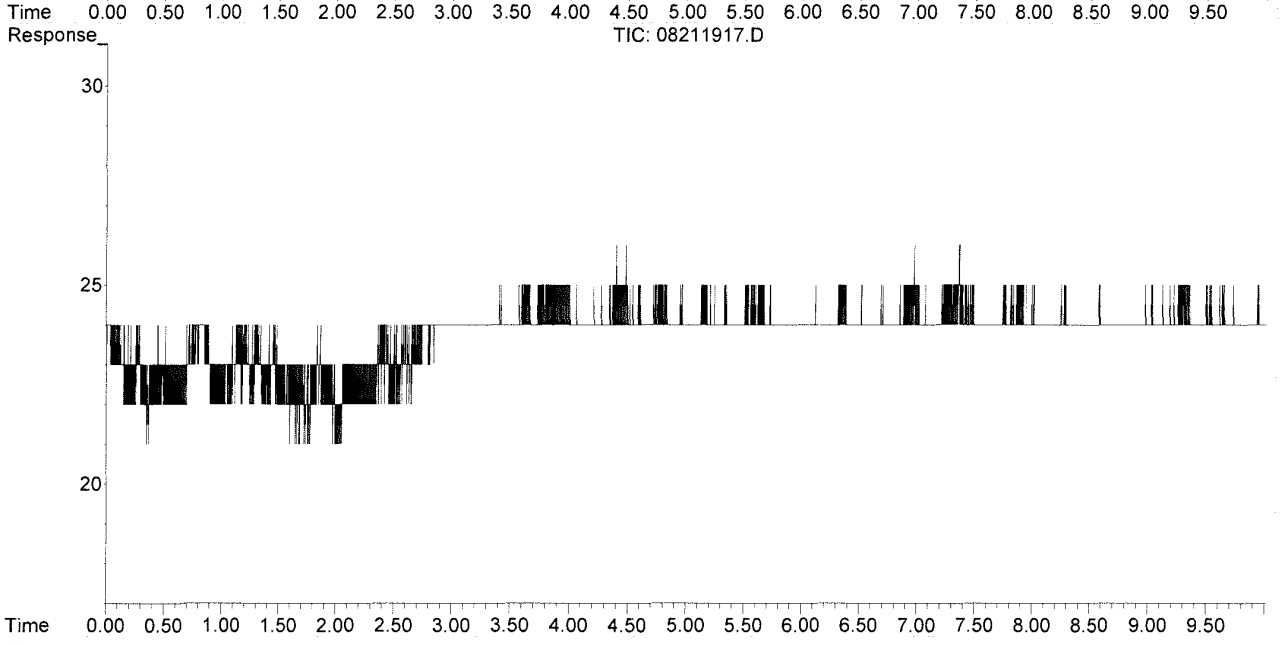
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211917.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 18:05:02
Operator : WH
Sample : P1904835-002msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 15:44:32 2019
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 :



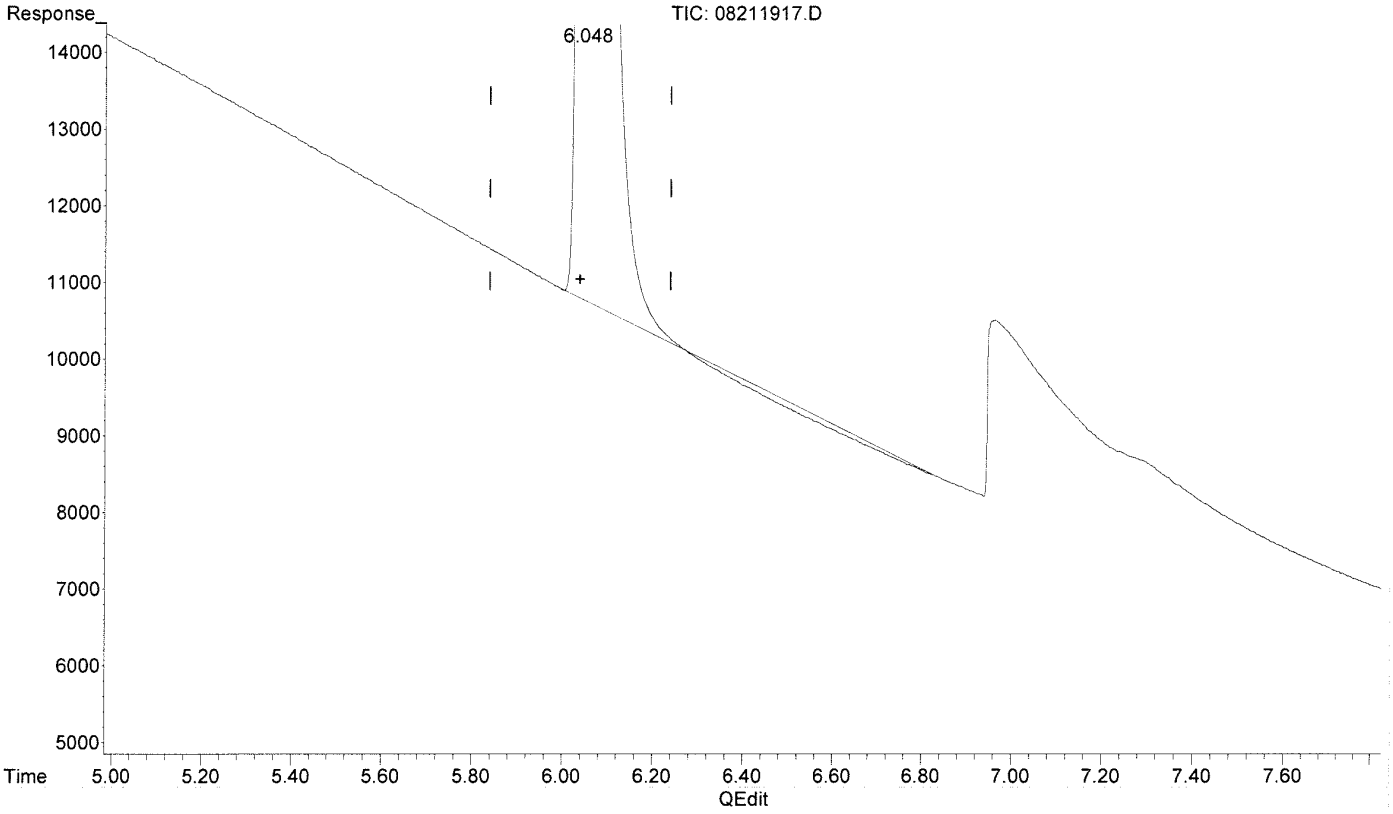



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211917.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 18:05:02
Operator : WH
Sample : P1904835-002msd 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 15:44:32 2019
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 :




(4) Carbon dioxide

6.049min 5251.623 ppm

response 1232709

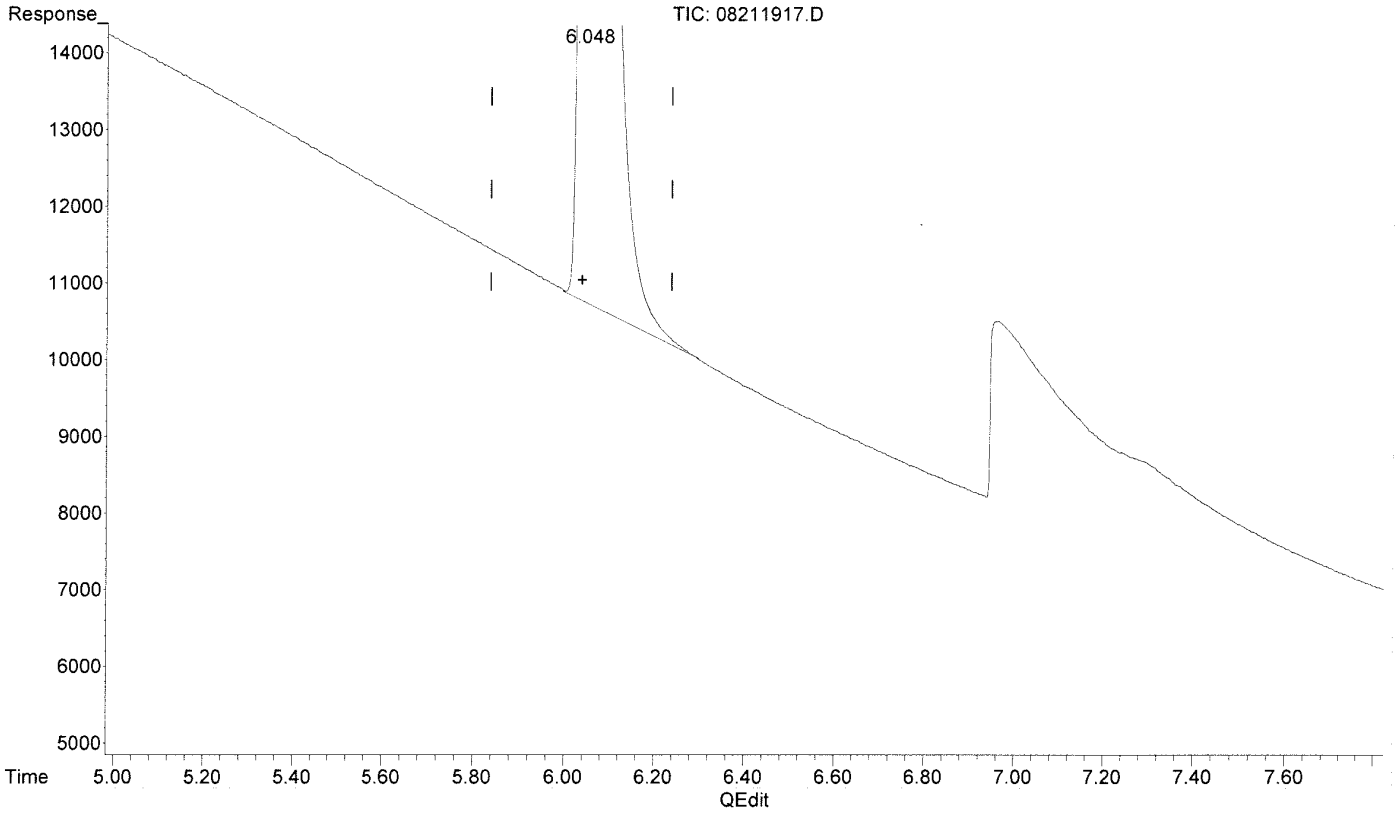
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211917.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 18:05:02
Operator : WH
Sample : P1904835-002msd 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 15:44:32 2019
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 #1 Info :
Signal #2 Phase:
Signal #2 Info :




(4) Carbon dioxide

6.048min 5346.702 ppm m

response 1255027

MR 8/22/19

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:43:39
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 13:56:23 2019
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 | 1.919f | 2348841 | 0.494 | ppm | |
| 2) | Carbon monoxide | 1.919f | 2348841 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.067 | 263675 | 1123.317 | ppm | m |
| 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 | |

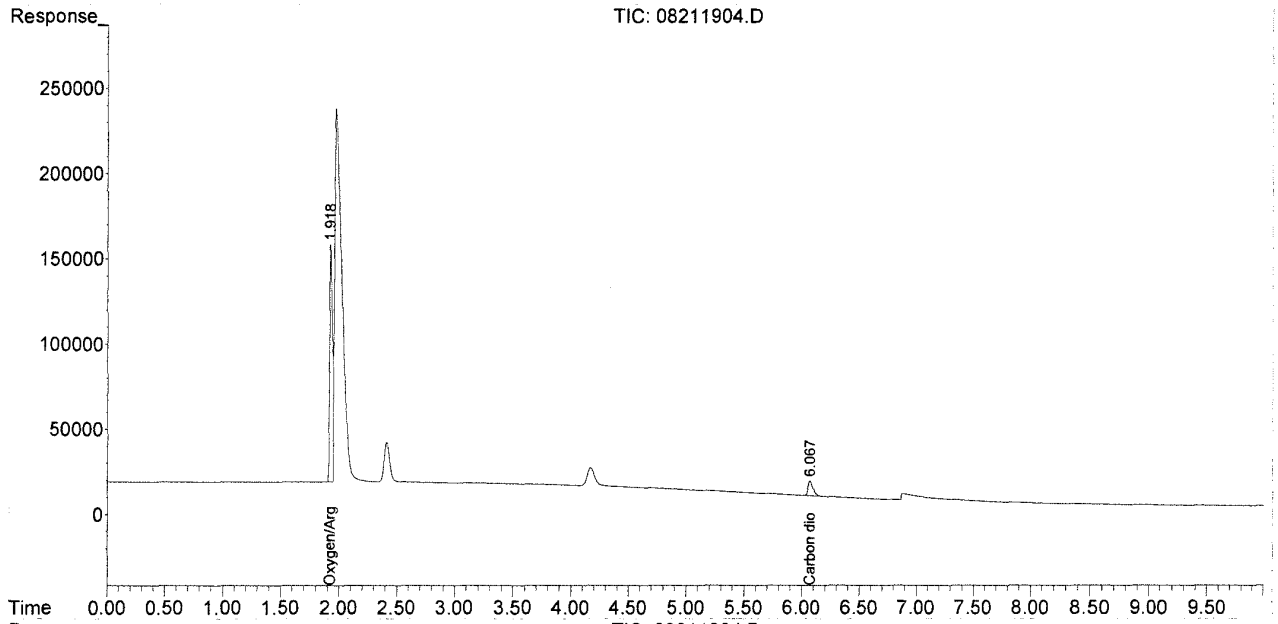
(f)=RT Delta > 1/2 Window (m)=manual int.

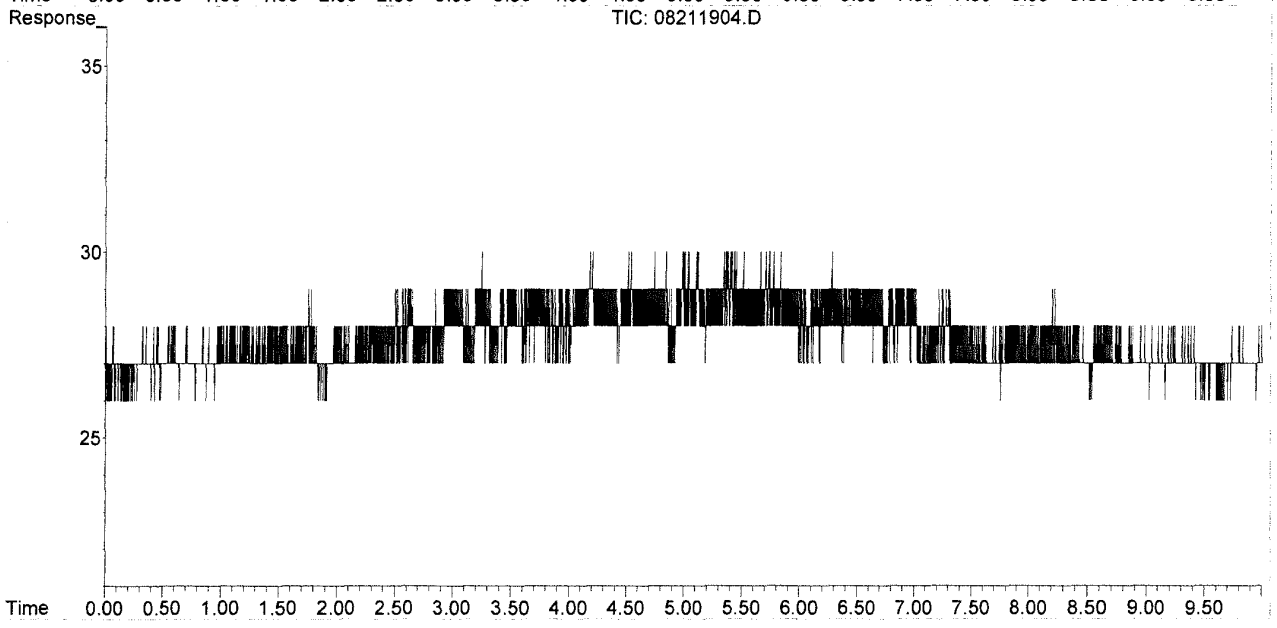
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:43:39
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 13:56:23 2019
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 :



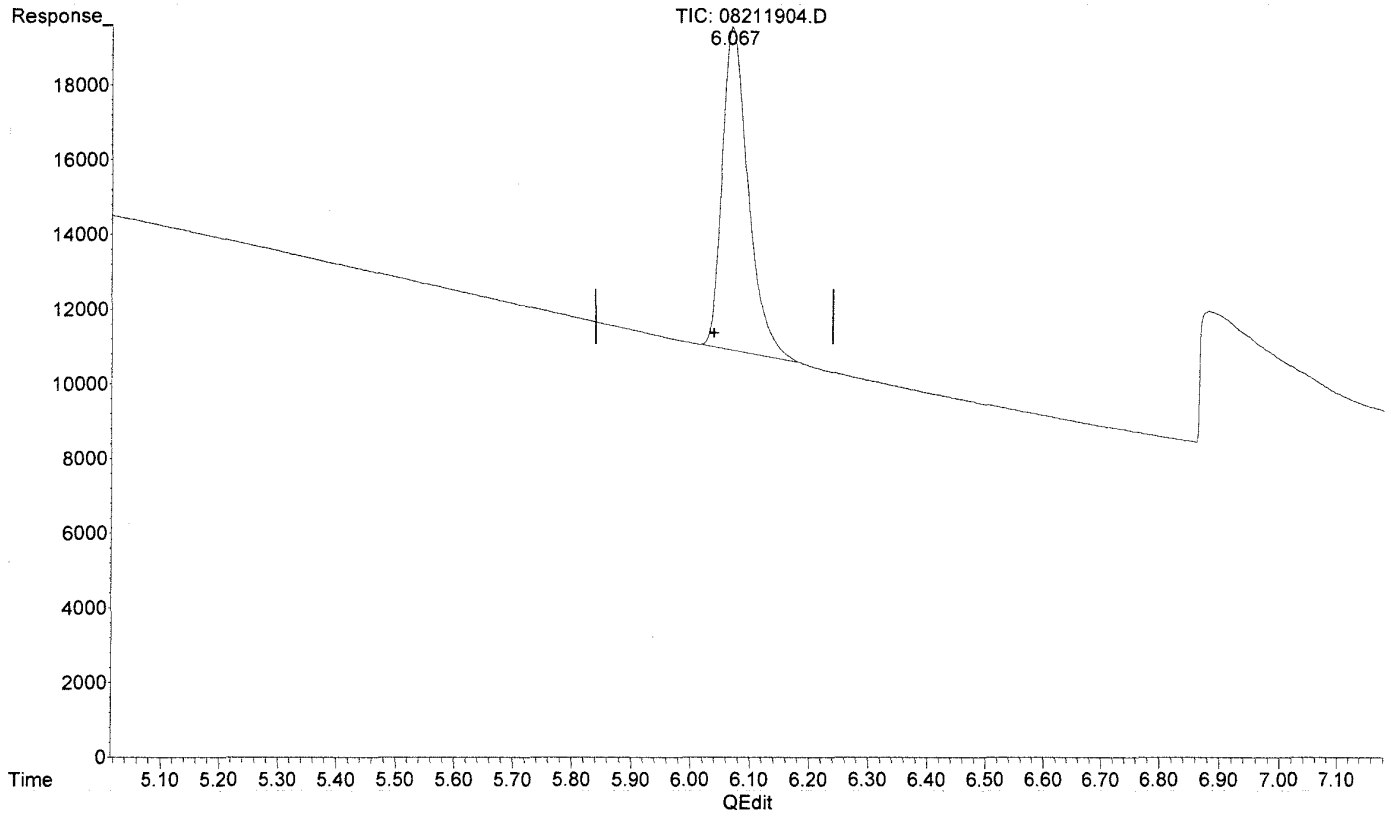



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211904.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 13:43:39
Operator : WH
Sample : LCS TCD 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 13:56:23 2019
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 :




(4) Carbon dioxide

6.067min 1123.317 ppm m

response 263675

MP 8/22/19

WH 12/1/19 BLC no problems

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:12:37
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 14:22:55 2019
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 | 1.955f | 1050494 | 0.221 | ppm | |
| 2) | Carbon monoxide | 1.955f | 1050494 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.069 | 251793 | 1072.695 | ppm | m |
| 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 | |

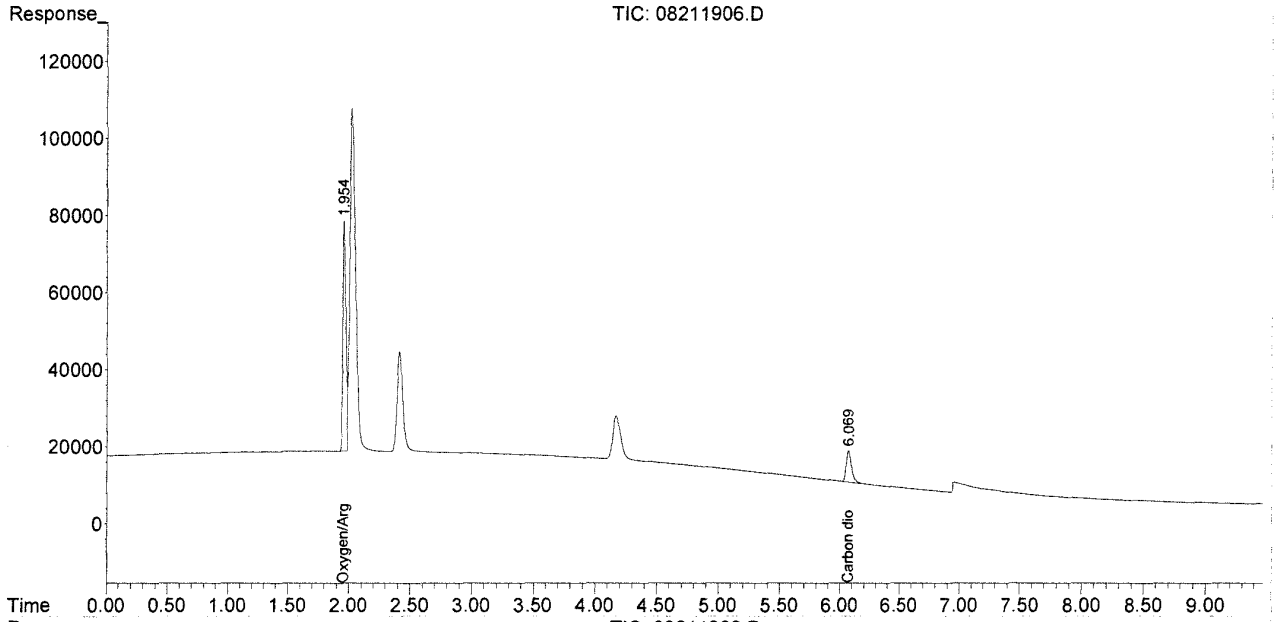
(f)=RT Delta > 1/2 Window (m)=manual int.

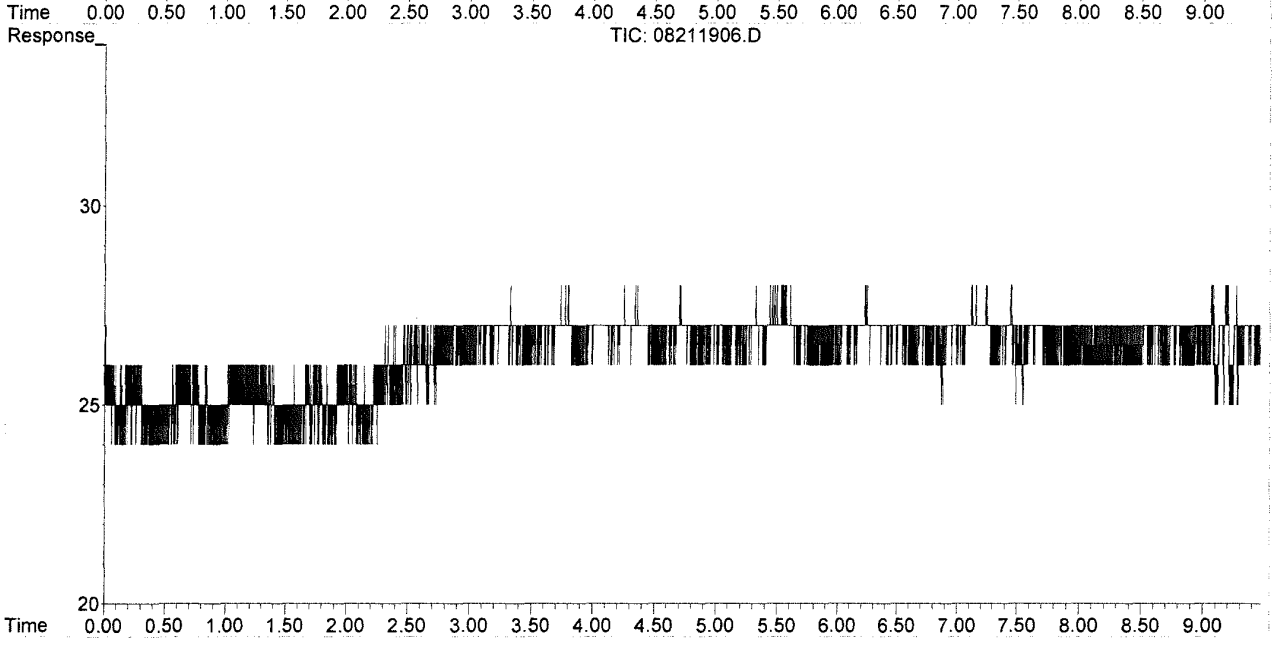
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211906.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:12:37
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 14:22:55 2019
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 :



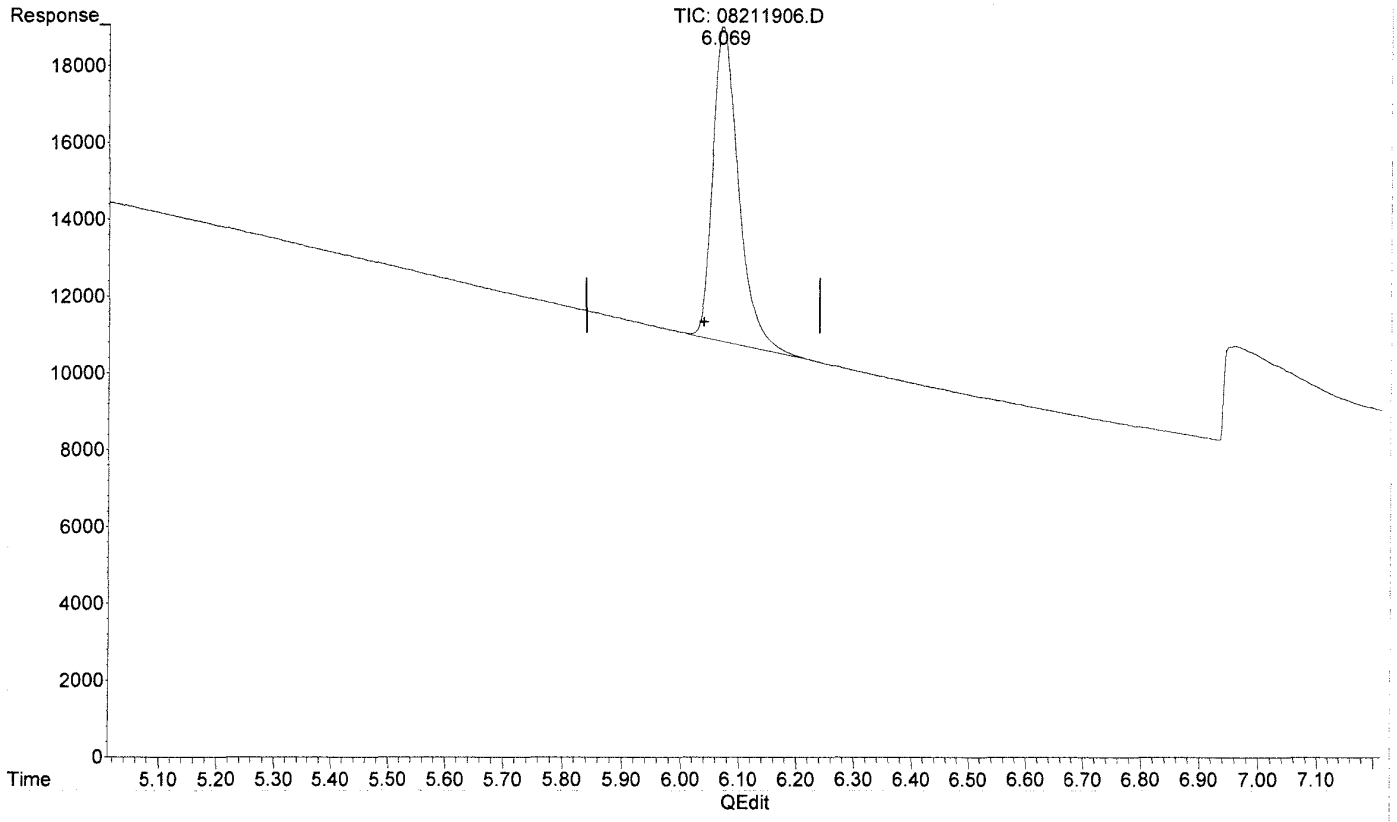



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211906.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 14:12:37
Operator : WH
Sample : LCSD TCD 0.1ml
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 14:22:55 2019
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 :




(4) Carbon dioxide

6.069min 1072.695 ppm m

response 251793

MR 8/22/19

(+) = Expected Retention Time

# 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

Edit Compounds -- Compound #4 -- Carbon dioxide

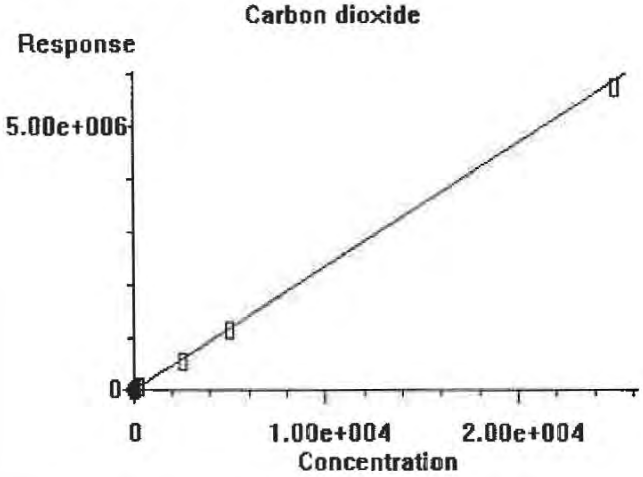
Search by: Ret Time | Name | Index | Find Compound

- 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

Quantitation Report (QT Reviewed)

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 | |

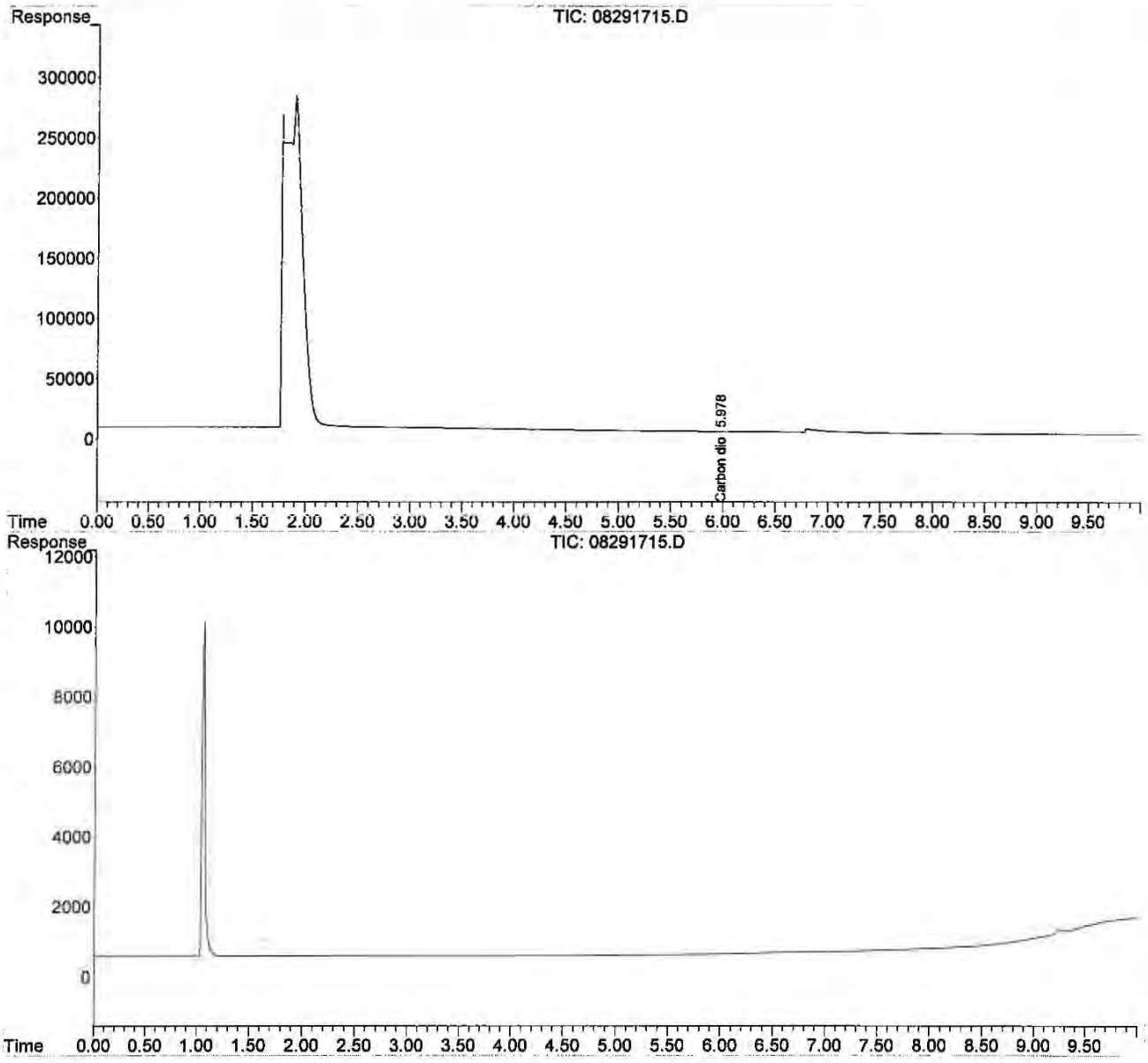
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :

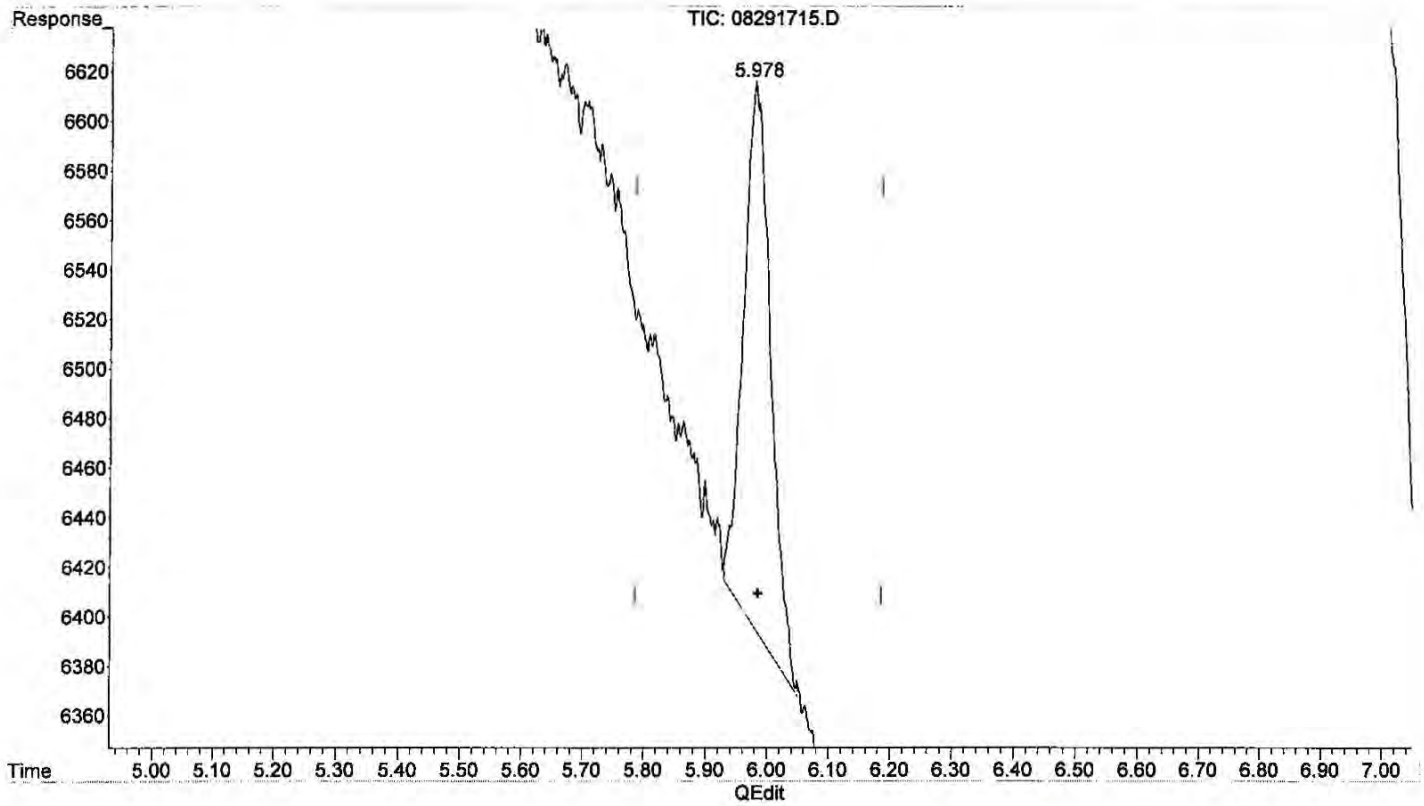


Quantitation Report (Qedit)

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

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 :

| | 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 | |

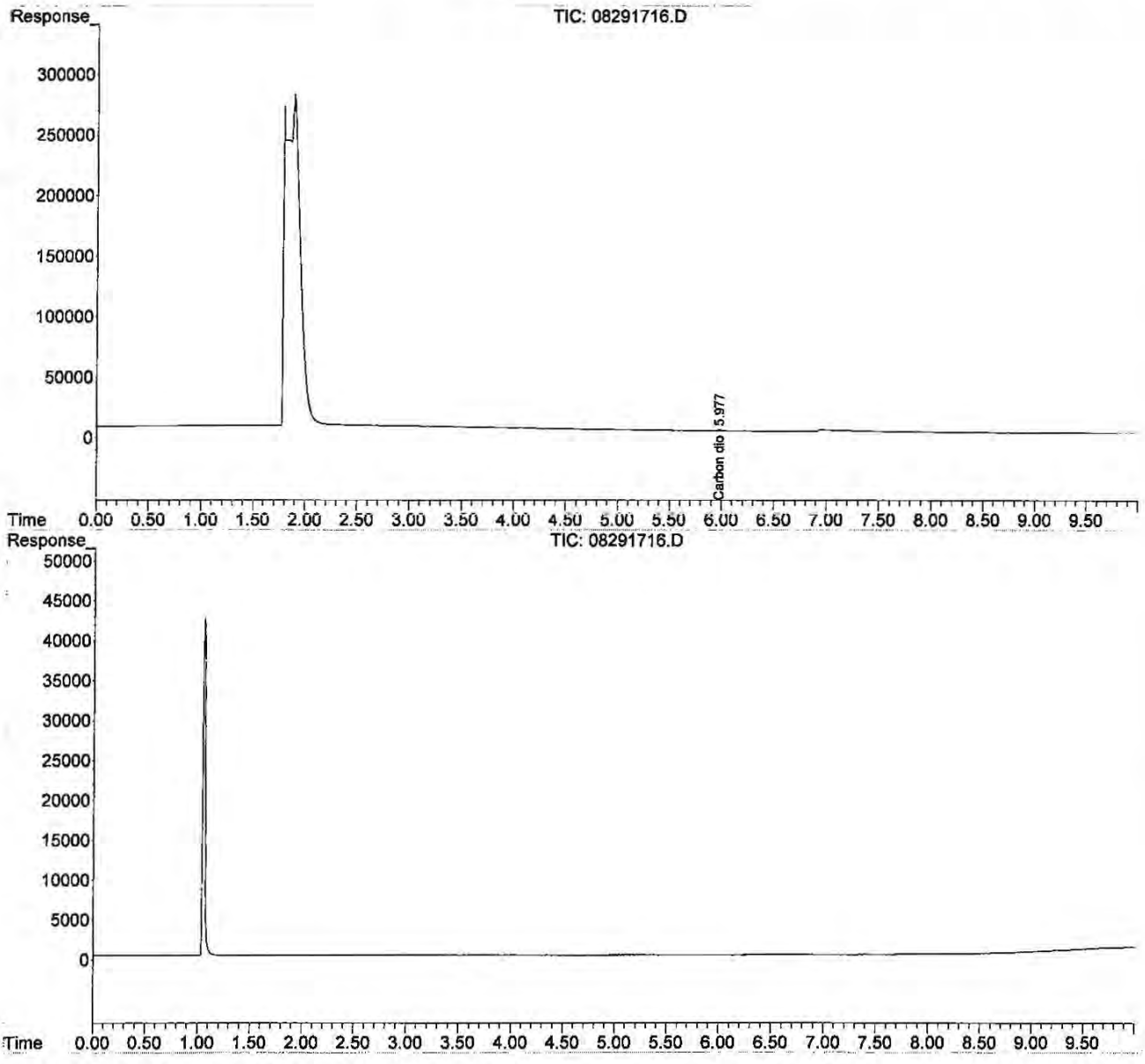
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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 :

| | 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 | |

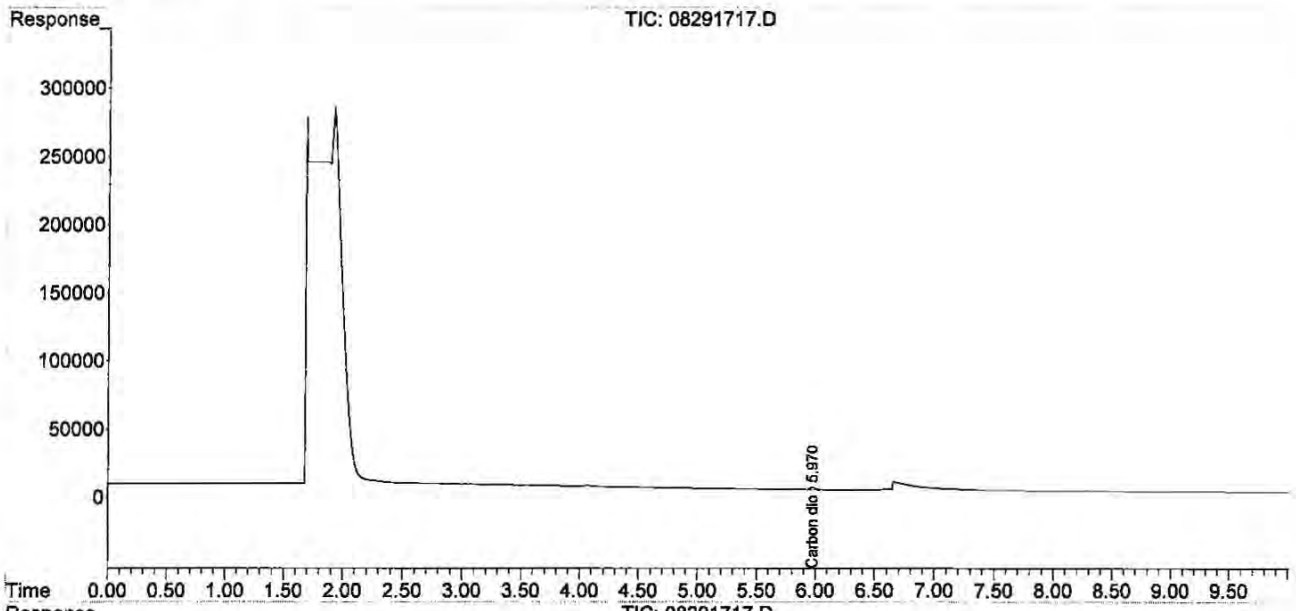
(f)=RT Delta > 1/2 Window (m)=manual int.

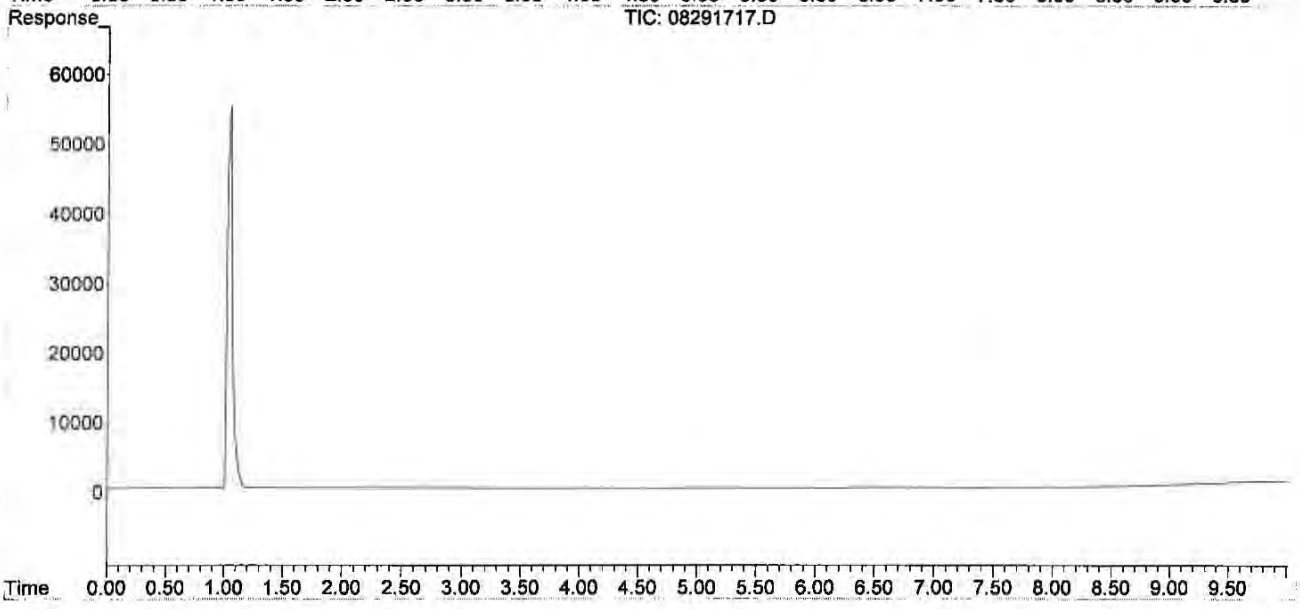
Quantitation Report (QT Reviewed)

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 :



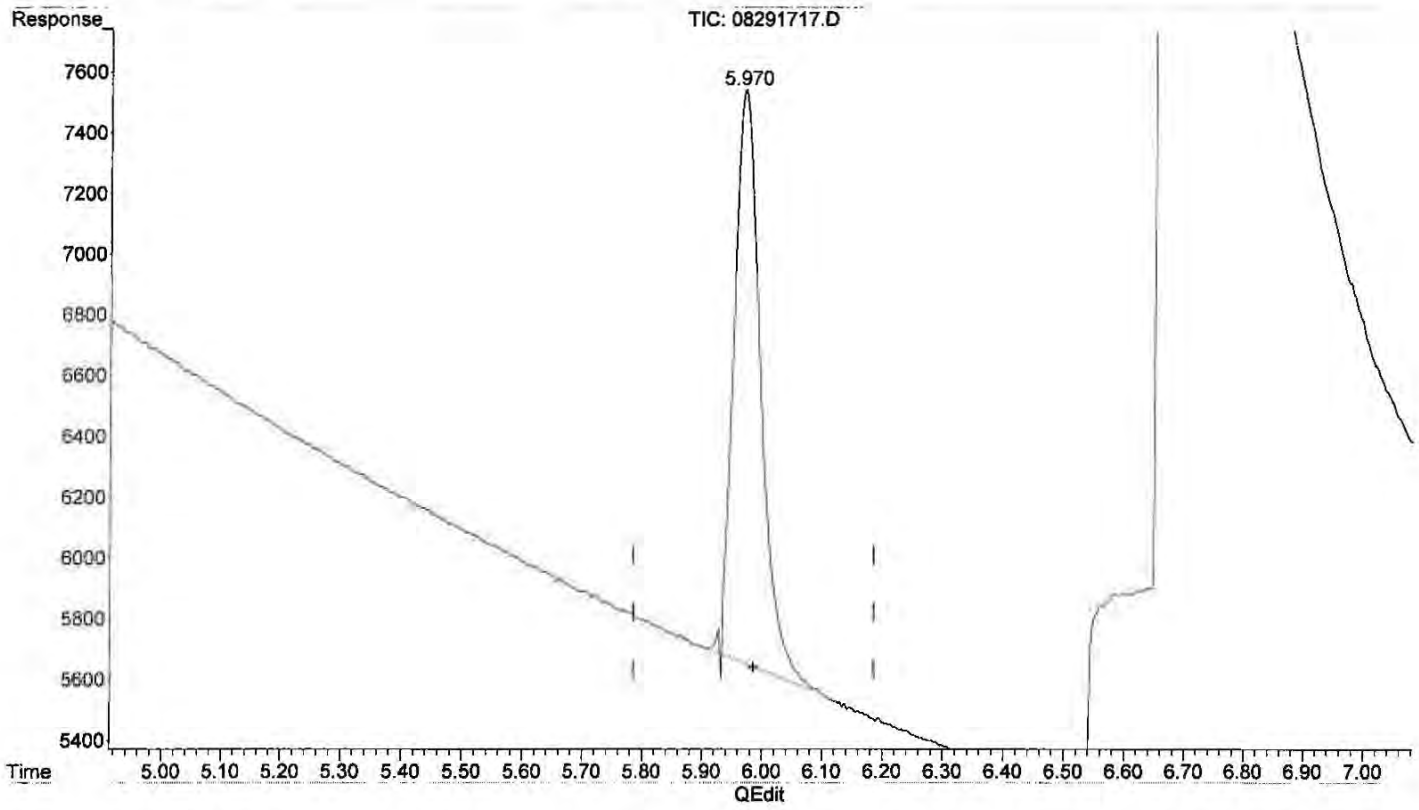



Quantitation Report (Qedit)

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 | |

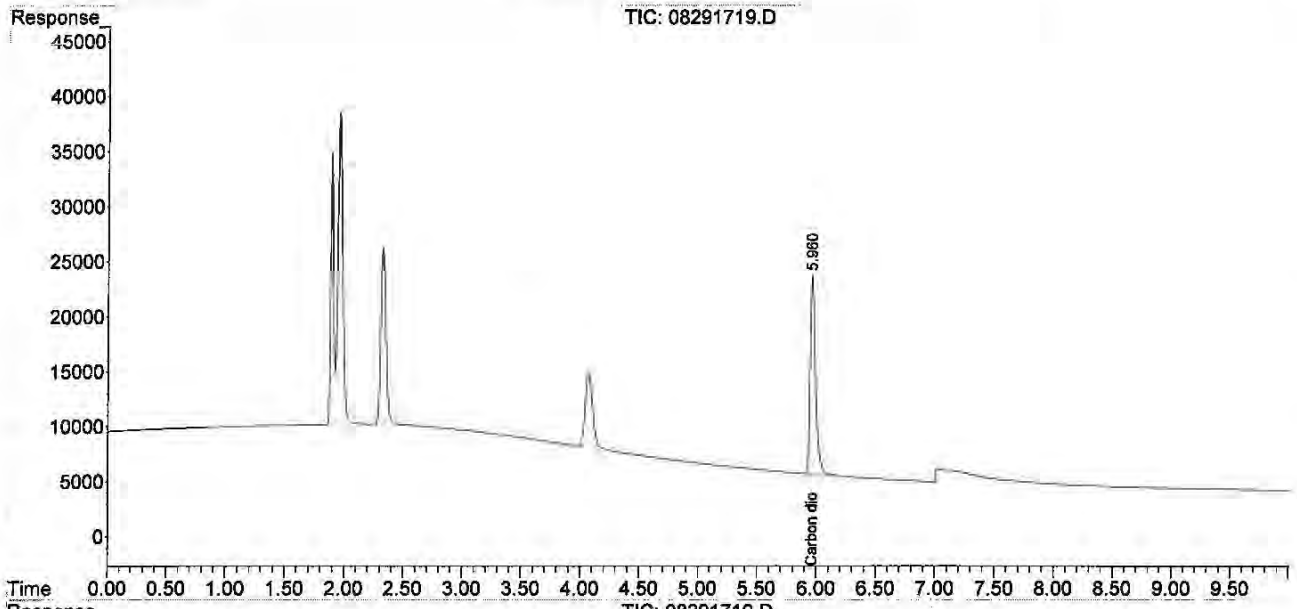
(f)=RT Delta > 1/2 Window (m)=manual int.

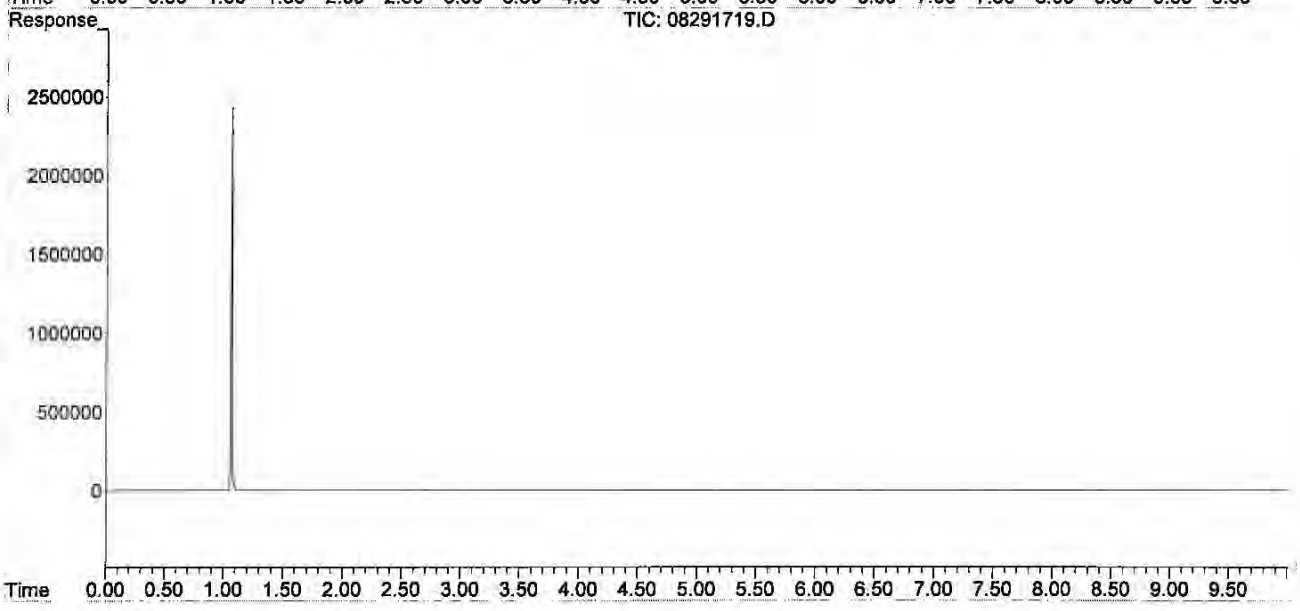
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



Quantitation Report (QT Reviewed)

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 | |

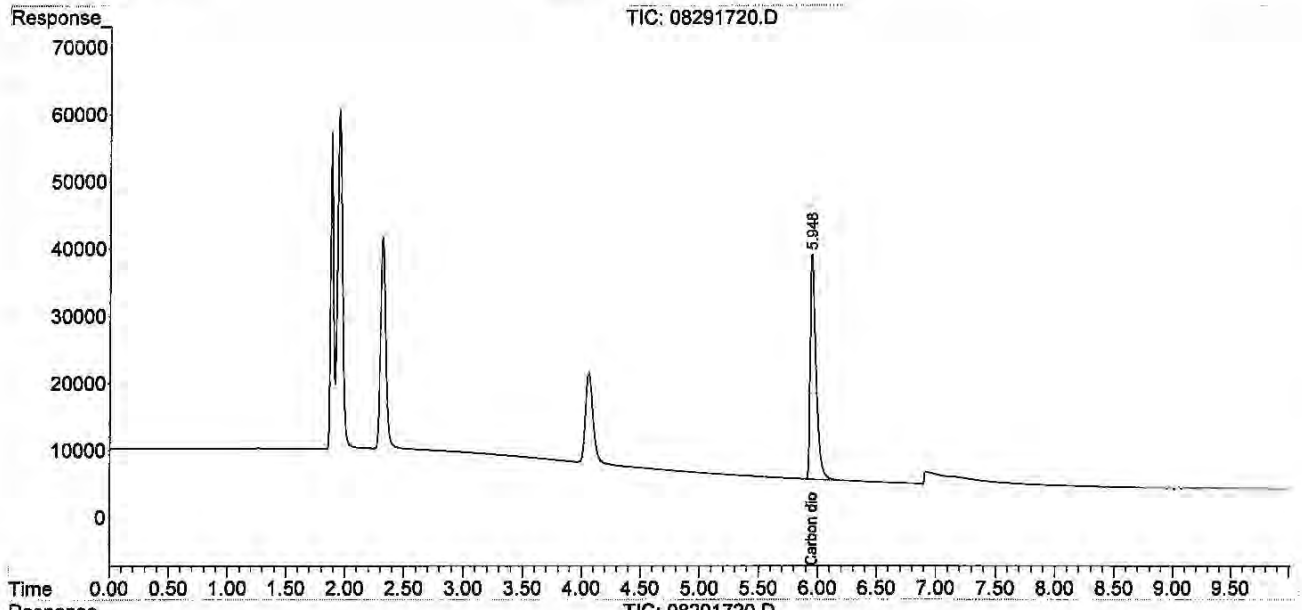
(f)=RT Delta > 1/2 Window (m)=manual int.

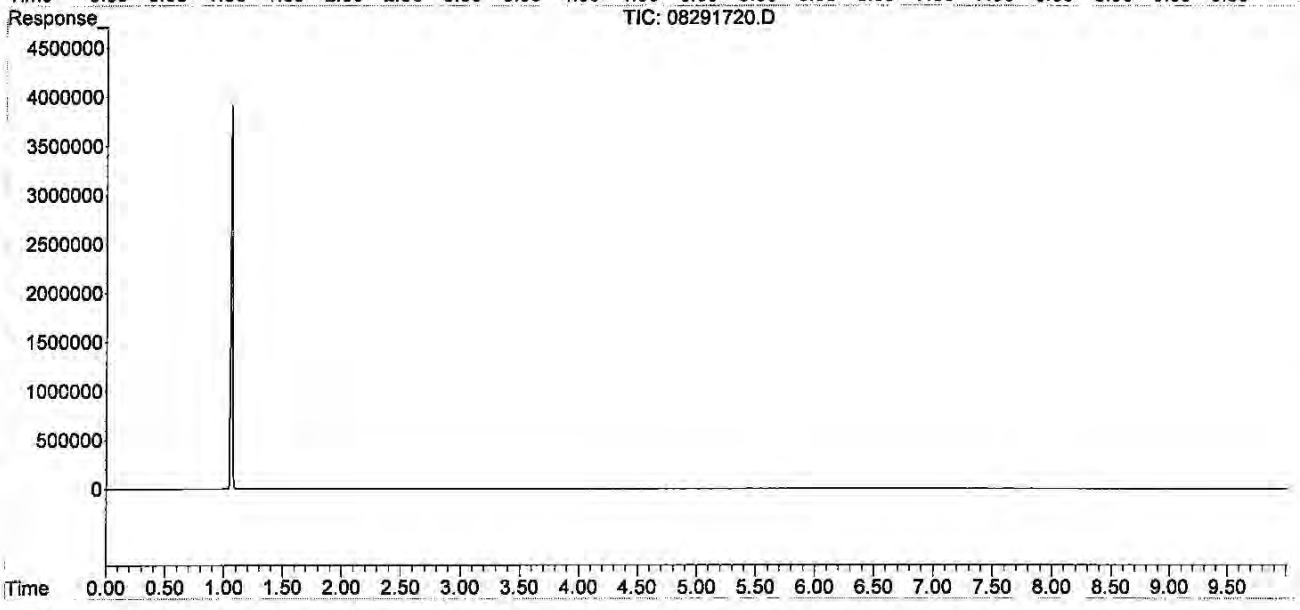
Quantitation Report (QT Reviewed)

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 | |

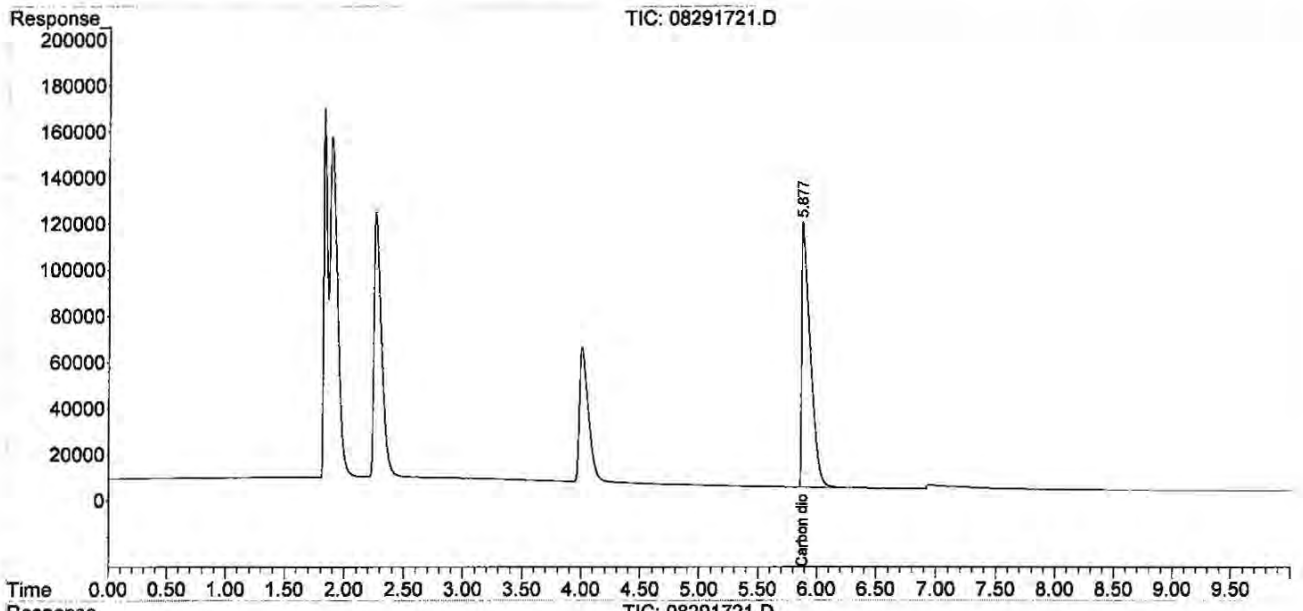
(f)=RT Delta > 1/2 Window (m)=manual int.

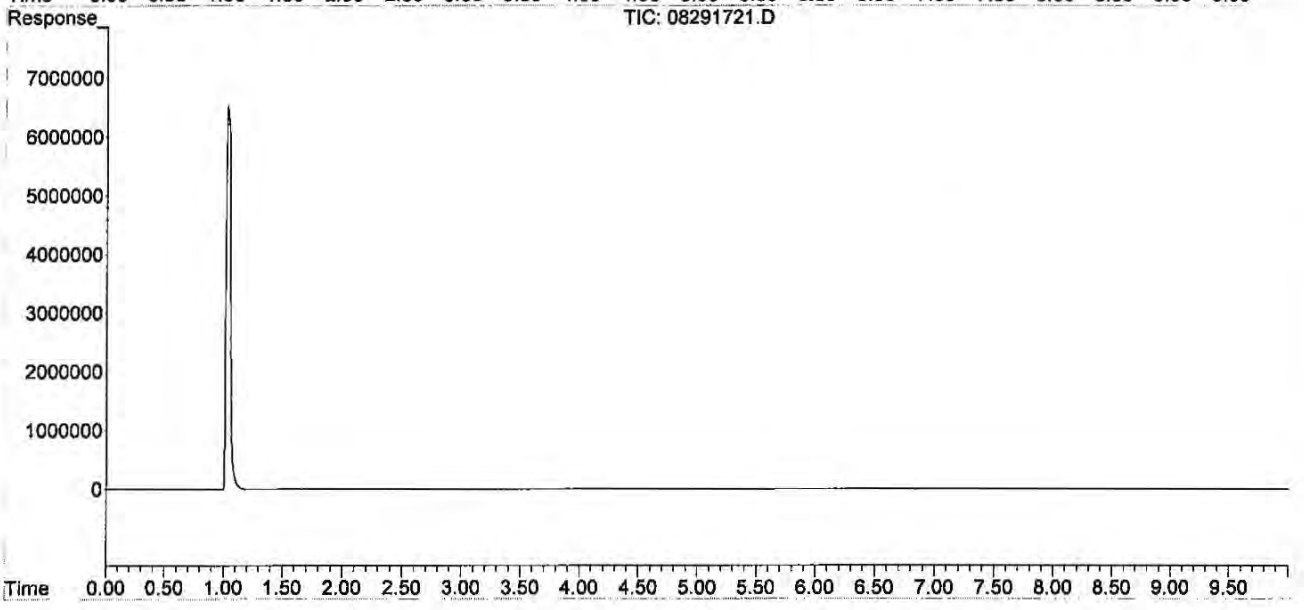
Quantitation Report (QT Reviewed)

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.

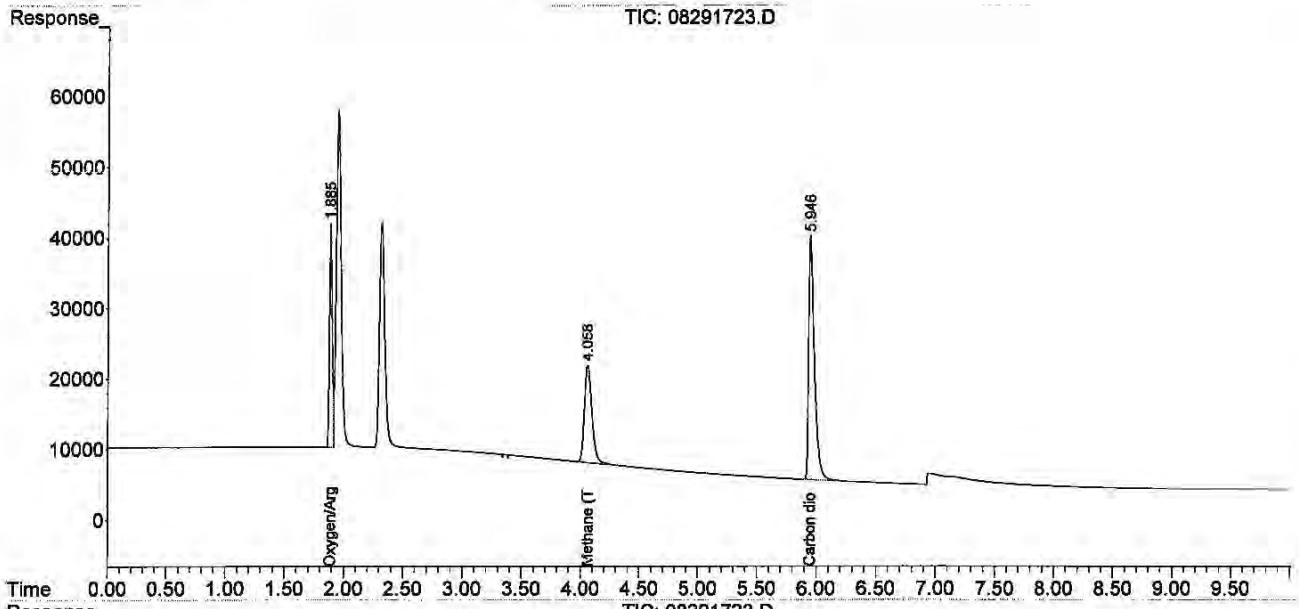
9/4/17

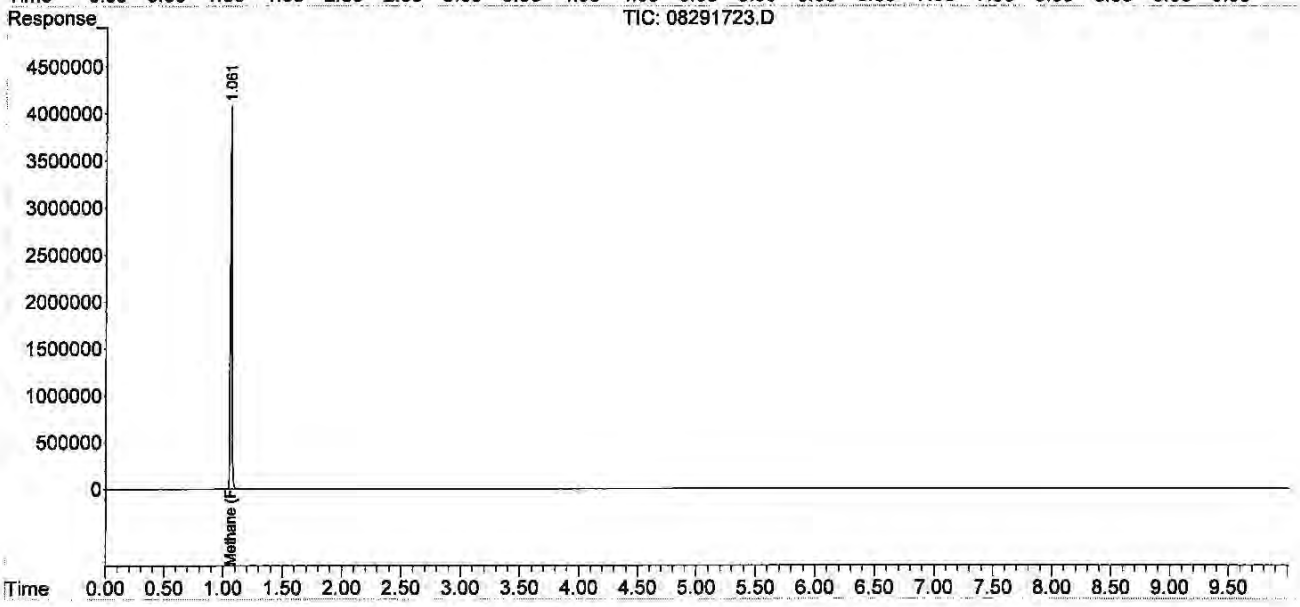
Quantitation Report (QT Reviewed)

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 :



## *ALS Environmental*

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1904835
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 08/21/19
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 | Inj. Vol. | Carbon Dioxide |
|---|---|---|
| std s32-06271901 | 0.100 | 5301.805 |
| ACTUAL | | 5000.00 |
| %Difference | | 6.0% |
| MCS 0.1ml | 0.100 | 26.576 |
| RB 0.1ml | 0.100 | 0.000 |
| LCS TCD 0.1ml | 0.100 | 1123.317 |
| LCSD TCD 0.1ml | 0.100 | 1072.695 |
| P1904835-001 0.1ml | 0.100 | 15568.32 |
| P1904835-002 0.1ml | 0.100 | 4522.554 |
| P1904835-003 0.1ml | 0.100 | 2917.561 |
| P1904835-002ms 0.1ml | 0.100 | 5724.251 |
| P1904835-002msd 0.1ml | 0.100 | 5346.702 |
| std s32-06271901 | | 4968.359 |
| ACTUAL | | 5000.00 |
| %Difference | | 0.6% |

### FINAL HEAD SPACE RESULT (ppm)

| | Carbon Dioxide |
|---|---|
| **WWt.** | 44.10 |
| **HENRY'S CONSTANT** | 1.42E+03 |
| **RL** | 100.00 |
| MCS 0.1ml | 265.760 |
| LCS TCD 0.1ml | 11233.170 |
| LCSD TCD 0.1ml | 10726.950 |
| P1904835-001 0.1ml | 155683.15 |
| P1904835-002 0.1ml | 45225.540 |
| P1904835-003 0.1ml | 29175.610 |
| P1904835-002ms 0.1ml | 57242.510 |
| P1904835-002msd 0.1ml | 53467.020 |





00972064

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 12:36:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 12:58:17 2019
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 | 1.957f | 550590 | 0.116 | ppm | |
| 2) | Carbon monoxide | 1.957f | 550590 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.038 | 1244489 | 5301.805 | ppm | m |
| 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 | |

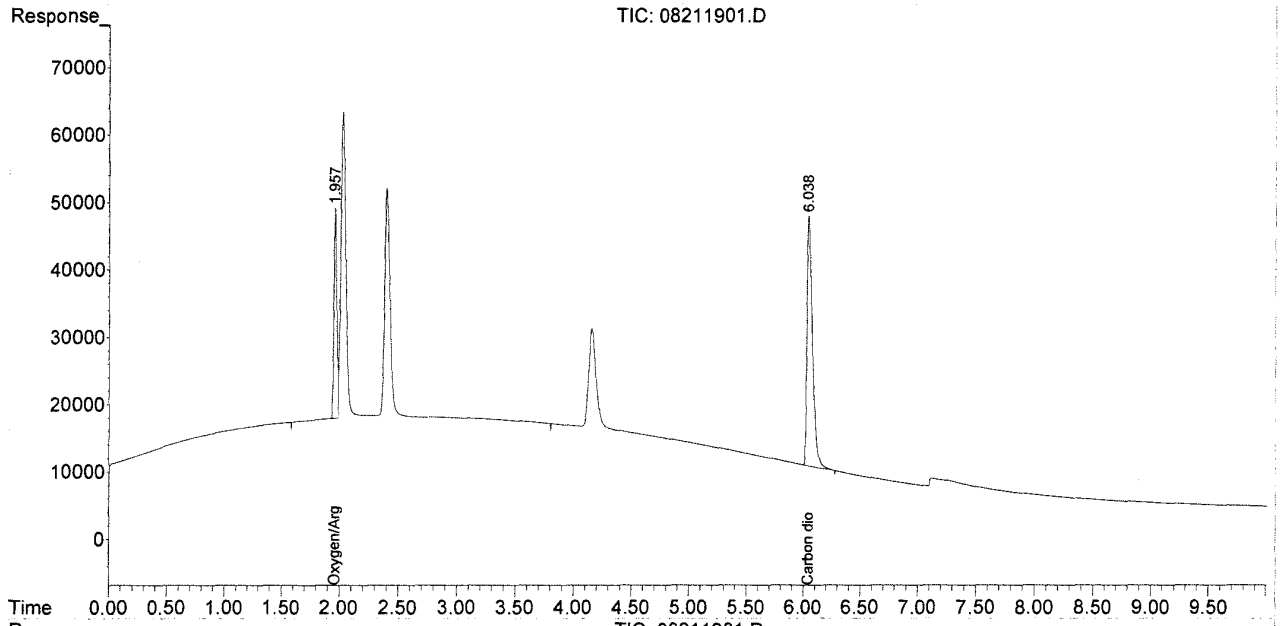
(f)=RT Delta > 1/2 Window (m)=manual int.

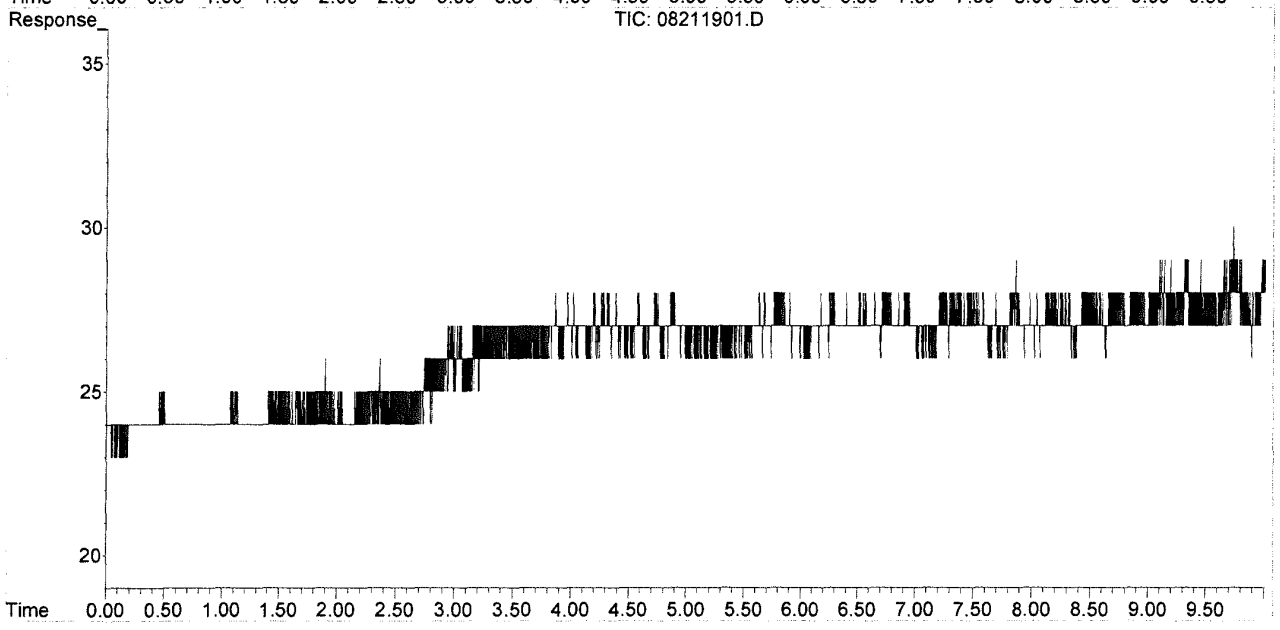
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 12:36:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 12:58:17 2019
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 :



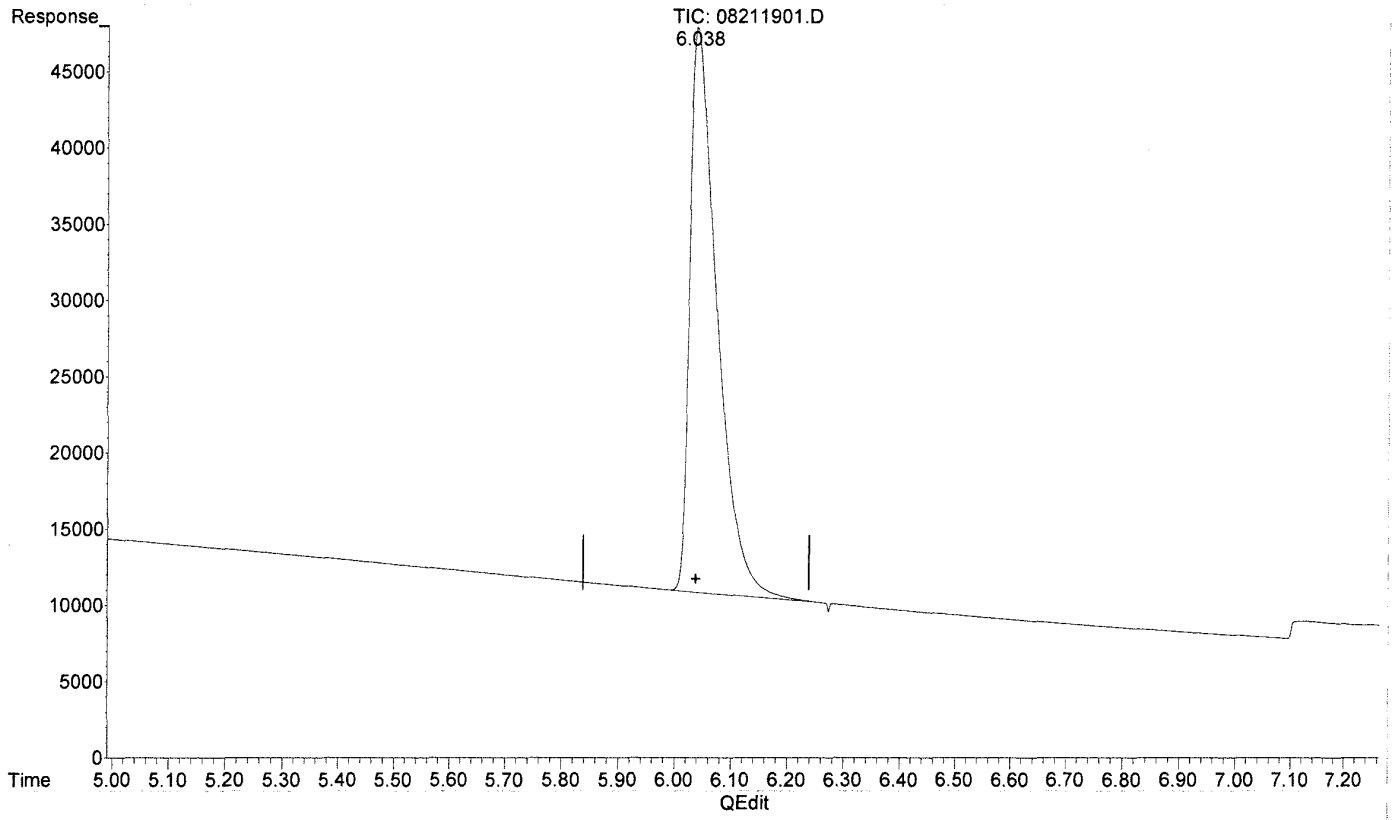



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211901.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 12:36:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 12:58:17 2019
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 :




(4) Carbon dioxide

6.038min 5301.805 ppm m

response 1244489

MR 8/22/19

LH 8/21/19 no flow BLC

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:23:48
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:42:39 2019
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 | 607968 | 0.128 | ppm | |
| 2) | Carbon monoxide | 1.964f | 607968 | N.D. | ppm | |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm | |
| 4) | Carbon dioxide | 6.047 | 1164471 | 4960.912 | ppm | m |
| 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 | |

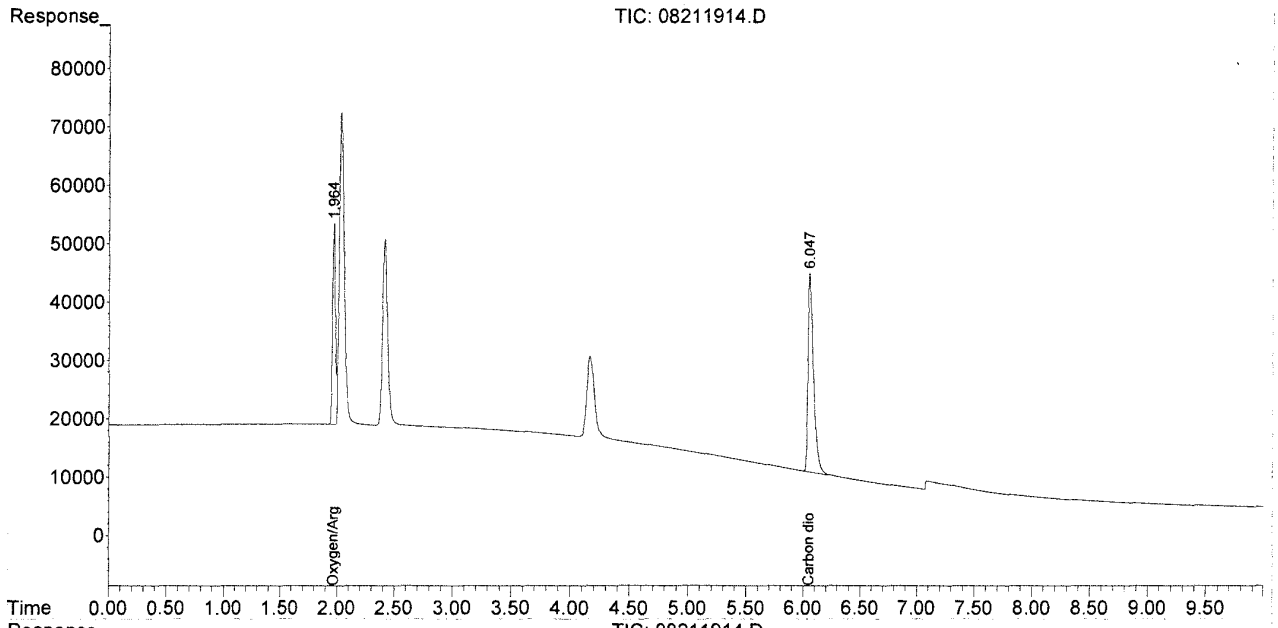
(f)=RT Delta > 1/2 Window (m)=manual int.

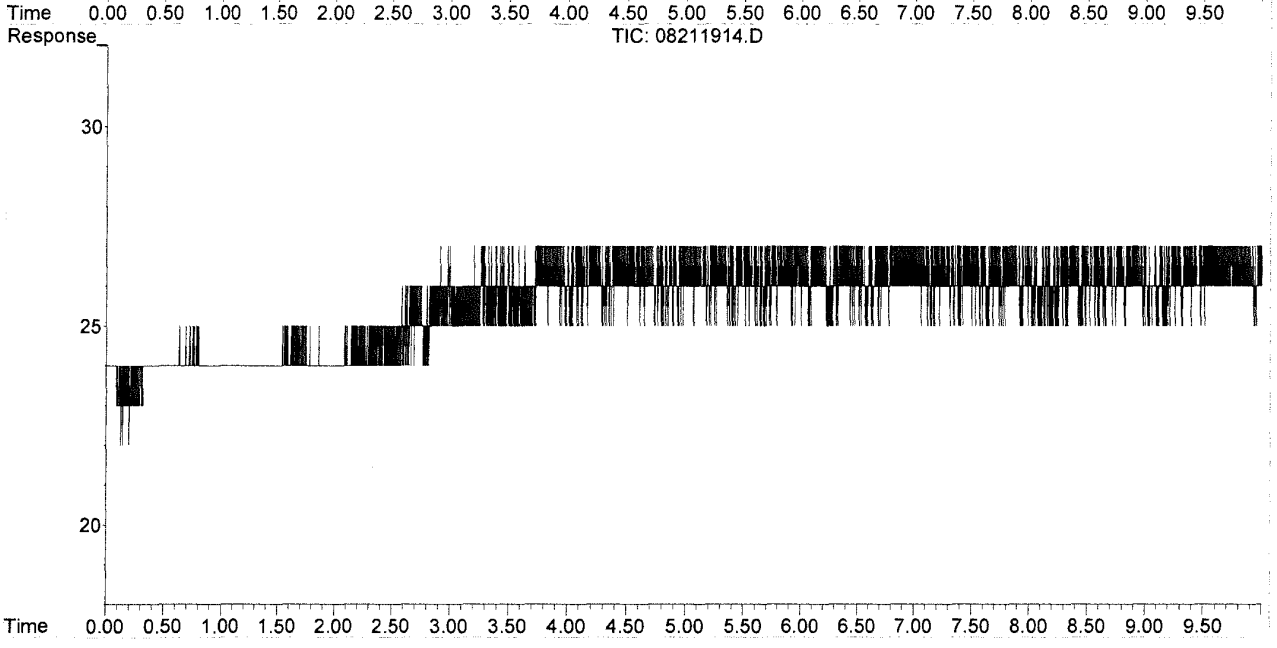
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:23:48
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:42:39 2019
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 :



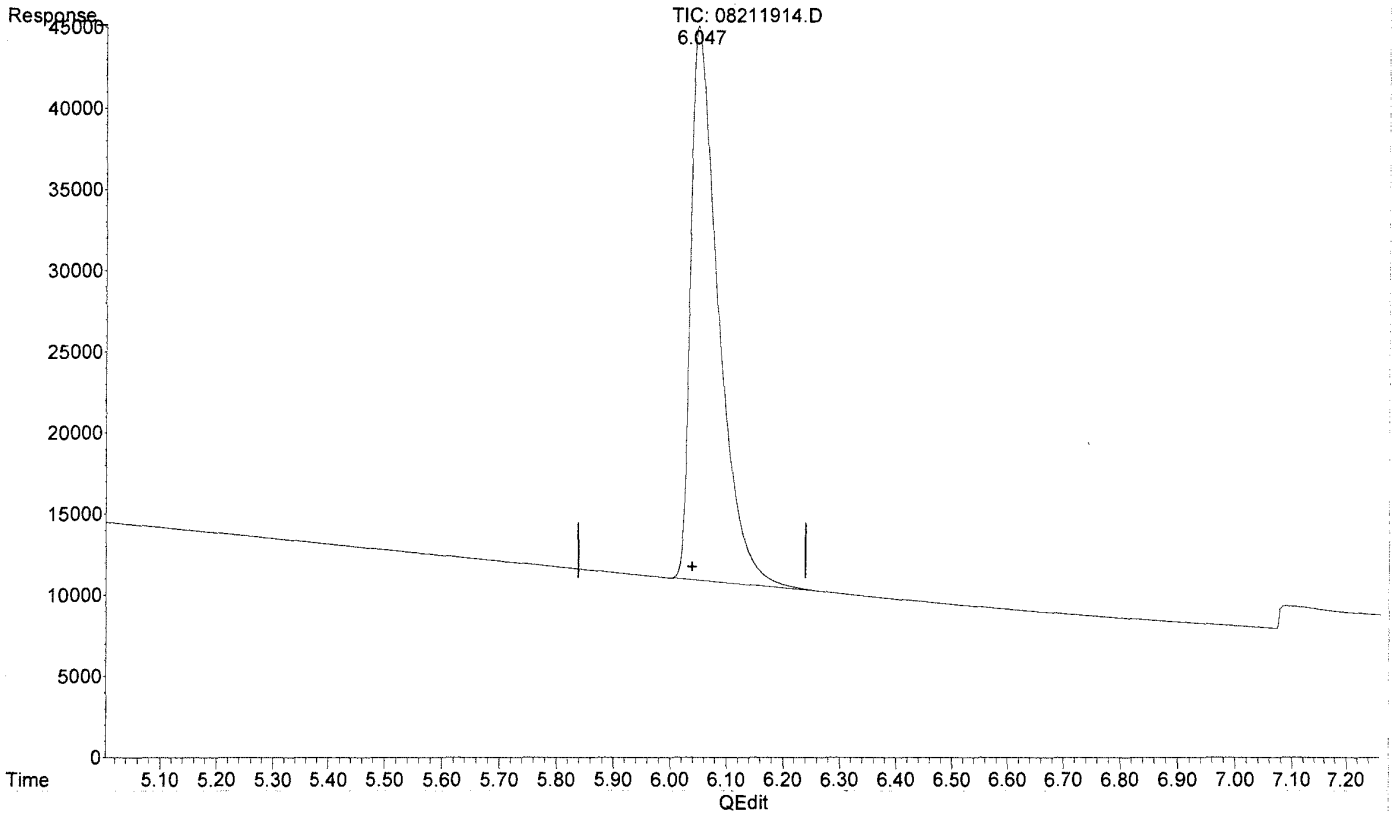



Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211914.D
Signal(s) : Signal #1: TCD1A.CH  Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 16:23:48
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1  Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 16:42:39 2019
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 :




(4) Carbon dioxide

6.047min 4960.912 ppm m

response 1164471

MR 8/22/19

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 18:38:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 18:51:06 2019
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 | 1.967f | 592286 | 0.124 | ppm |
| 2) | Carbon monoxide | 1.967f | 592286 | N.D. | ppm |
| 3) | Methane (TCD) | 0.000 | 0 | N.D. | ppm |
| 4) | Carbon dioxide | 6.049 | 1166219 | 4968.359 | 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 |

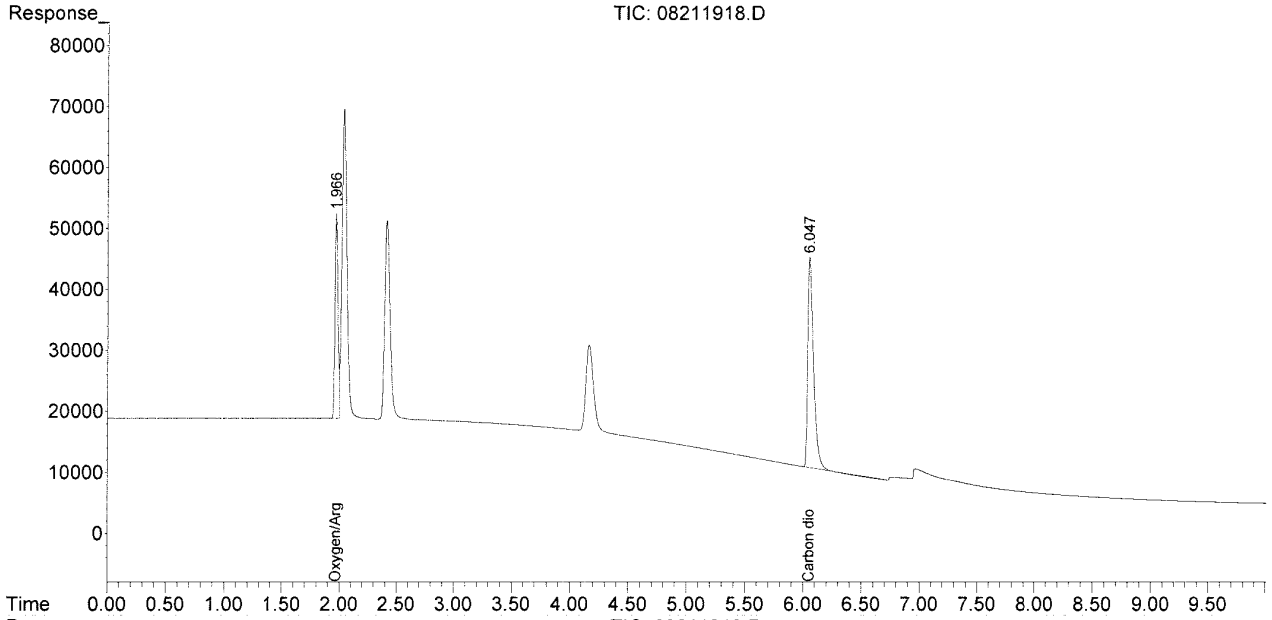
(f)=RT Delta > 1/2 Window (m)=manual int.

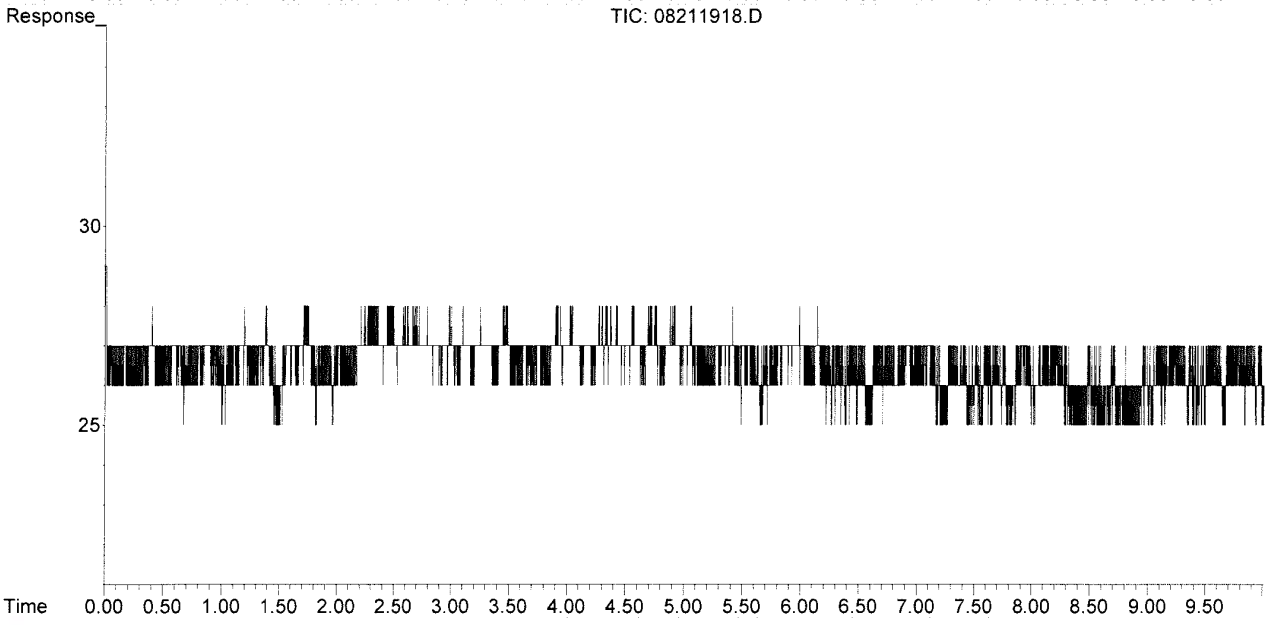
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_TCD\2019_08\21\
Data File : 08211918.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 21-Aug-2019, 18:38:43
Operator : WH
Sample : std s32-06271901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 21 18:51:06 2019
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_FID\2017_08\29\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 29-Aug-17, 07:58:00 | 08291701.D | std s30-06161601 | | MC | RSKBOTH.M | Pass |
| 2 | 29-Aug-17, 08:11:02 | 08291702.D | mb 0.5ml | | MC | RSKBOTH.M | Pass |
| 3 | 29-Aug-17, 08:24:13 | 08291703.D | 4089-001 0.5ml | | MC | RSKBOTH.M | |
| 4 | 29-Aug-17, 08:39:29 | 08291704.D | 4089-002 0.5ml | | MC | RSKBOTH.M | |
| 5 | 29-Aug-17, 08:53:38 | 08291705.D | 4089-003 0.5ml | | MC | RSKBOTH.M | |
| 6 | 29-Aug-17, 09:33:52 | 08291706.D | 4089-004 0.5ml | | MC | RSKBOTH.M | |
| 7 | 29-Aug-17, 09:50:51 | 08291707.D | 4089-005 0.5ml | | MC | RSKBOTH.M | |
| 8 | 29-Aug-17, 10:07:54 | 08291708.D | 4089-006 0.5ml | | MC | RSKBOTH.M | |
| 9 | 29-Aug-17, 10:42:34 | 08291709.D | 4089-007 0.5ml | | MC | RSKBOTH.M | |
| 10 | 29-Aug-17, 11:06:01 | 08291710.D | 4089-008 0.5ml | | MC | RSKBOTH.M | |
| 11 | 29-Aug-17, 11:23:53 | 08291711.D | 4089-009 0.5ml | | MC | RSKBOTH.M | |
| 12 | 29-Aug-17, 11:37:17 | 08291712.D | lcs s30-05241604 | | MC | RSKBOTH.M | Pass |
| 13 | 29-Aug-17, 11:50:31 | 08291713.D | lcs s30-05241604 | | MC | RSKBOTH.M | Pass |
| 14 | 29-Aug-17, 12:29:45 | 08291714.D | std s30-06161601 | | MC | RSKBOTH.M | Pass |
| 15 | 29-Aug-17, 14:07:01 | 08291715.D | 25ppm s32-08291701 0.25ml | | MC | RSKBOTH.M | Curve |
| 16 | 29-Aug-17, 14:22:12 | 08291716.D | 100ppm s32-08291702 0.2ml | | MC | RSKBOTH.M | Curve |
| 17 | 29-Aug-17, 14:53:00 | 08291717.D | 250ppm s32-08291702 0.5ml | | MC | RSKBOTH.M | Curve |
| 18 | 29-Aug-17, 15:07:43 | 08291718.D | mis inject | | MC | RSKBOTH.M | |
| 19 | 29-Aug-17, 15:23:21 | 08291719.D | 2500ppm s32-08231701 50ul | | MC | RSKBOTH.M | Curve |
| 20 | 29-Aug-17, 15:44:54 | 08291720.D | 5000ppm s32-08231701 0.1ml | | MC | RSKBOTH.M | Curve |
| 21 | 29-Aug-17, 16:00:09 | 08291721.D | 25000ppm s32-08231701 0.5ml | | MC | RSKBOTH.M | Curve |
| 22 | 29-Aug-17, 16:15:43 | 08291722.D | mb 0.1ml | | MC | RSKBOTH.M | Pass |
| 23 | 29-Aug-17, 16:35:37 | 08291723.D | icv s30-07071701 | | MC | RSKBOTH.M | Pass |

# Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2019_08\21\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 21-Aug-19, 12:36:43 | 08211901.D | std s32-06271901 | | WH | RSKBOTH.M | |
| 2 | 21-Aug-19, 13:00:26 | 08211902.D | RB 0.1ml | | WH | RSKBOTH.M | |
| 3 | 21-Aug-19, 13:24:01 | 08211903.D | MCS 0.1ml | | WH | RSKBOTH.M | |
| 4 | 21-Aug-19, 13:43:39 | 08211904.D | LCS TCD 0.1ml | | WH | RSKBOTH.M | |
| 5 | 21-Aug-19, 13:58:05 | 08211905.D | LCSD TCD 0.1ml | | WH | RSKBOTH.M | bad injection |
| 6 | 21-Aug-19, 14:12:37 | 08211906.D | LCSD TCD 0.1ml | | WH | RSKBOTH.M | |
| 7 | 21-Aug-19, 14:30:30 | 08211907.D | P1904812-001 0.1ml | | WH | RSKBOTH.M | |
| 8 | 21-Aug-19, 14:44:38 | 08211908.D | P1904812-002 0.1ml | | WH | RSKBOTH.M | |
| 9 | 21-Aug-19, 15:04:09 | 08211909.D | P1904812-003 0.1ml | | WH | RSKBOTH.M | |
| 10 | 21-Aug-19, 15:17:26 | 08211910.D | P1904812-004 0.1ml | | WH | RSKBOTH.M | |
| 11 | 21-Aug-19, 15:40:37 | 08211911.D | P1904835-001 0.1ml | | WH | RSKBOTH.M | |
| 12 | 21-Aug-19, 15:53:59 | 08211912.D | P1904835-002 0.1ml | | WH | RSKBOTH.M | |
| 13 | 21-Aug-19, 16:07:07 | 08211913.D | P1904835-003 0.1ml | | WH | RSKBOTH.M | |
| 14 | 21-Aug-19, 16:23:48 | 08211914.D | std s32-06271901 | | WH | RSKBOTH.M | |
| 15 | 21-Aug-19, 17:32:29 | 08211915.D | MS | | WH | RSKBOTH.M | |
| 16 | 21-Aug-19, 17:51:58 | 08211916.D | P1904835-002ms 0.1ml | | WH | RSKBOTH.M | |
| 17 | 21-Aug-19, 18:05:02 | 08211917.D | P1904835-002msd 0.1ml | | WH | RSKBOTH.M | |
| 18 | 21-Aug-19, 18:38:43 | 08211918.D | std s32-06271901 | | WH | RSKBOTH.M | |

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 12:05:46
Operator : WH
Sample : P1904835-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 23 13:33:11 2019
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) | 1.111 | 55658 | 6.136 | 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 |

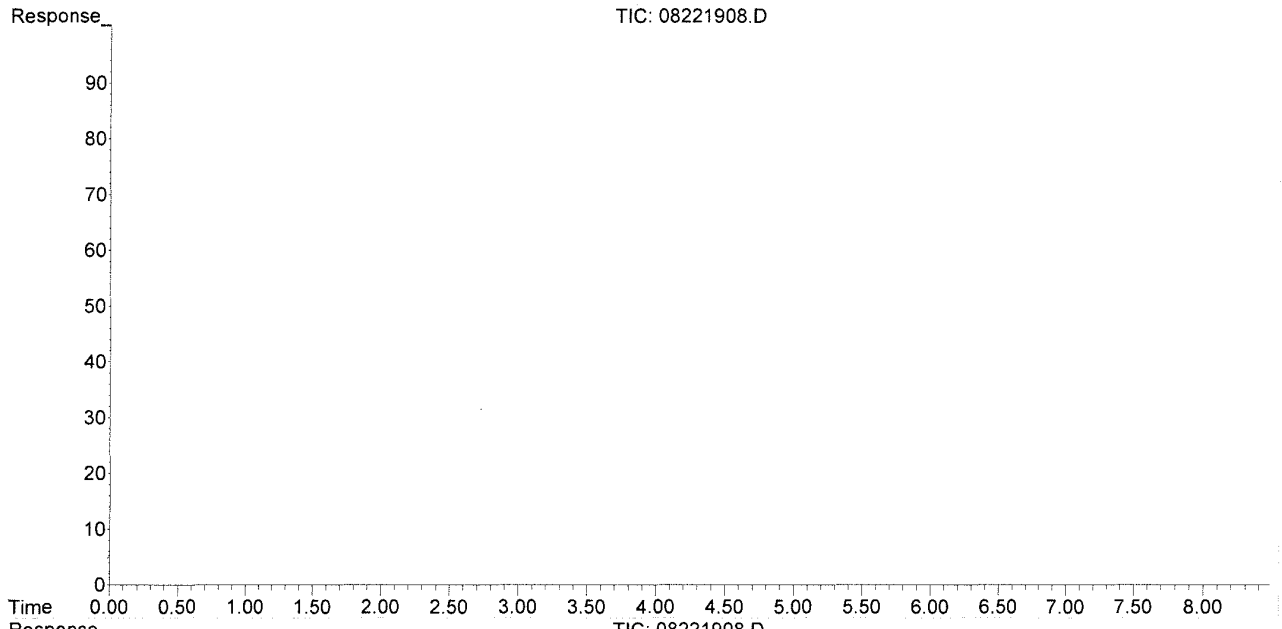
(f)=RT Delta > 1/2 Window (m)=manual int.

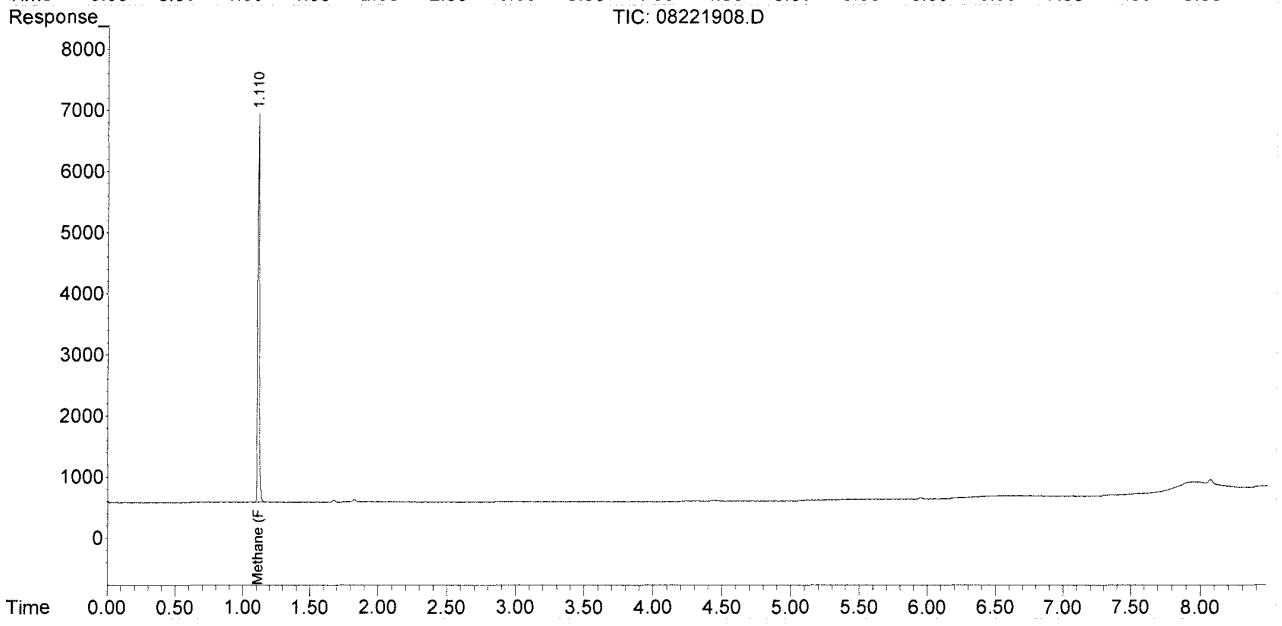
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221908.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 12:05:46
Operator : WH
Sample : P1904835-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 23 13:33:11 2019
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\2019_08\22\
Data File : 08221910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 12:37:18
Operator : WH
Sample : P1904835-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 13:46:16 2019
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 | 5048 | 0.557 | 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 |

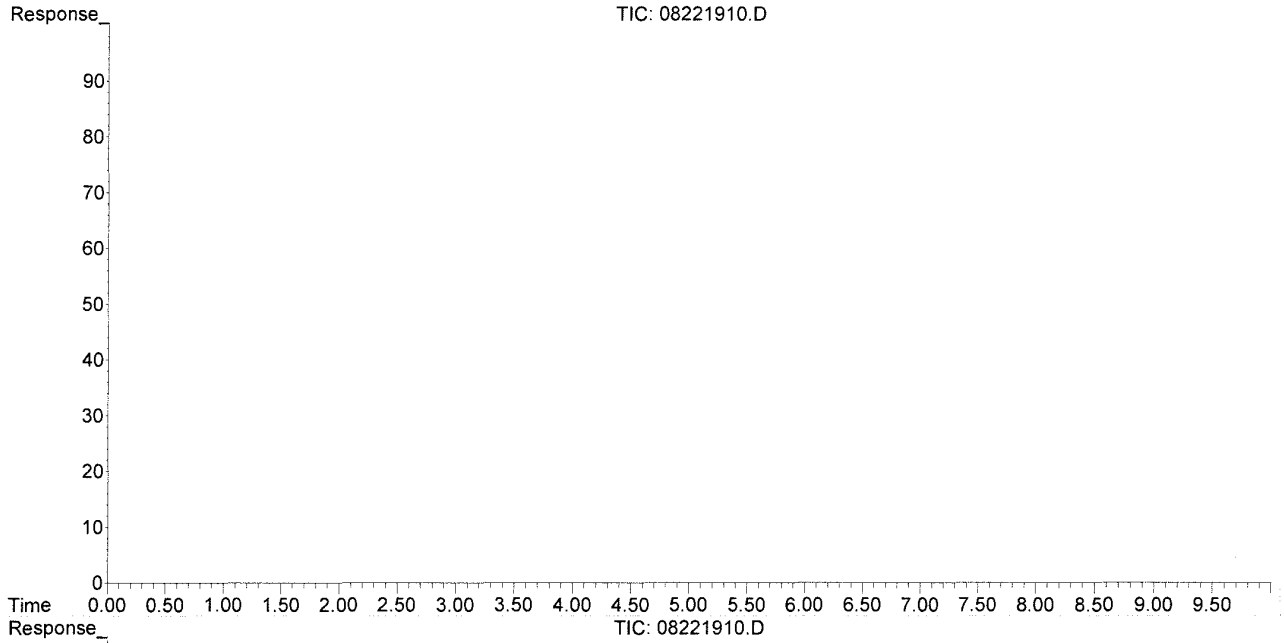
(f)=RT Delta > 1/2 Window (m)=manual int.

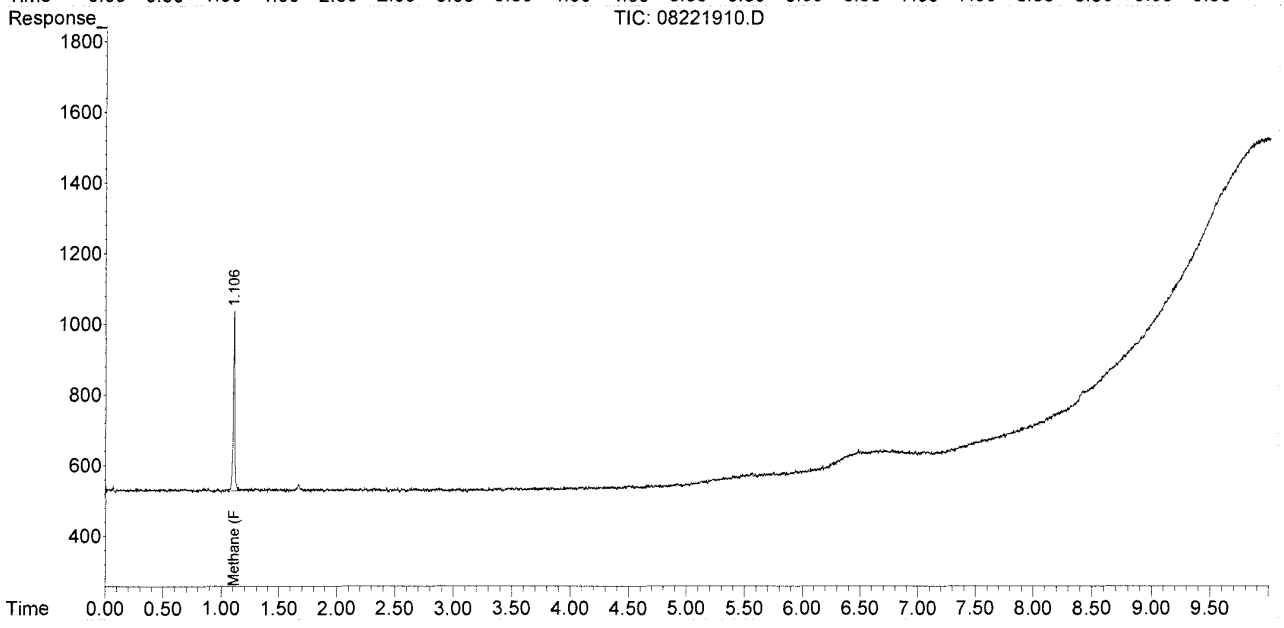
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221910.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 12:37:18
Operator : WH
Sample : P1904835-002 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 13:46:16 2019
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\2019_08\22\
Data File : 08221909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 12:17:25
Operator : WH
Sample : P1904835-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 23 13:34:21 2019
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) | 1.094 | 1838 | 0.203 | 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 |

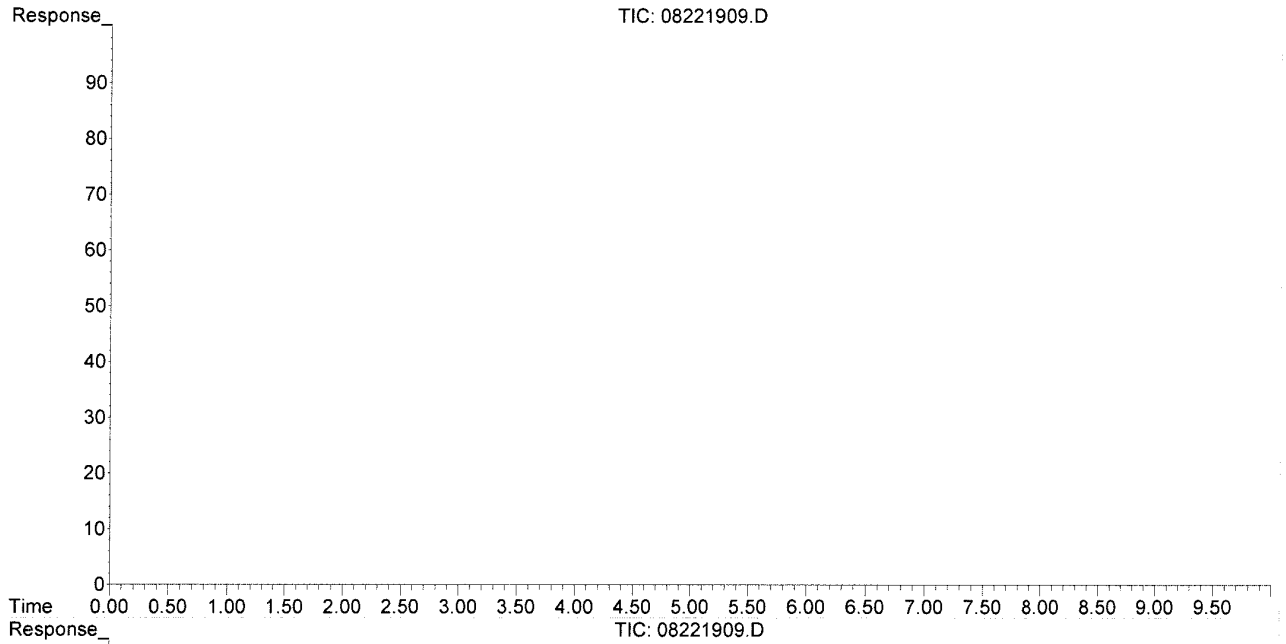
(f)=RT Delta > 1/2 Window (m)=manual int.

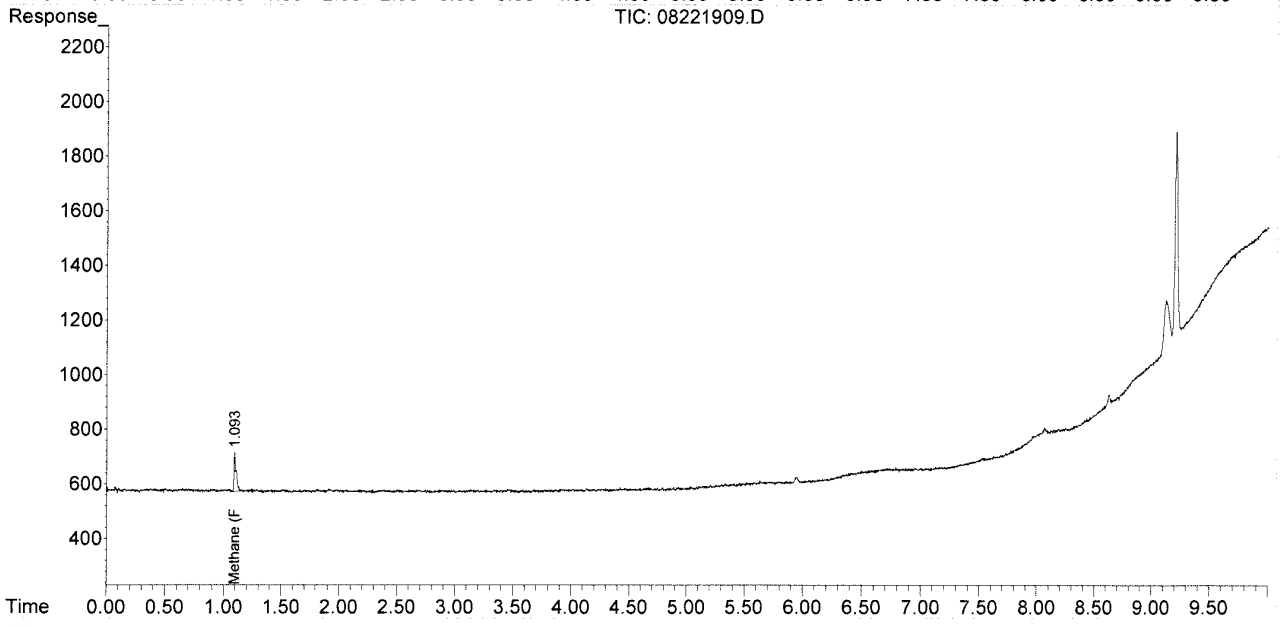
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221909.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 12:17:25
Operator : WH
Sample : P1904835-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 23 13:34:21 2019
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\2019_08\22\
Data File : 08221903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 10:59:42
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 22 11:21:18 2019
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) | 1.114 | 1284 | 0.142 | 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 |

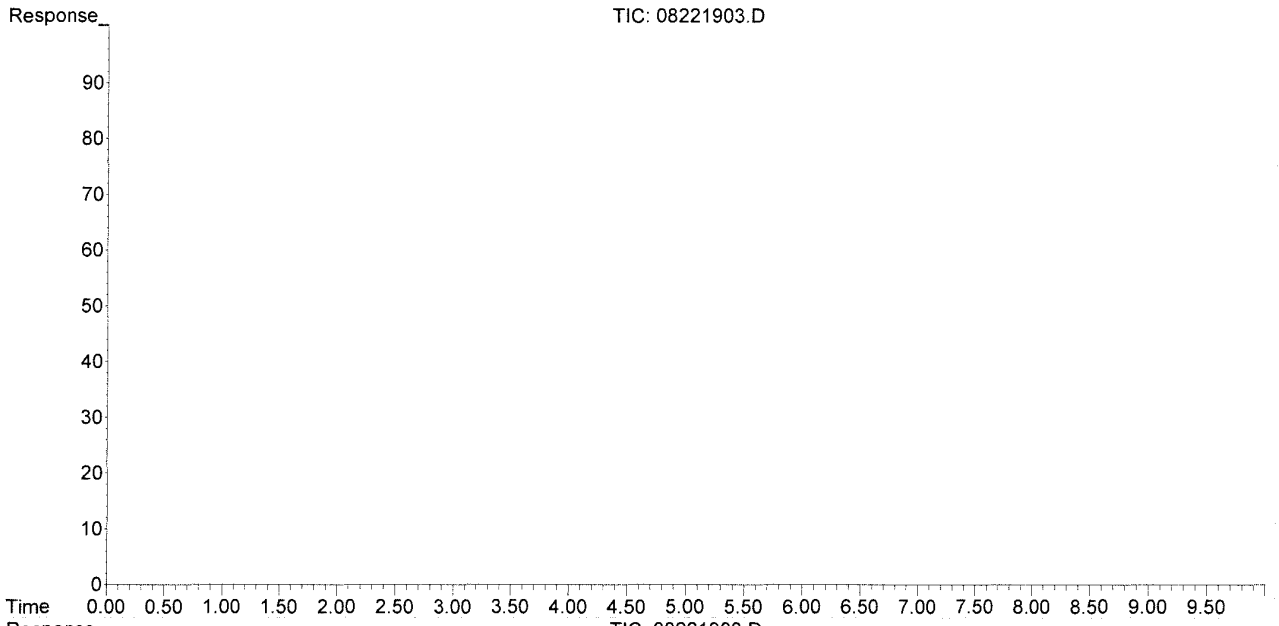
(f)=RT Delta > 1/2 Window (m)=manual int.

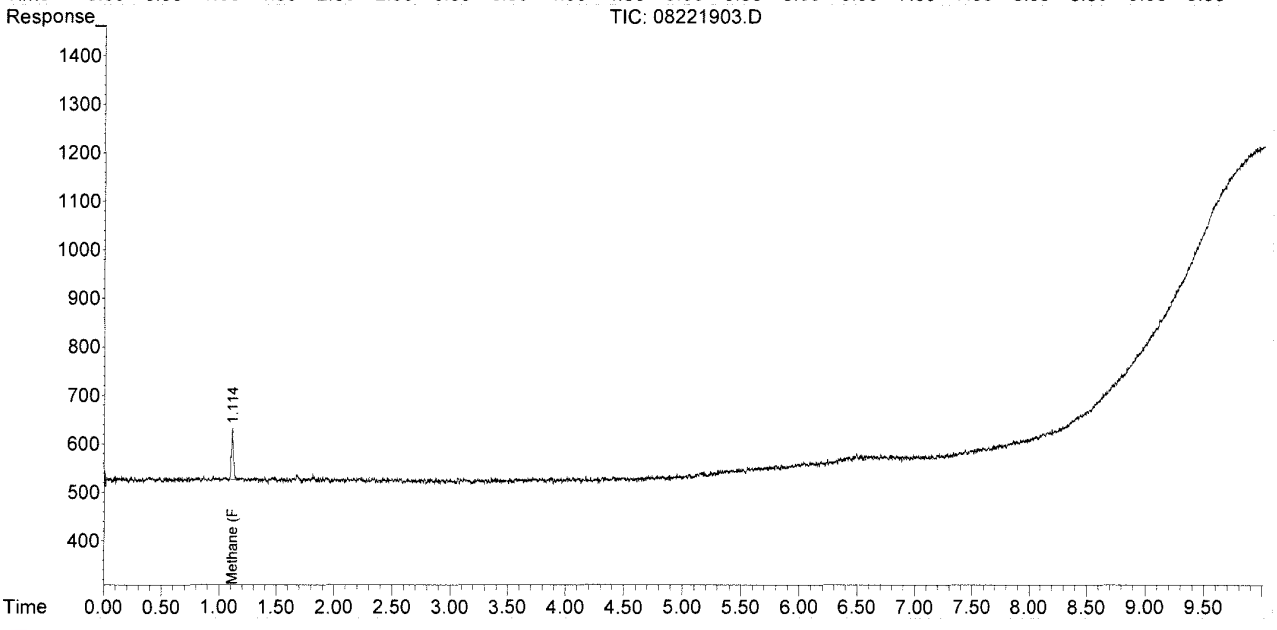
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221903.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 10:59:42
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 22 11:21:18 2019
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\2019_08\22\
Data File : 08221913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 13:48:49
Operator : WH
Sample : P1904835-002ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 14:12:28 2019
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 | 683312 | 75.332 | ppm |
| 7) | Ethylene | 1.667 | 1111851 | 66.441 | ppm |
| 8) | Ethane | 1.929 | 1297142 | 76.527 | ppm |
| 9) | Propylene | 4.305 | 1561423 | 66.638 | ppm |
| 10) | Propane | 4.426 | 1977220 | 79.470 | 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 |

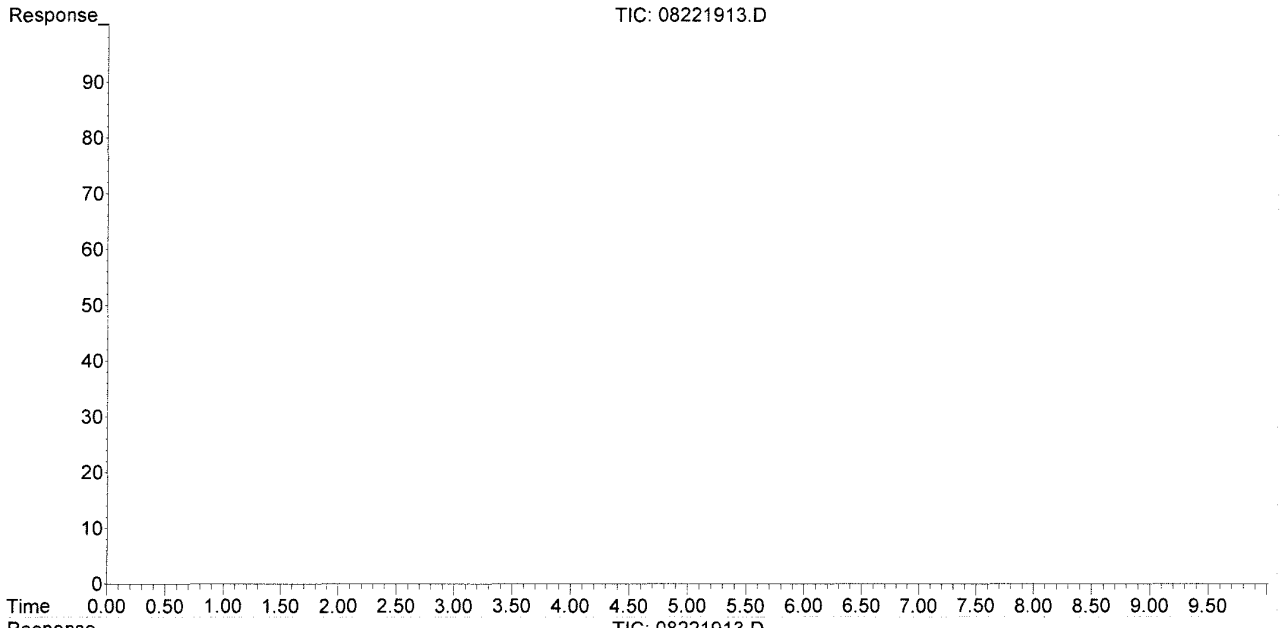
(f)=RT Delta > 1/2 Window (m)=manual int.

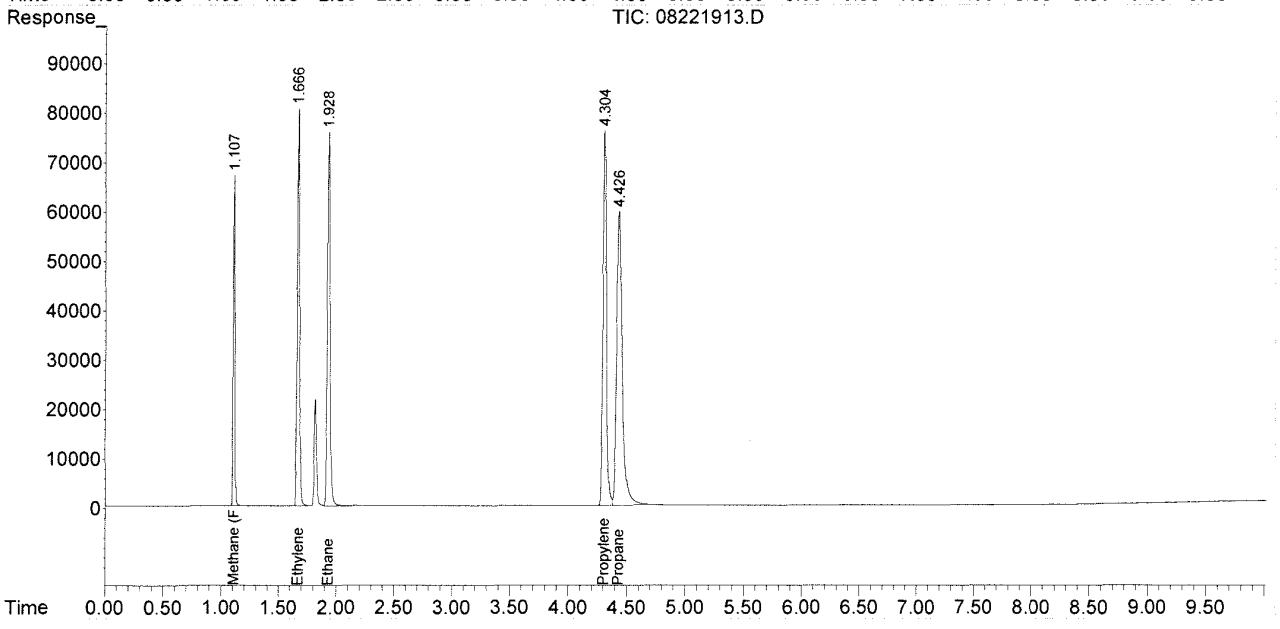
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221913.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 13:48:49
Operator : WH
Sample : P1904835-002ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 14:12:28 2019
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\2019_08\22\
Data File : 08221914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 14:02:06
Operator : WH
Sample : P1904835-002msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 14:12:42 2019
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 | 671542 | 74.035 | ppm |
| 7) | Ethylene | 1.664 | 1083968 | 64.775 | ppm |
| 8) | Ethane | 1.924 | 1277603 | 75.374 | ppm |
| 9) | Propylene | 4.301 | 1531938 | 65.379 | ppm |
| 10) | Propane | 4.424 | 1966267 | 79.029 | 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 |

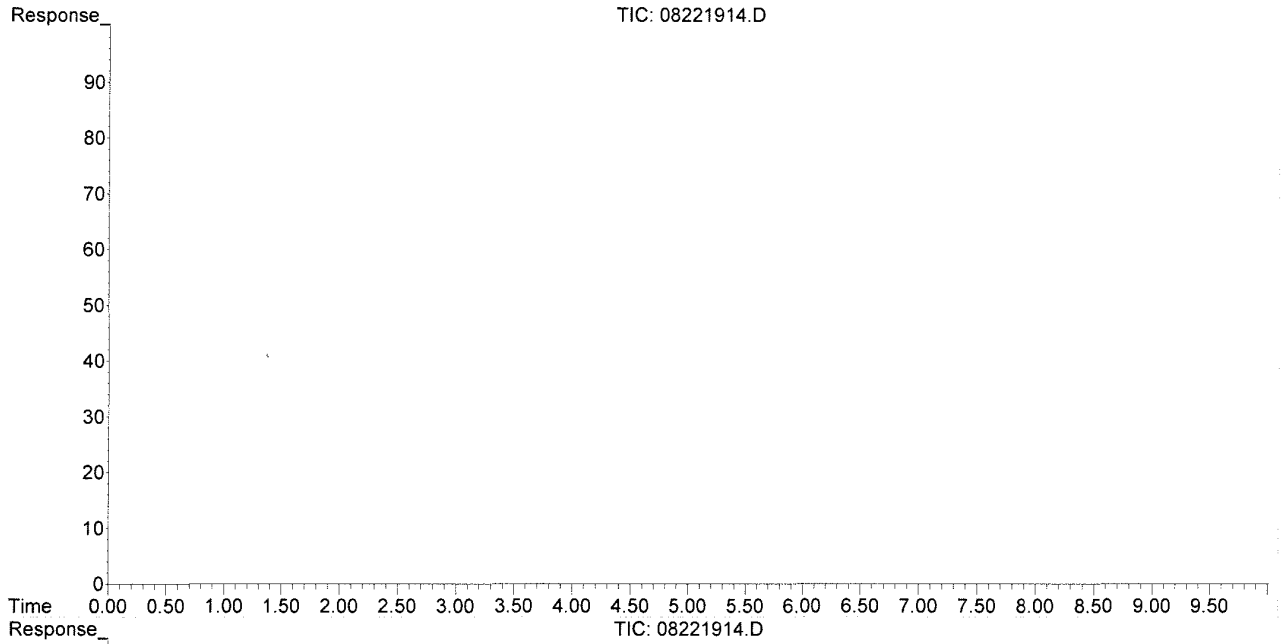
(f)=RT Delta > 1/2 Window (m)=manual int.

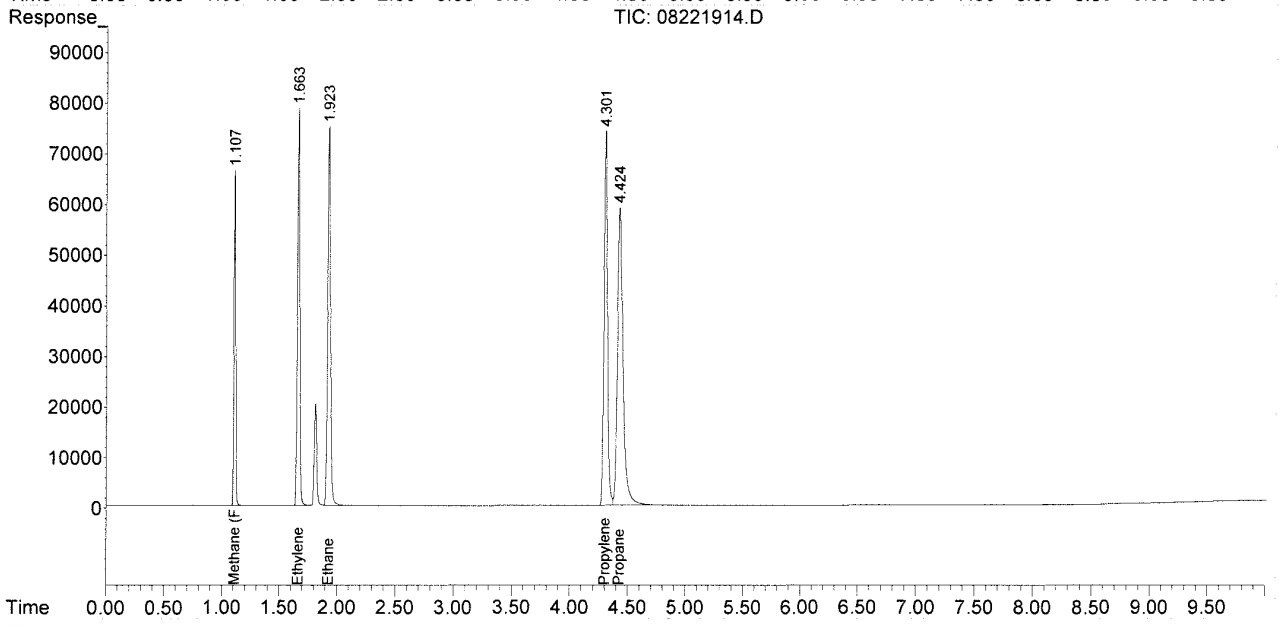
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221914.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 14:02:06
Operator : WH
Sample : P1904835-002msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 14:12:42 2019
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\2019_08\22\
Data File : 08221904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 11:13:12
Operator : WH
Sample : lcs fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 11:21:29 2019
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) | 1.109 | 13352 | 1.472 | ppm |
| 7) | Ethylene | 1.667 | 16755 | 1.001 | ppm |
| 8) | Ethane | 1.928 | 21051 | 1.242 | ppm |
| 9) | Propylene | 4.308 | 22653 | 0.967 | ppm |
| 10) | Propane | 4.430 | 32877 | 1.321 | ppm |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm |
| 12) | Isobutane | 6.650 | 42749 | 1.606 | ppm |
| 13) | n-Butane | 6.650 | 42749 | 1.606 | ppm |

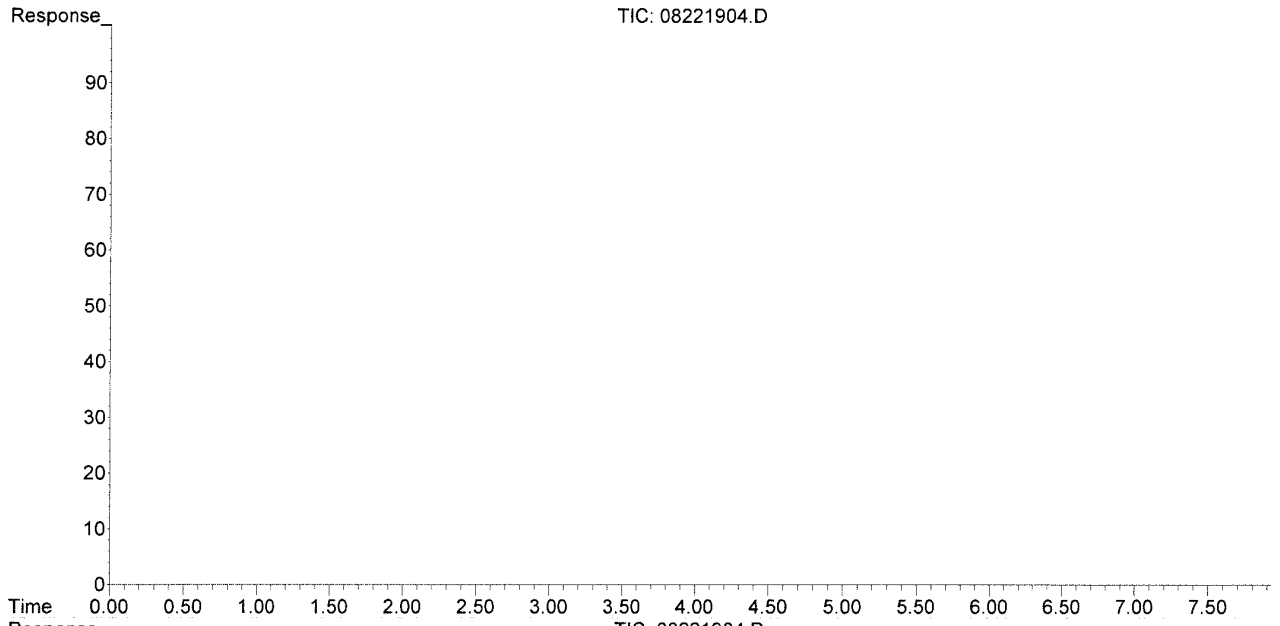
(f)=RT Delta > 1/2 Window (m)=manual int.

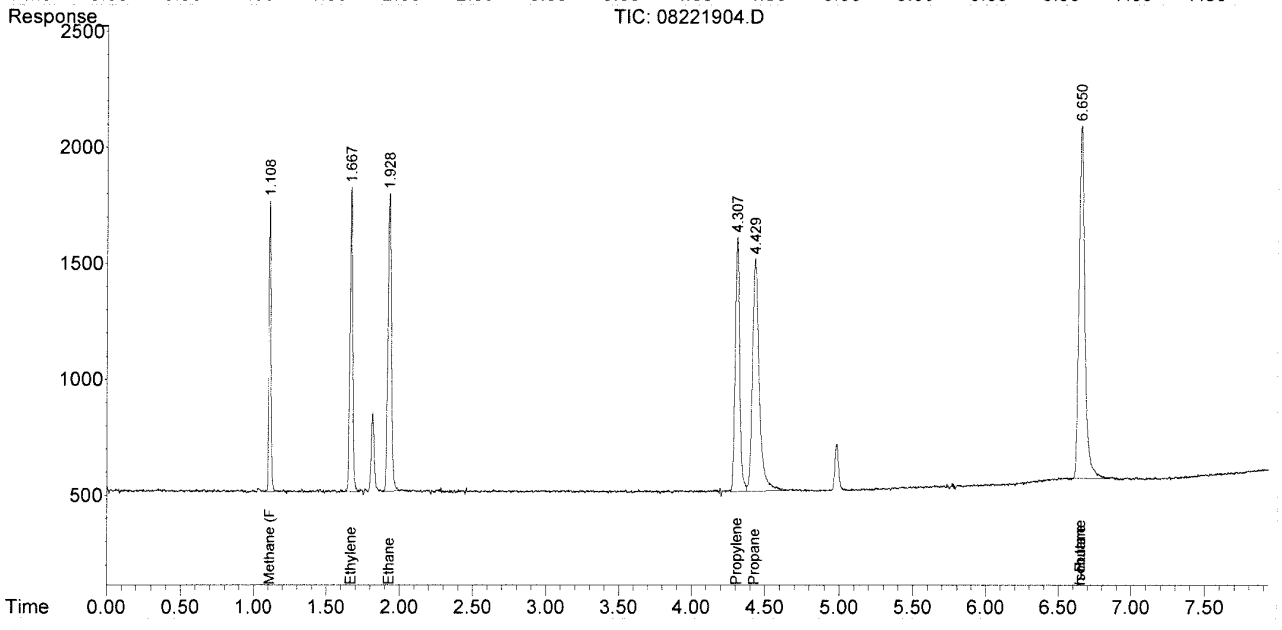
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221904.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 11:13:12
Operator : WH
Sample : lcs fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 11:21:29 2019
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\2019_08\22\
Data File : 08221905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 11:23:34
Operator : WH
Sample : lcsd fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 11:40:12 2019
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) | 1.110 | 13046 | 1.438 | ppm |
| 7) | Ethylene | 1.660 | 16321 | 0.975 | ppm |
| 8) | Ethane | 1.918 | 20571 | 1.214 | ppm |
| 9) | Propylene | 4.304 | 22340 | 0.953 | ppm |
| 10) | Propane | 4.427 | 32031 | 1.287 | ppm |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm |
| 12) | Isobutane | 6.650 | 43701 | 1.642 | ppm |
| 13) | n-Butane | 6.650 | 43701 | 1.642 | ppm |

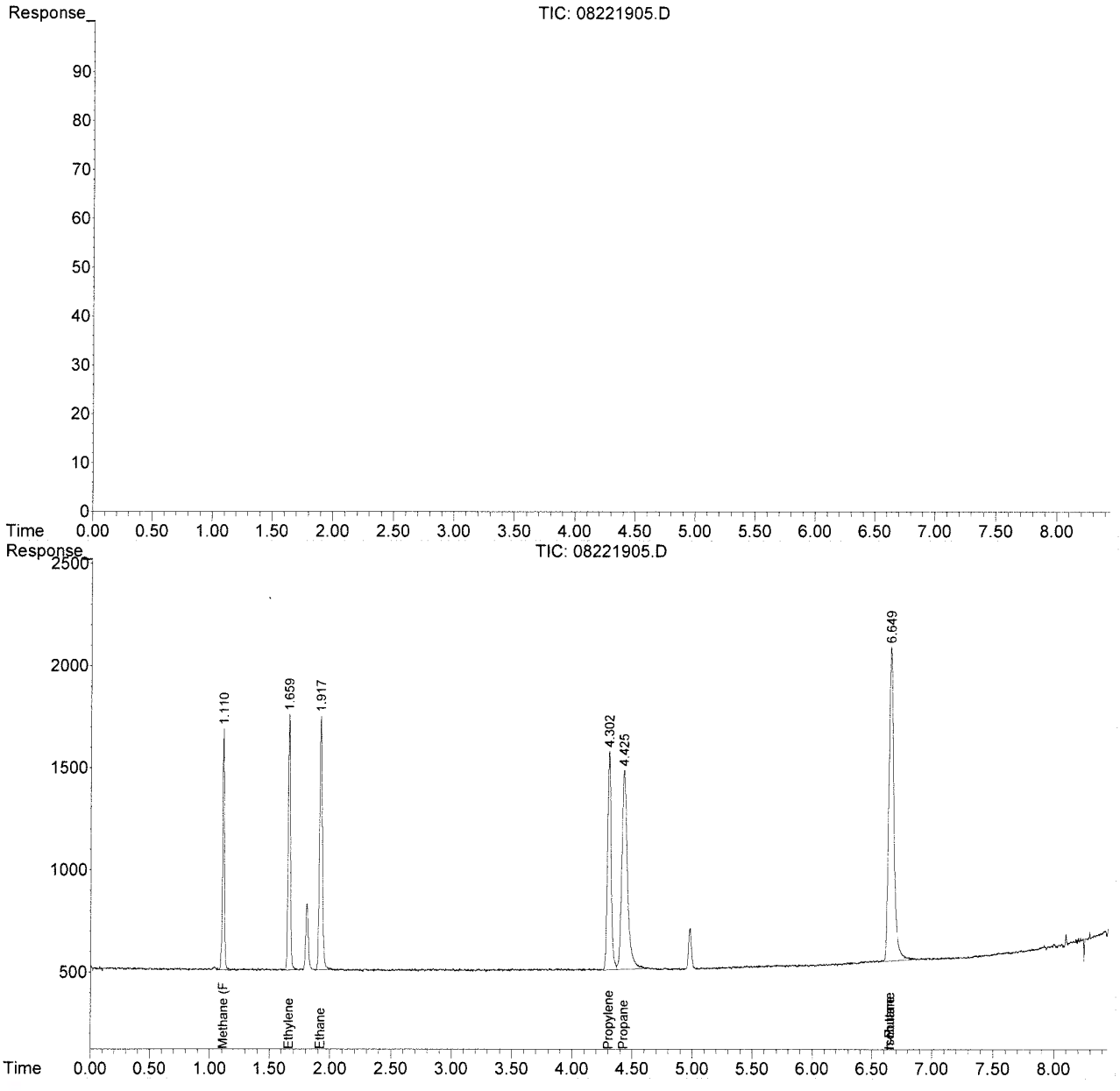
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221905.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 11:23:34
Operator : WH
Sample : lcsd fid
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 11:40:12 2019
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

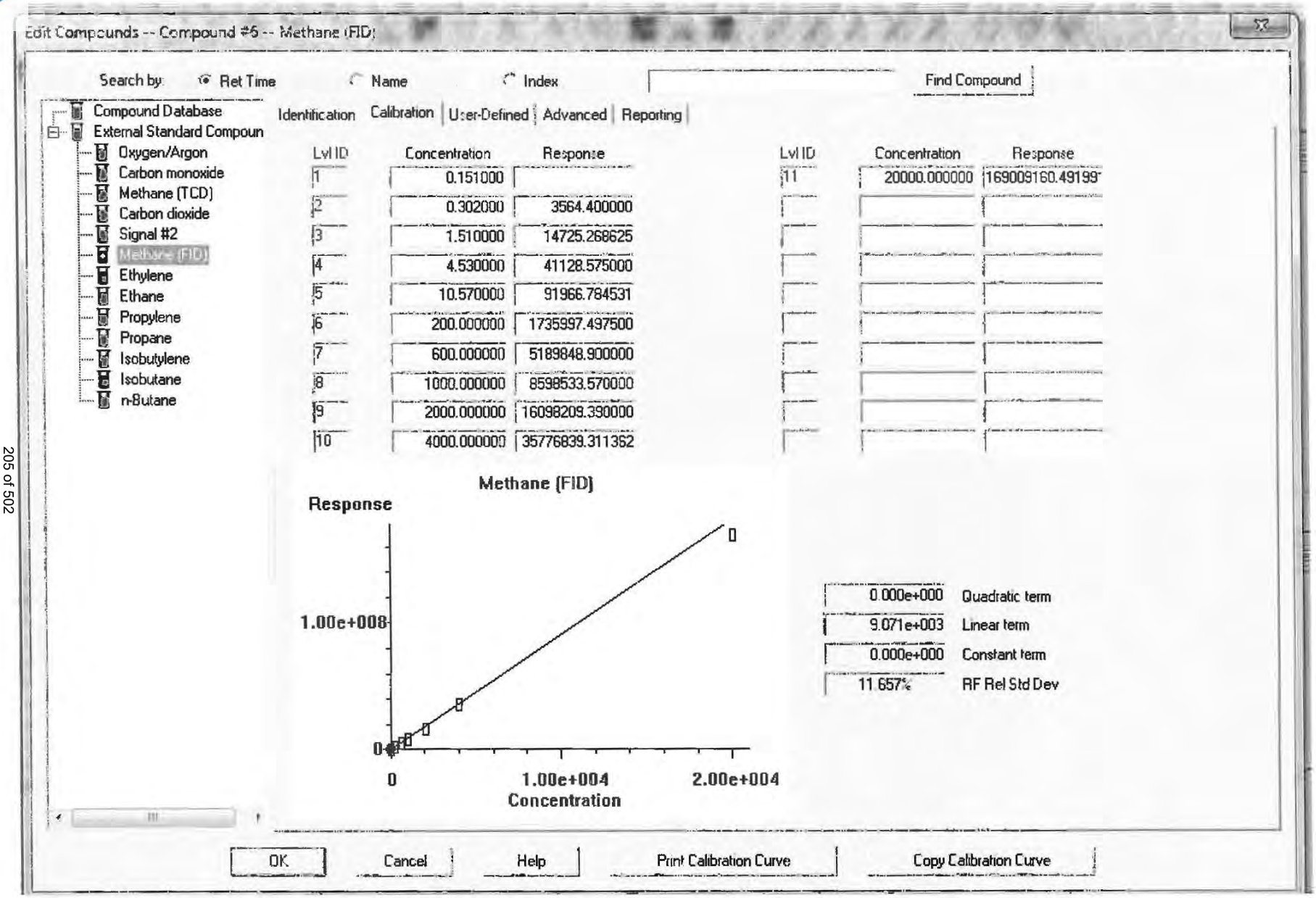
| | Compound | 1 | 2 | 3 | 4 | 5 | 6 | Avg | | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | Oxygen/Argon | 3.739 | | 1.014 | | | 0.001 | 0.793 | E6 | 189.17 |
| 2) | Carbon monoxide | 3.739 | | 1.014 | | | 0.001 | 0.594 | E6 | 221.92 |
| 3) | Methane (TCD) | | | | | | 2.161 | 0.951 | E2 | 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
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

Edit Compounds -- Compound #7 -- Ethylene

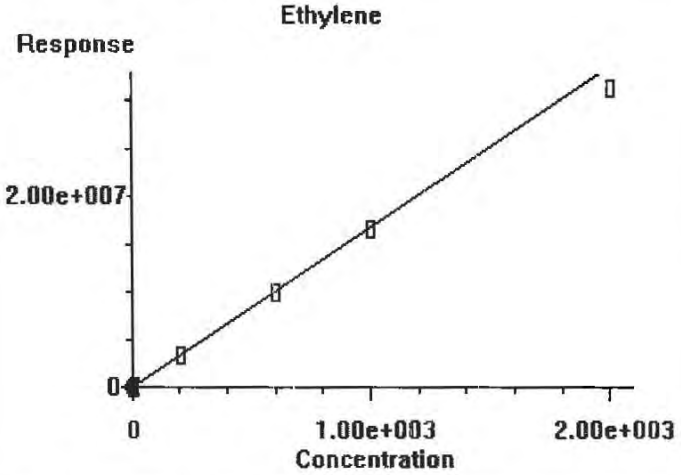
Search by: Ret Time | Name | Index — Find Compound

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

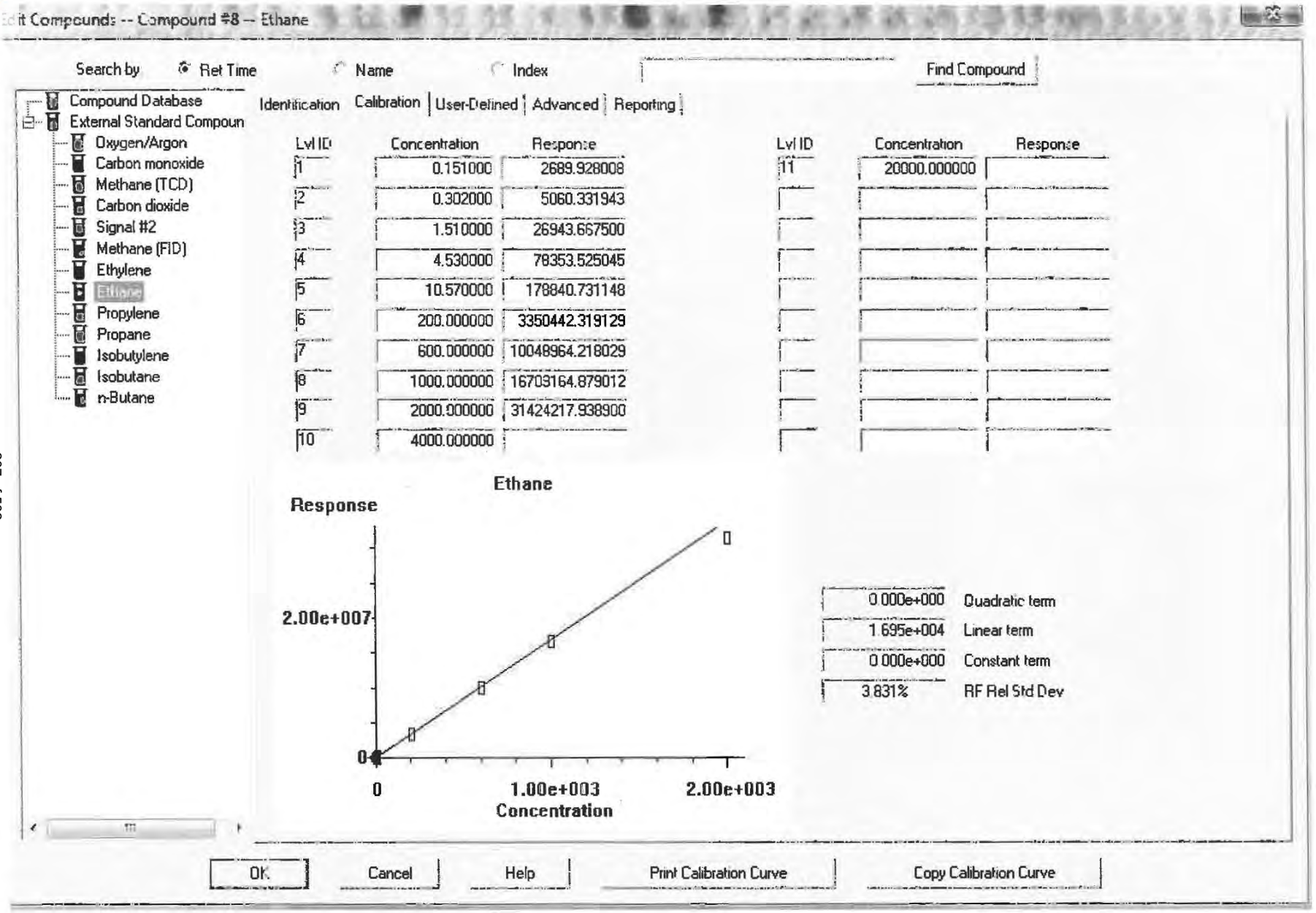
| Lvl ID | Concentration | Response |
|---|---|---|
| 1 | 0.151000 | 2621.970000 |
| 2 | 0.302000 | 4946.731301 |
| 3 | 1.510000 | 26884.746847 |
| 4 | 4.530000 | 77902.721497 |
| 5 | 10.570000 | 172085.529560 |
| 6 | 200.000000 | 3339702.313219 |
| 7 | 600.000000 | 10007758.776971 |
| 8 | 1000.000000 | 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


it 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
11 20000.000000
Ethane
Response
2.00e+007
0
0
1.00e+003
2.00e+003
Concentration
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

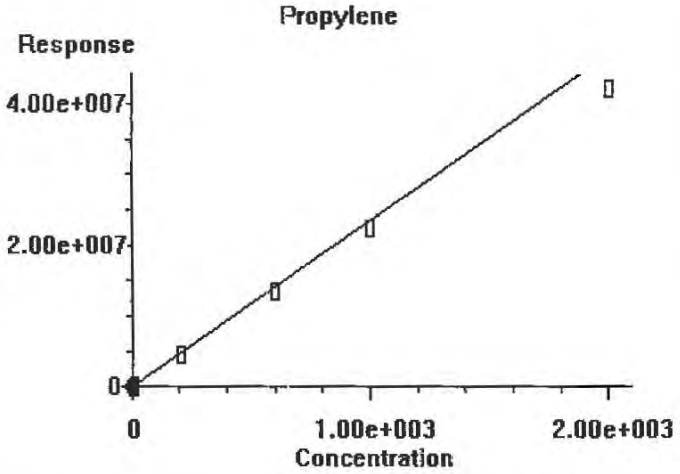
Edit Compounds -- Compound #9 -- Propylene

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 | |
| 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

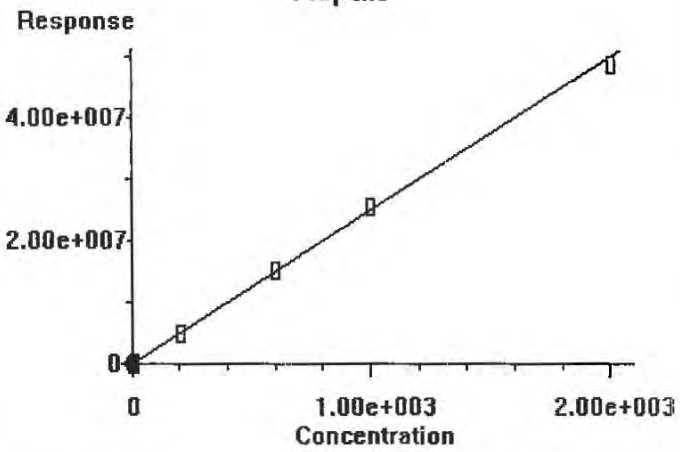
- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

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 | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Propane




| | |
|---|---|
| 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.

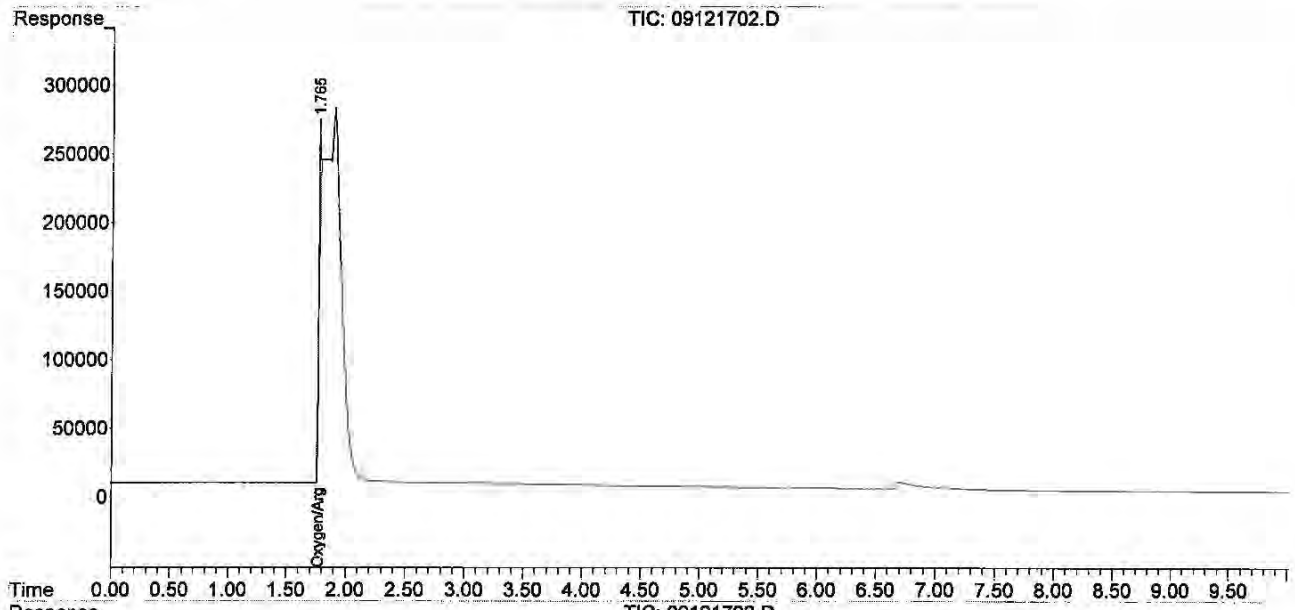
9/13/17

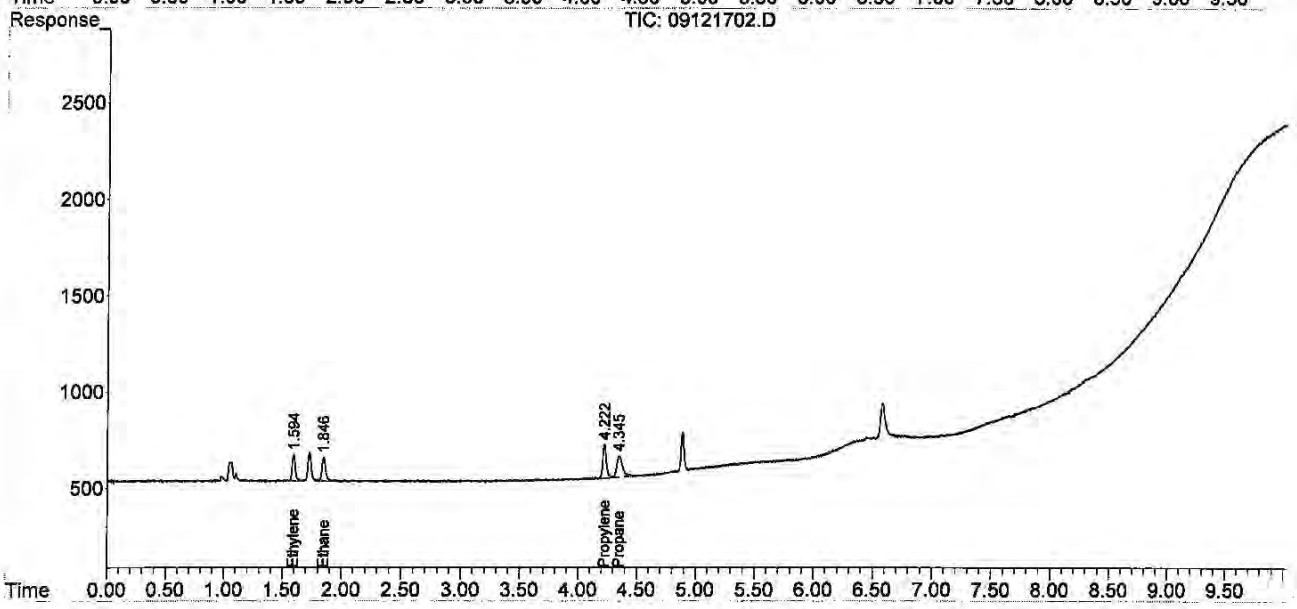
Quantitation Report (QT Reviewed)

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 :



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 | |

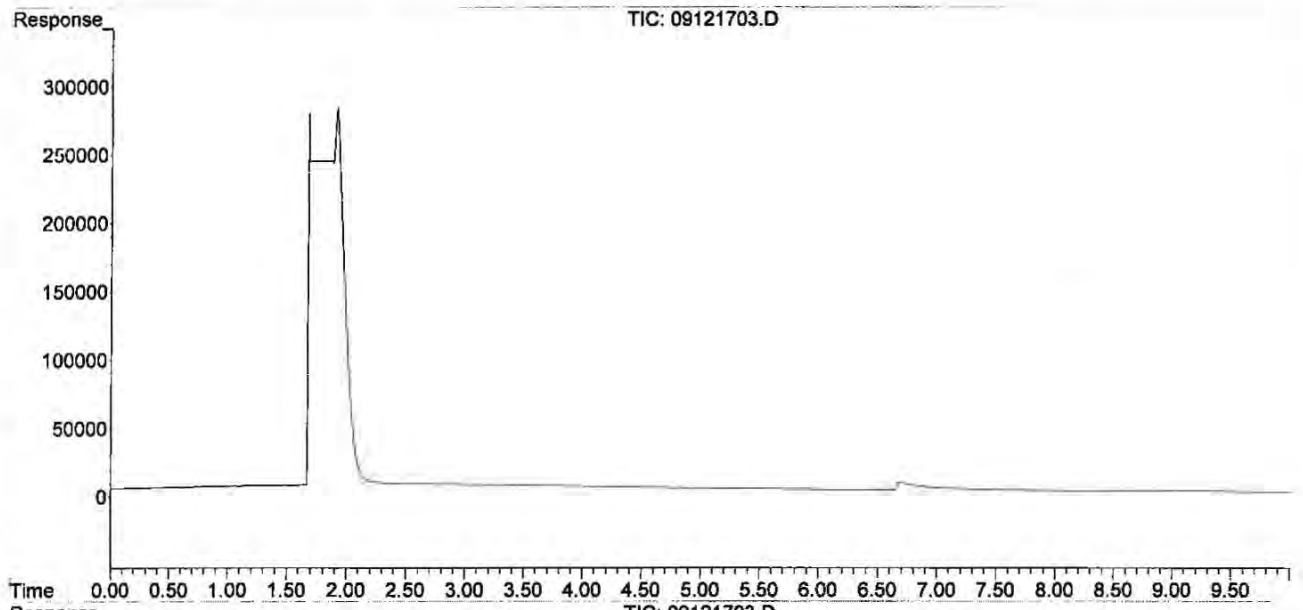
(f)=RT Delta > 1/2 Window (m)=manual int.

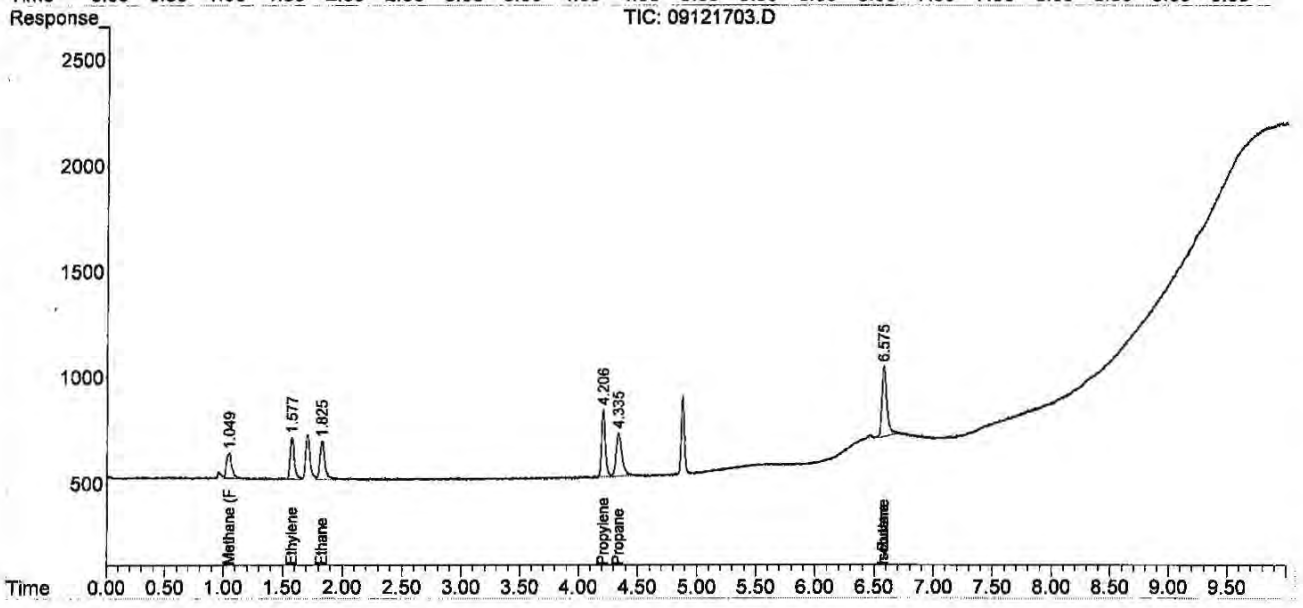
Quantitation Report (QT Reviewed)

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 :



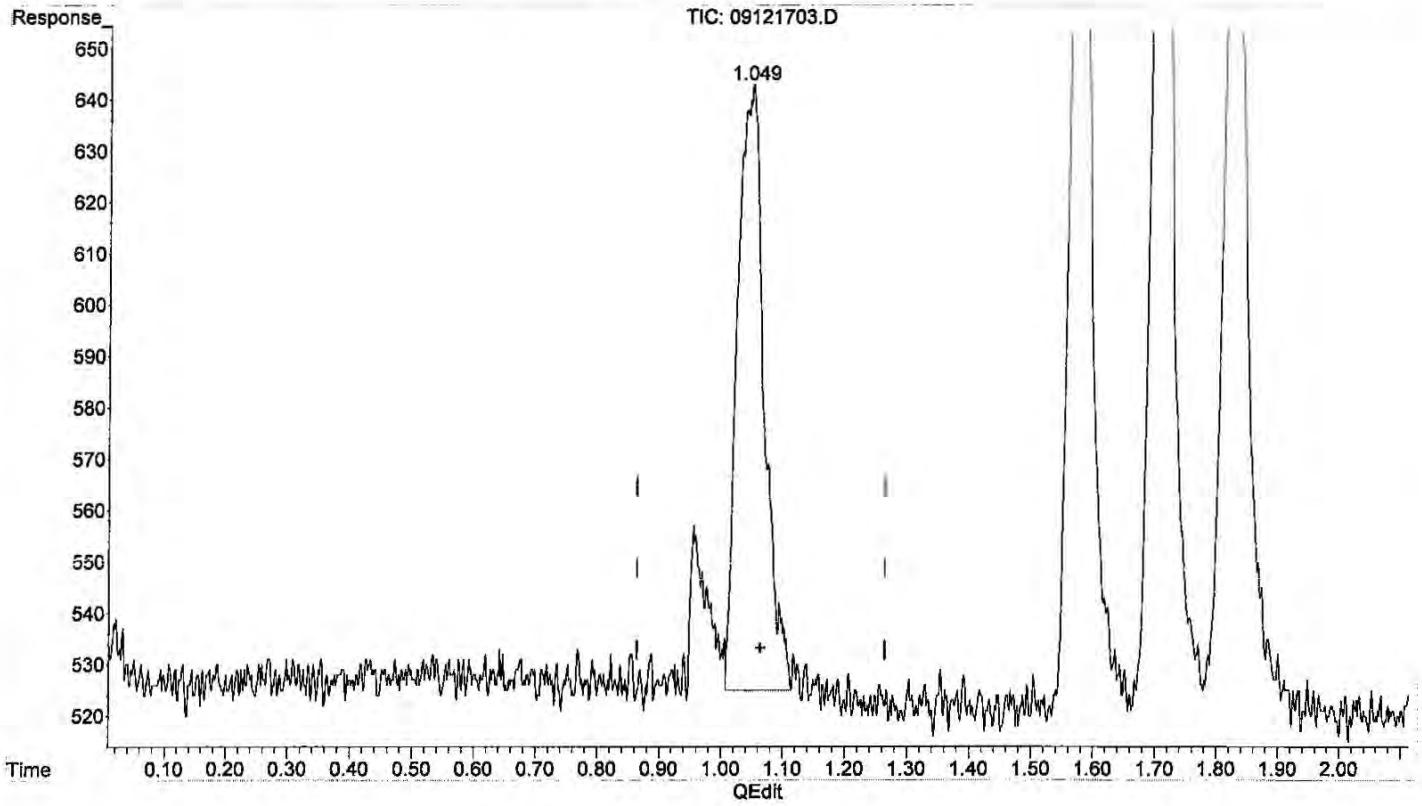



Quantitation Report (Qedit)

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 #1 Info :
Signal #2 Phase:
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 |

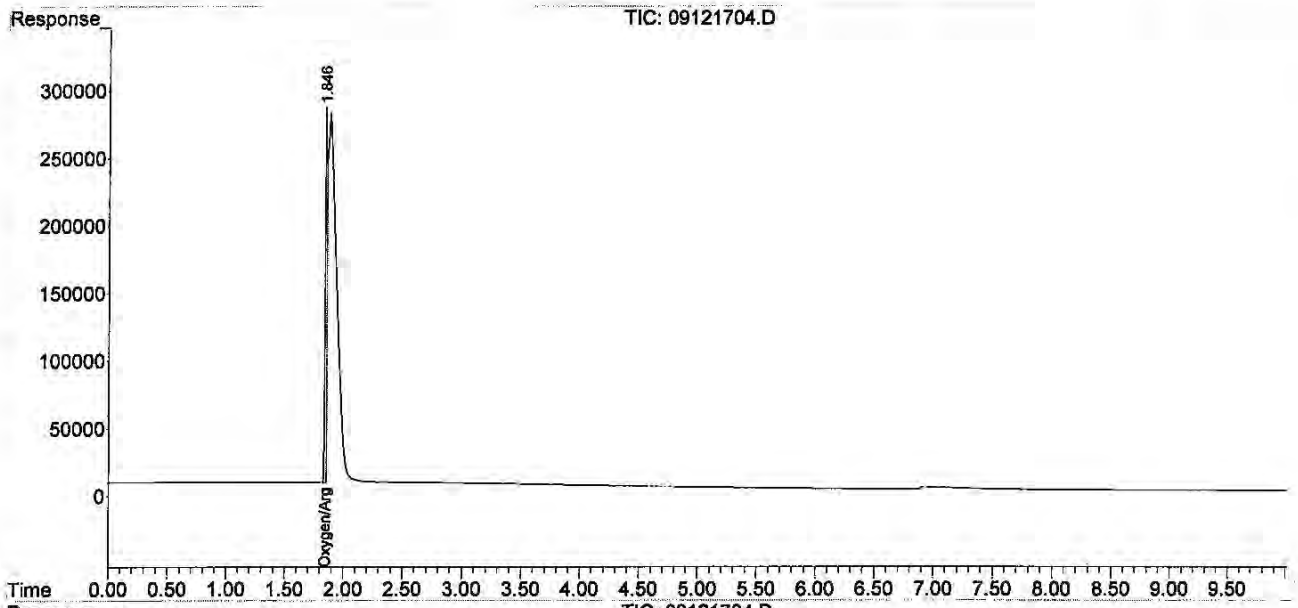
(f)=RT Delta > 1/2 Window (m)=manual int.

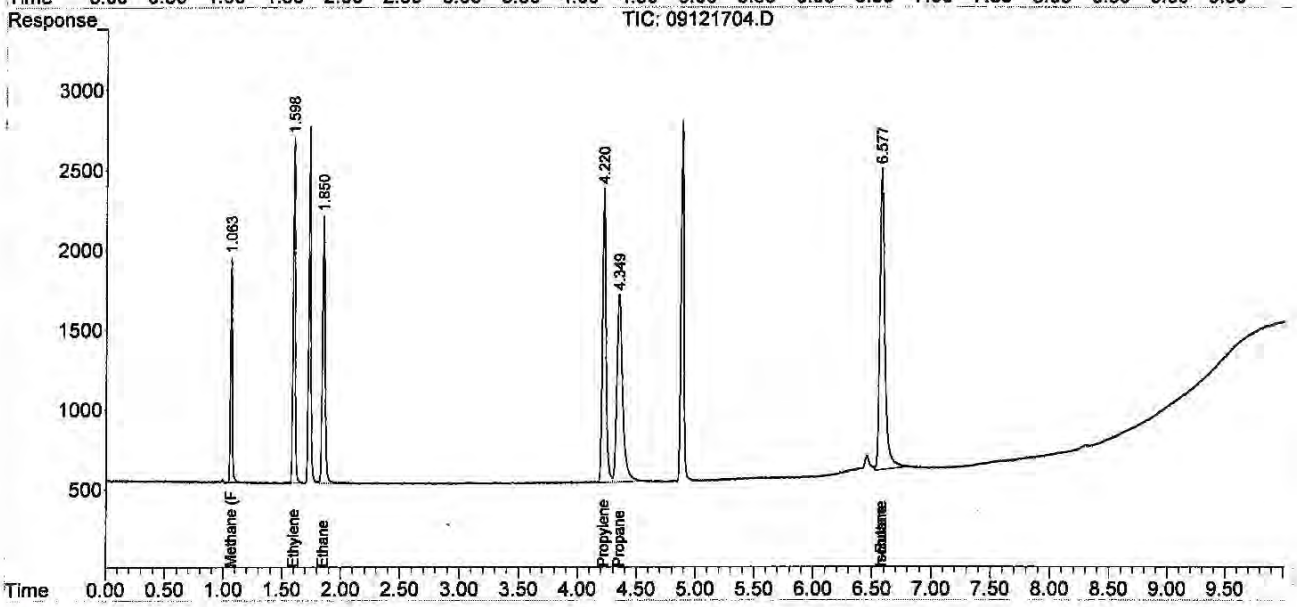
Quantitation Report (QT Reviewed)

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 :



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 |

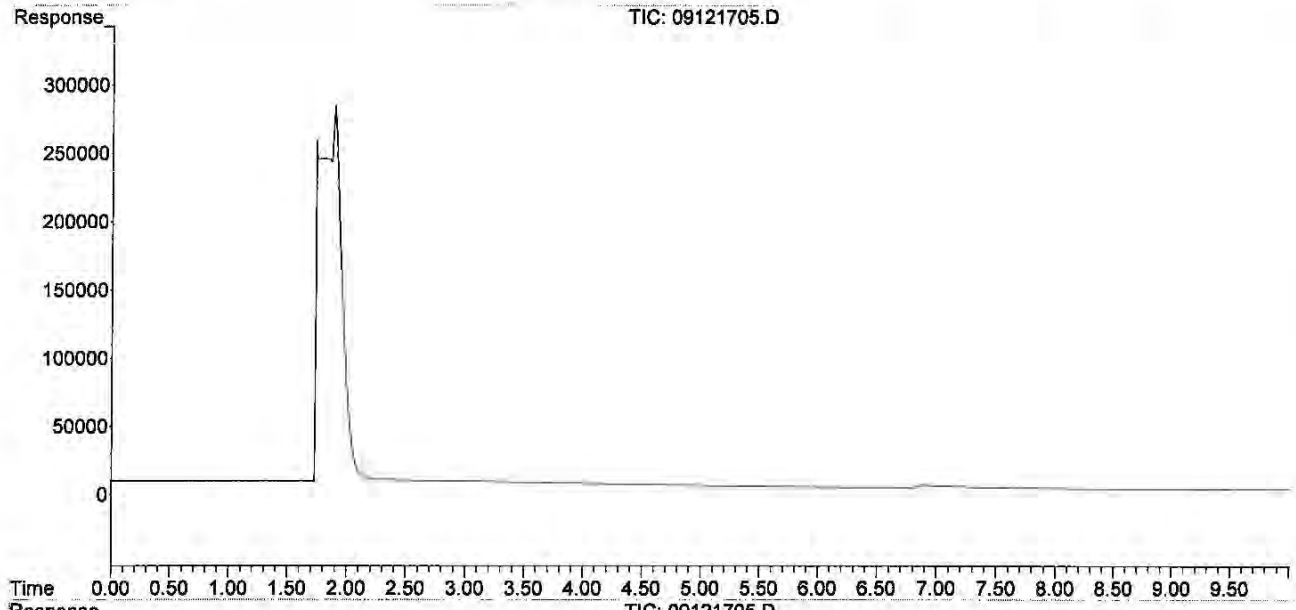
(f)=RT Delta > 1/2 Window (m)=manual int.

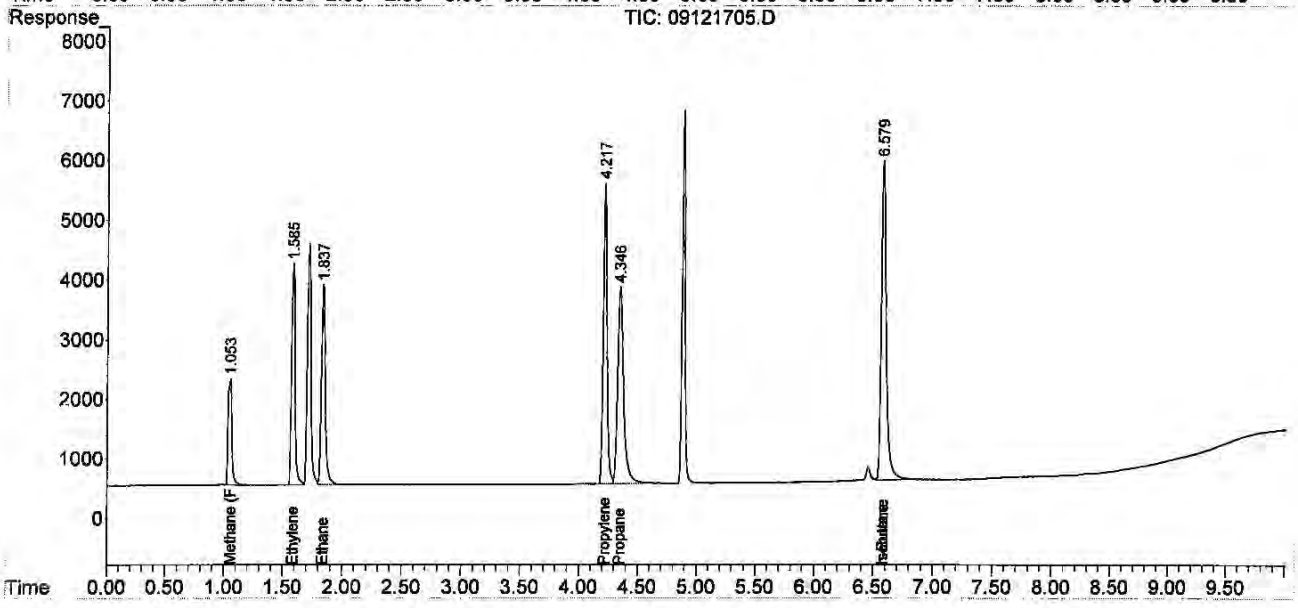
Quantitation Report (QT Reviewed)

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 |

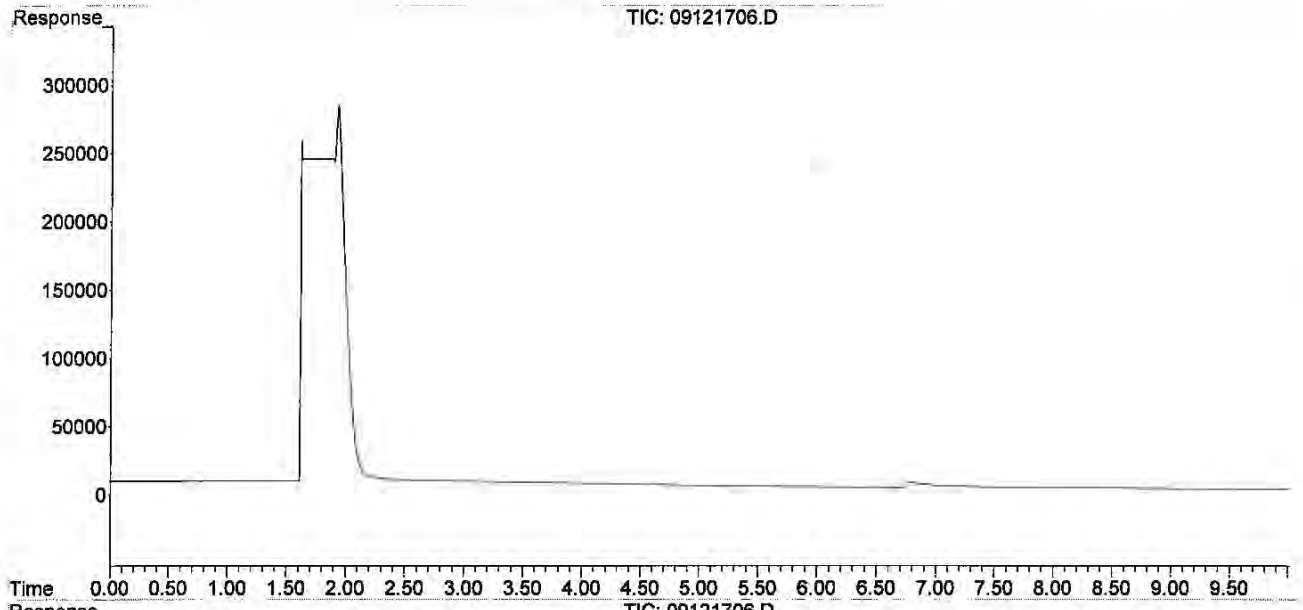
(f)=RT Delta > 1/2 Window (m)=manual int.

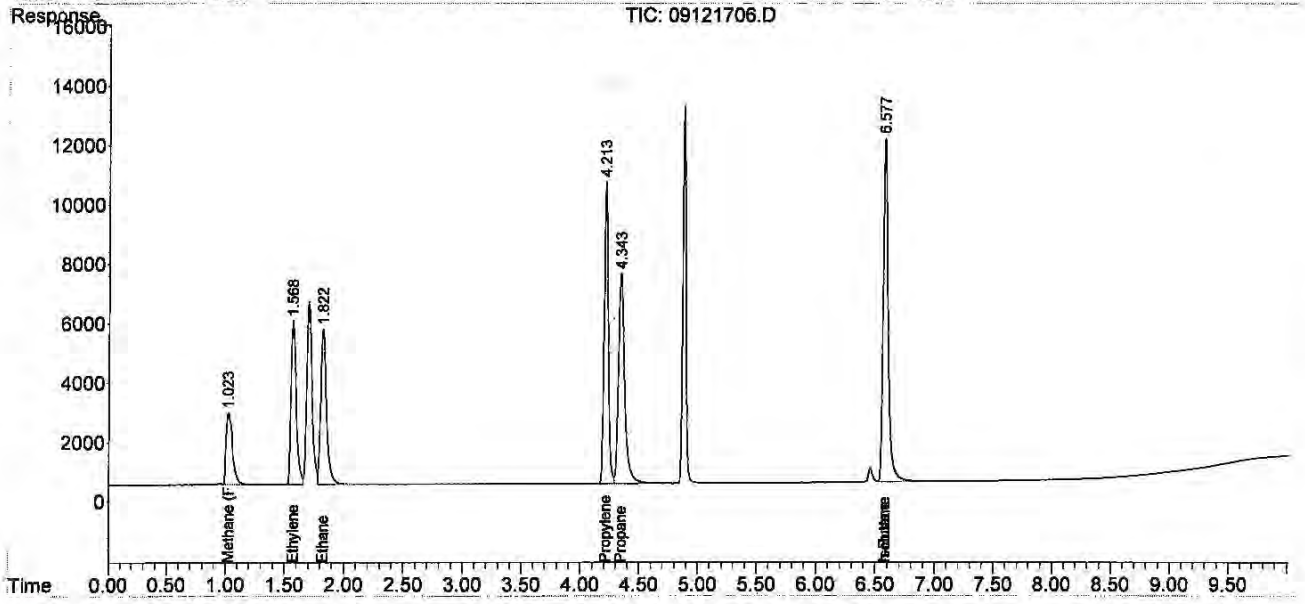
Quantitation Report (QT Reviewed)

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 |

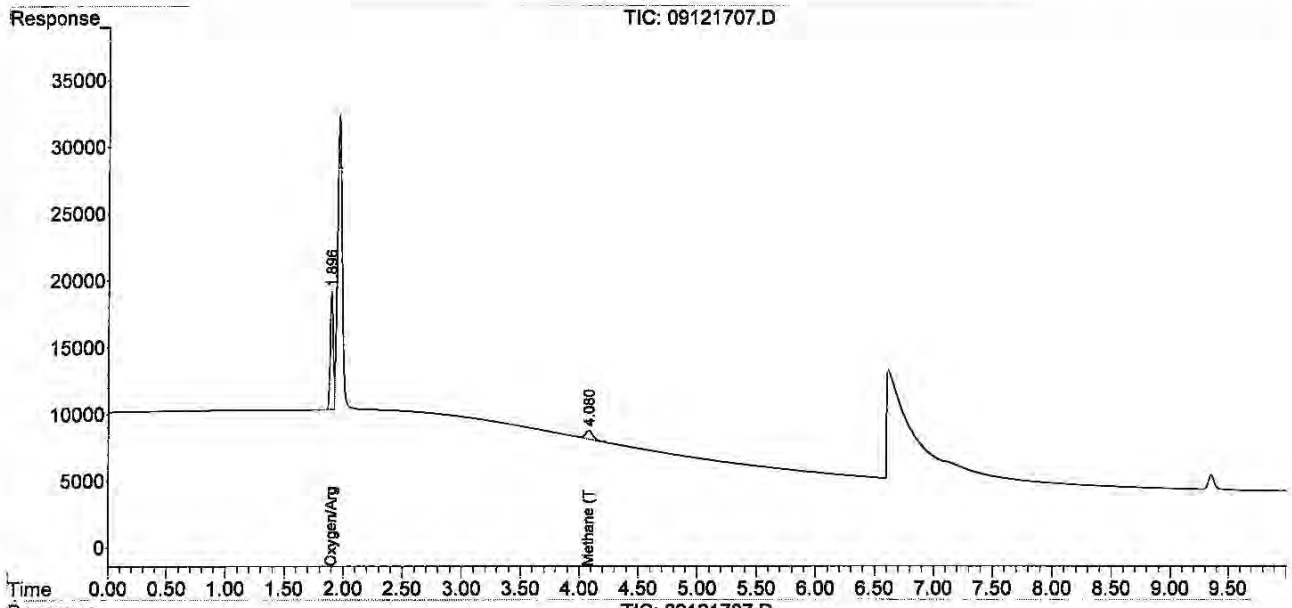
(f)=RT Delta > 1/2 Window (m)=manual int.

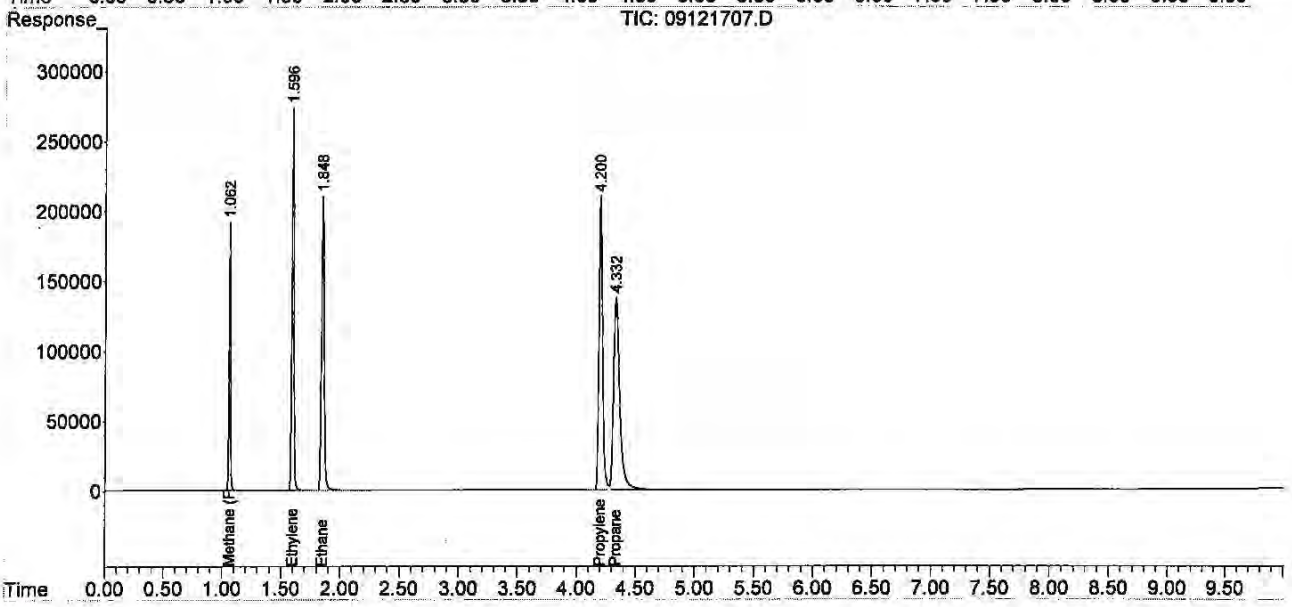
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

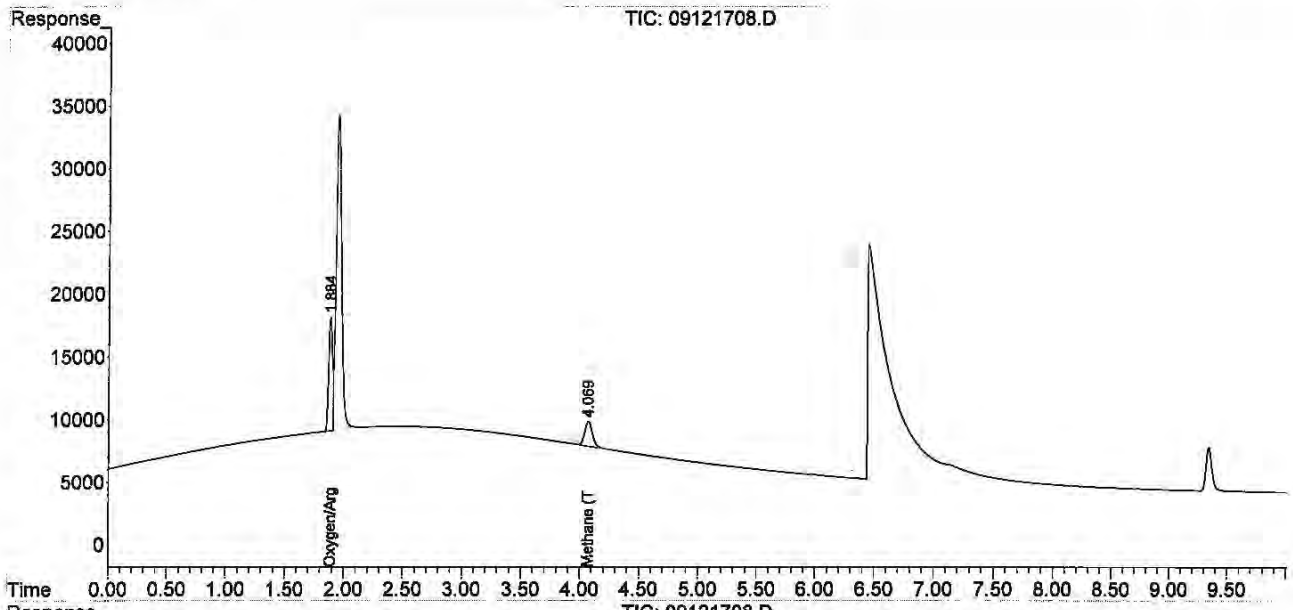
(f)=RT Delta > 1/2 Window (m)=manual int.

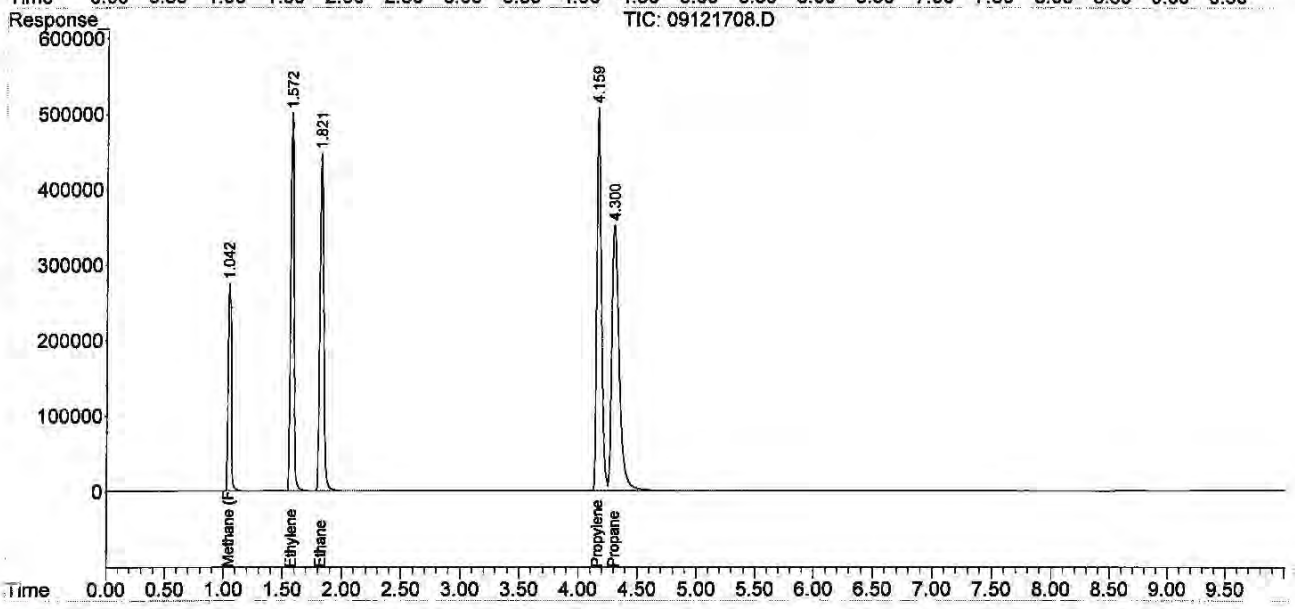
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
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 |

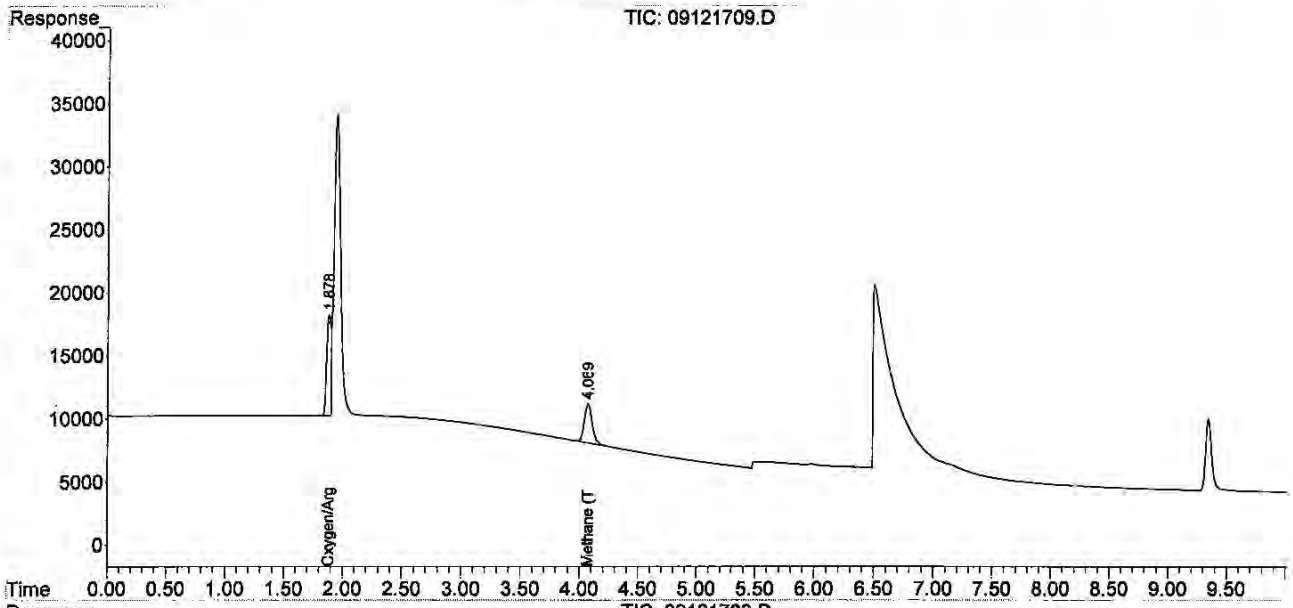
(f)=RT Delta > 1/2 Window (m)=manual int.

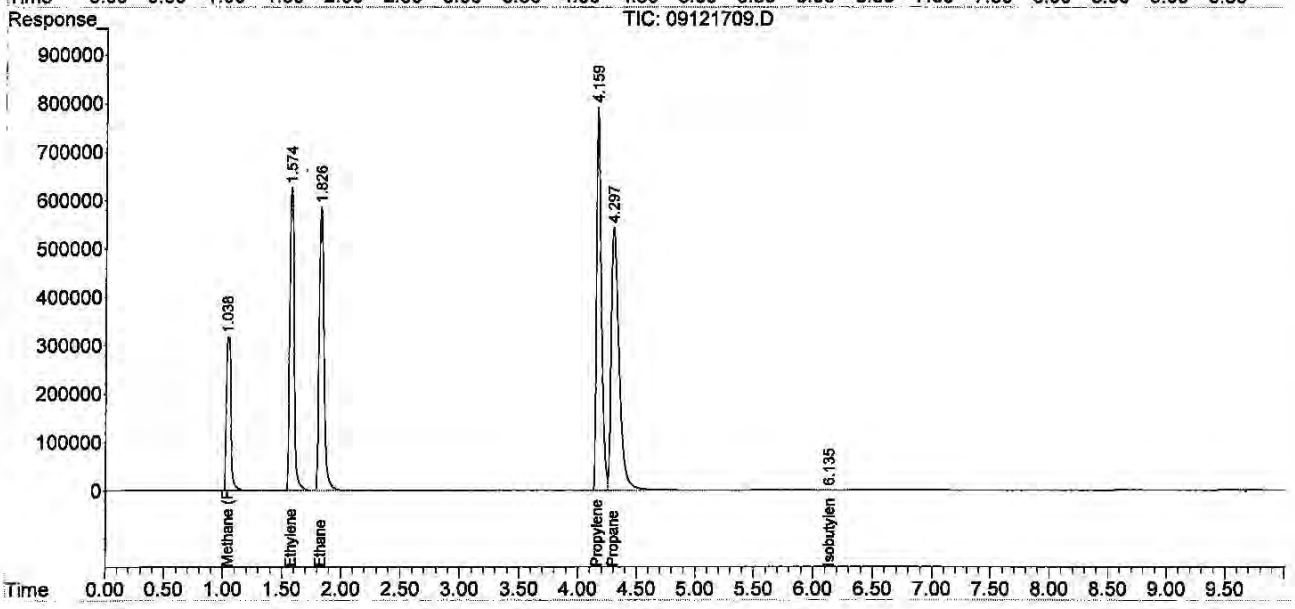
Quantitation Report (QT Reviewed)

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 | |

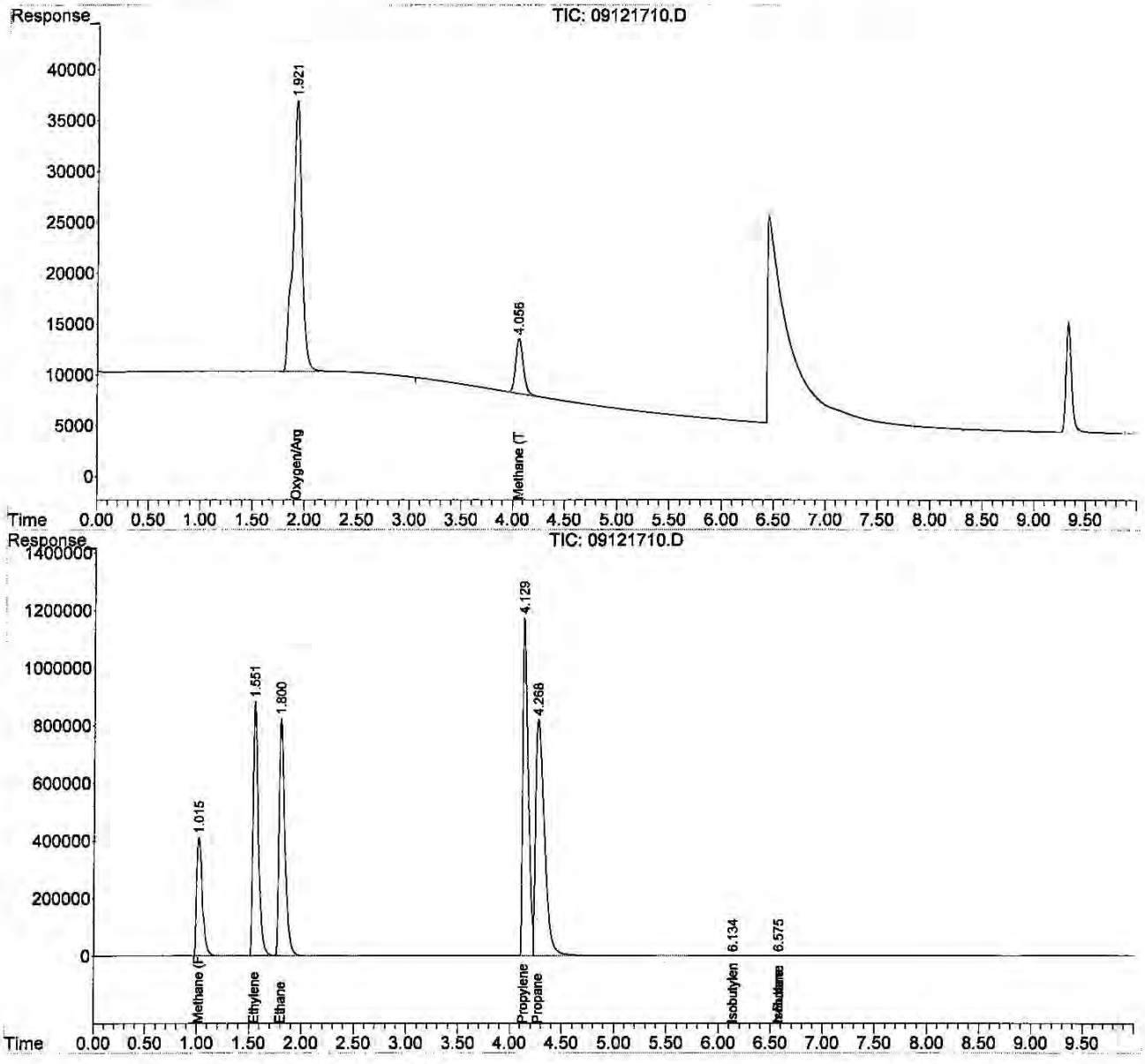
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

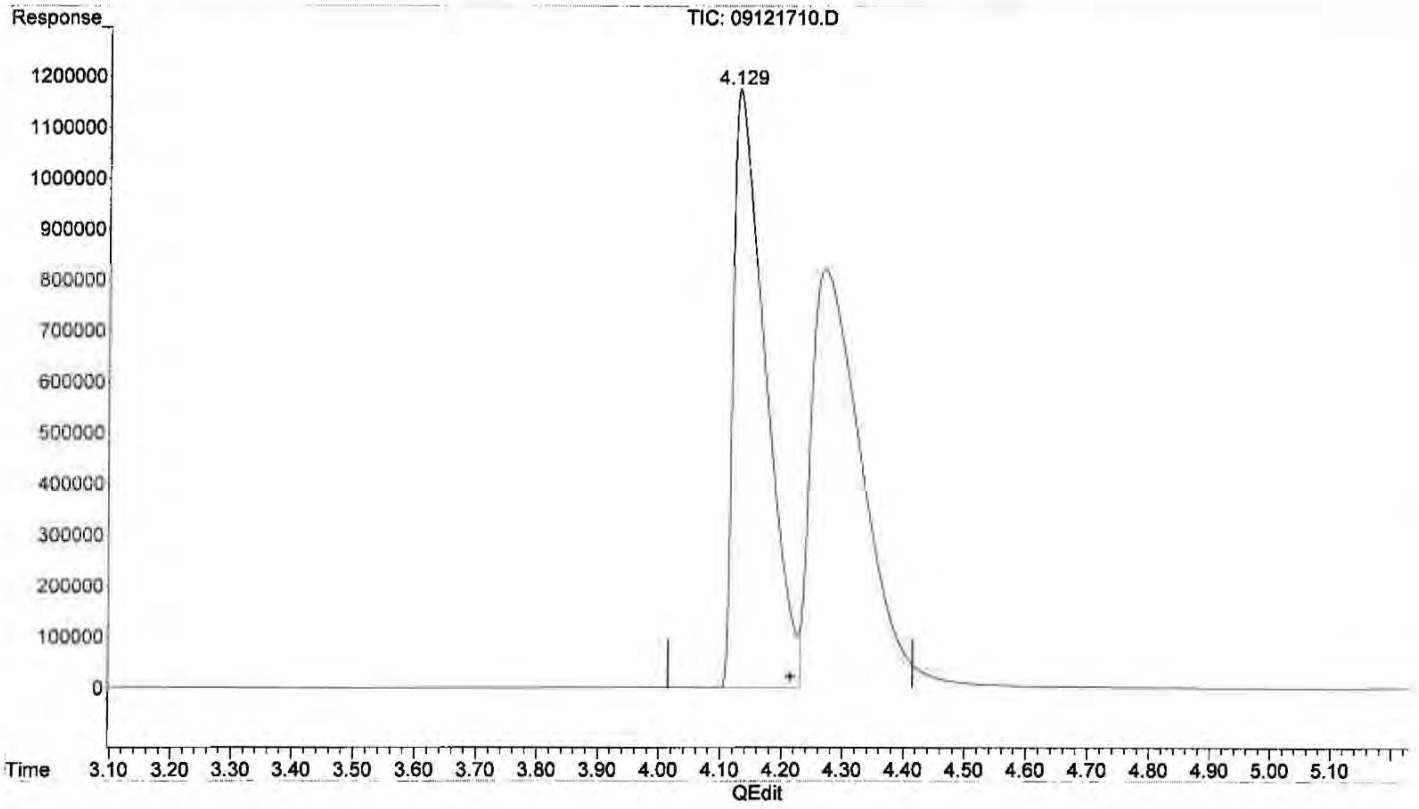


Quantitation Report (Qedit)

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 | |

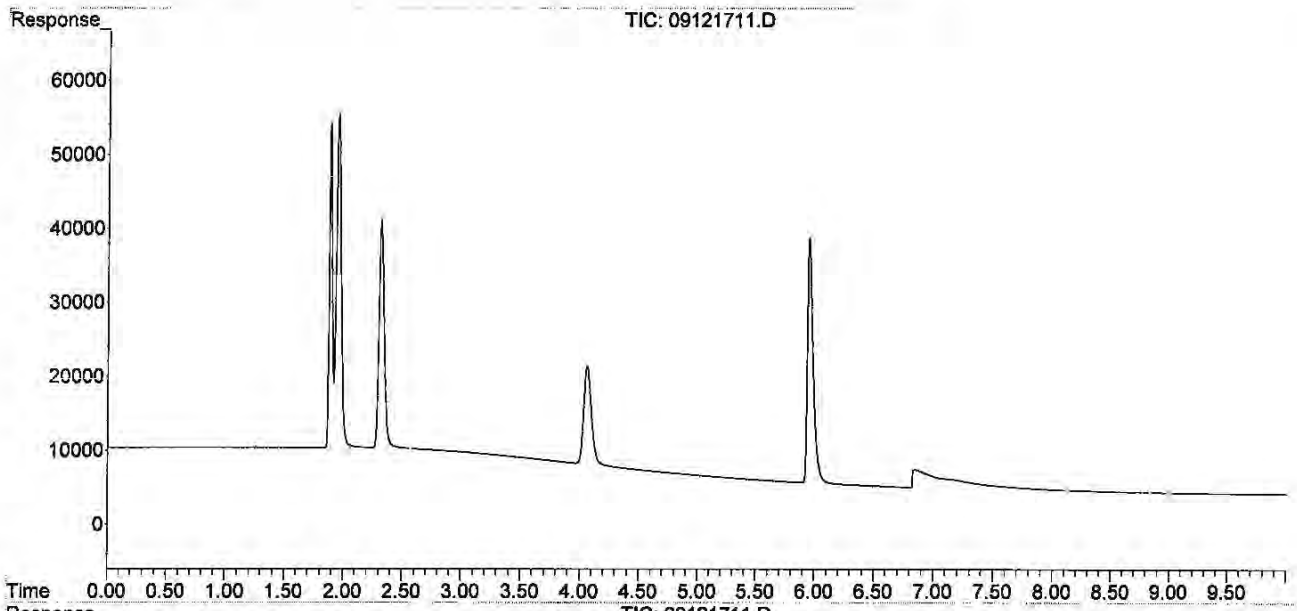
(f)=RT Delta > 1/2 Window (m)=manual int.

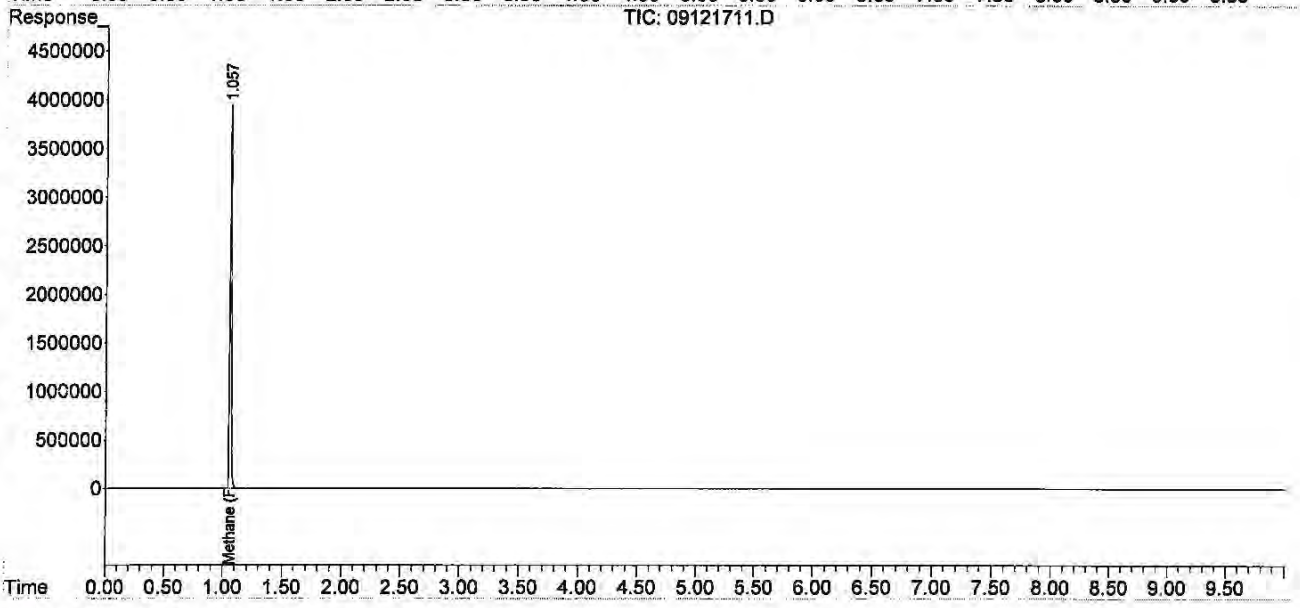
Quantitation Report (QT Reviewed)

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 #1 Info :
Signal #2 Phase:
Signal #2 Info :



Quantitation Report (QT Reviewed)

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 | |

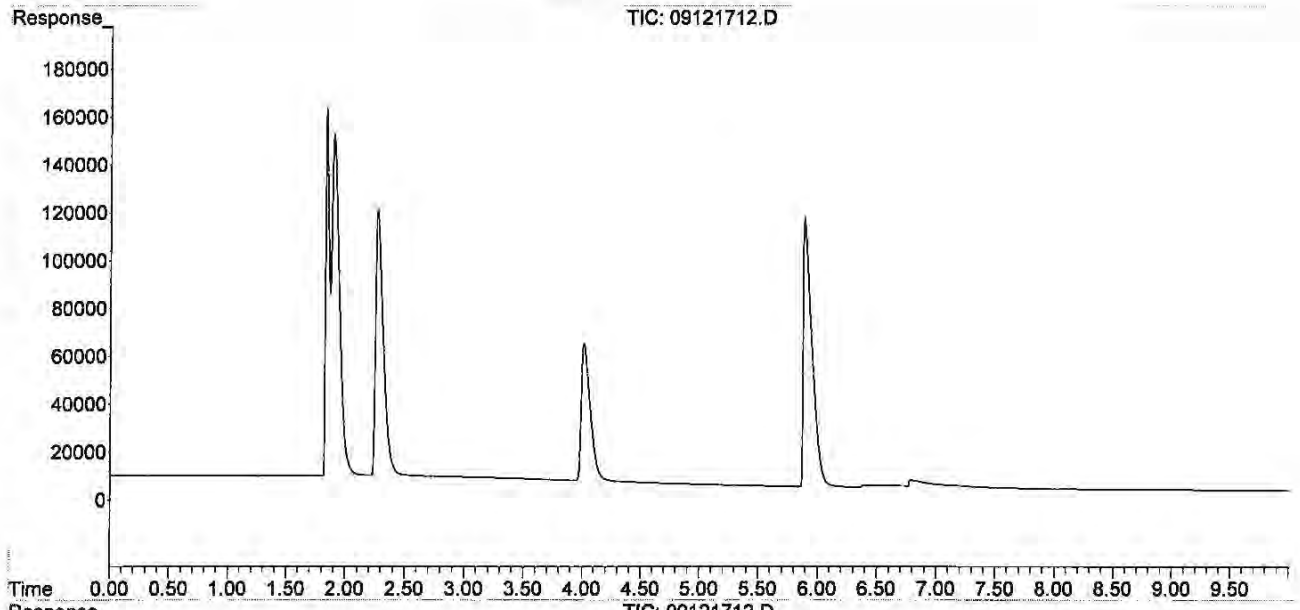
(f)=RT Delta > 1/2 Window (m)=manual int.

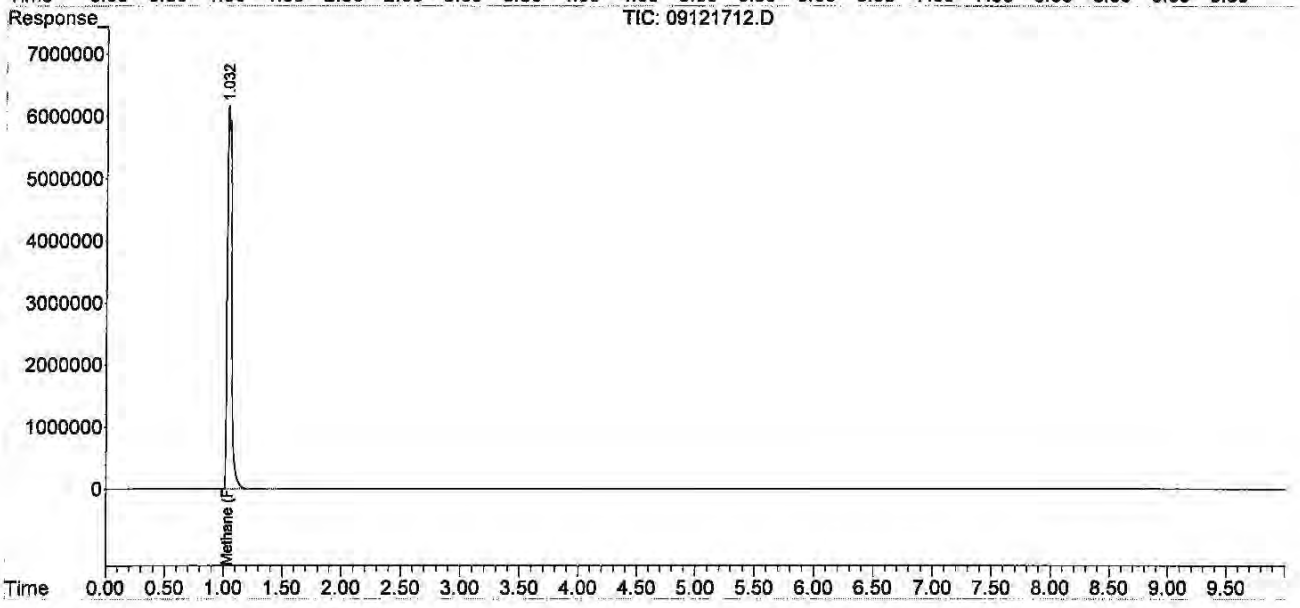
Quantitation Report (QT Reviewed)

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 | ~~1.510~~ 1.50 101.1 |
| 7) | Ethylene | 1.598 | 24153 | 1.443 | ppm | ~~1.490~~ 1.50 96.2 |
| 8) | Ethane | 1.850 | 24488 | 1.445 | ppm | ~~1.510~~ 1.50 96.3 |
| 9) | Propylene | 4.221 | 36004 | 1.537 | ppm | ~~1.490~~ 1.50 102.5 |
| 10) | Propane | 4.350 | 37738 | 1.517 | ppm | ~~1.511~~ 1.51 100.5 |
| 11) | Isobutylene | 0.000 | 0 | N.D. | ppm | |
| 12) | Isobutane | 6.579f | 48019 | 1.804 | ppm | 9/14/17 |
| 13) | n-Butane | 6.579f | 48019 | 1.804 | ppm | |

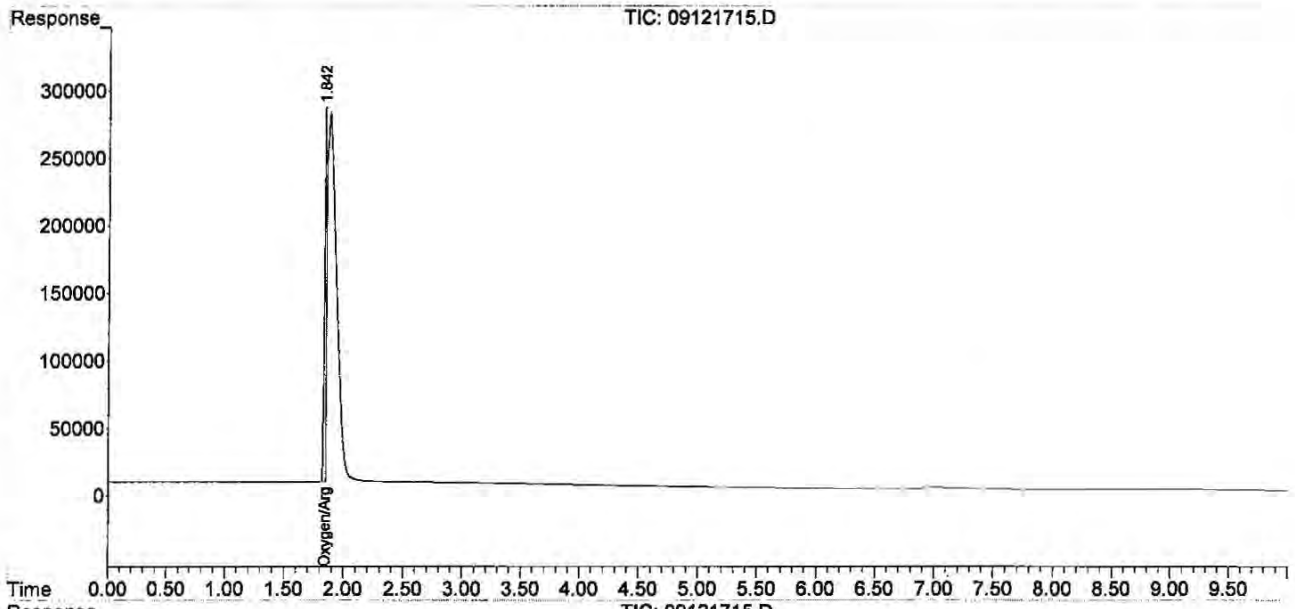
(f)=RT Delta > 1/2 Window (m)=manual int.

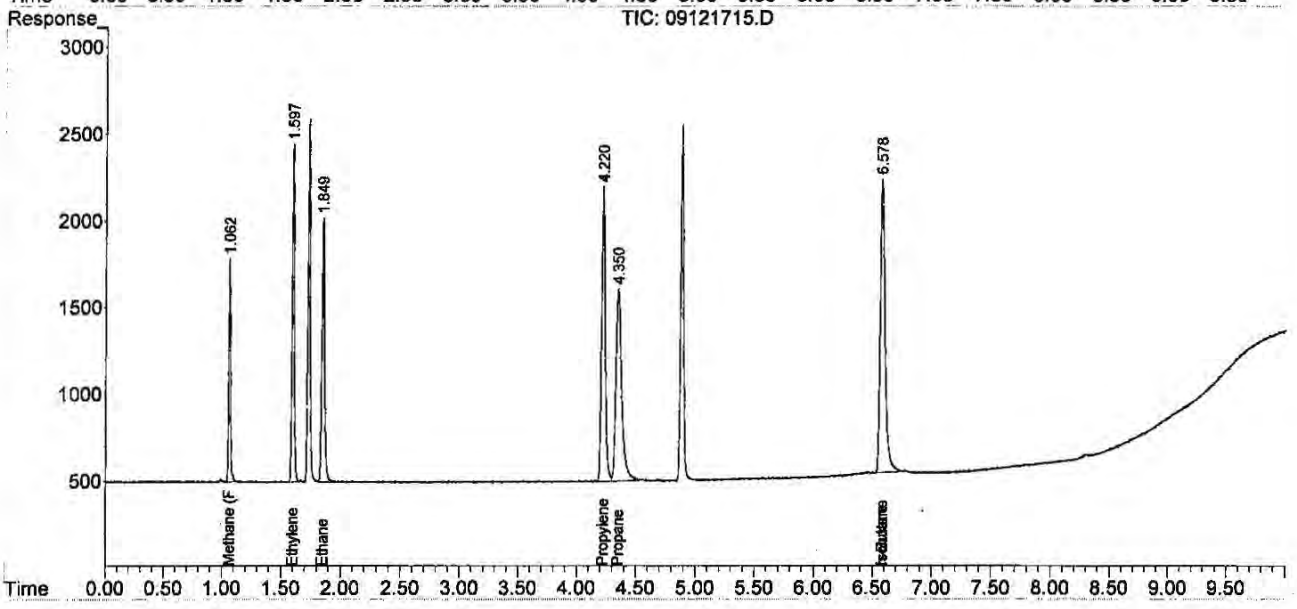
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 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 :



## *ALS Environmental*

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1904835
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 08/22/19
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 | Inj. Vol. | Methane | Ethylene | Ethane |
|---|---|---|---|---|
| STD s32-05221901 | 0.100 | 88.104 | 93.506 | 92.844 |
| ACTUAL | | 101.50 | 100.90 | 101.40 |
| %Difference | | 13.2% | 7.3% | 8.4% |
| MCS 0.1ml | 0.100 | 0.142 | 0.000 | 0.000 |
| RB 0.1ml | 0.100 | 0.000 | 0.000 | 0.000 |
| lcs fid | 0.100 | 1.472 | 1.001 | 1.242 |
| lcsd fid | 0.100 | 1.438 | 0.975 | 1.214 |
| P1904835-001 0.1ml | 0.100 | 6.136 | 0.000 | 0.000 |
| P1904835-002 0.1ml | 0.100 | 0.557 | 0.000 | 0.000 |
| P1904835-003 0.1ml | 0.100 | 0.203 | 0.000 | 0.000 |
| P1904835-002ms 0.1ml | 0.100 | 75.332 | 66.441 | 76.527 |
| P1904835-002msd 0.1ml | 0.100 | 74.035 | 64.775 | 75.374 |
| STD s32-05221901 | | 87.898 | 93.916 | 93.522 |
| ACTUAL | | 101.50 | 100.90 | 101.40 |
| %Difference | | 13.4% | 6.9% | 7.8% |

### 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 | 1.420 | 0.000 | 0.000 |
| lcs fid | 14.720 | 10.010 | 12.420 |
| lcsd fid | 14.380 | 9.750 | 12.140 |
| P1904835-001 0.1ml | 61.360 | 0.000 | 0.000 |
| P1904835-002 0.1ml | 5.570 | 0.000 | 0.000 |
| P1904835-003 0.1ml | 2.030 | 0.000 | 0.000 |
| P1904835-002ms 0.1ml | 753.320 | 664.410 | 765.270 |
| P1904835-002msd 0.1ml | 740.350 | 647.750 | 753.740 |





00972124

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 10:13:23
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 10:29:41 2019
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 | 799163 | 88.104 | ppm |
| 7) | Ethylene | 1.630 | 1564767 | 93.506 | ppm |
| 8) | Ethane | 1.881 | 1573724 | 92.844 | ppm |
| 9) | Propylene | 4.268 | 2302752 | 98.276 | ppm |
| 10) | Propane | 4.394 | 2364319 | 95.028 | 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 |

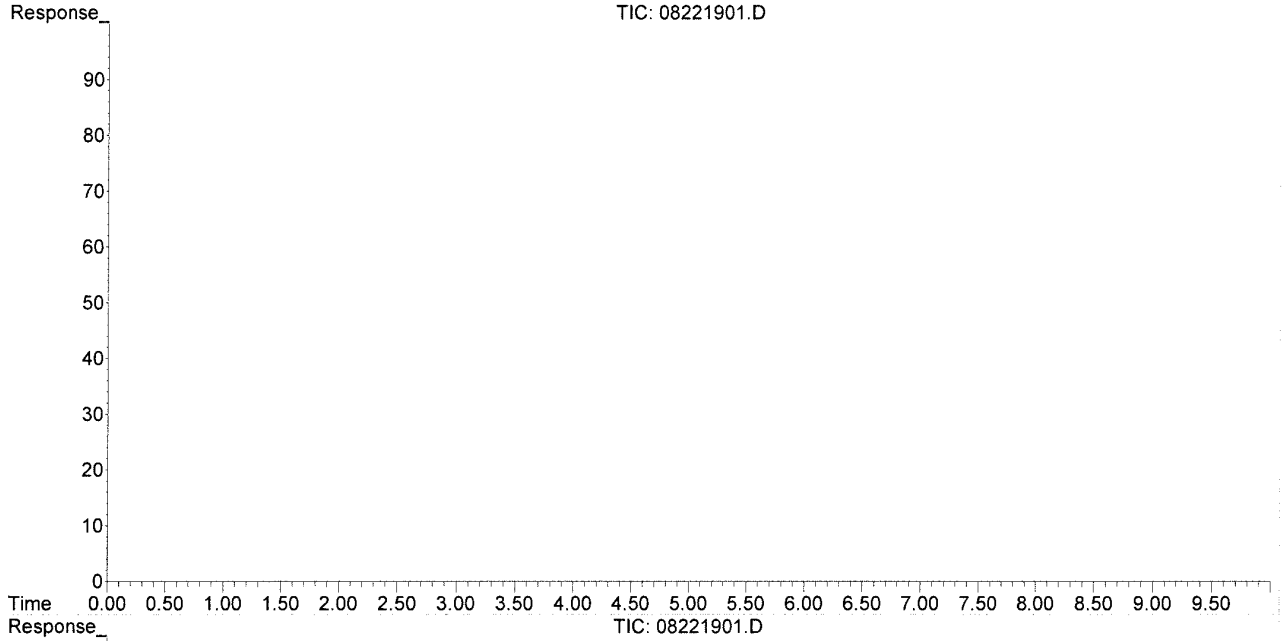
(f)=RT Delta > 1/2 Window (m)=manual int.

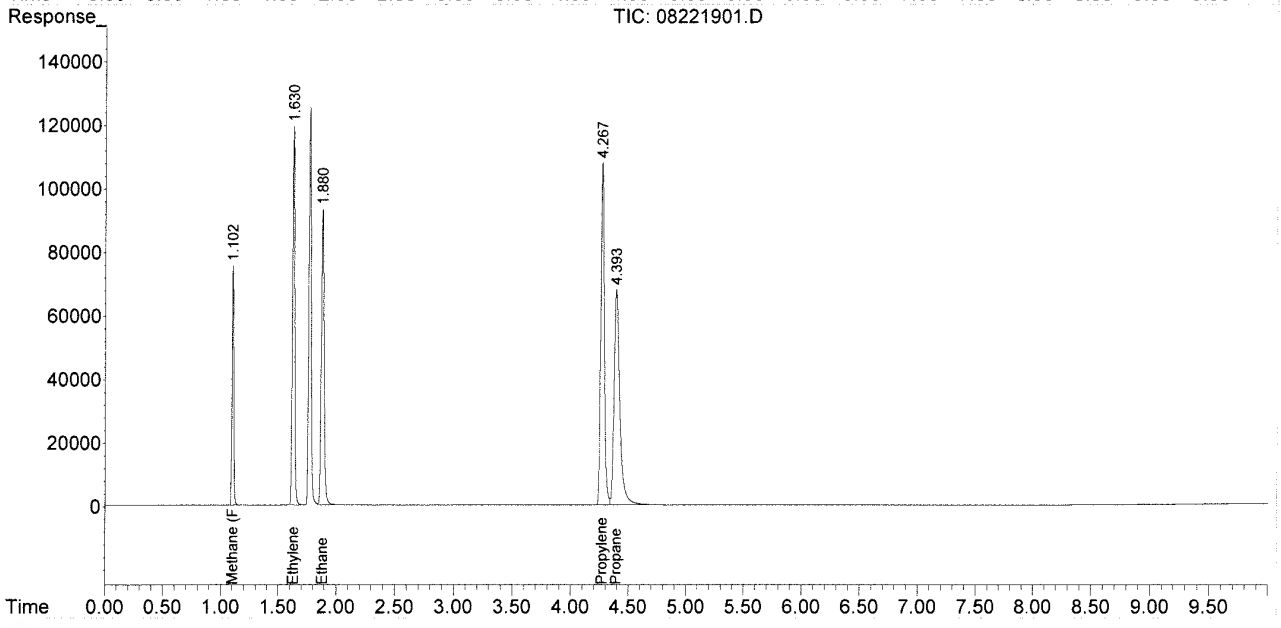
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221901.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 10:13:23
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 10:29:41 2019
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\2019_08\22\
Data File : 08221915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 14:18:03
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 14:43:06 2019
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 | 797294 | 87.898 | ppm |
| 7) | Ethylene | 1.669 | 1571616 | 93.916 | ppm |
| 8) | Ethane | 1.930 | 1585208 | 93.522 | ppm |
| 9) | Propylene | 4.304 | 2320463 | 99.032 | ppm |
| 10) | Propane | 4.428 | 2392523 | 96.162 | 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 |

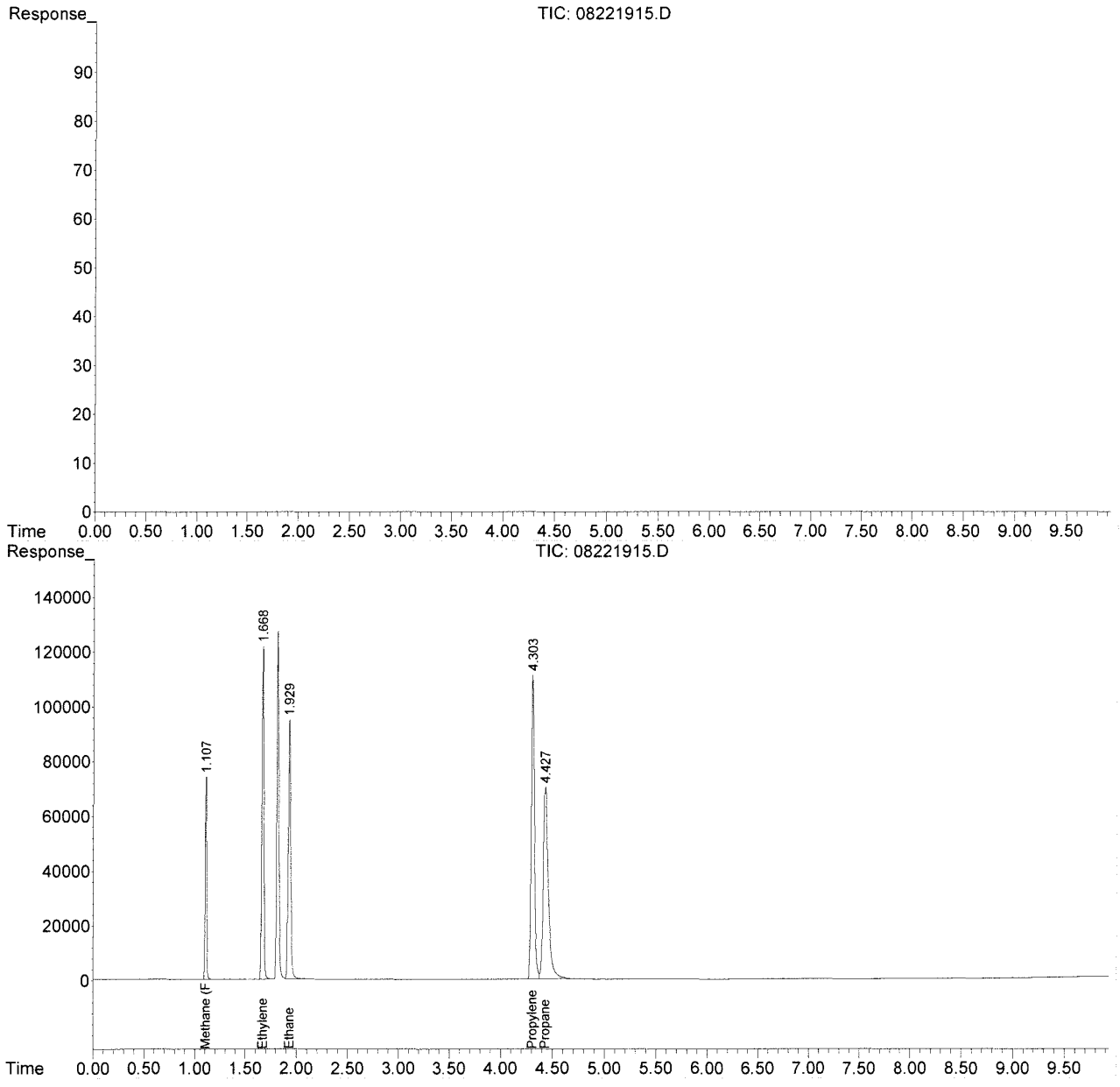
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2019_08\22\
Data File : 08221915.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 22-Aug-2019, 14:18:03
Operator : WH
Sample : STD s32-05221901
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 22 14:43:06 2019
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 :



# 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\2019_08\22\

| | Date/Time | File Name | Sample ID | Misc Info | Operator | Acquisition Method | Comments |
|---|---|---|---|---|---|---|---|
| 1 | 22-Aug-19, 10:13:23 | 08221901.D | STD s32-05221901 | | WH | RSKBOTH.M | |
| 2 | 22-Aug-19, 10:34:54 | 08221902.D | RB 0.1ml | | WH | RSKBOTH.M | |
| 3 | 22-Aug-19, 10:59:42 | 08221903.D | MCS 0.1ml | | WH | RSKBOTH.M | |
| 4 | 22-Aug-19, 11:13:12 | 08221904.D | lcs fid | | WH | RSKBOTH.M | |
| 5 | 22-Aug-19, 11:23:34 | 08221905.D | lcsd fid | | WH | RSKBOTH.M | |
| 6 | 22-Aug-19, 11:35:43 | 08221906.D | J1904660-002 0.1ml | | WH | RSKBOTH.M | |
| 7 | 22-Aug-19, 11:49:10 | 08221907.D | J1904660-005 0.1ml | | WH | RSKBOTH.M | |
| 8 | 22-Aug-19, 12:05:46 | 08221908.D | P1904835-001 0.1ml | | WH | RSKBOTH.M | |
| 9 | 22-Aug-19, 12:17:25 | 08221909.D | P1904835-003 0.1ml | | WH | RSKBOTH.M | |
| 10 | 22-Aug-19, 12:37:18 | 08221910.D | P1904835-002 0.1ml | | WH | RSKBOTH.M | |
| 11 | 22-Aug-19, 12:53:12 | 08221911.D | x | | WH | RSKBOTH.M | |
| 12 | 22-Aug-19, 13:30:50 | 08221912.D | x | | WH | RSKBOTH.M | |
| 13 | 22-Aug-19, 13:48:49 | 08221913.D | P1904835-002ms 0.1ml | | WH | RSKBOTH.M | |
| 14 | 22-Aug-19, 14:02:06 | 08221914.D | P1904835-002msd 0.1ml | | WH | RSKBOTH.M | |
| 15 | 22-Aug-19, 14:18:03 | 08221915.D | STD s32-05221901 | | WH | RSKBOTH.M | |
| 16 | 22-Aug-19, 14:47:36 | 08221916.D | J1904843-002 0.1 | | WH | RSKBOTH.M | |
| 17 | 22-Aug-19, 15:12:42 | 08221917.D | J1904843-003 0.1 | | WH | RSKBOTH.M | |
| 18 | 22-Aug-19, 15:36:28 | 08221918.D | J1904843-005 0.1 | | WH | RSKBOTH.M | |
| 19 | 22-Aug-19, 15:55:17 | 08221919.D | J1904843-006 0.1 | | WH | RSKBOTH.M | |
| 20 | 22-Aug-19, 16:10:24 | 08221920.D | J1904843-009 0.1 | | WH | RSKBOTH.M | |
| 21 | 22-Aug-19, 16:29:51 | 08221921.D | J1904843-010 0.1 | | WH | RSKBOTH.M | |
| 22 | 22-Aug-19, 16:51:17 | 08221922.D | STD s32-05221901 | | WH | RSKBOTH.M | |

# HS19080684 8260 Raw Data

ALS WO# HS19080684

# MSVOA06 -Logbook

**Batch:** 36844
**Date:** 08-06-2019
**Method:** 8260 ICAL
**Comments:**

**Analyst:** Presenta Cabascango
**Reviewer:**
**Laboratory:** Houston

| # | Samp ID | Type | Analyzed | DF | Init Wt/Vol | Final Vol | File ID | Matrix | Status | pH |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BFB | TUNE | 08-06-2019 10:34 am | 1.00 | 0.00 mL | 0.00 mL | X080601.D | Liquid | Y | NA |
| 2 | *Auto find/purged* VSTD000.25 | ICAL1 | 08-06-2019 10:58 am | 1.00 | 5.00 mL | 0.00 mL | X080602.D | Liquid | Y | NA |
| 3 | *0.1 uL cal std/100 mL DI* VSTD000.5 | ICAL2 | 08-06-2019 11:46 am | 1.00 | 5.00 mL | 0.00 mL | X080603.D | Liquid | Y | NA |
| 4 | *0.10 uL cal std/50 mL DI* VSTD001 | ICAL3 | 08-06-2019 12:10 pm | 1.00 | 5.00 mL | 0.00 mL | X080604.D | Liquid | Y | NA |
| 5 | *0.20 uL cal std/50 mL DI* VSTD002 | ICAL4 | 08-06-2019 12:34 pm | 1.00 | 5.00 mL | 0.00 mL | X080605.D | Liquid | Y | NA |
| 6 | *0.40 uL cal std/50 mL DI* VSTD005 | ICAL5 | 08-06-2019 12:58 pm | 1.00 | 5.00 mL | 0.00 mL | X080606.D | Liquid | Y | NA |
| 7 | *1.0 uL cal std/50 mL DI* VSTD020 | ICAL6 | 08-06-2019 01:22 pm | 1.00 | 5.00 mL | 0.00 mL | X080607.D | Liquid | Y | NA |
| 8 | *4.0 uL cal std/50 mL DI* VSTD050 | ICAL7 | 08-06-2019 01:46 pm | 1.00 | 5.00 mL | 0.00 mL | X080608.D | Liquid | Y | NA |
| 9 | *10 uL cal std/50 mL DI* VSTD100 | ICAL8 | 08-06-2019 02:10 pm | 1.00 | 5.00 mL | 0.00 mL | X080609.D | Liquid | Y | NA |
| 10 | *20 uL cal std/50 mL DI* VSTD150 | ICAL9 | 08-06-2019 02:34 pm | 1.00 | 5.00 mL | 0.00 mL | X080610.D | Liquid | Y | NA |
| 11 | *30 uL cal std/50 mL DI* VSTD200 | ICAL | 08-06-2019 02:58 pm | 1.00 | 5.00 mL | 0.00 mL | X080611.D | Liquid | Y | NA |
| 12 | *40 uL cal std/50 mL DI* BLANK | SAMP | 08-06-2019 03:22 pm | 1.00 | 5.00 mL | 0.00 mL | X080612.D | Liquid | Y | NA |
| 13 | *clean up blank* BLANK | SAMP | 08-06-2019 03:46 pm | 1.00 | 5.00 mL | 0.00 mL | X080613.D | Liquid | Y | NA |
| 14 | *clean up blank* ICV | ICV | 08-06-2019 04:10 pm | 1.00 | 5.00 mL | 0.00 mL | X080614.D | Liquid | Y | NA |
| 15 | *10 uL cal std/50 mL DI* BLANK | SAMP | 08-06-2019 04:34 pm | 1.00 | 5.00 mL | 0.00 mL | X080615.D | Liquid | Y | NA |
| 16 | *clean up blank* VLCSW-190806 | SAMP | 08-06-2019 04:58 pm | 1.00 | 5.00 mL | 0.00 mL | X080616.D | Liquid | Y | NA |
| 17 | *4 uL LCS std/50 mL DI* VLCSW-190806 | LCS | 08-06-2019 05:22 pm | 1.00 | 5.00 mL | 0.00 mL | X080617.D | Liquid | Y | NA |
| 18 | *4 uL LCS std/50 mL DI* BLANK | SAMP | 08-06-2019 05:46 pm | 1.00 | 5.00 mL | 0.00 mL | X080618.D | Liquid | Y | NA |
| 19 | VBLKW-190806 | MBLK | 08-06-2019 06:10 pm | 1.00 | 5.00 mL | 0.00 mL | X080619.D | Liquid | Y | NA |
| 20 | HS19080067-04 | SAMP | 08-06-2019 06:34 pm | 1.00 | 5.00 mL | 0.00 mL | X080620.D | Liquid | Y | <2 |
| 21 | HS19080067-05 | SAMP | 08-06-2019 06:58 pm | 1.00 | 5.00 mL | 0.00 mL | X080621.D | Liquid | Y | <2 |
| 22 | HS19080067-06 | SAMP | 08-06-2019 07:22 pm | 1.00 | 5.00 mL | 0.00 mL | X080622.D | Liquid | Y | <2 |
| 23 | HS19080067-03 | SAMP | 08-06-2019 07:46 pm | 1.00 | 5.00 mL | 0.00 mL | X080623.D | Liquid | Y | <2 |
| 24 | HS19080122-02 | SAMP | 08-06-2019 08:10 pm | 1.00 | 5.00 mL | 0.00 mL | X080624.D | Liquid | Y | <2 |
| 25 | HS19080067-01 | SAMP | 08-06-2019 08:34 pm | 1.00 | 5.00 mL | 0.00 mL | X080625.D | Liquid | Y | <2 |
| 26 | HS19080067-02 | SAMP | 08-06-2019 08:58 pm | 1.00 | 5.00 mL | 0.00 mL | X080626.D | Liquid | Y | <2 |
| 27 | HS19080067-03MS | MS | 08-06-2019 09:22 pm | 1.00 | 5.00 mL | 0.00 mL | X080627.D | Liquid | Y | <2 |
| 28 | *3.2 uL cal std/40 mL sample* HS19080067-03MSD | MSD | 08-06-2019 09:46 pm | 1.00 | 5.00 mL | 0.00 mL | X080628.D | Liquid | Y | <2 |
| 29 | *3.2 uL cal std/40 mL sample* CCV-END | CCV | 08-06-2019 10:10 pm | 1.00 | 5.00 mL | 0.00 mL | X080629.D | Liquid | Y | NA |

*10 uL cal std/50 mL DI*

# MSVOA06 -Logbook

| Chemical | Value |
|---|---|
| SURR SPK ID | 30502-86-03 |
| IS ID | 30502-86-04 |
| ICV STD ID | 30603-78-01/02 |
| LCS/MS ID | 30603-78-01/02 |
| CAL STD ID | 30502-88-01 |
| BFB ID | 30502-86-03 |
| pH Paper | 634-64-10 |

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Matrix Spike - Sample No.: ICV

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE AMOUNT () | % REC # | QC. LIMITS REC. |
|---|---|---|---|---|
| cis-1,3-Dichloropropene | 50.00 | 48.88 | 98 | 80-120 |
| trans-1,3-Dichloroprope | 50.00 | 48.73 | 97 | 80-120 |
| 1,3-Dichlorobenzene | 50.00 | 45.47 | 91 | 80-120 |
| 2,2-Dichloropropane | 50.00 | 48.83 | 98 | 80-120 |
| 1,1-Dichloropropene | 50.00 | 45.49 | 91 | 80-120 |
| Dibromomethane | 50.00 | 47.68 | 95 | 80-120 |
| 1,2-Dibromoethane | 50.00 | 47.60 | 95 | 80-120 |
| trans-1,2-Dichloroethen | 50.00 | 47.19 | 94 | 80-120 |
| 1,1,1,2-Tetrachloroetha | 50.00 | 48.22 | 96 | 80-120 |
| 1,1,1-Trichloroethane | 50.00 | 46.72 | 93 | 80-120 |
| 1,1,2,2-Tetrachloroetha | 50.00 | 48.50 | 97 | 80-120 |
| Toluene | 50.00 | 46.85 | 94 | 80-120 |
| 1,1,2-Trichloroethane | 50.00 | 47.00 | 94 | 80-120 |
| 1,1-Dichloroethane | 50.00 | 46.46 | 93 | 80-120 |
| 1,1-Dichloroethene | 50.00 | 46.56 | 93 | 80-120 |
| Trichlorofluoromethane | 50.00 | 47.22 | 94 | 80-120 |
| 1,2,3-Trichlorobenzene | 50.00 | 44.26 | 88 | 80-120 |
| Tetrachloroethene | 50.00 | 45.29 | 90 | 80-120 |
| 1,2,4-Trichlorobenzene | 50.00 | 44.70 | 89 | 80-120 |
| 1,2,4-Trimethylbenzene | 50.00 | 45.04 | 90 | 80-120 |
| tert-Butylbenzene | 50.00 | 42.67 | 85 | 80-120 |
| Trichloroethene | 50.00 | 47.28 | 94 | 80-120 |
| 1,2-Dichlorobenzene | 50.00 | 48.46 | 97 | 80-120 |
| 1,2-Dichloroethane | 50.00 | 46.35 | 93 | 80-120 |
| 1,2-Dichloropropane | 50.00 | 48.39 | 97 | 80-120 |
| 1,3,5-Trimethylbenzene | 50.00 | 44.72 | 89 | 80-120 |
| 1,3-Dichloropropane | 50.00 | 46.70 | 93 | 80-120 |
| 1,4-Dichlorobenzene | 50.00 | 47.30 | 95 | 80-120 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Matrix Spike - Sample No.: ICV

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE AMOUNT () | % REC # | QC. LIMITS REC. |
|---|---|---|---|---|
| 2-Butanone | 100.00 | 96.25 | 96 | 80-120 |
| 2-Chlorotoluene | 50.00 | 45.40 | 91 | 80-120 |
| 2-Hexanone | 100.00 | 96.66 | 97 | 80-120 |
| 4-Chlorotoluene | 50.00 | 45.48 | 91 | 80-120 |
| Styrene | 50.00 | 48.41 | 97 | 80-120 |
| 4-Methyl-2-Pentanone | 100.00 | 93.30 | 93 | 80-120 |
| Acetone | 100.00 | 103.42 | 103 | 80-120 |
| Benzene | 50.00 | 47.26 | 94 | 80-120 |
| Bromobenzene | 50.00 | 46.27 | 92 | 80-120 |
| Bromochloromethane | 50.00 | 46.38 | 93 | 80-120 |
| Bromodichloromethane | 50.00 | 47.60 | 95 | 80-120 |
| Bromoform | 50.00 | 48.63 | 97 | 80-120 |
| Bromomethane | 50.00 | 53.76 | 108 | 80-120 |
| Carbon Disulfide | 100.00 | 96.04 | 96 | 80-120 |
| Carbon Tetrachloride | 50.00 | 44.93 | 90 | 80-120 |
| Chlorobenzene | 50.00 | 47.26 | 94 | 80-120 |
| Chloroethane | 50.00 | 48.27 | 96 | 80-120 |
| Chloroform | 50.00 | 46.80 | 94 | 80-120 |
| Chloromethane | 50.00 | 44.34 | 89 | 80-120 |
| cis-1,2-Dichloroethene | 50.00 | 46.84 | 94 | 80-120 |
| Dibromochloromethane | 50.00 | 48.03 | 96 | 80-120 |
| Dichlorodifluoromethane | 50.00 | 46.88 | 94 | 80-120 |
| Ethylbenzene | 50.00 | 46.29 | 92 | 80-120 |
| Hexachlorobutadiene | 50.00 | 47.02 | 94 | 80-120 |
| Isopropylbenzene | 50.00 | 44.55 | 89 | 80-120 |
| m,p-Xylenes | 100.00 | 93.46 | 93 | 80-120 |
| Methylene Chloride | 50.00 | 48.81 | 98 | 80-120 |
| n-Butylbenzene | 50.00 | 44.91 | 90 | 80-120 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Matrix Spike - Sample No.: ICV

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE AMOUNT () | % REC # | QC. LIMITS REC. |
|---|---|---|---|---|
| n-Propylbenzene | 50.00 | 44.96 | 90 | 80-120 |
| Naphthalene | 50.00 | 48.00 | 96 | 80-120 |
| o-Xylene | 50.00 | 46.46 | 93 | 80-120 |
| sec-Butylbenzene | 50.00 | 43.29 | 86 | 80-120 |
| Vinyl Chloride | 50.00 | 47.80 | 96 | 80-120 |
| 1,2,3-Trichloropropane | 50.00 | 49.27 | 98 | 80-120 |
| p-Isopropyltoluene | 50.00 | 43.83 | 88 | 80-120 |
| 1,2-Dibromo-3-Chloropro | 50.00 | 46.99 | 94 | 80-120 |
| Freon TF | 50.00 | 47.16 | 94 | 80-120 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

# FORM 5
## VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
## BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Lab File ID: X080601 BFB Injection Date: 08/06/19

Instrument ID: VOA6 BFB Injection Time: 1034

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 15.0 - 40.0% of mass 95 | 20.2 |
| 75 | 30.0 - 60.0% of mass 95 | 51.7 |
| 95 | Base Peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 7.2 |
| 173 | Less than 2.0% of mass 174 | 0.6 ( 0.9)1 |
| 174 | Greater than 50.0% of mass 95 | 65.5 |
| 175 | 5.0 - 9.0% of mass 174 | 5.0 ( 7.7)1 |
| 176 | 95.0 - 101.0% of mass 174 | 62.7 ( 95.8)1 |
| 177 | 5.0 - 9.0% of mass 176 | 4.7 ( 7.4)2 |

1-Value is % mass 174 2-Value is % mass 176

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

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | VSTD000.25 | VSTD000.25 | X080602 | 08/06/19 | 1058 |
| 02 | VSTD000.5 | VSTD000.5 | X080603 | 08/06/19 | 1146 |
| 03 | VSTD001 | VSTD001 | X080604 | 08/06/19 | 1210 |
| 04 | VSTD002 | VSTD002 | X080605 | 08/06/19 | 1234 |
| 05 | VSTD005 | VSTD005 | X080606 | 08/06/19 | 1258 |
| 06 | VSTD020 | VSTD020 | X080607 | 08/06/19 | 1322 |
| 07 | VSTD050 | VSTD050 | X080608 | 08/06/19 | 1346 |
| 08 | VSTD100 | VSTD100 | X080609 | 08/06/19 | 1410 |
| 09 | VSTD150 | VSTD150 | X080610 | 08/06/19 | 1434 |
| 10 | VSTD200 | VSTD200 | X080611 | 08/06/19 | 1458 |
| 11 | ICV | ICV | X080614 | 08/06/19 | 1610 |
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FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Instrument ID: VOA6 Calibration Date(s): 08/06/19 08/06/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1058 1458

LAB FILE ID: RF0.25: X080602 RF0.5: X080603 RF1: X080604
RF2: X080605 RF5: X080606 RF20: X080607

| COMPOUND | RF0.25 | RF0.5 | RF1 | RF2 | RF5 | RF20 |
|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | | 0.587 | 0.528 | 0.502 | 0.516 | 0.534 |
| trans-1,3-Dichloropropene | | 0.556 | 0.477 | 0.459 | 0.463 | 0.490 |
| 1,3-Dichlorobenzene | | 2.002 | 1.581 | 1.502 | 1.432 | 1.511 |
| 2,2-Dichloropropane | | 0.859 | 0.781 | 0.719 | 0.659 | 0.734 |
| 1,1-Dichloropropene | | 0.532 | 0.488 | 0.451 | 0.380 | 0.427 |
| Dibromomethane | | 0.249 | 0.236 | 0.234 | 0.222 | 0.230 |
| 1,2-Dibromoethane | | 0.445 | 0.388 | 0.384 | 0.383 | 0.383 |
| trans-1,2-Dichloroethene | | 0.532 | 0.492 | 0.463 | 0.427 | 0.469 |
| 1,1,1,2-Tetrachloroethane | | 0.432 | 0.373 | 0.353 | 0.352 | 0.369 |
| 1,1,1-Trichloroethane | | 0.844 | 0.738 | 0.732 | 0.676 | 0.759 |
| 1,1,2,2-Tetrachloroethane | | 5659 | 6626 | 12756 | 31907 | 120938 |
| Toluene | | 1.704 | 1.592 | 1.498 | 1.444 | 1.487 |
| 1,1,2-Trichloroethane | | 0.358 | 0.306 | 0.289 | 0.286 | 0.288 |
| 1,1-Dichloroethane | | 1.006 | 0.960 | 0.878 | 0.805 | 0.870 |
| 1,1-Dichloroethene | | 0.459 | 0.419 | 0.381 | 0.330 | 0.383 |
| Trichlorofluoromethane | | 0.827 | 0.752 | 0.717 | 0.593 | 0.744 |
| 1,2,3-Trichlorobenzene | | 2992 | 3988 | 7459 | 18555 | 72953 |
| Tetrachloroethene | | 0.387 | 0.362 | 0.346 | 0.290 | 0.329 |
| 1,2,4-Trichlorobenzene | | 4027 | 5354 | 10935 | 26308 | 111065 |
| 1,2,4-Trimethylbenzene | | 3.153 | 2.533 | 2.473 | 2.318 | 2.568 |
| tert-Butylbenzene | | 2.457 | 2.185 | 2.088 | 1.840 | 2.079 |
| Trichloroethene | | 0.378 | 0.372 | 0.359 | 0.330 | 0.361 |
| 1,2-Dichlorobenzene | | 8069 | 11264 | 21519 | 52130 | 208489 |
| 1,2-Dichloroethane | | 0.567 | 0.521 | 0.435 | 0.471 | 0.461 |
| 1,2-Dichloropropane | | 0.336 | 0.318 | 0.305 | 0.314 | 0.325 |
| 1,3,5-Trimethylbenzene | | 2.881 | 2.517 | 2.431 | 2.210 | 2.474 |
| 1,3-Dichloropropane | | 0.735 | 0.644 | 0.587 | 0.599 | 0.589 |
| 1,4-Dichlorobenzene | | 8152 | 12600 | 23714 | 53180 | 218428 |
| 2-Butanone | | 0.224 | 0.251 | 0.238 | 0.232 | 0.236 |
| 2-Chlorotoluene | | 2.519 | 2.069 | 2.096 | 1.940 | 2.035 |
| 2-Hexanone | | 5622 | 6914 | 14348 | 35565 | 140453 |
| 4-Chlorotoluene | | 2.971 | 2.556 | 2.373 | 2.195 | 2.358 |
| Styrene | | 1.124 | 1.100 | 1.078 | 1.036 | 1.092 |
| 4-Methyl-2-Pentanone | | 0.515 | 0.374 | 0.360 | 0.368 | 0.361 |
| Acetone | | 5436 | 6802 | 13368 | 34711 | 83748 |
| Benzene | | 1.451 | 1.291 | 1.245 | 1.199 | 1.270 |
| Bromobenzene | | 1.148 | 0.978 | 0.907 | 0.872 | 0.902 |
| Bromochloromethane | | 0.351 | 0.336 | 0.305 | 0.284 | 0.302 |
| Bromodichloromethane | | 0.484 | 0.442 | 0.430 | 0.420 | 0.444 |
| Bromoform | | 0.386 | 0.276 | 0.275 | 0.282 | 0.299 |
| Bromomethane | | 3112 | 5663 | 10787 | 23188 | 79494 |
| Carbon Disulfide | | 1.366 | 1.285 | 1.202 | 1.054 | 1.237 |
| Carbon Tetrachloride | | 0.536 | 0.524 | 0.454 | 0.376 | 0.436 |
| Chlorobenzene | | 1.156 | 1.049 | 1.038 | 0.963 | 0.989 |

FORM VI VOA

# FORM 6
## VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1908068

Instrument ID: VOA6 Calibration Date(s): 08/06/19 08/06/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1058 1458

LAB FILE ID: RF0.25: X080602 RF0.5: X080603 RF1: X080604
RF2: X080605 RF5: X080606 RF20: X080607

| COMPOUND | RF0.25 | RF0.5 | RF1 | RF2 | RF5 | RF20 |
|---|---|---|---|---|---|---|
| Chloroethane | | 0.281 | 0.254 | 0.287 | 0.269 | 0.297 |
| Chloroform | | 0.991 | 0.963 | 0.886 | 0.852 | 0.897 |
| Chloromethane | | 0.494 | 0.504 | 0.461 | 0.406 | 0.424 |
| cis-1,2-Dichloroethene | | 0.629 | 0.592 | 0.542 | 0.526 | 0.558 |
| Dibromochloromethane | | 0.474 | 0.400 | 0.370 | 0.379 | 0.390 |
| Dichlorodifluoromethane | | 2759 | 4826 | 9700 | 19920 | 98359 |
| Ethylbenzene | | 0.603 | 0.551 | 0.522 | 0.478 | 0.524 |
| Hexachlorobutadiene | | 2483 | 2972 | 5995 | 11573 | 57379 |
| Isopropylbenzene | | 1.743 | 1.618 | 1.549 | 1.403 | 1.560 |
| m,p-Xylenes | | 0.714 | 0.664 | 0.624 | 0.586 | 0.639 |
| Methylene Chloride | | 3680 | 5846 | 11085 | 25173 | 98183 |
| n-Butylbenzene | | 2.575 | 1.988 | 2.092 | 1.826 | 2.204 |
| n-Propylbenzene | | 3.879 | 3.352 | 3.337 | 2.993 | 3.387 |
| Naphthalene | | 1.762 | 1.261 | 1.312 | 1.328 | 1.318 |
| o-Xylene | | 0.711 | 0.644 | 0.616 | 0.594 | 0.623 |
| sec-Butylbenzene | | 3.478 | 2.802 | 2.792 | 2.429 | 2.892 |
| Vinyl Chloride | | 0.523 | 0.467 | 0.482 | 0.402 | 0.476 |
| 1,2,3-Trichloropropane | | 3909 | 5681 | 10452 | 28632 | 99015 |
| p-Isopropyltoluene | | 3.168 | 2.479 | 2.473 | 2.203 | 2.588 |
| 1,2-Dibromo-3-Chloropropane | | 855 | 976 | 1858 | 4986 | 19142 |
| Freon TF | | 2426 | 4221 | 8238 | 16200 | 79363 |
| 4-Bromofluorobenzene | | 5116 | 8436 | 14521 | 36874 | 127818 |
| Dibromofluoromethane | | 3072 | 4938 | 9646 | 26693 | 94840 |
| Toluene-d8 | | 1.705 | 1.389 | 1.332 | 1.388 | 1.264 |
| 1,2-Dichloroethane-d4 | | 4023 | 6125 | 12388 | 31797 | 110423 |

FORM VI VOA

# FORM 6
## VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1908068

Instrument ID: VOA6 Calibration Date(s): 08/06/19 08/06/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1058 1458

LAB FILE ID: RF50: X080608 RF100: X080609 RF150: X080610
RF200: X080611

| COMPOUND | RF50 | RF100 | RF150 | RF200 |
|---|---|---|---|---|
| cis-1,3-Dichloropropene | 0.520 | 0.545 | 0.568 | 0.564 |
| trans-1,3-Dichloropropene | 0.486 | 0.499 | 0.519 | 0.515 |
| 1,3-Dichlorobenzene | 1.322 | 1.482 | 1.522 | 1.490 |
| 2,2-Dichloropropane | 0.648 | 0.708 | 0.734 | 0.707 |
| 1,1-Dichloropropene | 0.364 | 0.430 | 0.449 | 0.444 |
| Dibromomethane | 0.223 | 0.228 | 0.234 | 0.230 |
| 1,2-Dibromoethane | 0.372 | 0.372 | 0.379 | 0.372 |
| trans-1,2-Dichloroethene | 0.430 | 0.456 | 0.471 | 0.458 |
| 1,1,1,2-Tetrachloroethane | 0.349 | 0.366 | 0.375 | 0.369 |
| 1,1,1-Trichloroethane | 0.658 | 0.745 | 0.777 | 0.759 |
| 1,1,2,2-Tetrachloroethane | 287320 | 556744 | 815822 | 1051001 |
| Toluene | 1.350 | 1.441 | 1.476 | 1.437 |
| 1,1,2-Trichloroethane | 0.279 | 0.278 | 0.286 | 0.280 |
| 1,1-Dichloroethane | 0.815 | 0.845 | 0.878 | 0.865 |
| 1,1-Dichloroethene | 0.334 | 0.376 | 0.399 | 0.388 |
| Trichlorofluoromethane | 0.633 | 0.744 | 0.793 | 0.767 |
| 1,2,3-Trichlorobenzene | 156716 | 361440 | 546758 | 709991 |
| Tetrachloroethene | 0.268 | 0.323 | 0.330 | 0.321 |
| 1,2,4-Trichlorobenzene | 235388 | 543527 | 813621 | 1041364 |
| 1,2,4-Trimethylbenzene | 2.130 | 2.520 | 2.597 | 2.533 |
| tert-Butylbenzene | 1.607 | 2.046 | 2.097 | 2.033 |
| Trichloroethene | 0.329 | 0.364 | 0.378 | 0.374 |
| 1,2-Dichlorobenzene | 441748 | 917056 | 1331014 | 1666102 |
| 1,2-Dichloroethane | 0.442 | 0.446 | 0.459 | 0.452 |
| 1,2-Dichloropropane | 0.310 | 0.319 | 0.330 | 0.329 |
| 1,3,5-Trimethylbenzene | 2.022 | 2.451 | 2.517 | 2.451 |
| 1,3-Dichloropropane | 0.570 | 0.572 | 0.585 | 0.575 |
| 1,4-Dichlorobenzene | 462233 | 984312 | 1423510 | 1815176 |
| 2-Butanone | 0.212 | 0.222 | 0.230 | 0.226 |
| 2-Chlorotoluene | 1.736 | 2.000 | 2.087 | 2.034 |
| 2-Hexanone | 327757 | 667493 | 977647 | 1280044 |
| 4-Chlorotoluene | 2.068 | 2.340 | 2.416 | 2.349 |
| Styrene | 0.998 | 1.056 | 1.064 | 1.034 |
| 4-Methyl-2-Pentanone | 0.360 | 0.366 | 0.378 | 0.376 |
| Acetone | 165174 | 324584 | 473170 | 610663 |
| Benzene | 1.190 | 1.254 | 1.296 | 1.280 |
| Bromobenzene | 0.834 | 0.882 | 0.916 | 0.900 |
| Bromochloromethane | 0.285 | 0.285 | 0.298 | 0.279 |
| Bromodichloromethane | 0.434 | 0.447 | 0.460 | 0.460 |
| Bromoform | 0.299 | 0.305 | 0.314 | 0.310 |
| Bromomethane | 184765 | 383833 | 528681 | |
| Carbon Disulfide | 1.113 | 1.242 | 1.314 | 1.282 |
| Carbon Tetrachloride | 0.372 | 0.448 | 0.473 | 0.468 |
| Chlorobenzene | 0.917 | 0.962 | 0.978 | 0.958 |

FORM VI VOA

# FORM 6
## VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1908068

Instrument ID: VOA6 Calibration Date(s): 08/06/19 08/06/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1058 1458

LAB FILE ID: RF50: X080608 RF100: X080609 RF150: X080610
RF200: X080611

| COMPOUND | RF50 | RF100 | RF150 | RF200 |
|---|---|---|---|---|
| Chloroethane | 0.258 | 0.282 | 0.296 | 0.287 |
| Chloroform | 0.844 | 0.863 | 0.889 | 0.869 |
| Chloromethane | 0.385 | 0.431 | 0.473 | 0.480 |
| cis-1,2-Dichloroethene | 0.518 | 0.536 | 0.550 | 0.537 |
| Dibromochloromethane | 0.388 | 0.397 | 0.409 | 0.406 |
| Dichlorodifluoromethane | 206989 | 471218 | 722804 | 917264 |
| Ethylbenzene | 0.445 | 0.512 | 0.526 | 0.513 |
| Hexachlorobutadiene | 102746 | 283349 | 427791 | 536967 |
| Isopropylbenzene | 1.236 | 1.516 | 1.543 | 1.496 |
| m,p-Xylenes | 0.543 | 0.618 | 0.628 | 0.606 |
| Methylene Chloride | 223622 | 445589 | 648169 | 839760 |
| n-Butylbenzene | 1.674 | 2.211 | 2.259 | 2.173 |
| n-Propylbenzene | 2.730 | 3.396 | 3.502 | 3.420 |
| Naphthalene | 1.280 | 1.449 | 1.552 | 1.560 |
| o-Xylene | 0.547 | 0.604 | 0.607 | 0.588 |
| sec-Butylbenzene | 2.177 | 2.858 | 2.980 | 2.889 |
| Vinyl Chloride | 0.432 | 0.484 | 0.525 | 0.522 |
| 1,2,3-Trichloropropane | 236991 | 457316 | 668211 | 847337 |
| p-Isopropyltoluene | 2.008 | 2.587 | 2.685 | 2.592 |
| 1,2-Dibromo-3-Chloropropane | 46273 | 94870 | 141880 | 183452 |
| Freon TF | 146243 | 378648 | 575070 | 721454 |
| 4-Bromofluorobenzene | 314351 | 601330 | 846206 | 1095385 |
| Dibromofluoromethane | 236755 | 445659 | 629862 | 824306 |
| Toluene-d8 | 1.282 | 1.262 | 1.226 | 1.228 |
| 1,2-Dichloroethane-d4 | 273642 | 523547 | 741103 | 967848 |

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1908068

Instrument ID: VOA6 Calibration Date(s): 08/06/19 08/06/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1058 1458

| COMPOUND | CURVE | COEFFICENTS A0 | A1 | A2 | %RSD OR R^2 | MAX %RSD OR R^2 |
|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | AVRG | | 0.54050730 | | 5.127 | 15.000 |
| trans-1,3-Dichloropropene | AVRG | | 0.49596552 | | 6.178 | 15.000 |
| 1,3-Dichlorobenzene | AVRG | | 1.53829984 | | 12.224 | 15.000 |
| 2,2-Dichloropropane | AVRG | | 0.72750513 | | 8.709 | 15.000 |
| 1,1-Dichloropropene | AVRG | | 0.44080849 | | 11.550 | 15.000 |
| Dibromomethane | AVRG | | 0.23176261 | | 3.451 | 15.000 |
| 1,2-Dibromoethane | AVRG | | 0.38645529 | | 5.846 | 15.000 |
| trans-1,2-Dichloroethene | AVRG | | 0.46645713 | | 6.794 | 15.000 |
| 1,1,1,2-Tetrachloroethane | AVRG | | 0.37092670 | | 6.673 | 15.000 |
| 1,1,1-Trichloroethane | AVRG | | 0.74325865 | | 7.319 | 15.000 |
| 1,1,2,2-Tetrachloroethane | LINR | 7.174e-003 | 1.15104203 | | 0.9997733 | 0.9900000 |
| Toluene | AVRG | | 1.49216818 | | 6.842 | 15.000 |
| 1,1,2-Trichloroethane | AVRG | | 0.29438252 | | 8.604 | 15.000 |
| 1,1-Dichloroethane | AVRG | | 0.88034491 | | 7.384 | 15.000 |
| 1,1-Dichloroethene | AVRG | | 0.38543152 | | 10.272 | 15.000 |
| Trichlorofluoromethane | AVRG | | 0.72999518 | | 10.147 | 15.000 |
| 1,2,3-Trichlorobenzene | LINR | 4.839e-002 | 1.70098646 | | 0.9973285 | 0.9900000 |
| Tetrachloroethene | AVRG | | 0.32857960 | | 10.798 | 15.000 |
| 1,2,4-Trichlorobenzene | LINR | 4.193e-002 | 1.15304470 | | 0.9978225 | 0.9900000 |
| 1,2,4-Trimethylbenzene | AVRG | | 2.53615513 | | 10.821 | 15.000 |
| tert-Butylbenzene | AVRG | | 2.04796006 | | 11.311 | 15.000 |
| Trichloroethene | AVRG | | 0.36067407 | | 5.278 | 15.000 |
| 1,2-Dichlorobenzene | LINR | 1.393e-003 | 0.71777420 | | 0.9992603 | 0.9900000 |
| 1,2-Dichloroethane | AVRG | | 0.47279050 | | 9.178 | 15.000 |
| 1,2-Dichloropropane | AVRG | | 0.32072243 | | 3.213 | 15.000 |
| 1,3,5-Trimethylbenzene | AVRG | | 2.43943890 | | 9.562 | 15.000 |
| 1,3-Dichloropropane | AVRG | | 0.60622717 | | 8.750 | 15.000 |
| 1,4-Dichlorobenzene | LINR | 1.081e-002 | 0.66266805 | | 0.9993437 | 0.9900000 |
| 2-Butanone | AVRG | | 0.23032901 | | 4.859 | 15.000 |
| 2-Chlorotoluene | AVRG | | 2.05743892 | | 9.974 | 15.000 |
| 2-Hexanone | LINR | 2.136e-002 | 3.71403656 | | 0.9998182 | 0.9900000 |
| 4-Chlorotoluene | AVRG | | 2.40279588 | | 10.524 | 15.000 |
| Styrene | AVRG | | 1.06468259 | | 3.641 | 15.000 |
| 4-Methyl-2-Pentanone | AVRG | | 0.38433851 | | 12.865 | 15.000 |
| Acetone | LINR | -8.74e-002 | 5.72940888 | | 0.9993693 | 0.9900000 |
| Benzene | AVRG | | 1.27522750 | | 5.954 | 15.000 |
| Bromobenzene | AVRG | | 0.92647315 | | 9.891 | 15.000 |
| Bromochloromethane | AVRG | | 0.30269574 | | 8.220 | 15.000 |
| Bromodichloromethane | AVRG | | 0.44685641 | | 4.254 | 15.000 |
| Bromoform | AVRG | | 0.30522994 | | 11.038 | 15.000 |
| Bromomethane | LINR | -7.05e-003 | 2.47926887 | | 0.9993610 | 0.9900000 |
| Carbon Disulfide | AVRG | | 1.23298376 | | 7.939 | 15.000 |
| Carbon Tetrachloride | AVRG | | 0.45409012 | | 12.420 | 15.000 |
| Chlorobenzene | AVRG | | 1.00127994 | | 7.090 | 15.000 |

# FORM 6
## VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1908068

Instrument ID: VOA6 Calibration Date(s): 08/06/19 08/06/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1058 1458

| COMPOUND | CURVE | COEFFICENTS A0 | A1 | A2 | %RSD OR R^2 | MAX %RSD OR R^2 |
|---|---|---|---|---|---|---|
| Chloroethane | AVRG | | 0.27921963 | | 5.525 | 15.000 |
| Chloroform | AVRG | | 0.89520437 | | 5.610 | 15.000 |
| Chloromethane | AVRG | | 0.45080803 | | 9.133 | 15.000 |
| cis-1,2-Dichloroethene | AVRG | | 0.55434618 | | 6.368 | 15.000 |
| Dibromochloromethane | AVRG | | 0.40158992 | | 7.419 | 15.000 |
| Dichlorodifluoromethane | LINR | 3.654e-002 | 1.86473304 | | 0.9977082 | 0.9900000 |
| Ethylbenzene | AVRG | | 0.51946414 | | 8.458 | 15.000 |
| Hexachlorobutadiene | 2ORDR | 3.683e-002 | 2.44434125 | -0.1441734 | 0.9951036 | 0.9900000 |
| Isopropylbenzene | AVRG | | 1.51820989 | | 9.234 | 15.000 |
| m,p-Xylenes | AVRG | | 0.62483298 | | 7.659 | 15.000 |
| Methylene Chloride | LINR | -2.33e-003 | 2.06060825 | | 0.9998390 | 0.9900000 |
| n-Butylbenzene | AVRG | | 2.11133023 | | 12.389 | 15.000 |
| n-Propylbenzene | AVRG | | 3.33301664 | | 9.612 | 15.000 |
| Naphthalene | AVRG | | 1.42455947 | | 11.895 | 15.000 |
| o-Xylene | AVRG | | 0.61490646 | | 7.280 | 15.000 |
| sec-Butylbenzene | AVRG | | 2.81084404 | | 12.811 | 15.000 |
| Vinyl Chloride | AVRG | | 0.47919143 | | 8.834 | 15.000 |
| 1,2,3-Trichloropropane | LINR | -8.75e-005 | 1.41981727 | | 0.9997423 | 0.9900000 |
| p-Isopropyltoluene | AVRG | | 2.53150219 | | 12.698 | 15.000 |
| 1,2-Dibromo-3-Chloropropane | LINR | 2.976e-002 | 6.58675860 | | 0.9990809 | 0.9900000 |
| Freon TF | 2ORDR | 2.87e-002 | 2.50642384 | -0.1001770 | 0.9958942 | 0.9900000 |
| 4-Bromofluorobenzene | LINR | -1.94e-002 | 2.16146294 | | 0.9997280 | 0.9900000 |
| Dibromofluoromethane | LINR | -1.26e-002 | 2.10273852 | | 0.9998600 | 0.9900000 |
| Toluene-d8 | AVRG | | 1.34174992 | | 11.140 | 15.000 |
| 1,2-Dichloroethane-d4 | LINR | -1.15e-002 | 1.79007374 | | 0.9999157 | 0.9900000 |

FORM VI VOA

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080601.D

Date : 06-AUG-2019 10:34

Client ID: BFB

Instrument: voa6.i

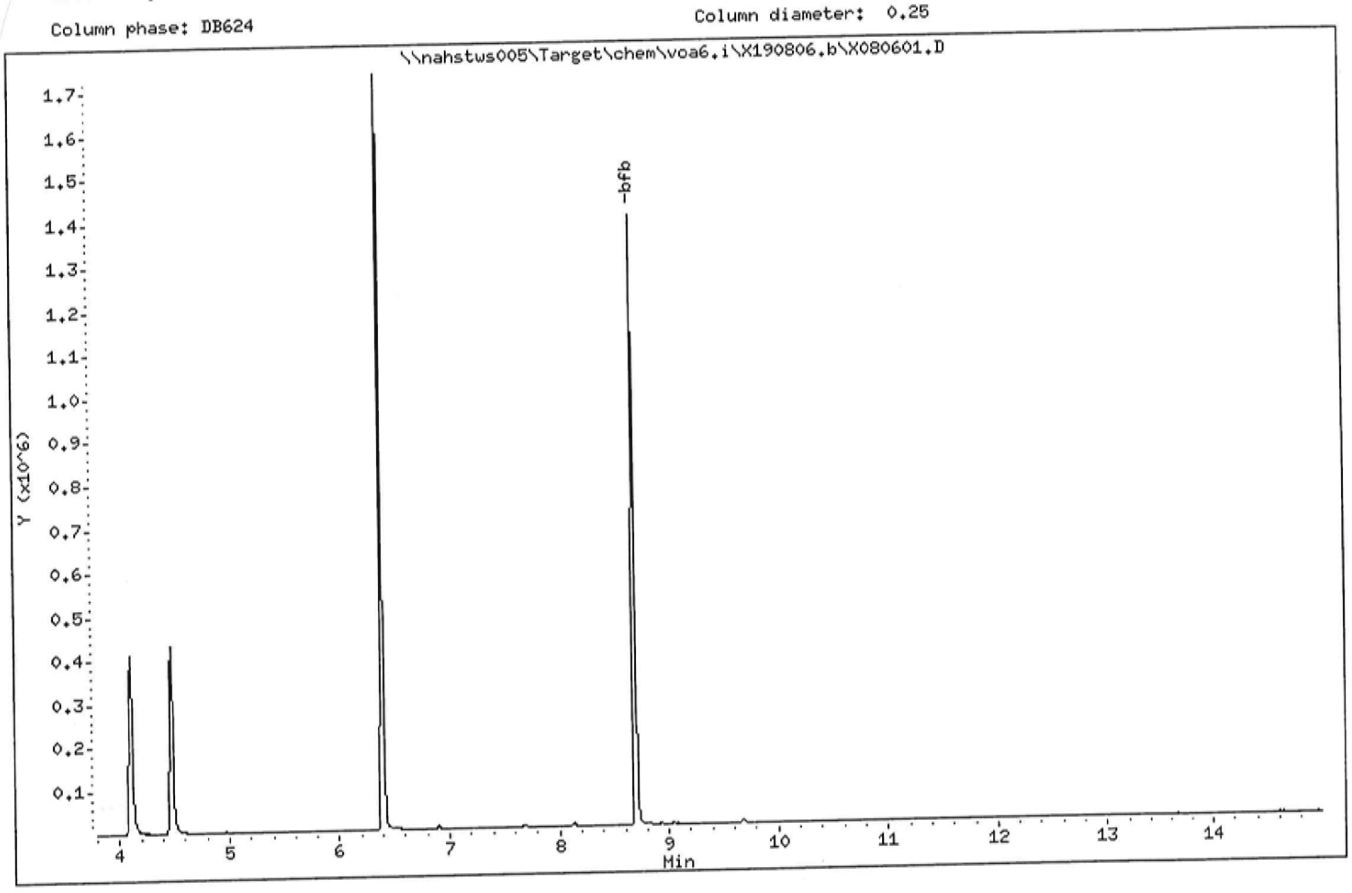
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: DG

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080601.D



Date : 06-AUG-2019 10:34

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

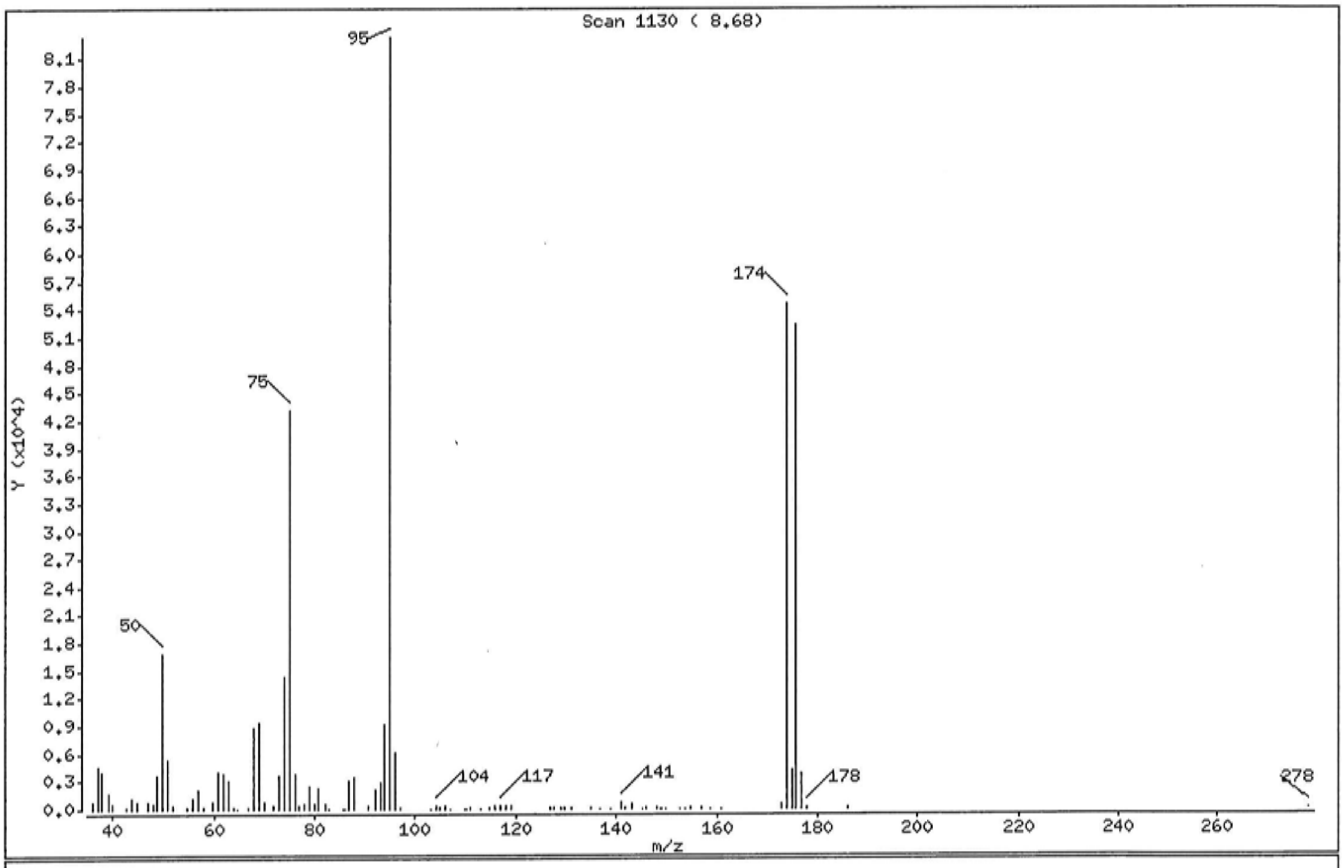
Volume Injected (uL): 2.0

Operator: DG

Column phase: DB624

Column diameter: 0.25

1 bfb




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 95 | Base Peak, 100% relative abundance | 100.00 |
| 50 | 15.00 - 40.00% of mass 95 | 20.19 |
| 75 | 30.00 - 60.00% of mass 95 | 51.73 |
| 96 | 5.00 - 9.00% of mass 95 | 7.24 |
| 173 | Less than 2.00% of mass 174 | 0.60 ( 0.92) |
| 174 | Greater than 50.00% of mass 95 | 65.53 |
| 175 | 5.00 - 9.00% of mass 174 | 5.03 ( 7.67) |
| 176 | 95.00 - 101.00% of mass 174 | 62.75 ( 95.75) |
| 177 | 5.00 - 9.00% of mass 176 | 4.66 ( 7.43) |

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080601.D

Date : 06-AUG-2019 10:34

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: DG

Column phase: DB624

Column diameter: 0.25

Data File: X080601.D
Spectrum: Scan 1130 ( 8.68)
Location of Maximum: 95.00
Number of points: 96

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 36.00 | 755 | 68.00 | 8752 | 96.90 | 198 | 143.00 | 595 |
| 37.00 | 4659 | 69.00 | 9448 | 103.00 | 78 | 145.10 | 61 |
| 38.00 | 4024 | 70.00 | 836 | 104.00 | 417 | 145.90 | 113 |
| 39.10 | 1672 | 72.00 | 403 | 105.00 | 161 | 148.00 | 139 |
| 39.90 | 525 | 73.00 | 3640 | 105.80 | 363 | 148.70 | 61 |
| 42.90 | 160 | 74.00 | 14357 | 106.90 | 88 | 149.00 | 59 |
| 44.00 | 1192 | 75.00 | 43136 | 109.80 | 74 | 150.00 | 86 |
| 45.00 | 691 | 76.00 | 3787 | 110.10 | 67 | 152.80 | 54 |
| 47.10 | 819 | 77.00 | 467 | 110.80 | 98 | 153.80 | 51 |
| 48.10 | 599 | 78.00 | 594 | 112.90 | 86 | 155.00 | 142 |
| 49.00 | 3669 | 78.90 | 2414 | 114.90 | 129 | 156.80 | 150 |
| 50.00 | 16840 | 79.90 | 652 | 115.90 | 323 | 158.90 | 68 |
| 51.00 | 5417 | 80.90 | 2267 | 116.90 | 466 | 160.80 | 86 |
| 52.00 | 312 | 82.00 | 623 | 117.90 | 292 | 173.00 | 502 |
| 54.90 | 279 | 83.00 | 66 | 119.00 | 302 | 173.90 | 54648 |
| 56.00 | 1166 | 85.80 | 80 | 126.90 | 96 | 174.90 | 4194 |
| 57.00 | 2063 | 86.10 | 85 | 127.70 | 232 | 175.90 | 52328 |
| 57.90 | 121 | 86.90 | 3083 | 129.10 | 209 | 177.00 | 3888 |
| 59.90 | 779 | 87.90 | 3391 | 129.80 | 271 | 177.90 | 176 |
| 61.00 | 4114 | 90.80 | 323 | 131.00 | 135 | 186.00 | 143 |
| 62.00 | 3907 | 92.00 | 2132 | 134.90 | 140 | 278.30 | 58 |
| 63.00 | 3053 | 93.00 | 2877 | 136.60 | 81 | | |
| 64.00 | 264 | 94.00 | 9188 | 138.90 | 67 | | |
| 64.80 | 84 | 95.00 | 83392 | 141.00 | 687 | | |
| 66.90 | 219 | 96.00 | 6041 | 141.80 | 113 | | |

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Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080602.D
Lab Smp Id: VSTD000.25 Client Smp ID: VSTD000.25
Inj Date : 06-AUG-2019 10:58
Operator : DG Inst ID: voa6.i
Smp Info : VSTD000.25;VSTD000.25;1;1;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 10:58 Cal File: X080602.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

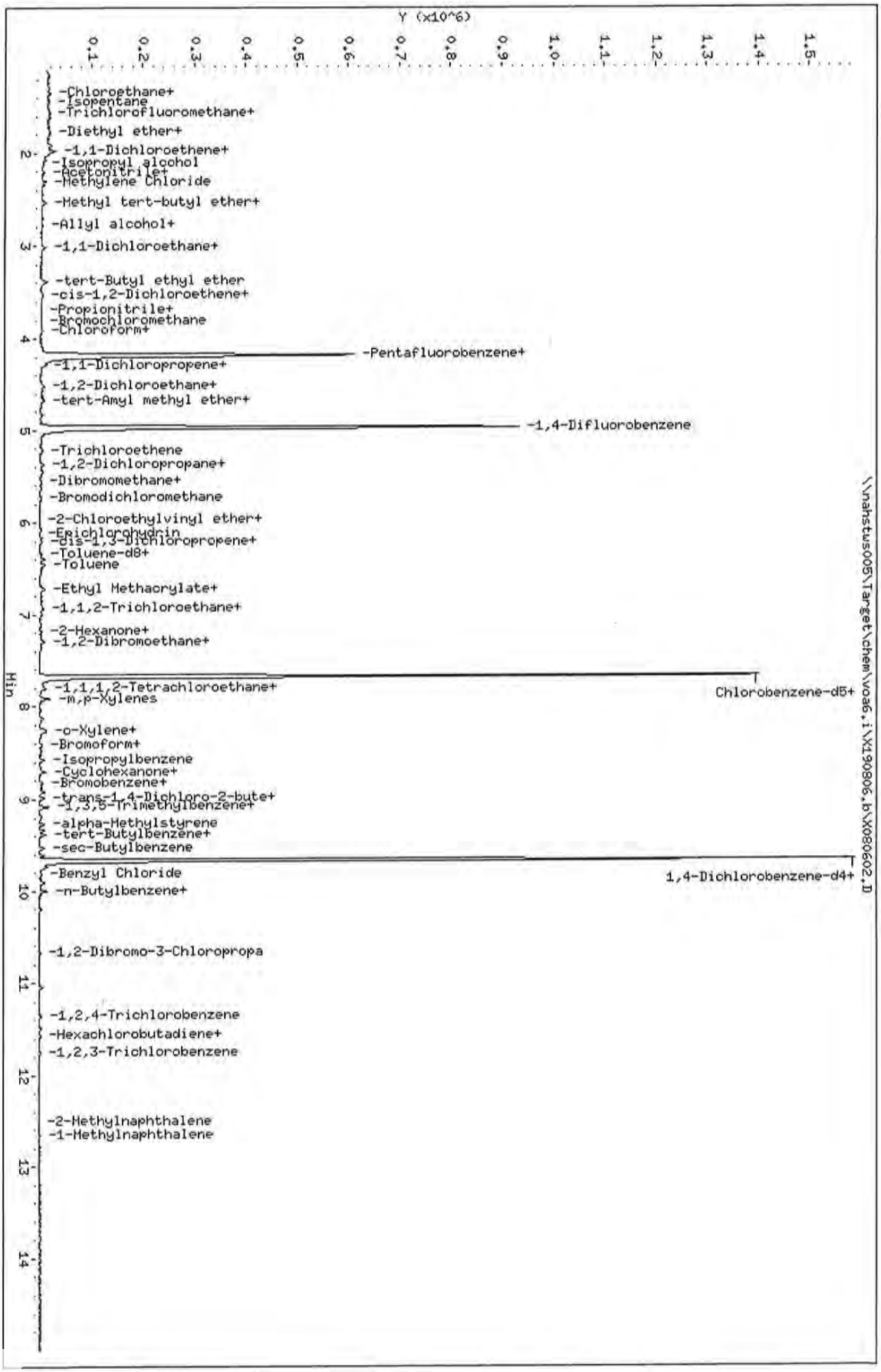
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) | |
|---|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 527323 | 50.0000 | | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 794076 | 50.0000 | | |
| * | 47 Chlorobenzene-d5 | 117 | 7.678 | 7.678 | (1.000) | 712201 | 50.0000 | | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 381882 | 50.0000 | | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.483 | 4.476 | (1.072) | 2470 | 0.25000 | | (TaM) |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.132) | 3451 | 0.25000 | | (aM) |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.104 | (0.981) | 1624 | 0.25000 | | (a) |
| $ | 48 Toluene-d8 | 98 | 6.396 | 6.389 | (0.833) | 6439 | 0.25000 | 0.33 | (aM) |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.785 | 7.778 | (1.014) | 1508 | 0.25000 | 0.28 | (a) |
| | 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 2379 | 0.25000 | 0.30 | (a) |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.853 | 8.845 | (0.916) | 2010 | 0.25000 | 0.66 | (aM) |
| | 138 Freon TF | 101 | 1.912 | 1.912 | (0.457) | 1119 | 0.25000 | 1.70 | (a) |
| | 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.892) | 1143 | 0.25000 | 0.27 | (a) |
| | 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.700) | 3194 | 0.25000 | 0.34 | (Ta) |
| | 11 1,1-Dichloroethene | 96 | 1.919 | 1.912 | (0.459) | 1214 | 0.25000 | 0.29 | (a) |
| | 32 1,1-Dichloropropene | 75 | 4.290 | 4.283 | (0.863) | 2294 | 0.25000 | 0.32 | (aM) |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.754 | 11.747 | (1.216) | 1112 | 0.25000 | 2.66 | (aM) |
| | 71 1,2,3-Trichloropropane | 75 | 8.874 | 8.867 | (0.918) | 1626 | 0.25000 | 0.29 | (aM) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.352 | 11.345 | (1.174) | 1149 | 0.25000 | 2.27 | (aM) |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.390 | 9.383 | (0.971) | 5812 | 0.25000 | 0.30 | (a) |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.672 | 10.658 | (1.104) | 221 | 0.25000 | 1.67 | (aM) |
| | 57 1,2-Dibromoethane | 107 | 7.269 | 7.270 | (0.947) | 1662 | 0.25000 | 0.30 | (a) |
| | 88 1,2-Dichlorobenzene | 146 | 10.006 | 9.999 | (1.035) | 3200 | 0.25000 | 0.37 | (a) |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 33 | 1,2-Dichloroethane | 62 | 4.569 | 4.562 | (0.919) | 2373 | 0.25000 | 0.31 (a) |
| 42 | 1,2-Dichloropropane | 63 | 5.450 | 5.443 | (1.097) | 1193 | 0.25000 | 0.23 (aM) |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 5467 | 0.25000 | 0.29 (a) |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 3180 | 0.25000 | 0.27 (a) |
| 54 | 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.910) | 2578 | 0.25000 | 0.29 (a) |
| 84 | 1,4-Dichlorobenzene | 146 | 9.691 | 9.691 | (1.002) | 3890 | 0.25000 | 0.87 (a) |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 2570 | 0.25000 | 0.33 (aM) |
| 24 | 2-Butanone | 43 | 3.616 | 3.581 | (0.865) | 2134 | 0.50000 | 0.87 (aM) |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 4981 | 0.25000 | 0.31 (a) |
| 52 | 2-Hexanone | 43 | 7.105 | 7.091 | (0.925) | 2218 | 0.50000 | 1.64 (a) |
| 77 | 4-Chlorotoluene | 91 | 9.082 | 9.075 | (0.939) | 5053 | 0.25000 | 0.27 (a) |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 5563 | 0.25000 | 0.28 (a) |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.338 | 6.331 | (0.826) | 3294 | 0.50000 | 0.60 (aM) |
| 10 | Acetone | 43 | 1.962 | 1.976 | (0.469) | 2076 | 0.50000 | (aM) |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 6371 | 0.25000 | 0.31 (aM) |
| 74 | Bromobenzene | 156 | 8.817 | 8.810 | (0.912) | 2052 | 0.25000 | 0.28 (a) |
| 29 | Bromochloromethane | 128 | 3.803 | 3.803 | (0.909) | 1131 | 0.25000 | 0.35 (a) |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 1921 | 0.25000 | 0.27 (aM) |
| 66 | Bromoform | 173 | 8.416 | 8.416 | (1.096) | 1079 | 0.25000 | 0.24 (aM) |
| 6 | Bromomethane | 94 | 1.338 | 1.331 | (0.320) | 1612 | 0.25000 | 0.02 (aM) |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 8326 | 0.50000 | 0.64 (a) |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 3128 | 0.25000 | 0.43 (aM) |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.003) | 4421 | 0.25000 | 0.30 (a) |
| 7 | Chloroethane | 64 | 1.403 | 1.396 | (0.336) | 939 | 0.25000 | 0.31 (a) |
| 28 | Chloroform | 83 | 3.917 | 3.910 | (0.937) | 2809 | 0.25000 | 0.29 (a) |
| 3 | Chloromethane | 50 | 1.073 | 1.074 | (0.257) | 1624 | 0.25000 | 0.34 (a) |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 1815 | 0.25000 | 0.31 (a) |
| 46 | cis-1,3-Dichloropropene | 75 | 6.166 | 6.159 | (1.241) | 2226 | 0.25000 | 0.25 (a) |
| 55 | Dibromochloromethane | 129 | 7.184 | 7.184 | (0.936) | 1637 | 0.25000 | 0.28 (a) |
| 44 | Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 1103 | 0.25000 | 0.29 (a) |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.233) | 1641 | 0.25000 | 2.11 (aM) |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.017) | 2194 | 0.25000 | 0.29 (a) |
| 91 | Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 892 | 0.25000 | 2.12 (aM) |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.116) | 6011 | 0.25000 | 0.27 (a) |
| 62 | m,p-Xylenes | 106 | 7.914 | 7.907 | (1.031) | 5407 | 0.50000 | 0.60 (a) |
| 17 | Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 1935 | 0.25000 | 0.26 (a) |
| 87 | n-Butylbenzene | 91 | 10.006 | 9.999 | (1.035) | 4662 | 0.25000 | 0.28 (a) |
| 73 | n-Propylbenzene | 91 | 8.924 | 8.917 | (0.923) | 7279 | 0.25000 | 0.28 (a) |
| 92 | Naphthalene | 128 | 11.560 | 11.546 | (1.196) | 2666 | 0.25000 | 0.24 (aM) |
| 63 | o-Xylene | 106 | 8.251 | 8.244 | (1.075) | 2715 | 0.25000 | 0.30 (a) |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 5999 | 0.25000 | 0.27 (a) |
| 64 | Styrene | 104 | 8.272 | 8.265 | (1.077) | 4703 | 0.25000 | 0.31 (a) |
| 78 | tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 4692 | 0.25000 | 0.29 (a) |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.903) | 1490 | 0.25000 | 0.31 (a) |
| 50 | Toluene | 91 | 6.460 | 6.453 | (0.841) | 6815 | 0.25000 | 0.32 (a) |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.528 | (0.606) | 1383 | 0.25000 | 0.28 (aM) |
| 51 | trans-1,3-Dichloropropene | 75 | 6.696 | 6.689 | (1.347) | 2196 | 0.25000 | 0.27 (a) |
| 38 | Trichloroethene | 130 | 5.221 | 5.214 | (1.050) | 1794 | 0.25000 | 0.31 (a) |
| 8 | Trichlorofluoromethane | 101 | 1.561 | 1.553 | (0.373) | 2388 | 0.25000 | 0.31 (a) |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 1416 | 0.25000 | 0.28 (aM) |

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.




Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080602.D
Date : 06-AUG-2019 10:58
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D  Page 1
Report Date: 27-Aug-2019 17:57

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Lab Smp Id: VSTD000.5  Client Smp ID: VSTD000.5
Inj Date : 06-AUG-2019 11:46
Operator : DG  Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i  Quant Type: ISTD
Cal Date : 06-AUG-2019 11:46  Cal File: X080603.D
Als bottle: 4  Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

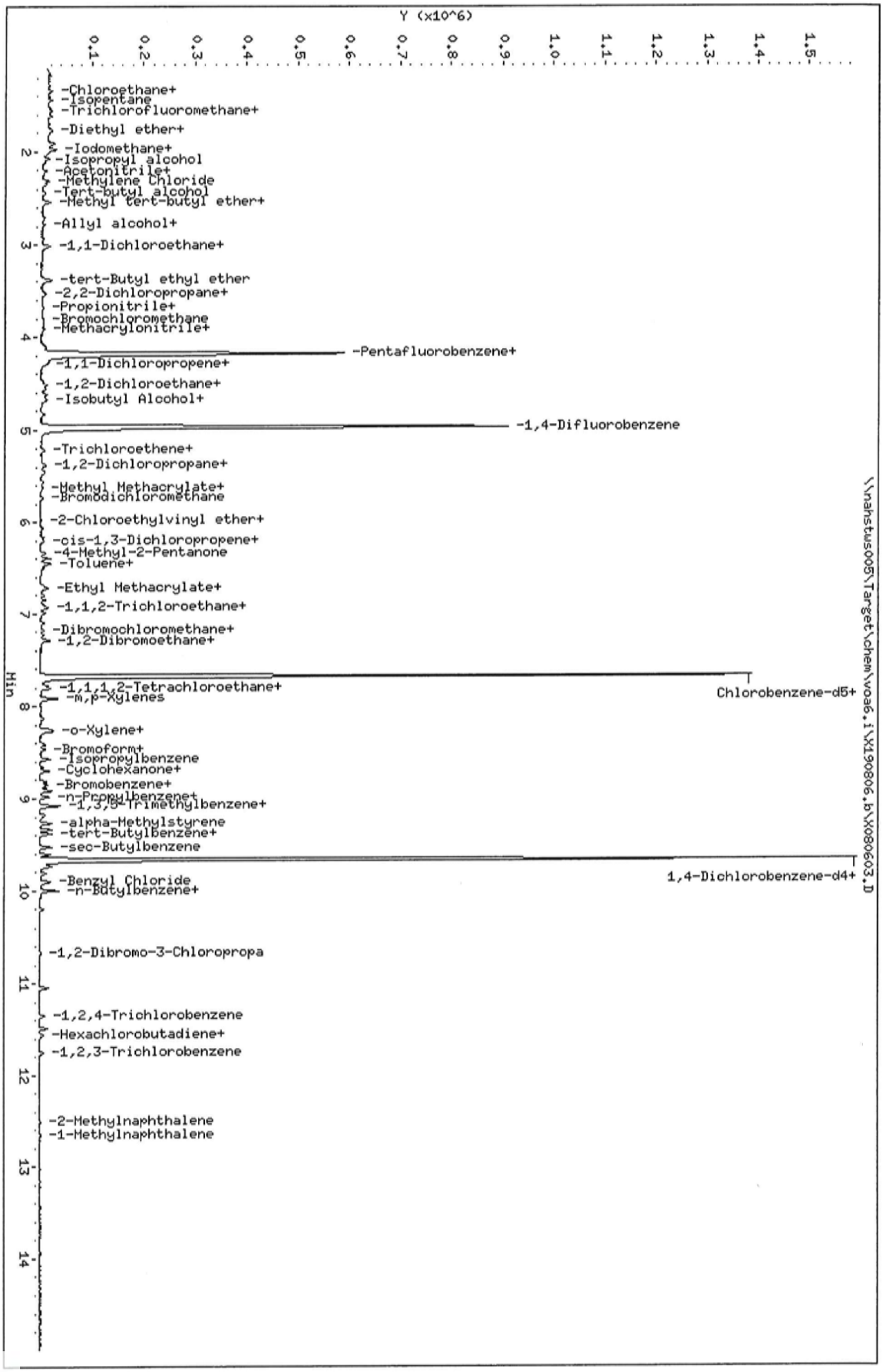
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 512204 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 764566 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 692062 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 366630 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.483 | 4.476 | (1.072) | 4023 | 0.50000 | 0.12(aM) |
| $ 69 4-Bromofluorobenzene | 95 | 8.702 | 8.695 | (1.134) | 5116 | 0.50000 | (aM) |
| $ 30 Dibromofluoromethane | 113 | 4.111 | 4.104 | (0.983) | 3072 | 0.50000 | 0.00(aM) |
| $ 48 Toluene-d8 | 98 | 6.396 | 6.389 | (0.834) | 11801 | 0.50000 | 0.63(aM) |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 2988 | 0.50000 | 0.58(a) |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 4323 | 0.50000 | 0.56(a) |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 5659 | 0.50000 | 1.24(aM) |
| 138 Freon TF | 101 | 1.912 | 1.912 | (0.457) | 2426 | 0.50000 | 2.02(a) |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 2479 | 0.50000 | 0.60(a) |
| 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.700) | 5155 | 0.50000 | 0.57(a) |
| 11 1,1-Dichloroethene | 96 | 1.919 | 1.912 | (0.459) | 2352 | 0.50000 | 0.59(aM) |
| 32 1,1-Dichloropropene | 75 | 4.290 | 4.283 | (0.863) | 4072 | 0.50000 | 0.60(aM) |
| 93 1,2,3-Trichlorobenzene | 180 | 11.754 | 11.747 | (1.216) | 2992 | 0.50000 | 3.11(a) |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 3909 | 0.50000 | 0.75(aM) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.352 | 11.345 | (1.174) | 4027 | 0.50000 | 2.72(aM) |
| 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 11560 | 0.50000 | 0.62(aM) |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.658 | (1.103) | 855 | 0.50000 | 2.25(a) |
| 57 1,2-Dibromoethane | 107 | 7.270 | 7.270 | (0.948) | 3077 | 0.50000 | 0.57(a) |
| 88 1,2-Dichlorobenzene | 146 | 10.006 | 9.999 | (1.035) | 8069 | 0.50000 | 0.85(a) |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 4335 | 0.50000 | 0.59 (aM) |
| 42 | 1,2-Dichloropropane | 63 | 5.450 | 5.443 | (1.097) | 2571 | 0.50000 | 0.52 (aM) |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 10563 | 0.50000 | 0.59 (a) |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 7340 | 0.50000 | 0.65 (a) |
| 54 | 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.911) | 5084 | 0.50000 | 0.60 (a) |
| 84 | 1,4-Dichlorobenzene | 146 | 9.683 | 9.691 | (1.001) | 8152 | 0.50000 | 1.27 (a) |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 4398 | 0.50000 | 0.59 (a) |
| 24 | 2-Butanone | 43 | 3.609 | 3.581 | (0.863) | 2294 | 1.00000 | 0.97 (aM) |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 9236 | 0.50000 | 0.61 (a) |
| 52 | 2-Hexanone | 43 | 7.098 | 7.091 | (0.925) | 5622 | 1.00000 | 2.57 (aM) |
| 77 | 4-Chlorotoluene | 91 | 9.082 | 9.075 | (0.939) | 10893 | 0.50000 | 0.61 (a) |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 11614 | 0.50000 | 0.62 (aM) |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.338 | 6.331 | (0.826) | 7127 | 1.00000 | 1.33 (a) |
| 10 | Acetone | 43 | 1.969 | 1.976 | (0.471) | 5436 | 1.00000 | (aM) |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 11095 | 0.50000 | 0.56 (a) |
| 74 | Bromobenzene | 156 | 8.817 | 8.810 | (0.912) | 4210 | 0.50000 | 0.61 (a) |
| 29 | Bromochloromethane | 128 | 3.803 | 3.803 | (0.909) | 1796 | 0.50000 | 0.57 (a) |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 3700 | 0.50000 | 0.54 (aM) |
| 66 | Bromoform | 173 | 8.416 | 8.416 | (1.097) | 2674 | 0.50000 | 0.63 (Ta) |
| 6 | Bromomethane | 94 | 1.339 | 1.331 | (0.320) | 3112 | 0.50000 | 0.40 (aM) |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 13993 | 1.00000 | 1.10 (a) |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 4099 | 0.50000 | 0.59 (aM) |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 8003 | 0.50000 | 0.57 (a) |
| 7 | Chloroethane | 64 | 1.403 | 1.396 | (0.336) | 1439 | 0.50000 | 0.50 (a) |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.935) | 5078 | 0.50000 | 0.55 (a) |
| 3 | Chloromethane | 50 | 1.073 | 1.074 | (0.257) | 2533 | 0.50000 | 0.54 (aM) |
| 27 | cis-1,2-Dichloroethene | 96 | 3.538 | 3.530 | (0.846) | 3224 | 0.50000 | 0.56 (a) |
| 46 | cis-1,3-Dichloropropene | 75 | 6.166 | 6.159 | (1.241) | 4485 | 0.50000 | 0.54 (a) |
| 55 | Dibromochloromethane | 129 | 7.184 | 7.184 | (0.937) | 3280 | 0.50000 | 0.59 (a) |
| 44 | Dibromomethane | 93 | 5.565 | 5.558 | (1.120) | 1901 | 0.50000 | 0.53 (a) |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.233) | 2759 | 0.50000 | 2.32 (a) |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 4174 | 0.50000 | 0.58 (a) |
| 91 | Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 2483 | 0.50000 | 2.66 (a) |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 12060 | 0.50000 | 0.57 (a) |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 9887 | 1.00000 | 1.14 (a) |
| 17 | Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 3680 | 0.50000 | 0.62 (a) |
| 87 | n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 9440 | 0.50000 | 0.60 (a) |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 14223 | 0.50000 | 0.58 (a) |
| 92 | Naphthalene | 128 | 11.553 | 11.546 | (1.195) | 6459 | 0.50000 | 0.61 (aM) |
| 63 | o-Xylene | 106 | 8.251 | 8.244 | (1.076) | 4920 | 0.50000 | 0.57 (a) |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 12753 | 0.50000 | 0.61 (aM) |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 7781 | 0.50000 | 0.52 (a) |
| 78 | tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 9007 | 0.50000 | 0.59 (aM) |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 2680 | 0.50000 | 0.58 (a) |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 11794 | 0.50000 | 0.57 (a) |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.528 | (0.606) | 2723 | 0.50000 | 0.56 (a) |
| 51 | trans-1,3-Dichloropropene | 75 | 6.696 | 6.689 | (1.347) | 4254 | 0.50000 | 0.56 (a) |
| 38 | Trichloroethene | 130 | 5.207 | 5.214 | (1.048) | 2894 | 0.50000 | 0.52 (a) |
| 8 | Trichlorofluoromethane | 101 | 1.561 | 1.553 | (0.373) | 4234 | 0.50000 | 0.56 (a) |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 2679 | 0.50000 | 0.54 (a) |

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

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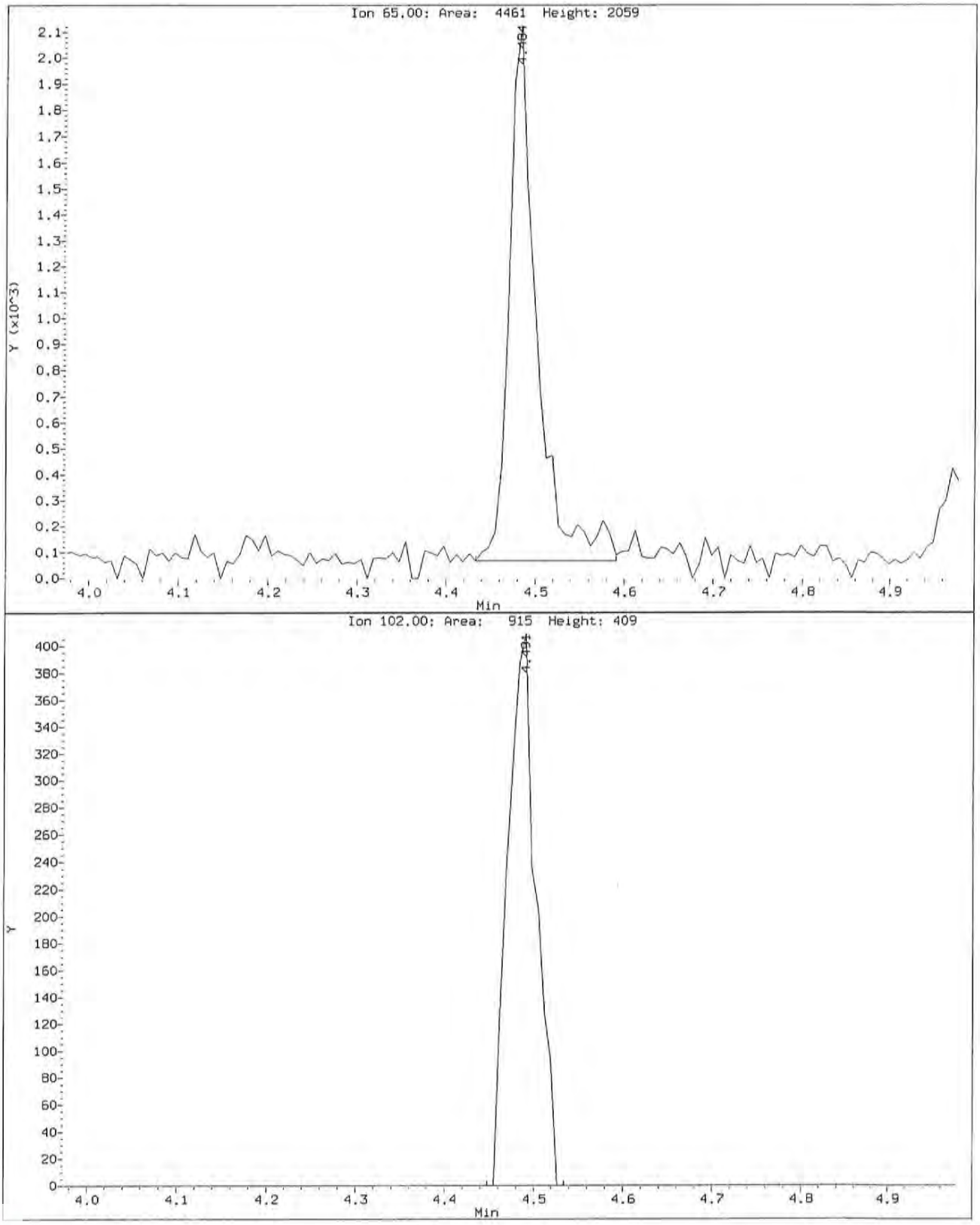
Sample Info: VSTD000.5;VSTD000.5;1;2;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0



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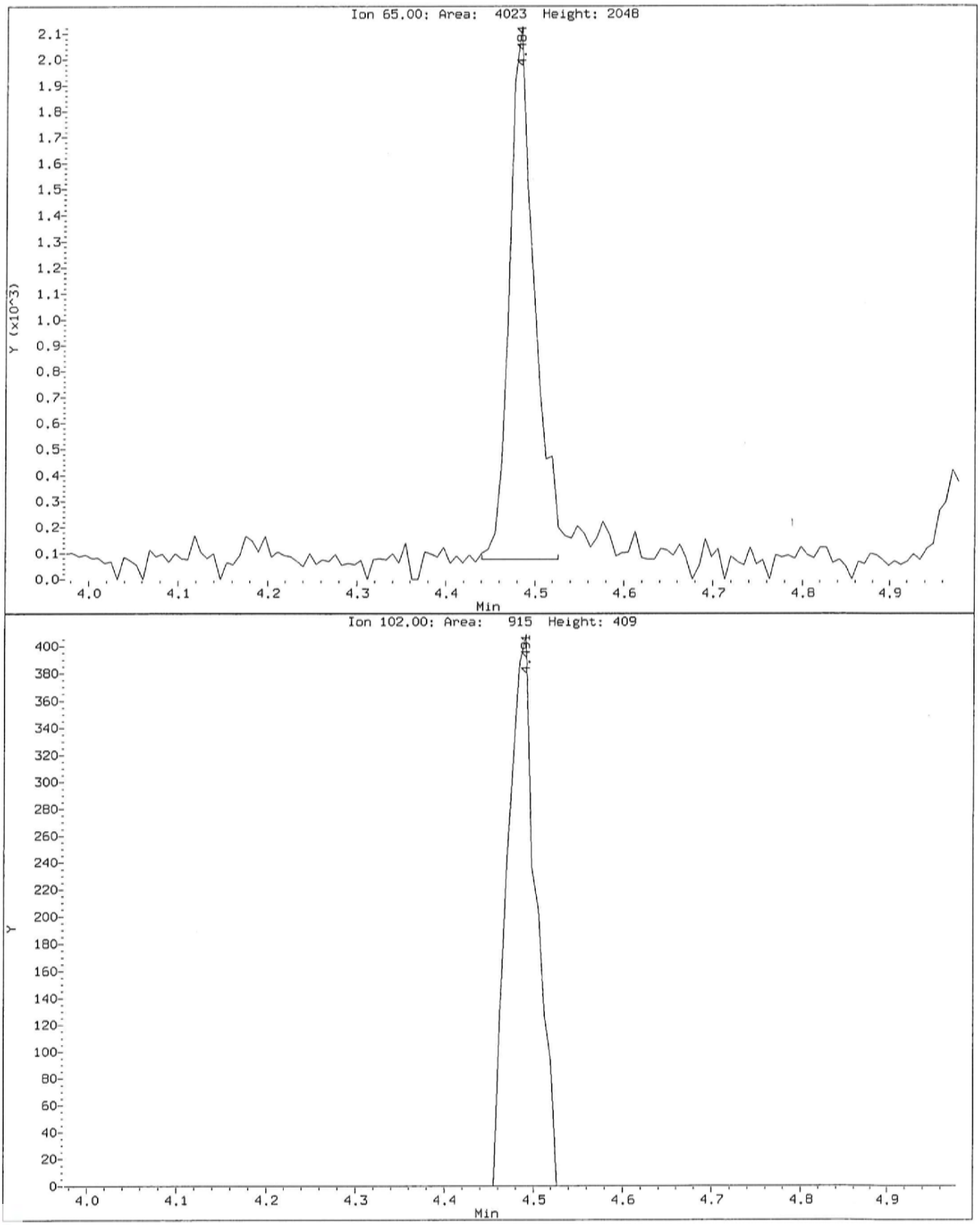
Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0



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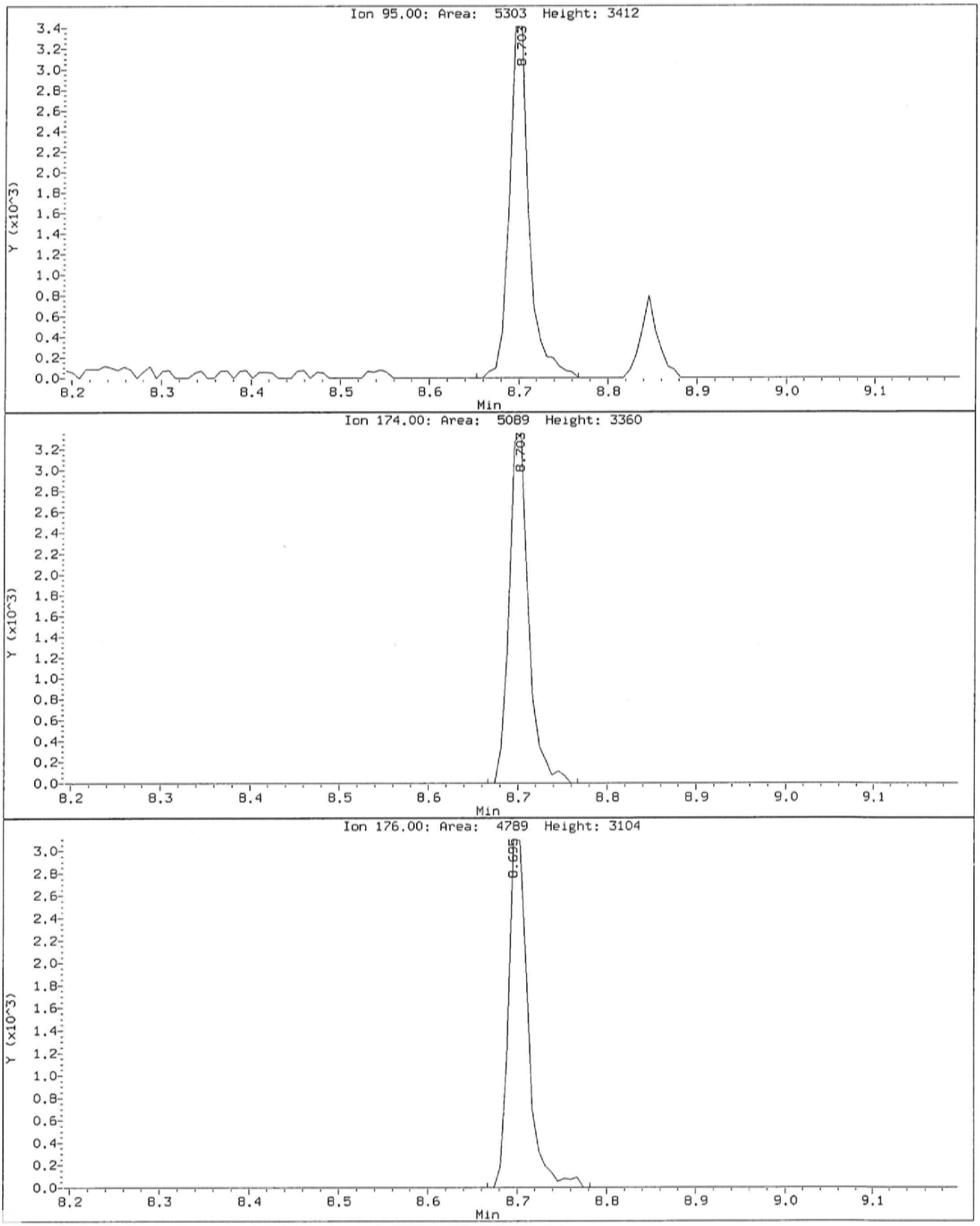
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



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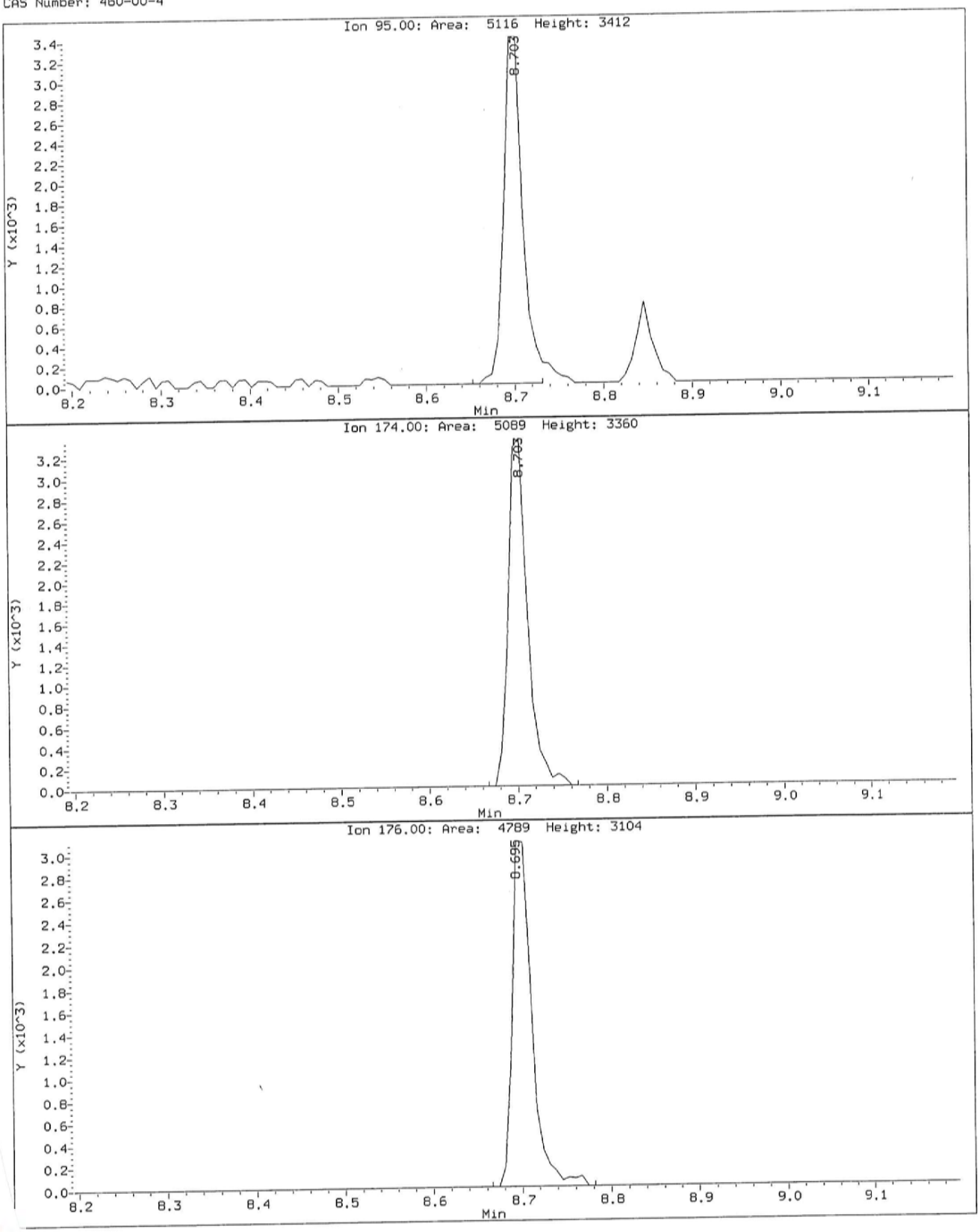
Client Sample ID: VSTD000.5

Compound: 4-Bromofluorobenzene
CAS Number: 460-00-4



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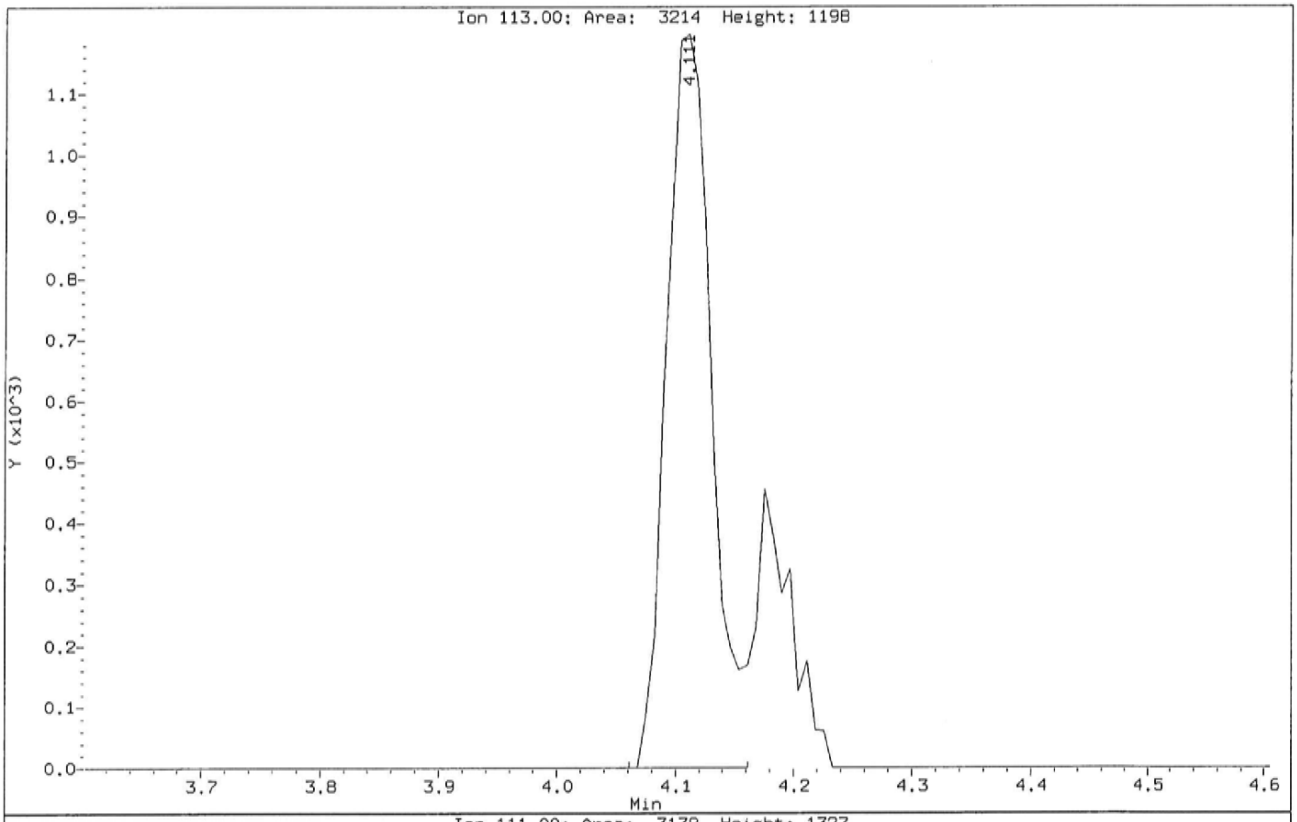
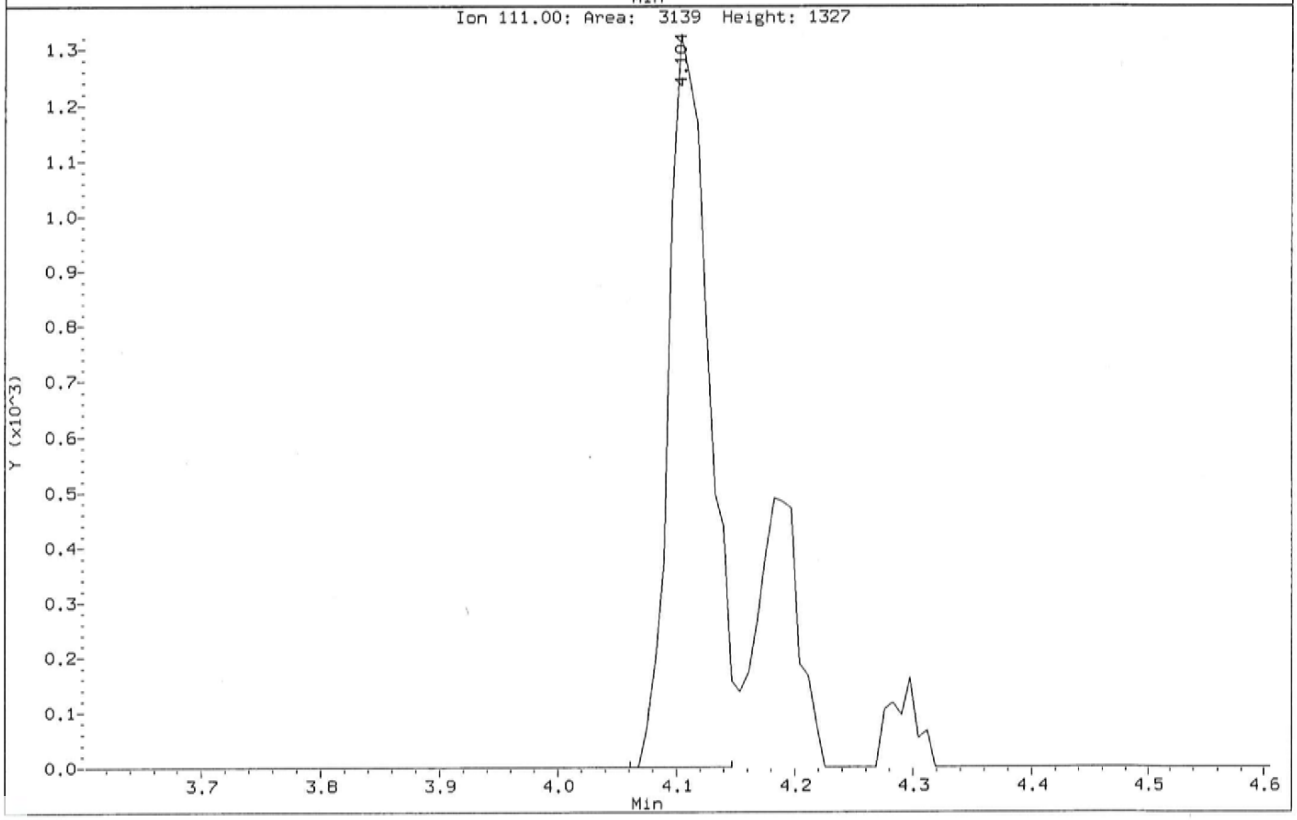
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Dibromofluoromethane
CAS Number: 1868-53-7



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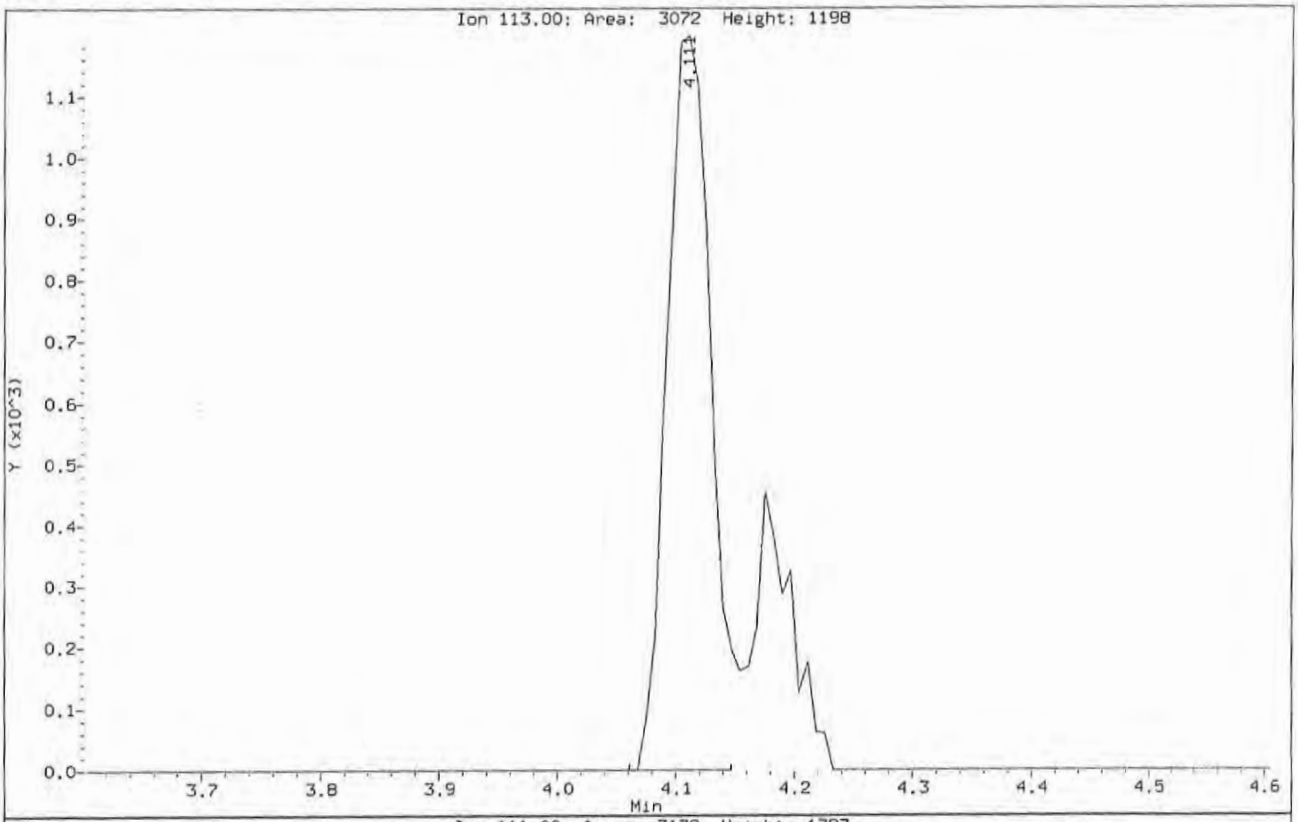
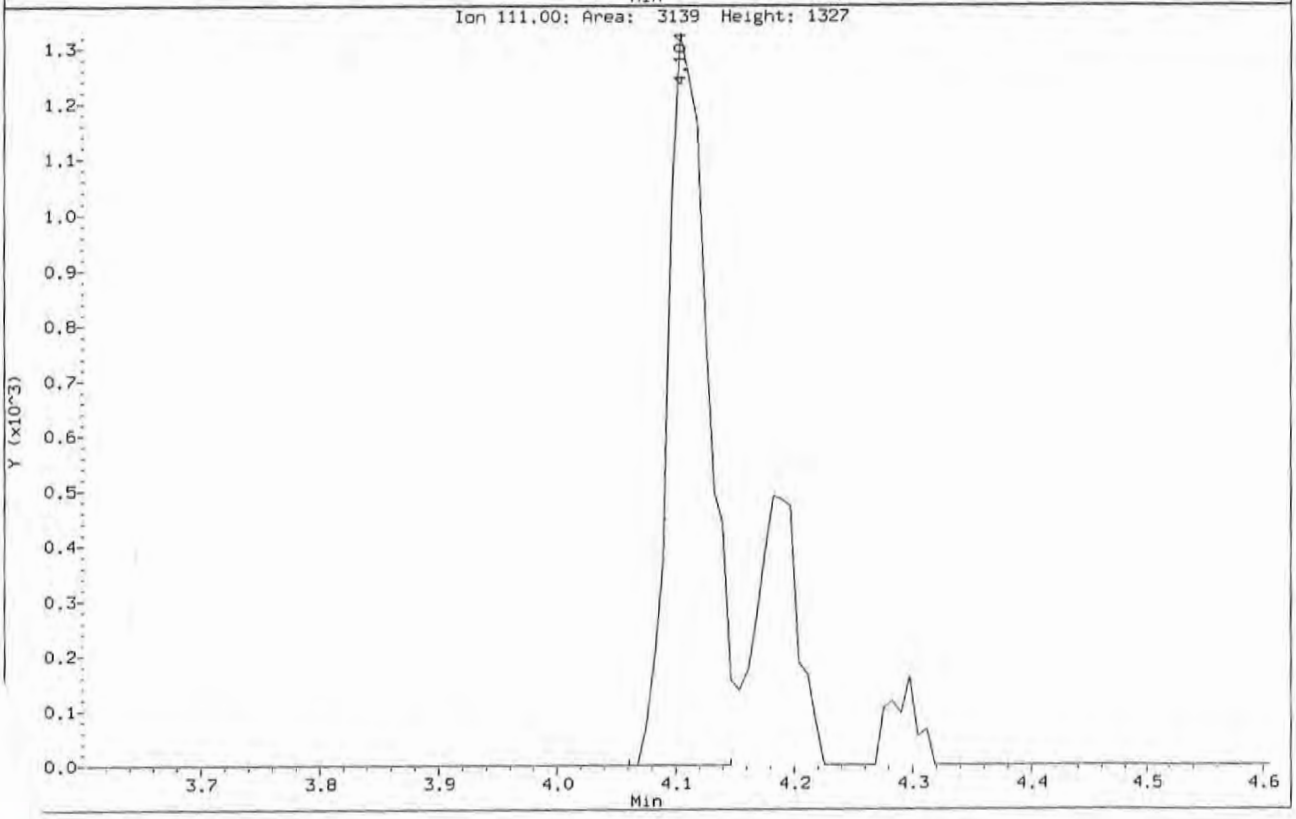
Client Sample ID: VSTD000.5

Compound: Dibromofluoromethane
CAS Number: 1868-53-7



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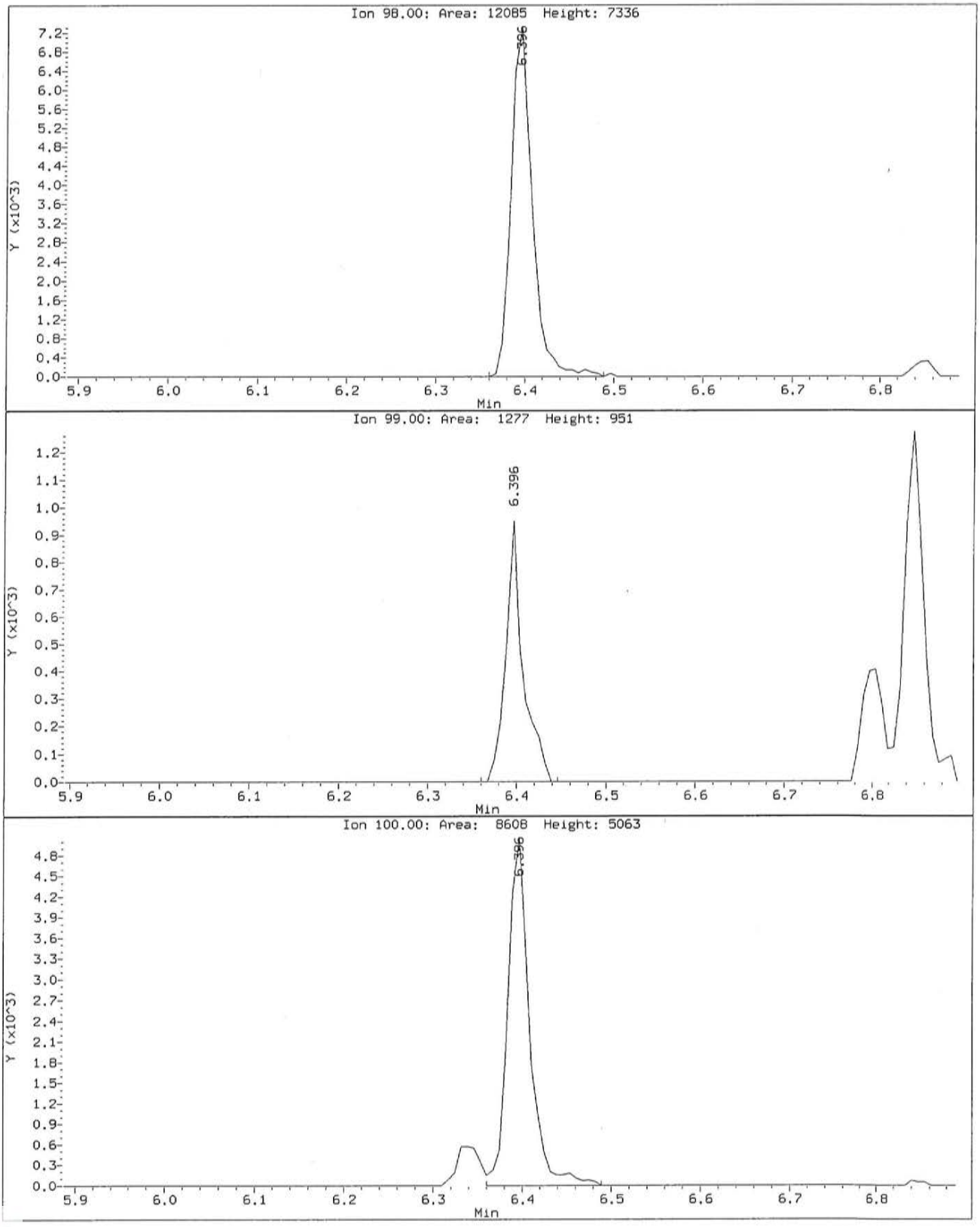
Client Sample ID: VSTD000.5

Compound: Toluene-d8
CAS Number: 2037-26-5



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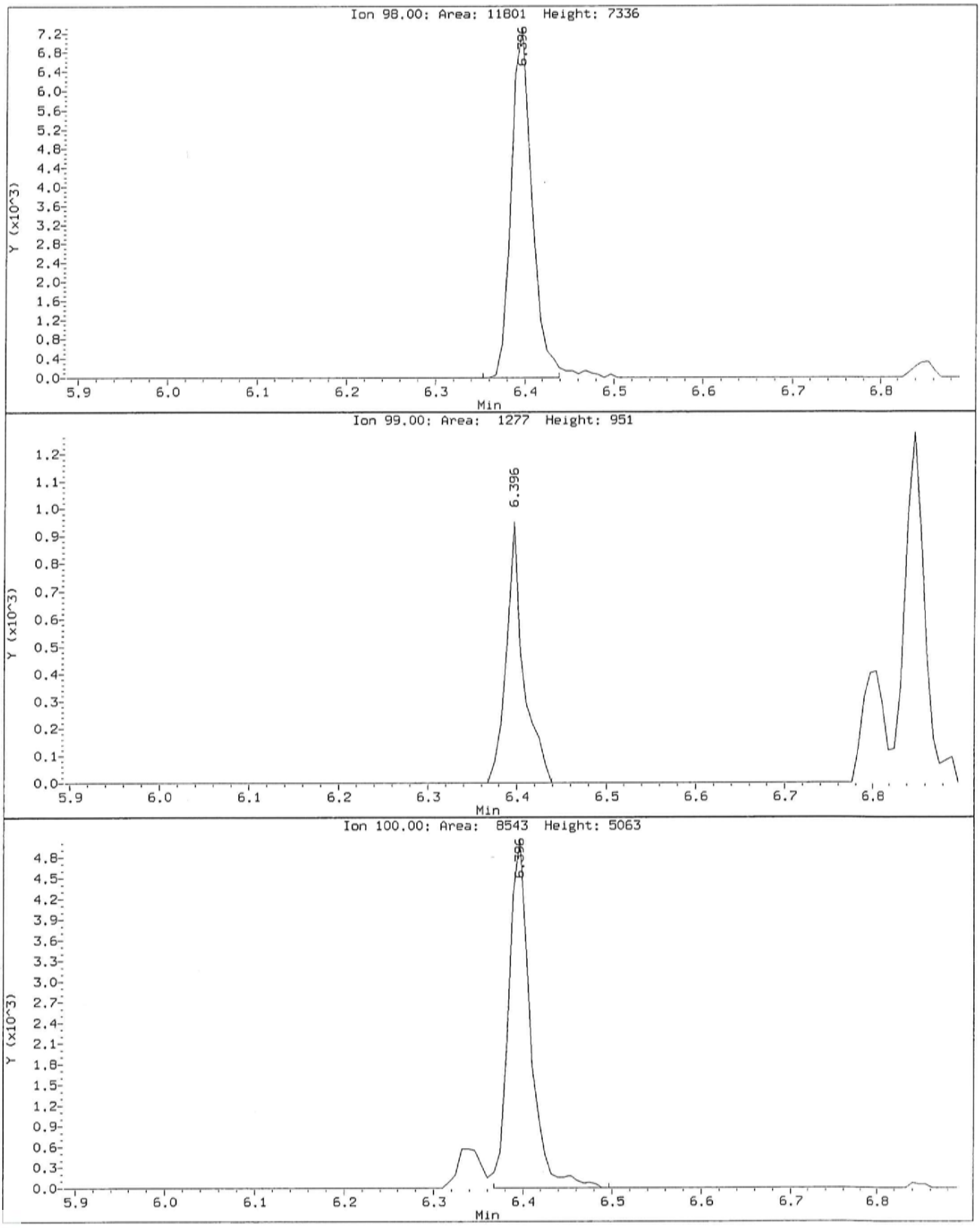
Client Sample ID: VSTD000.5

Compound: Toluene-d8
CAS Number: 2037-26-5



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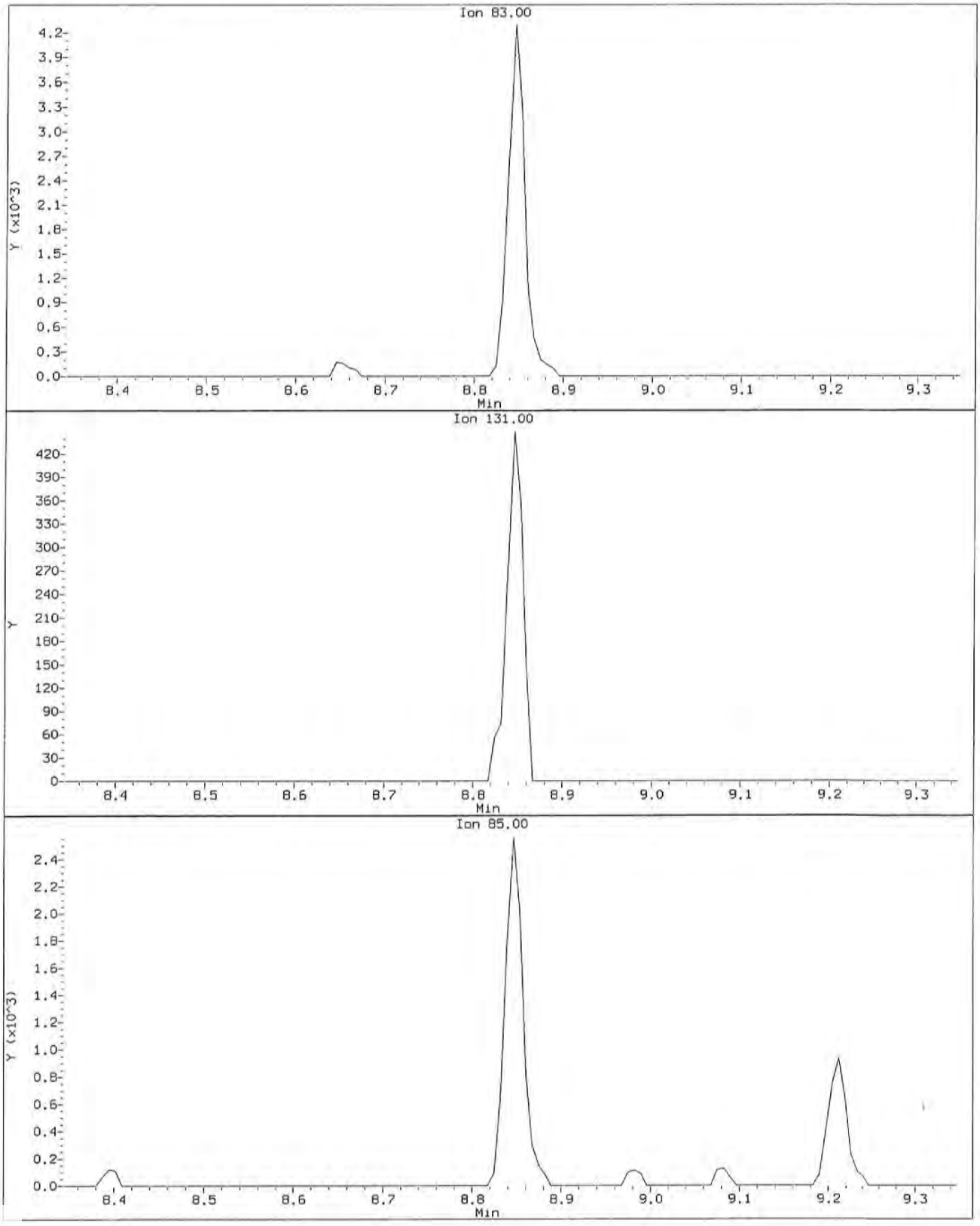
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



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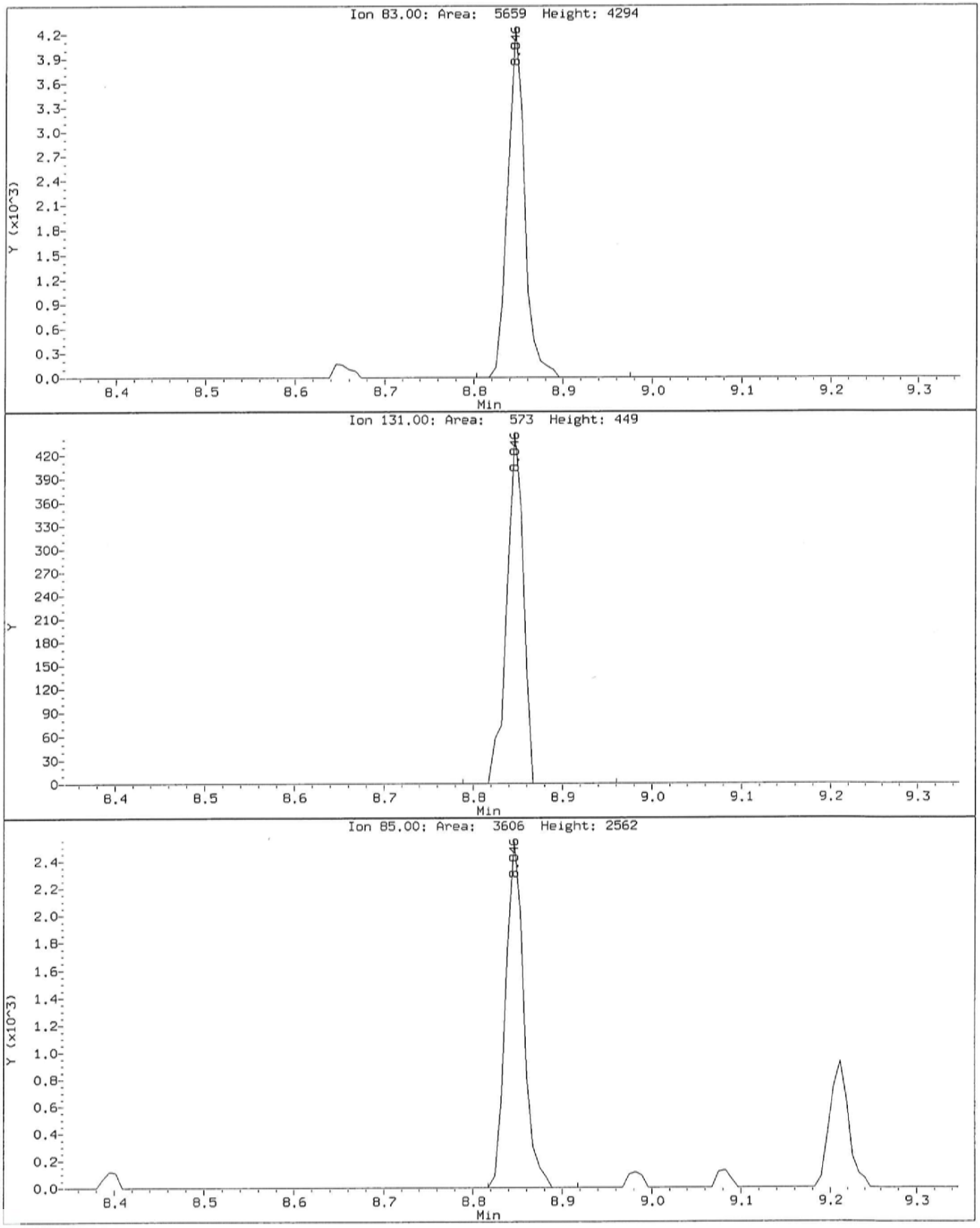
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



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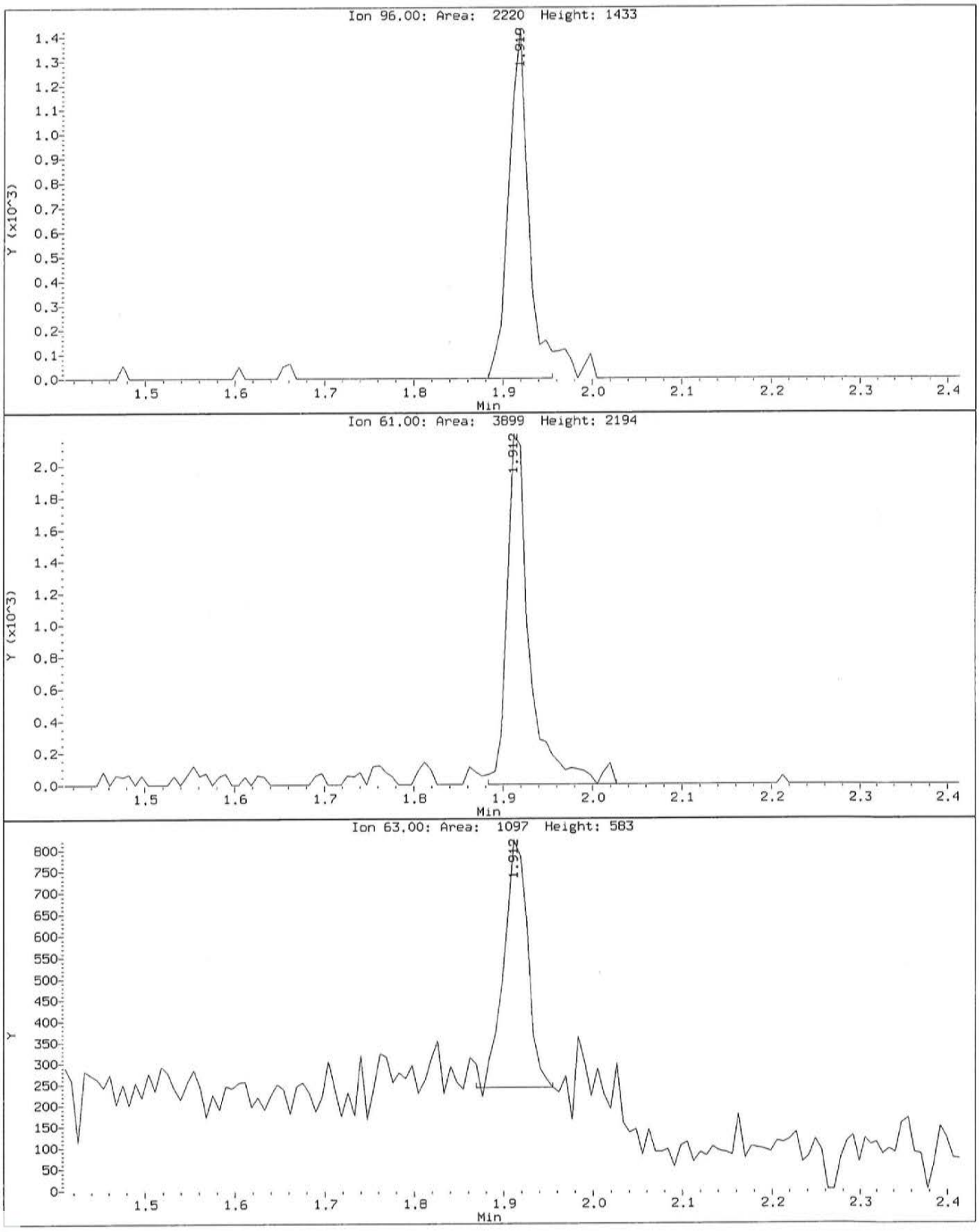
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1-Dichloroethene
CAS Number: 75-35-4



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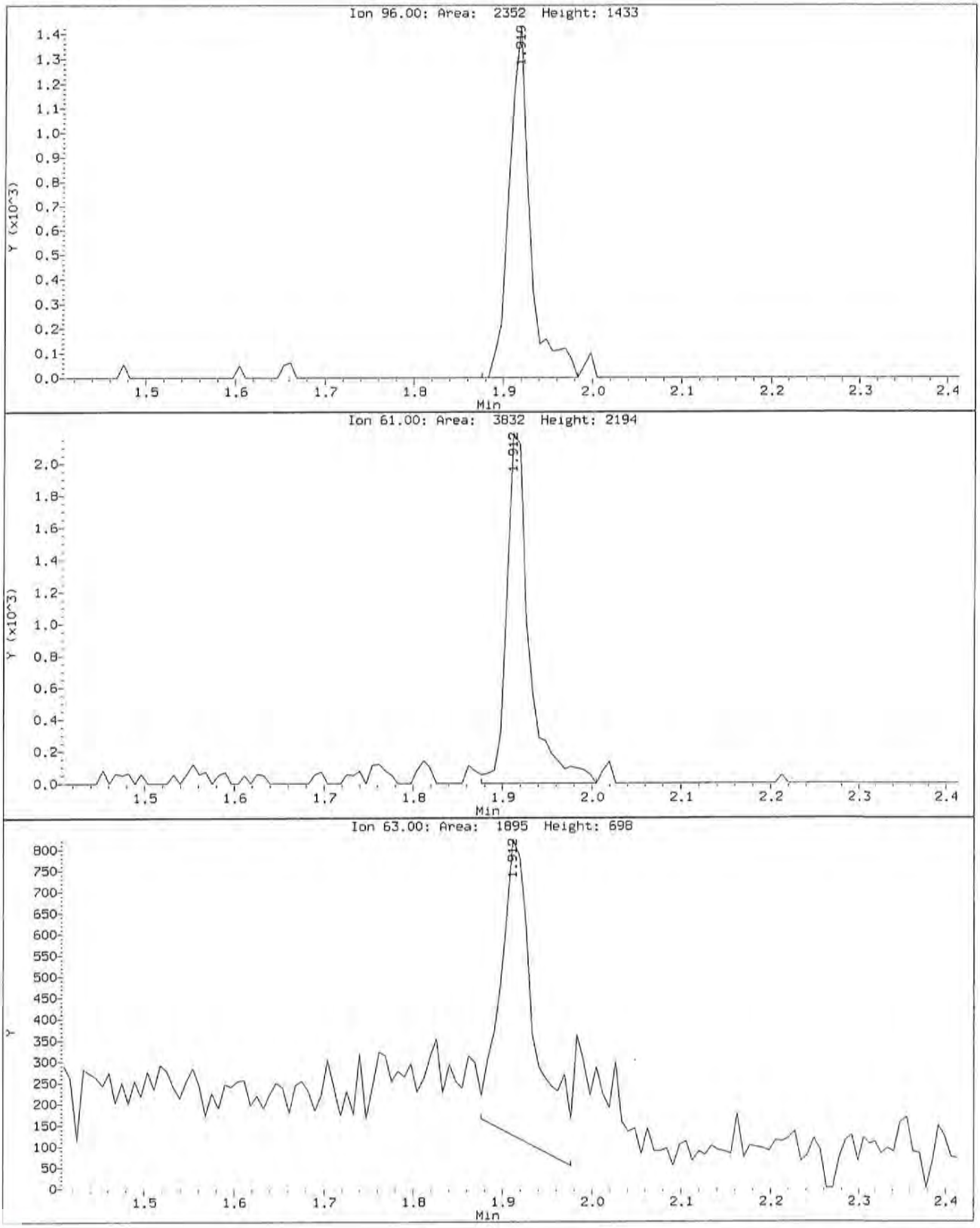
Compound: 1,1-Dichloroethene
CAS Number: 75-35-4



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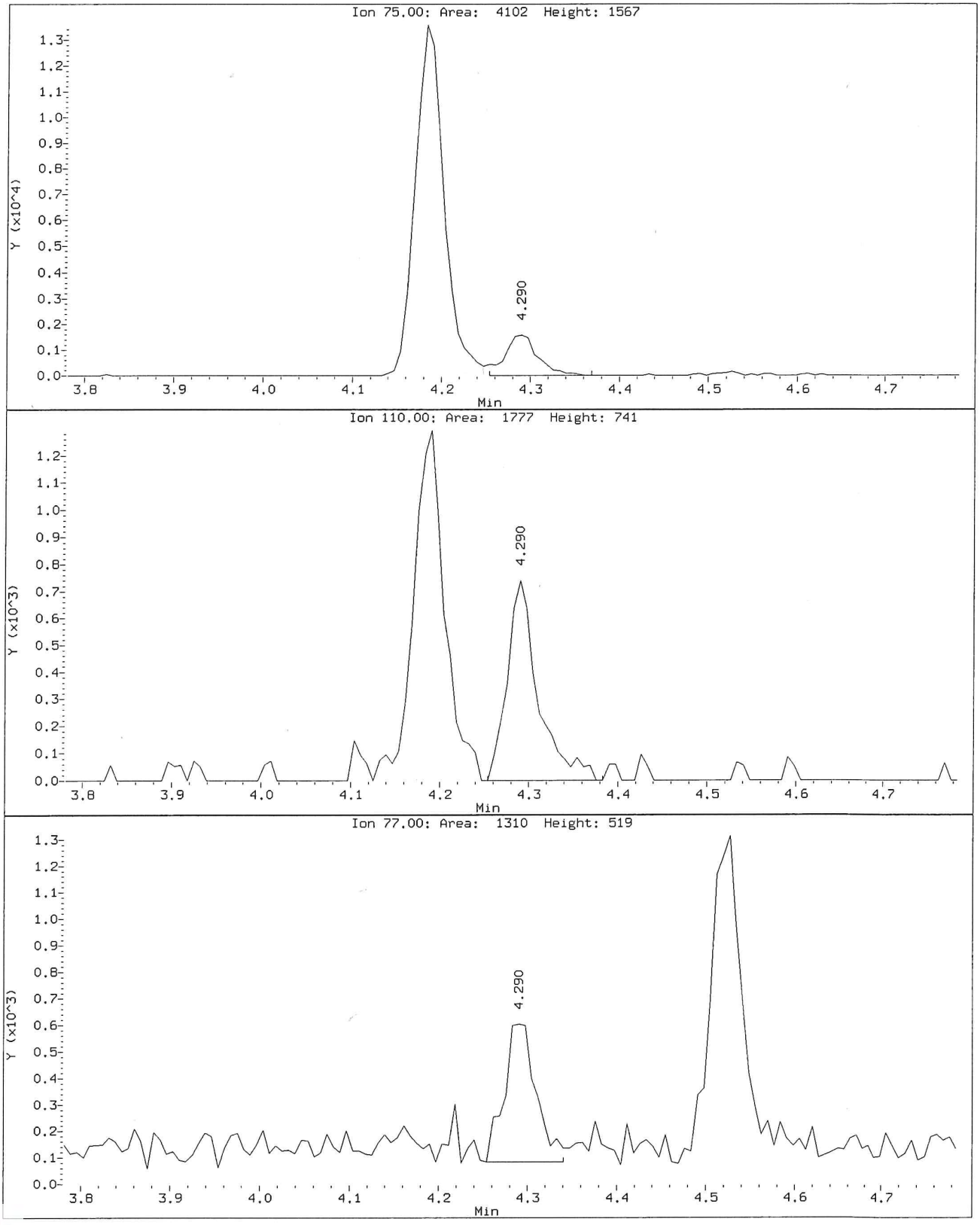
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1-Dichloropropene
CAS Number: 563-58-6



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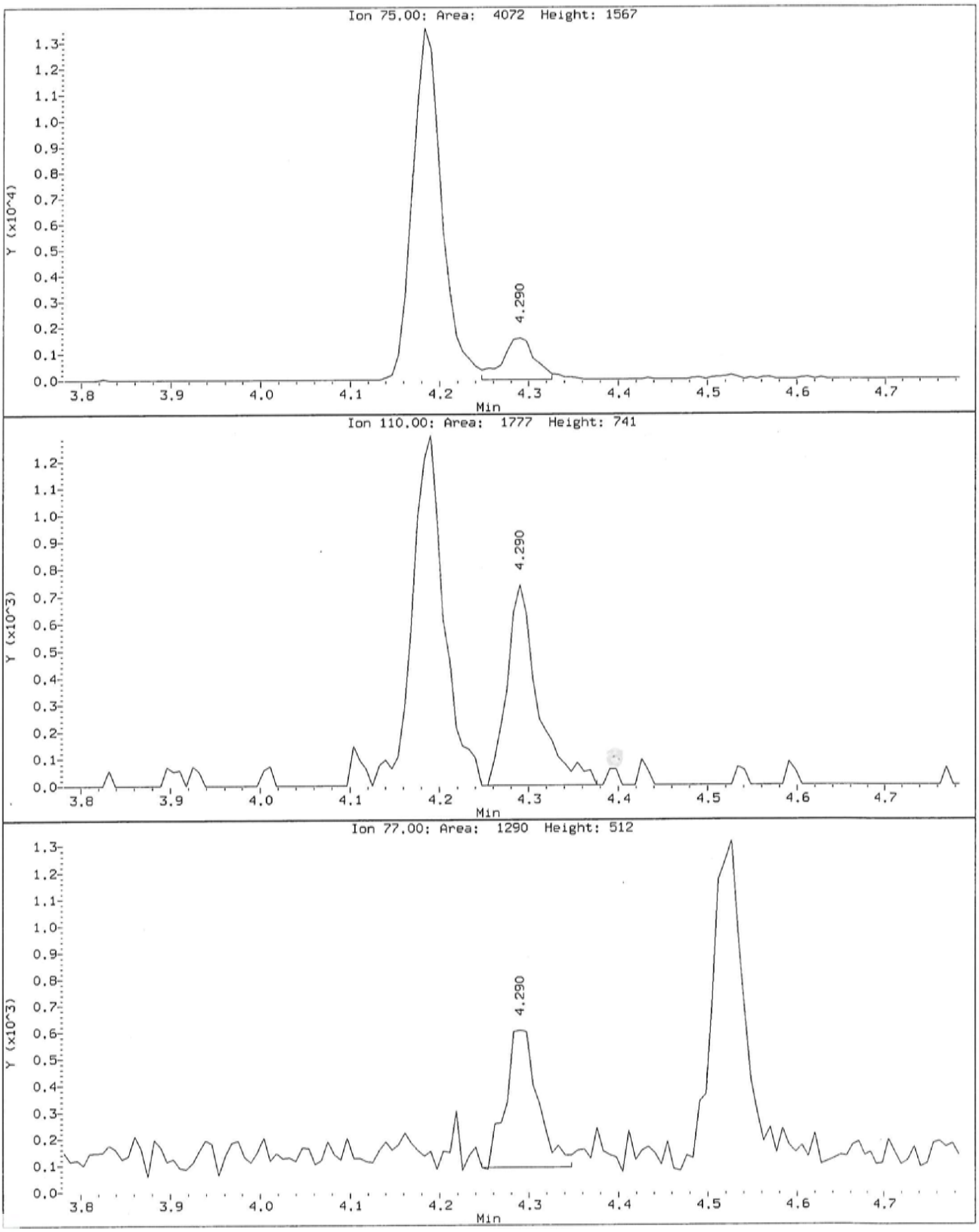
Compound: 1,1-Dichloropropene
CAS Number: 563-58-6



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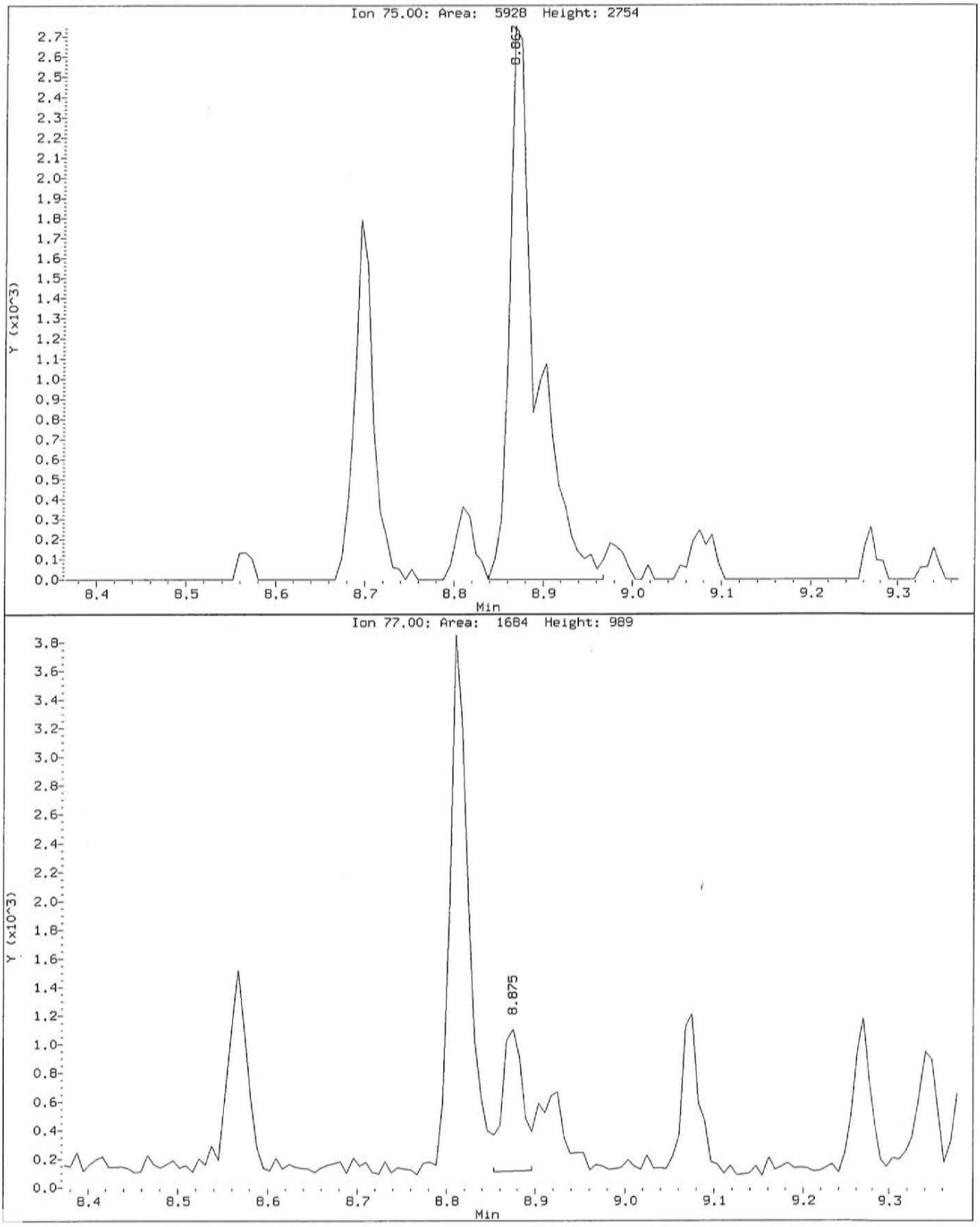
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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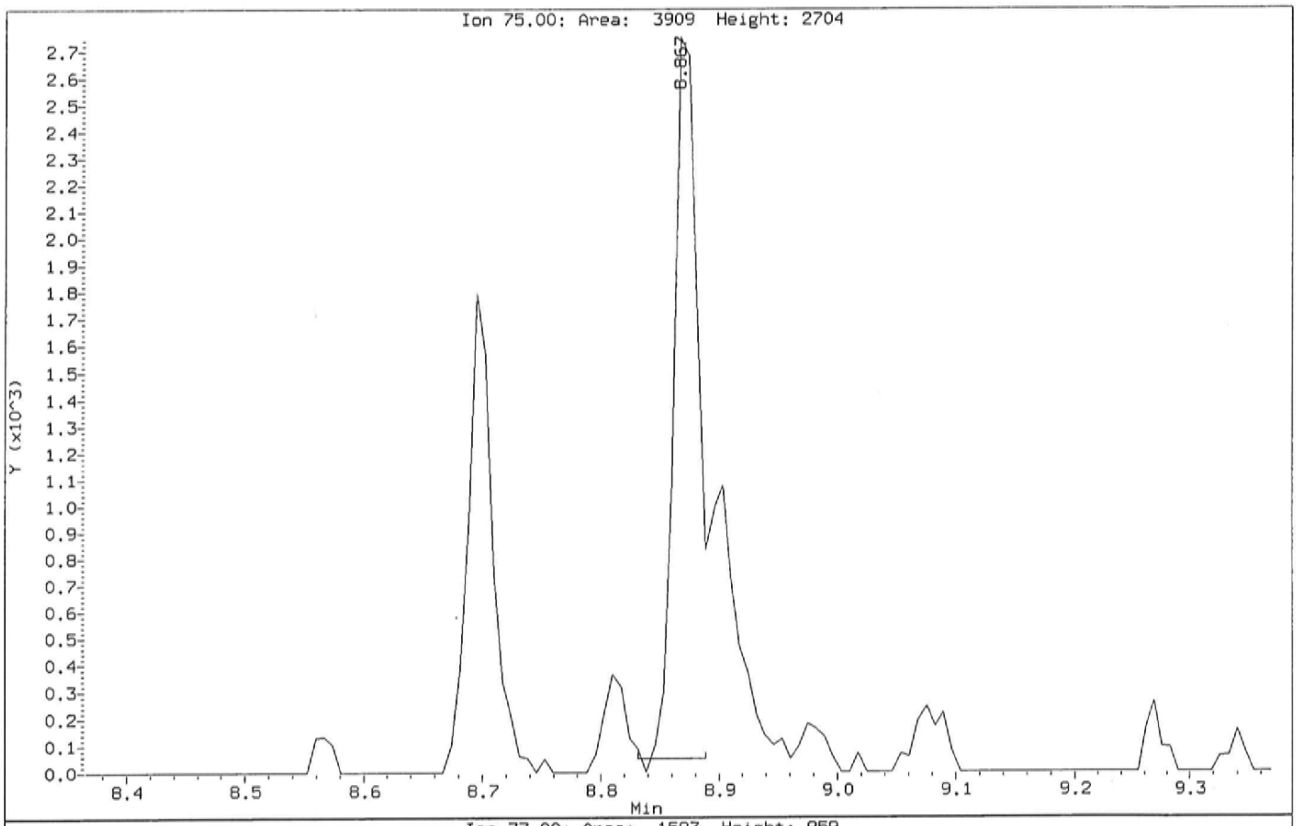
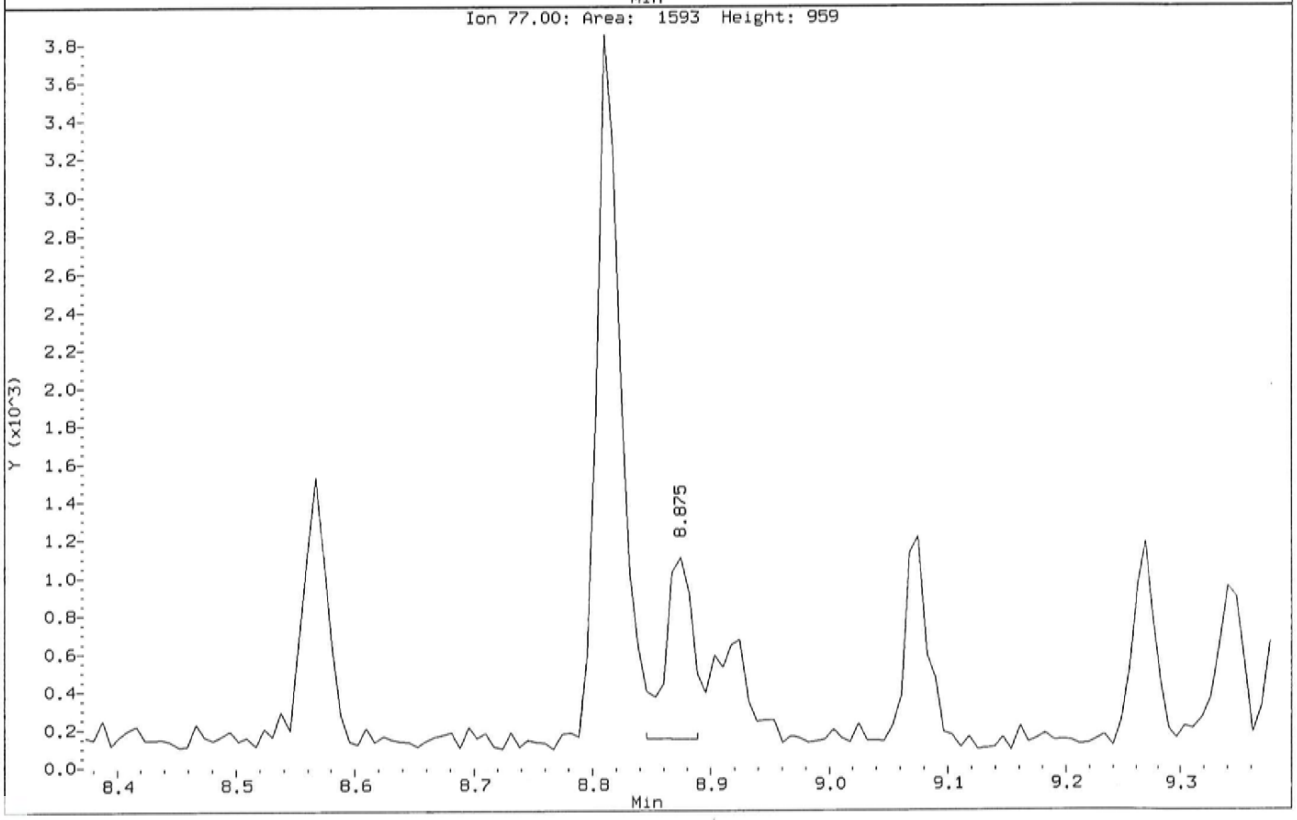
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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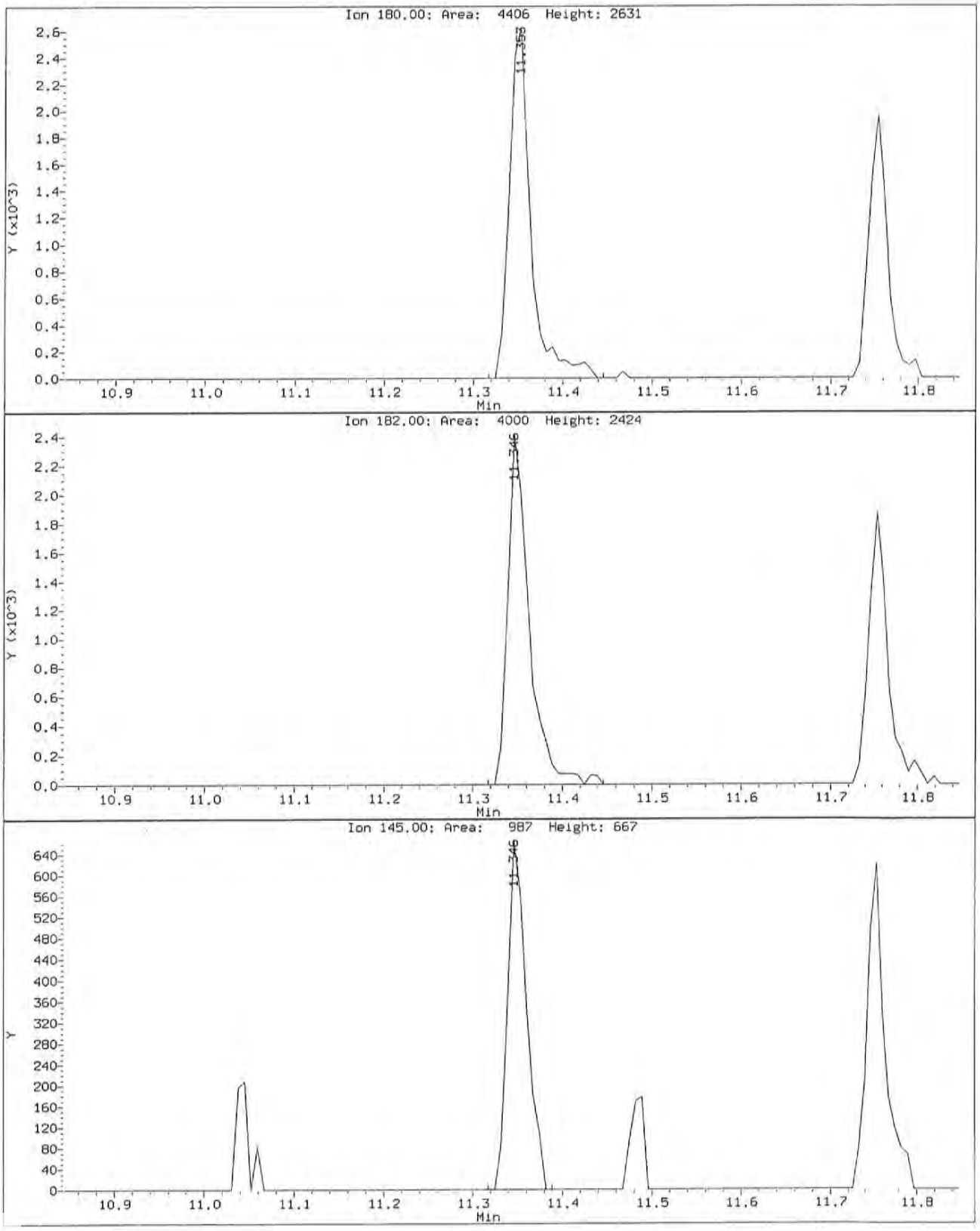
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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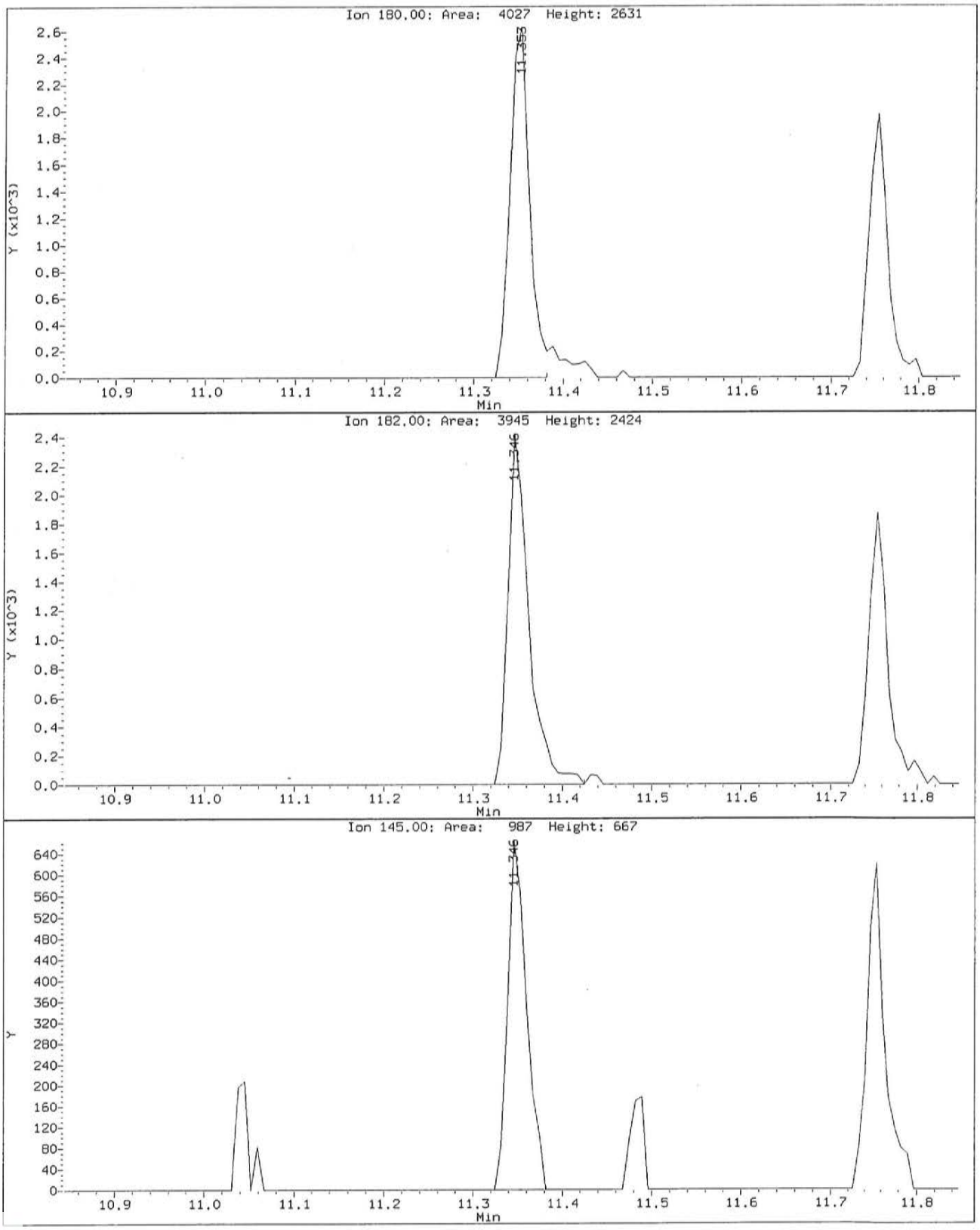
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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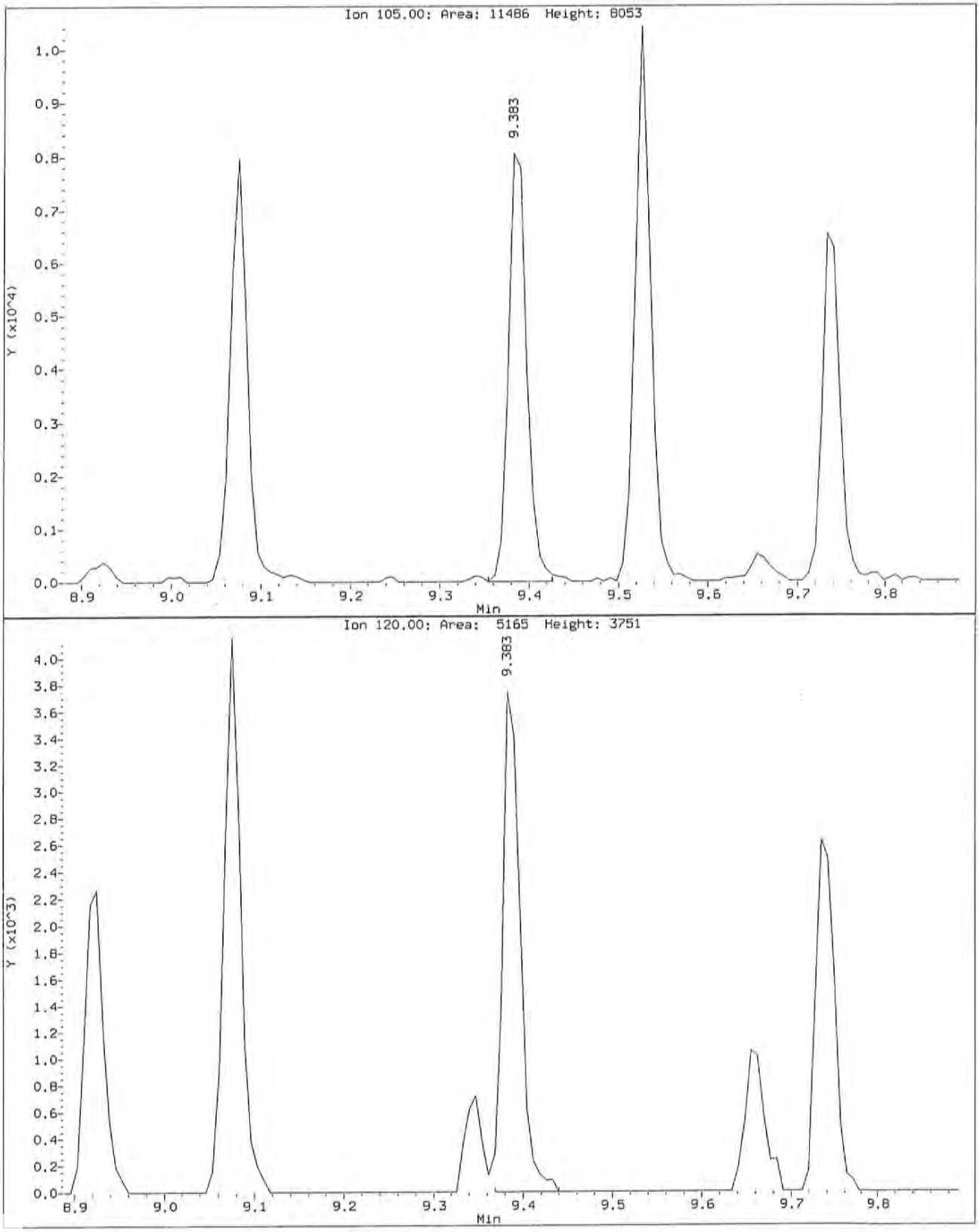
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trimethylbenzene
CAS Number: 95-63-6



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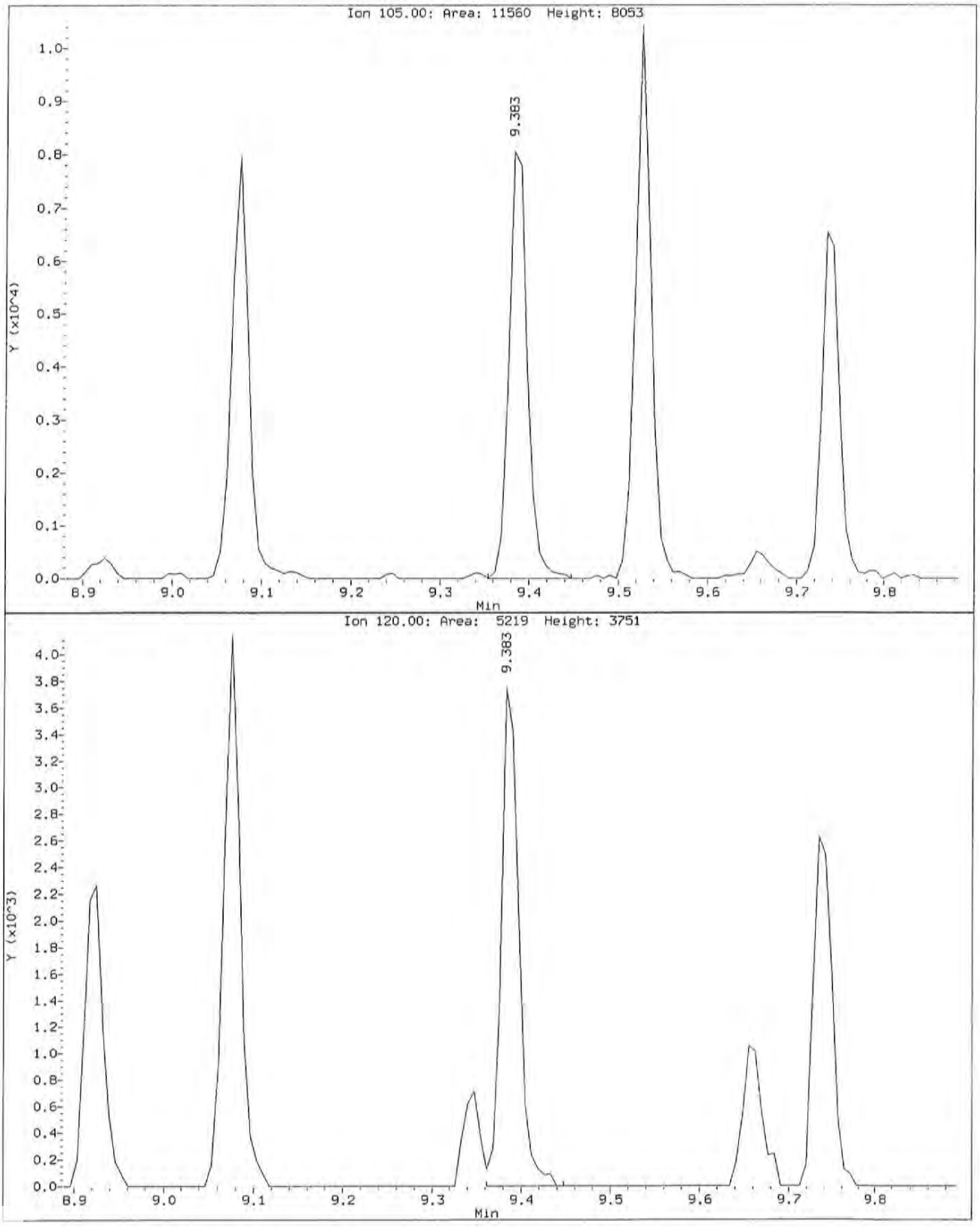
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trimethylbenzene
CAS Number: 95-63-6



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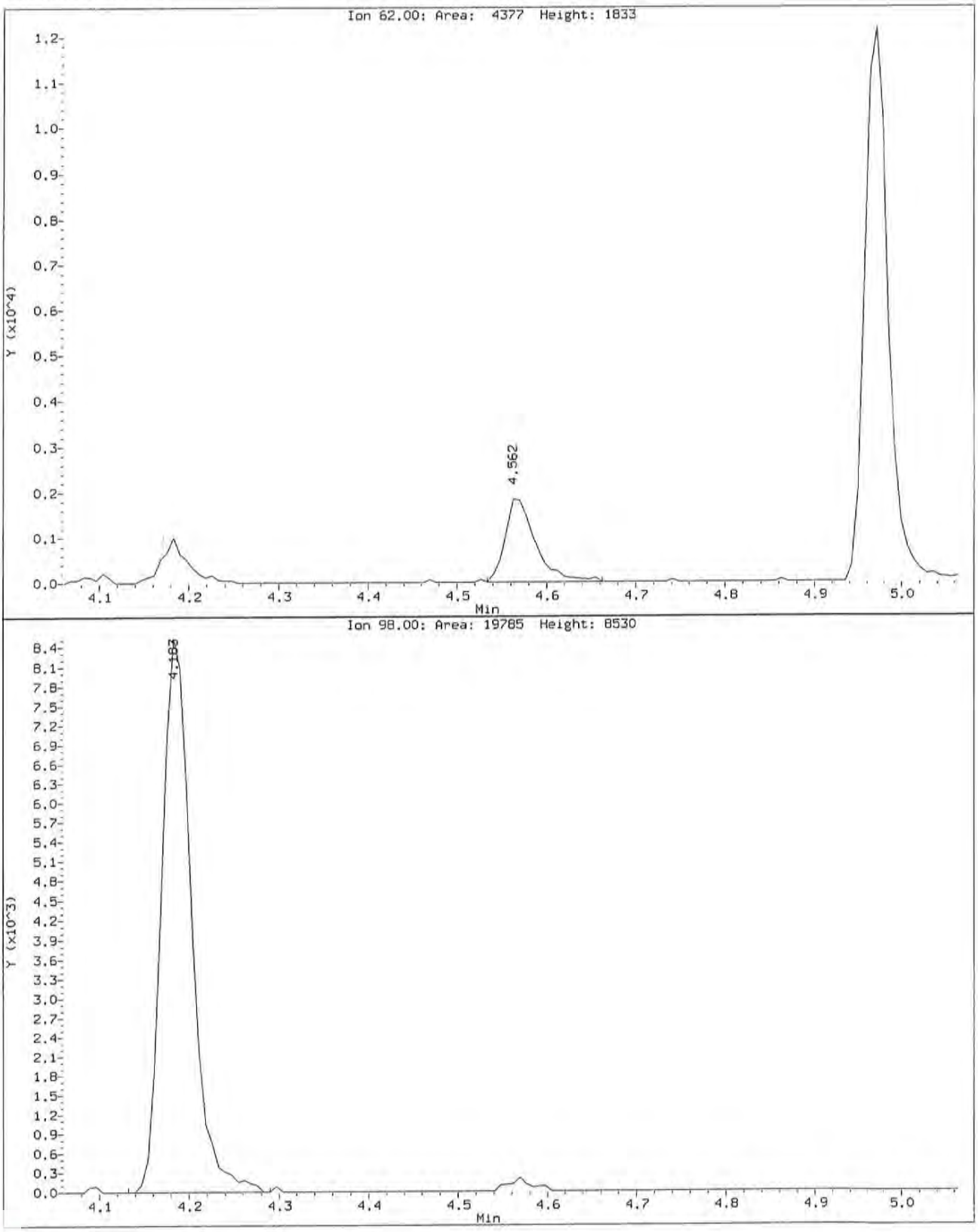
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2



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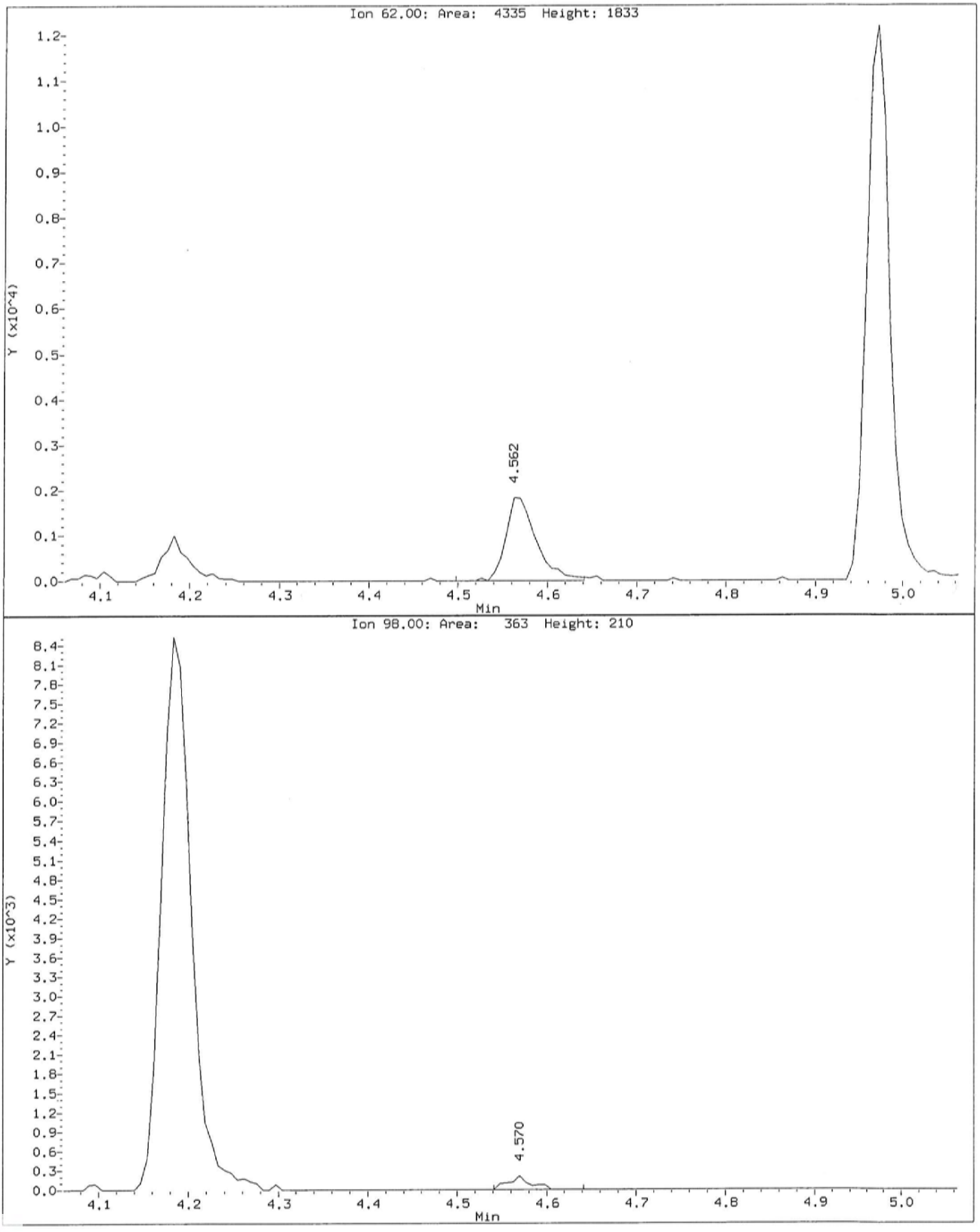
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2



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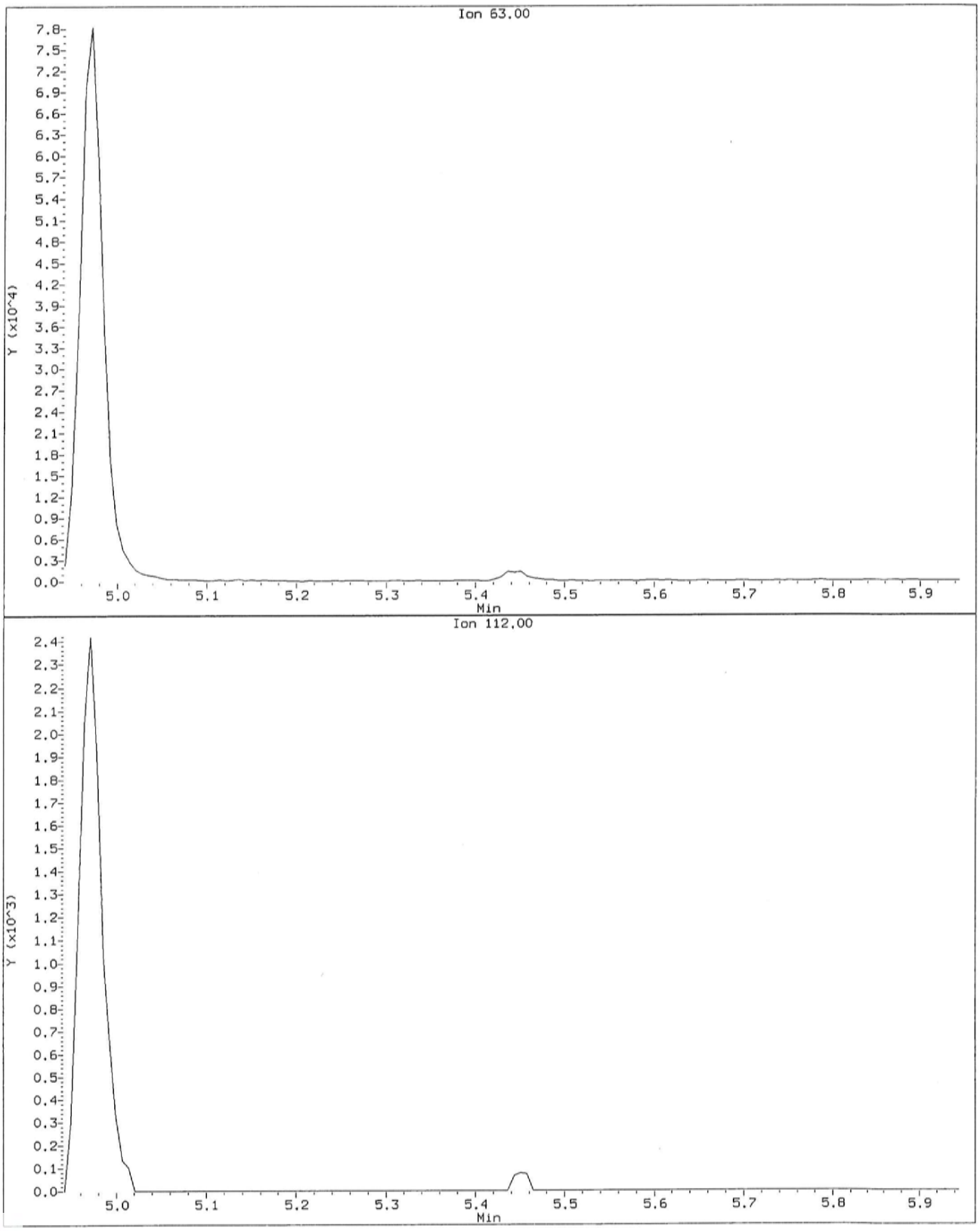
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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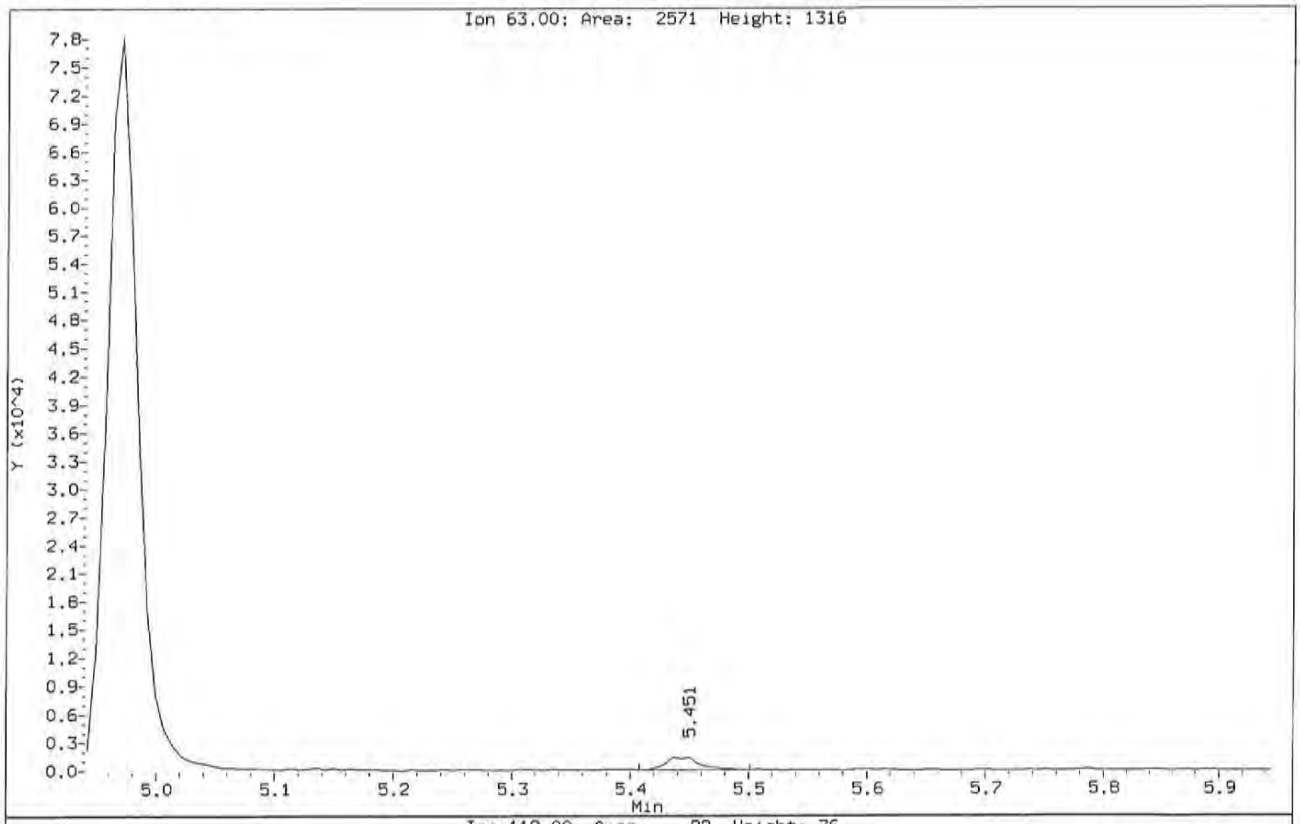
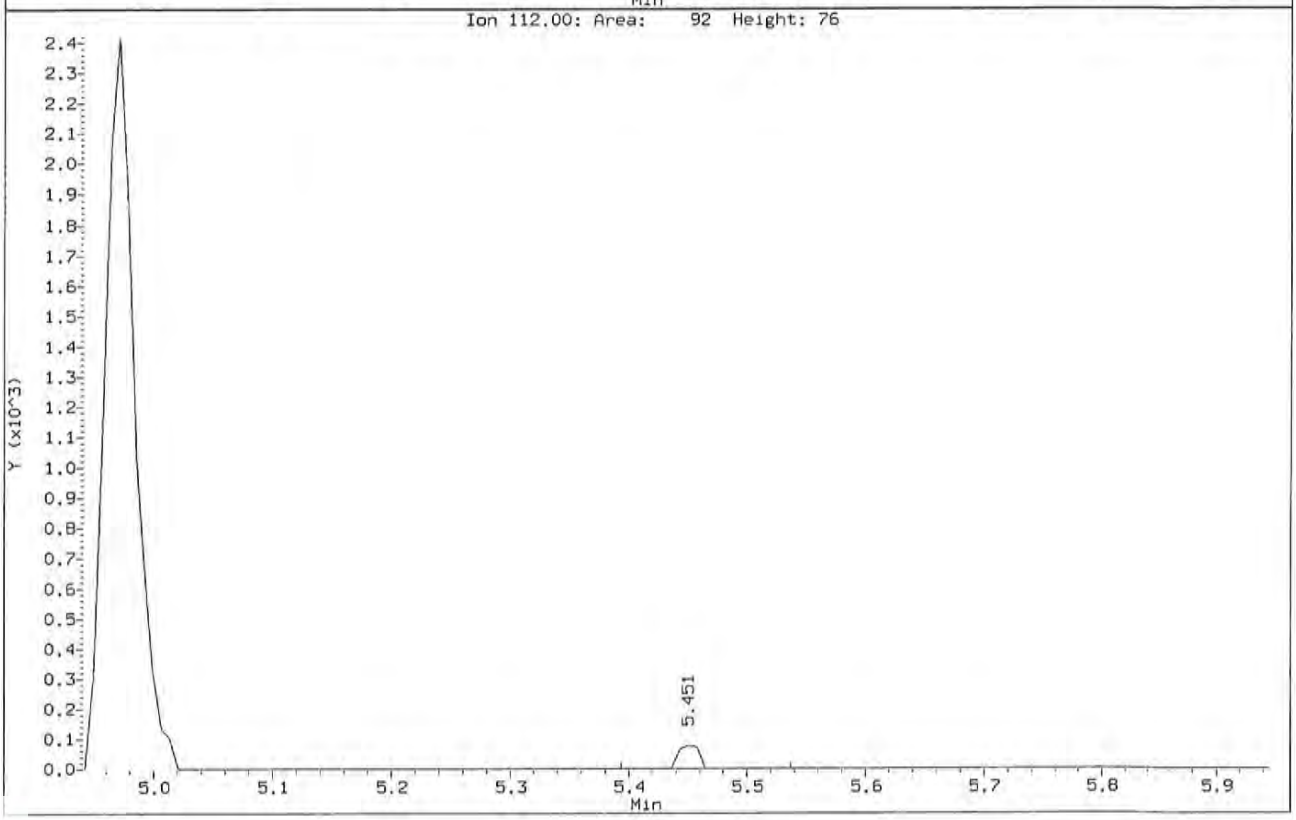
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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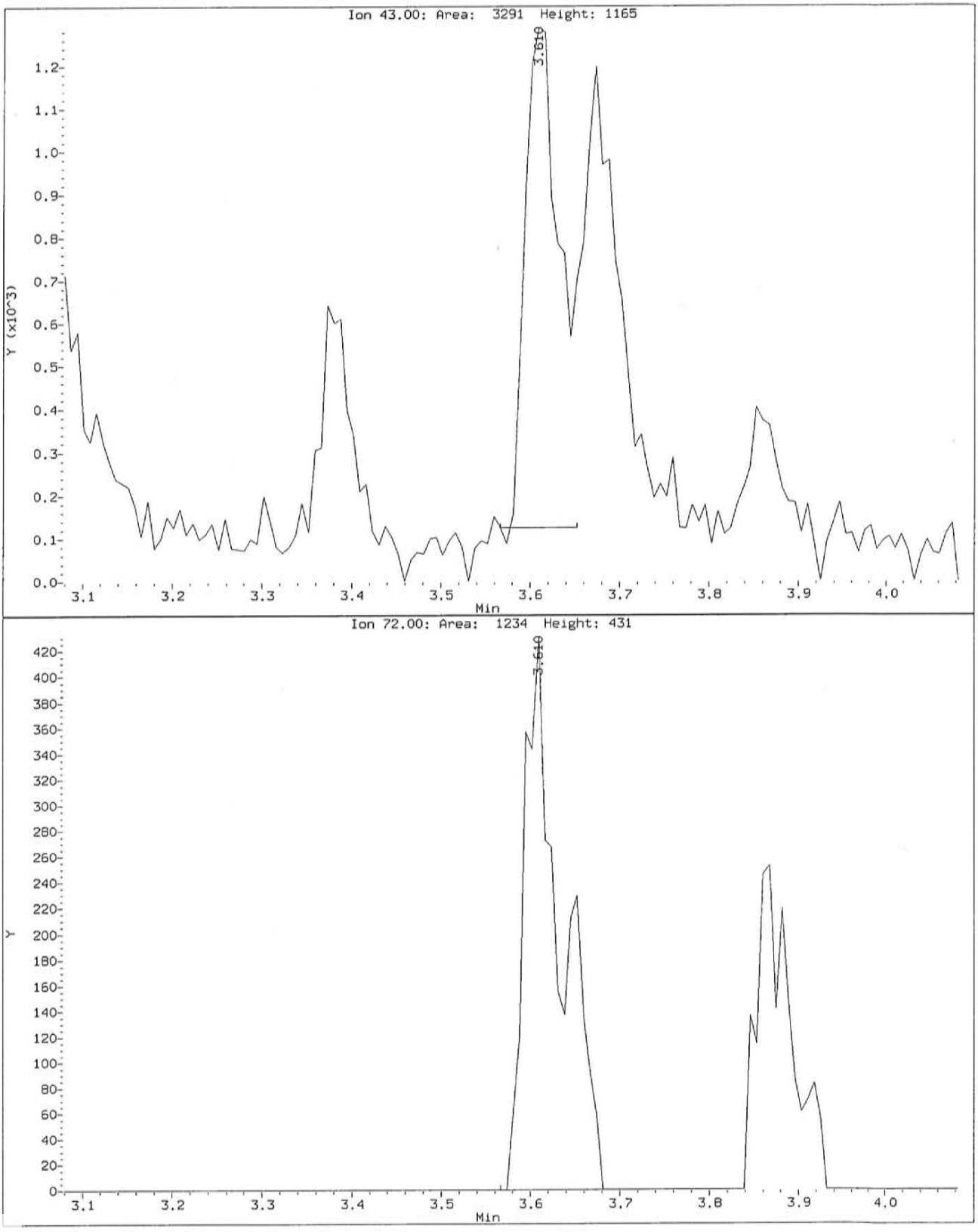
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2-Butanone
CAS Number: 78-93-3



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Compound: 2-Butanone
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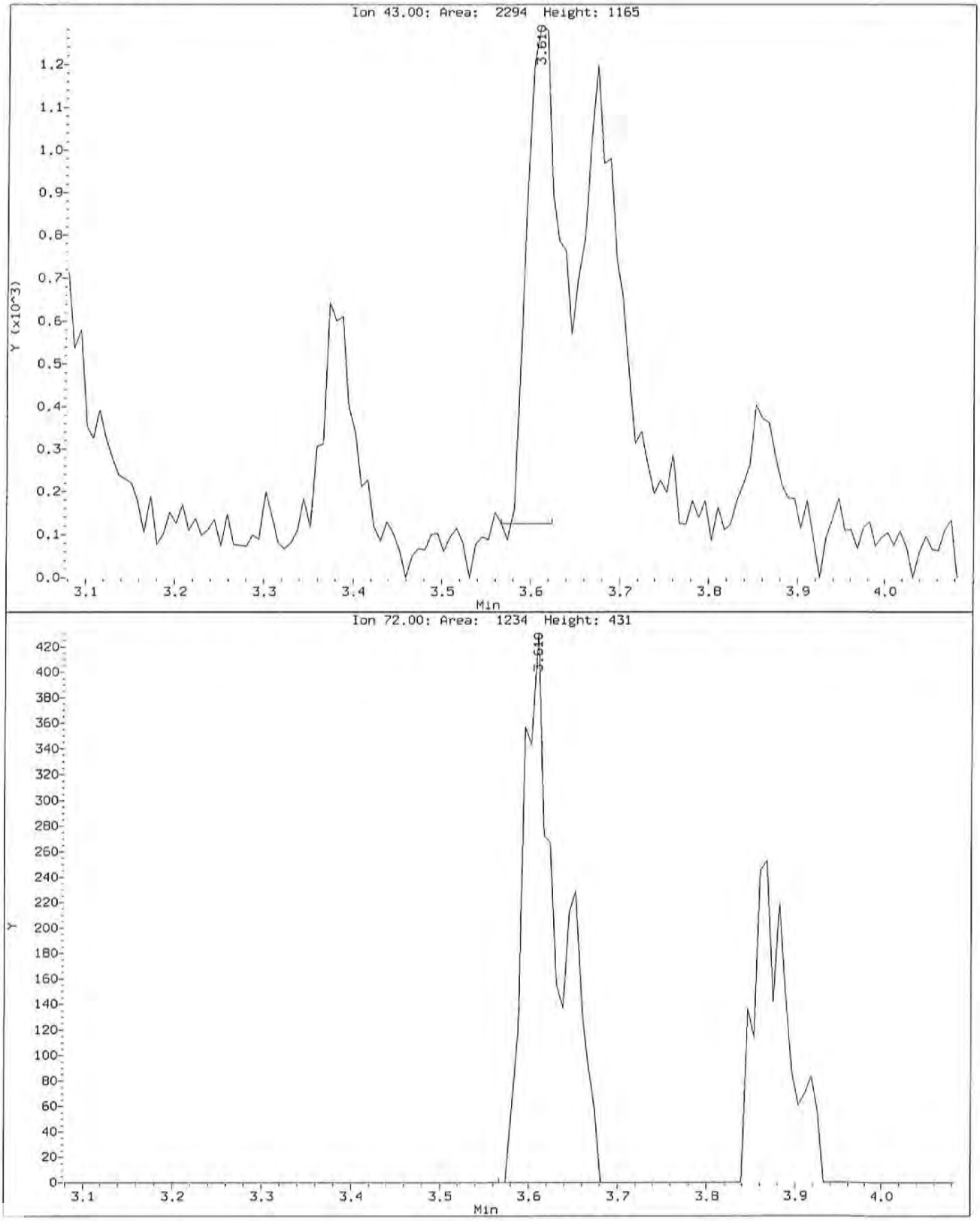

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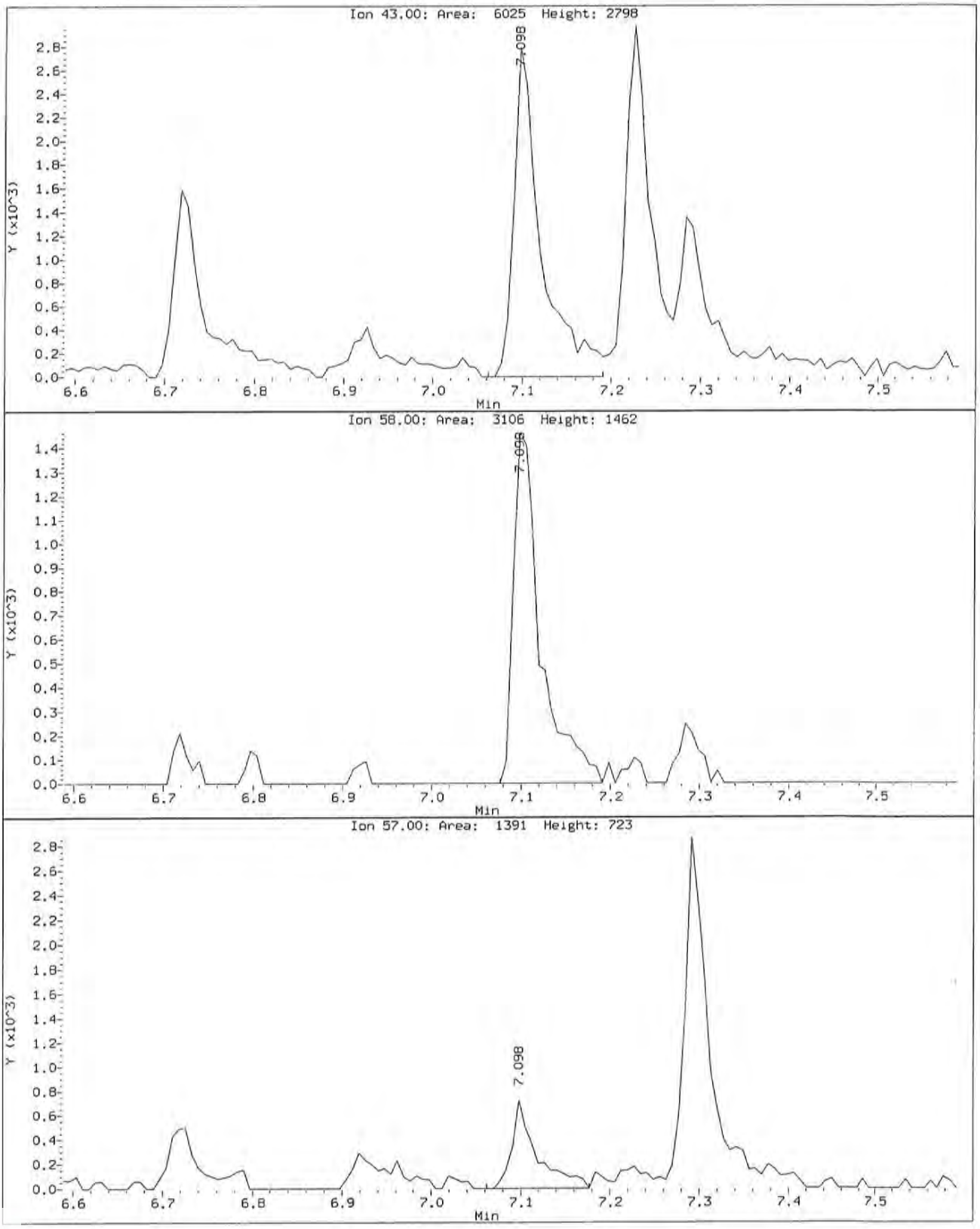
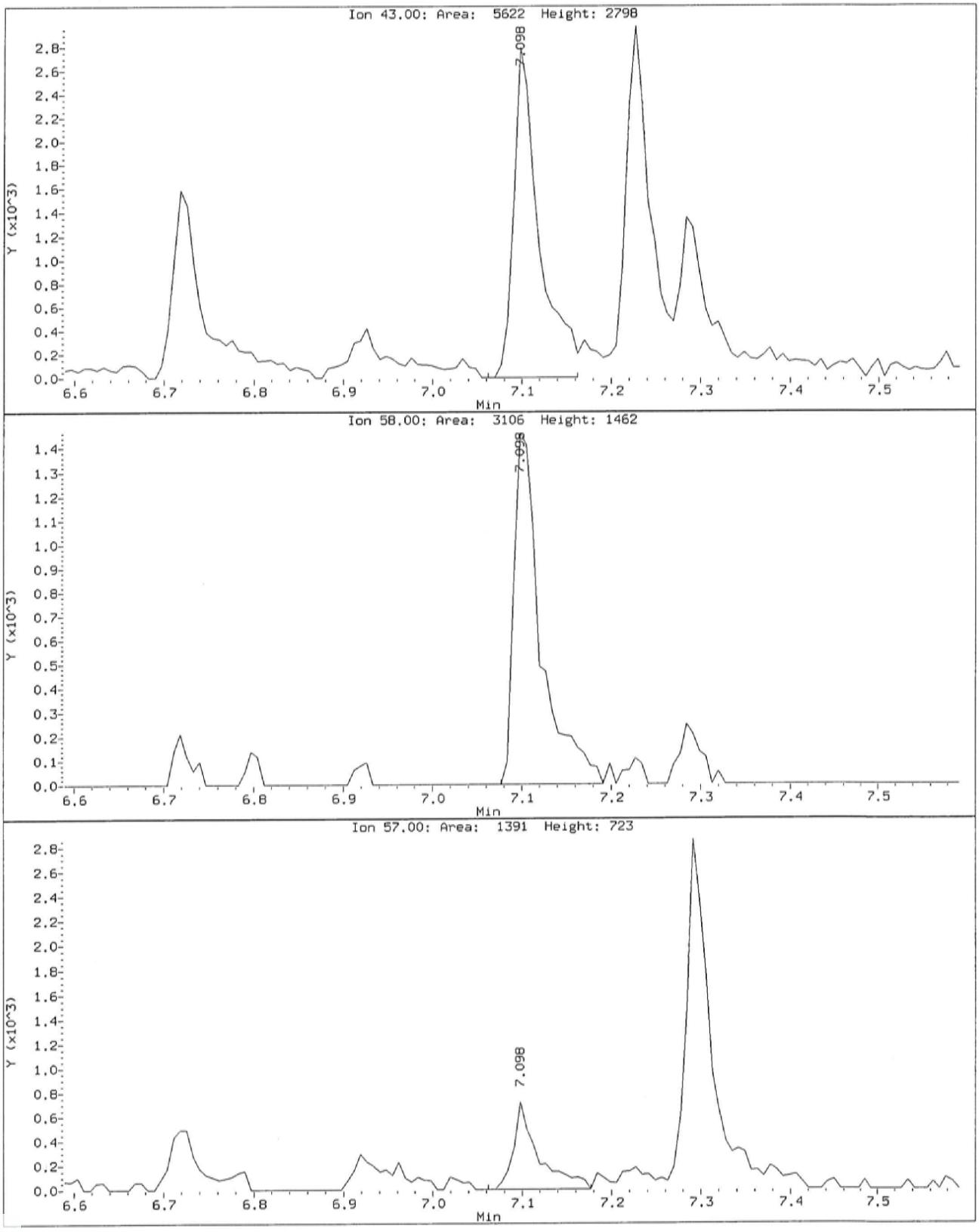
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2-Hexanone
CAS Number: 591-78-6



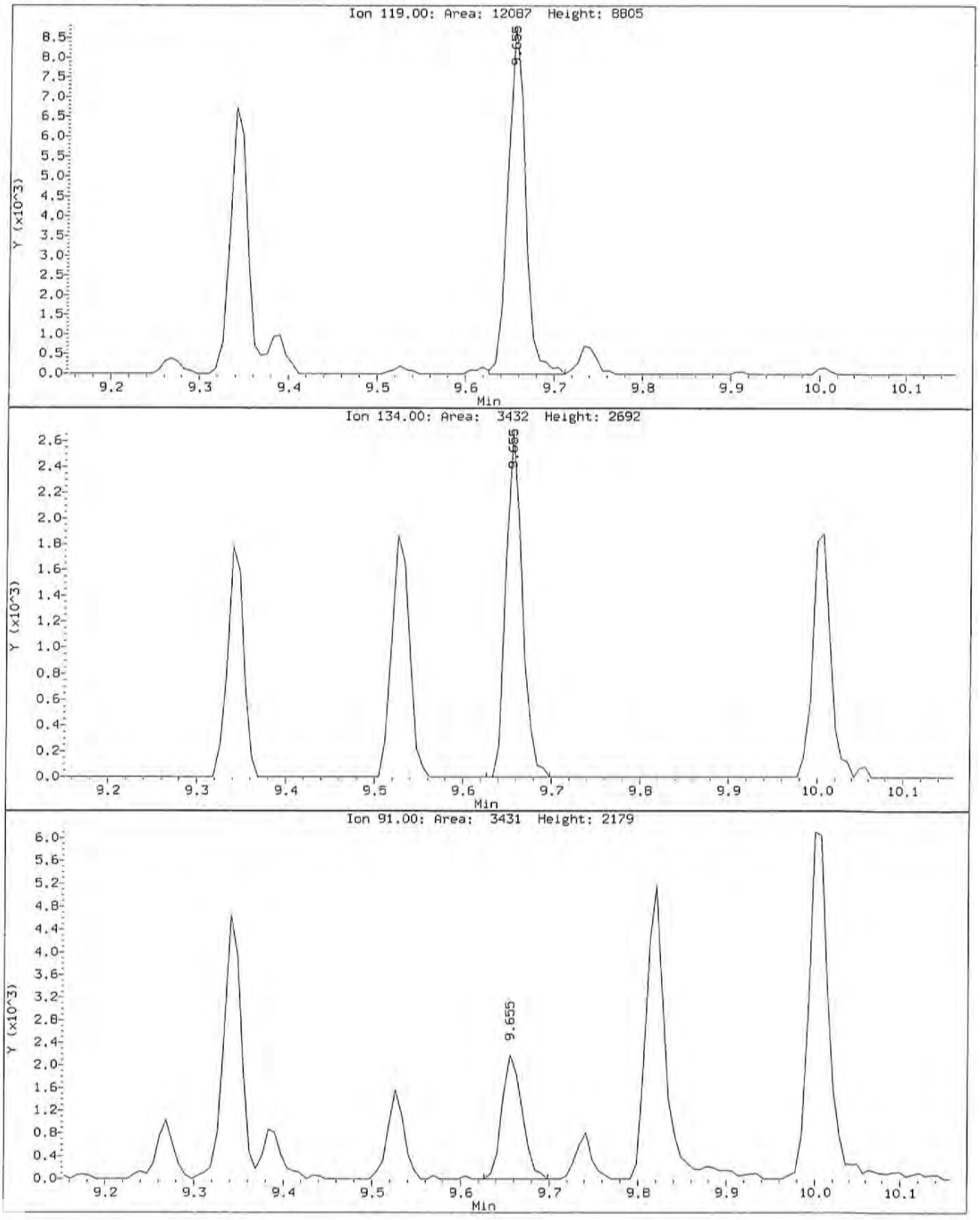
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2-Hexanone
CAS Number: 591-78-6



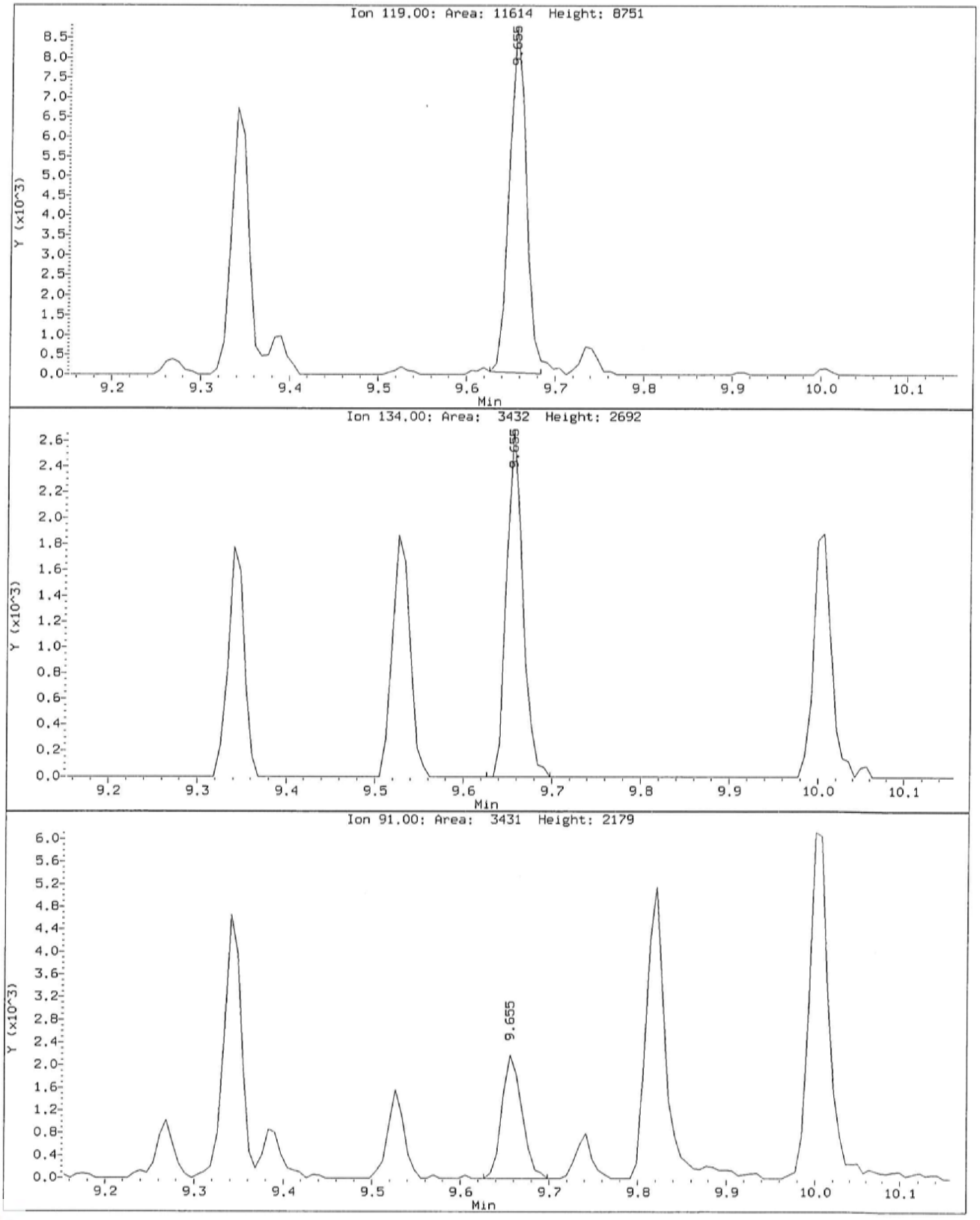
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: p-Isopropyltoluene
CAS Number: 99-87-6



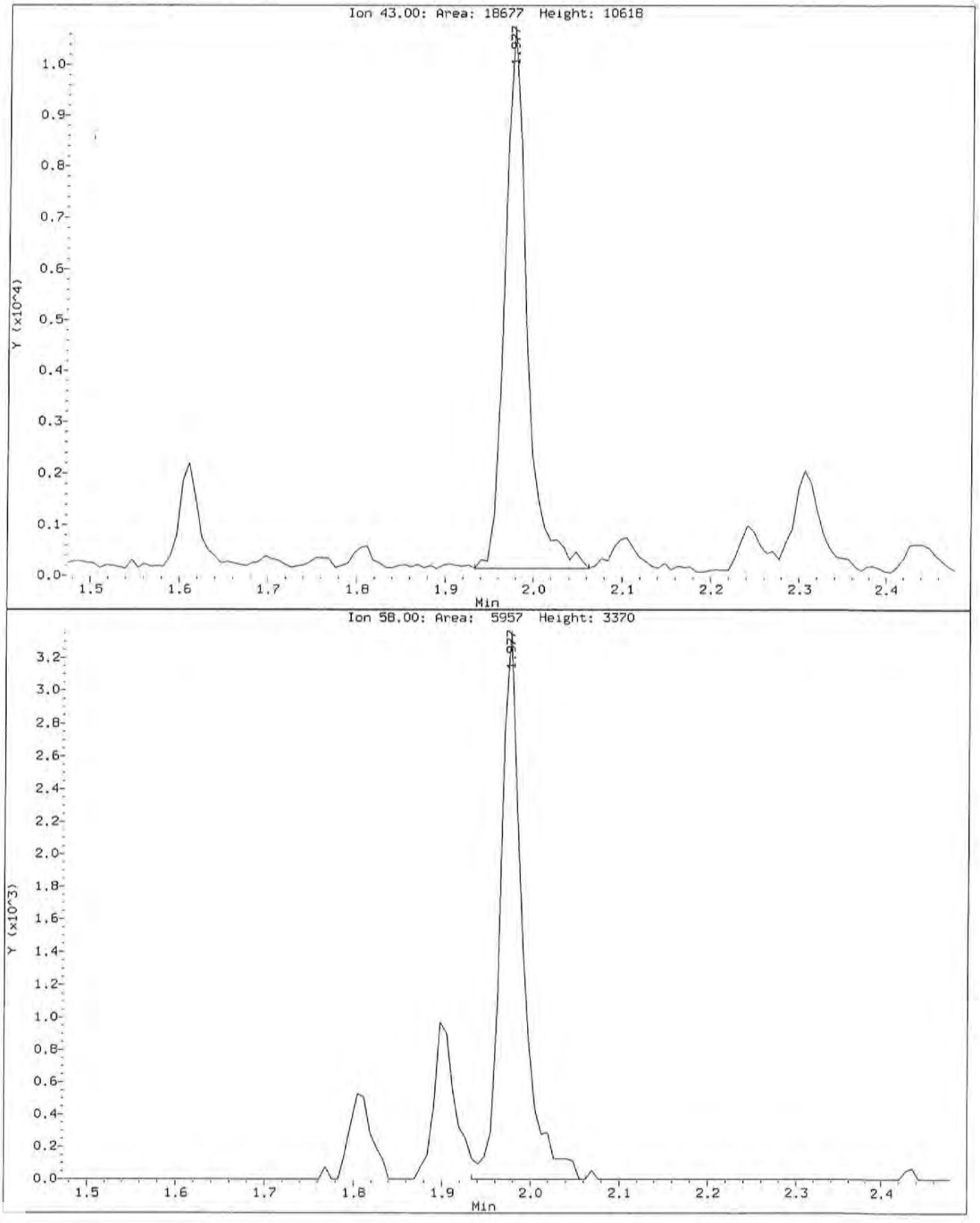
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: p-Isopropyltoluene
CAS Number: 99-87-6



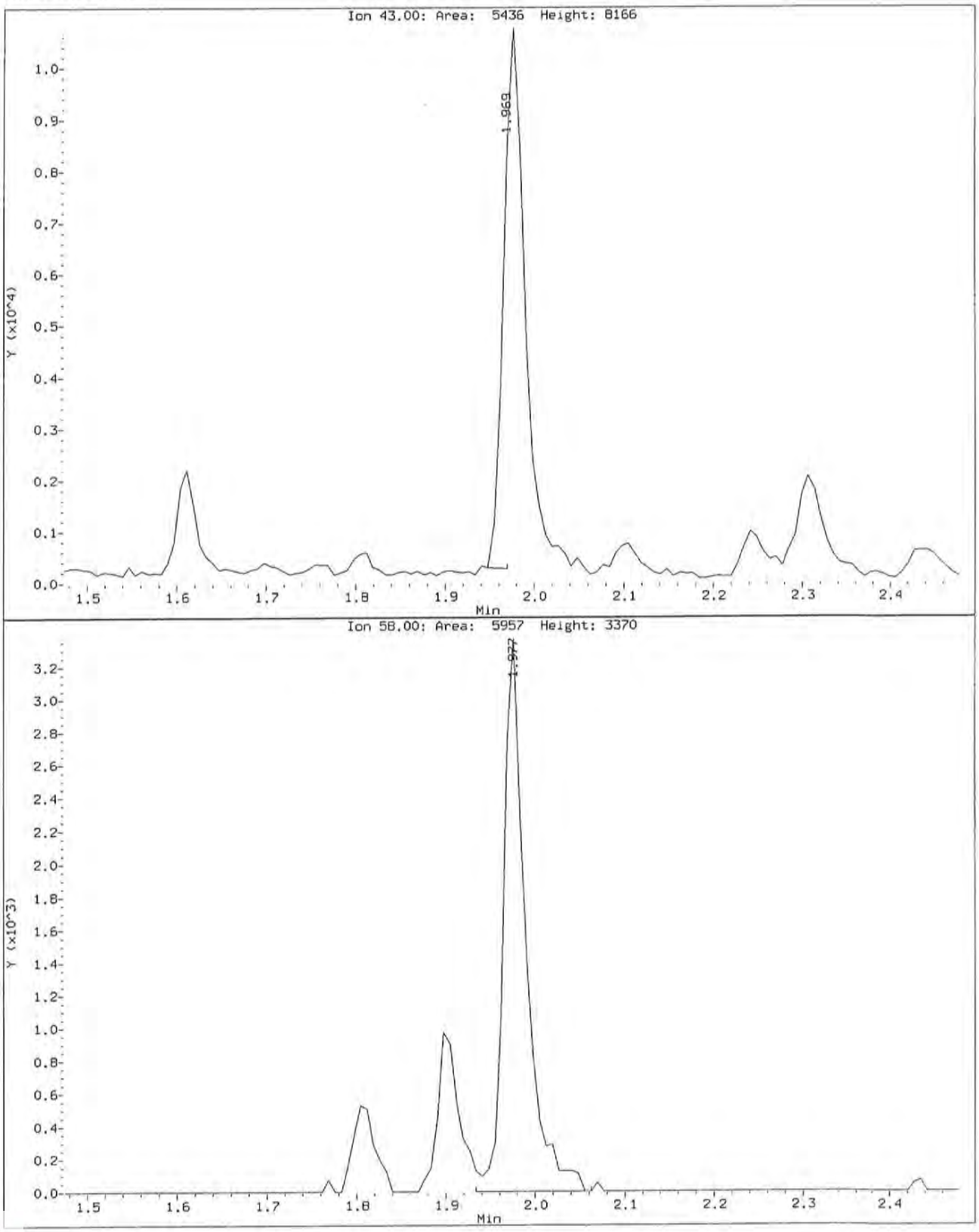
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: V5TD000.5

Compound: Acetone
CAS Number: 67-64-1



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Acetone
CAS Number: 67-64-1



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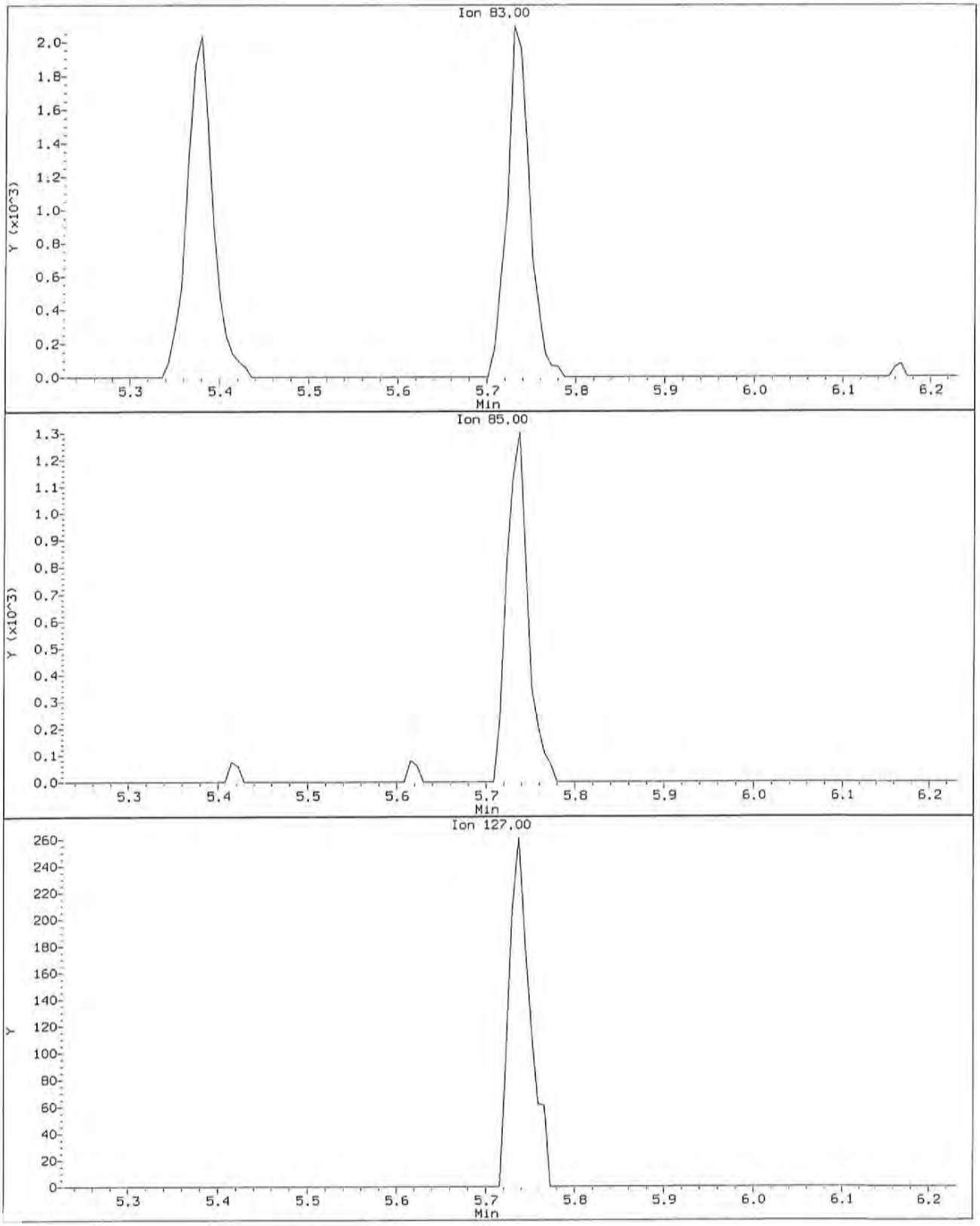
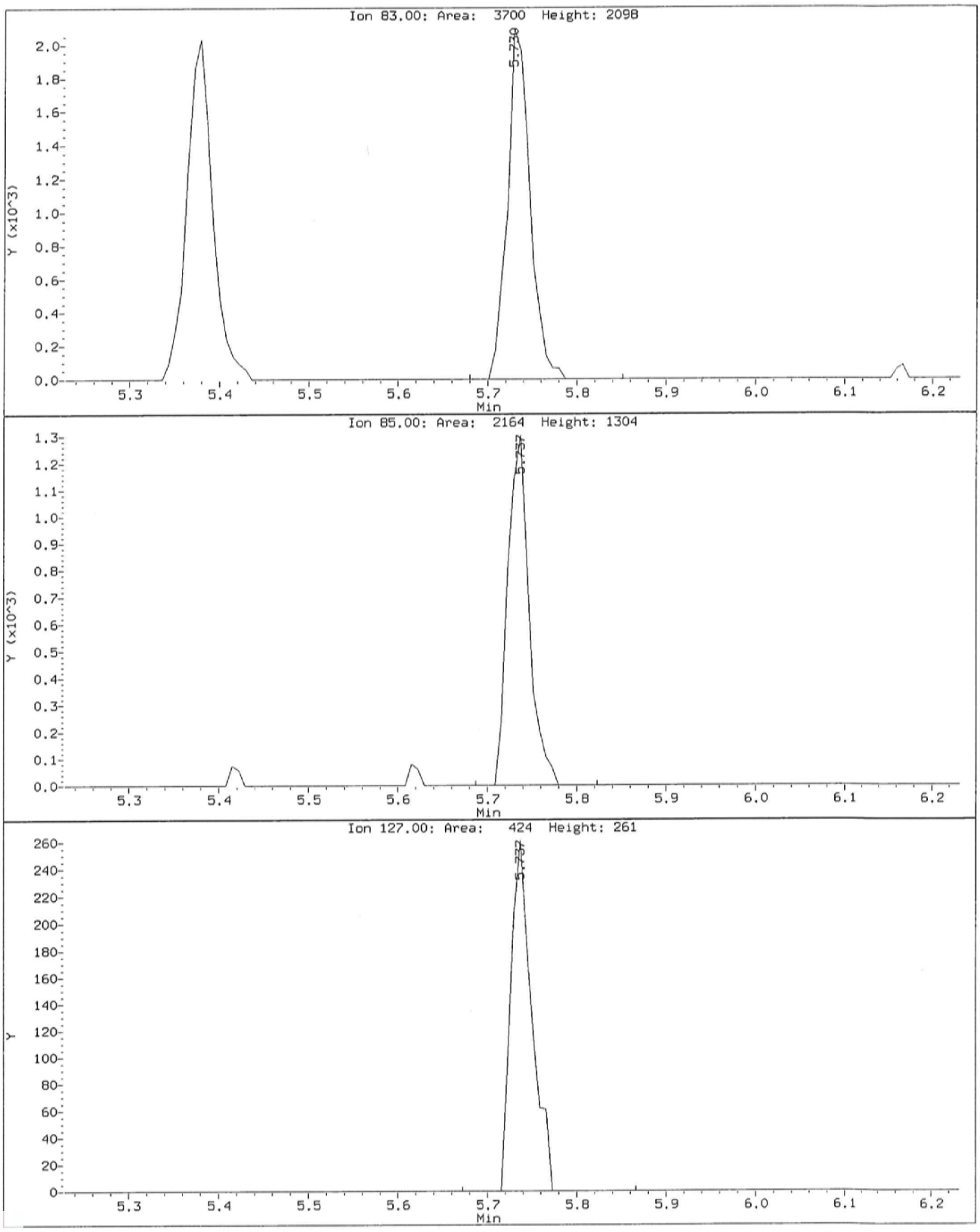
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



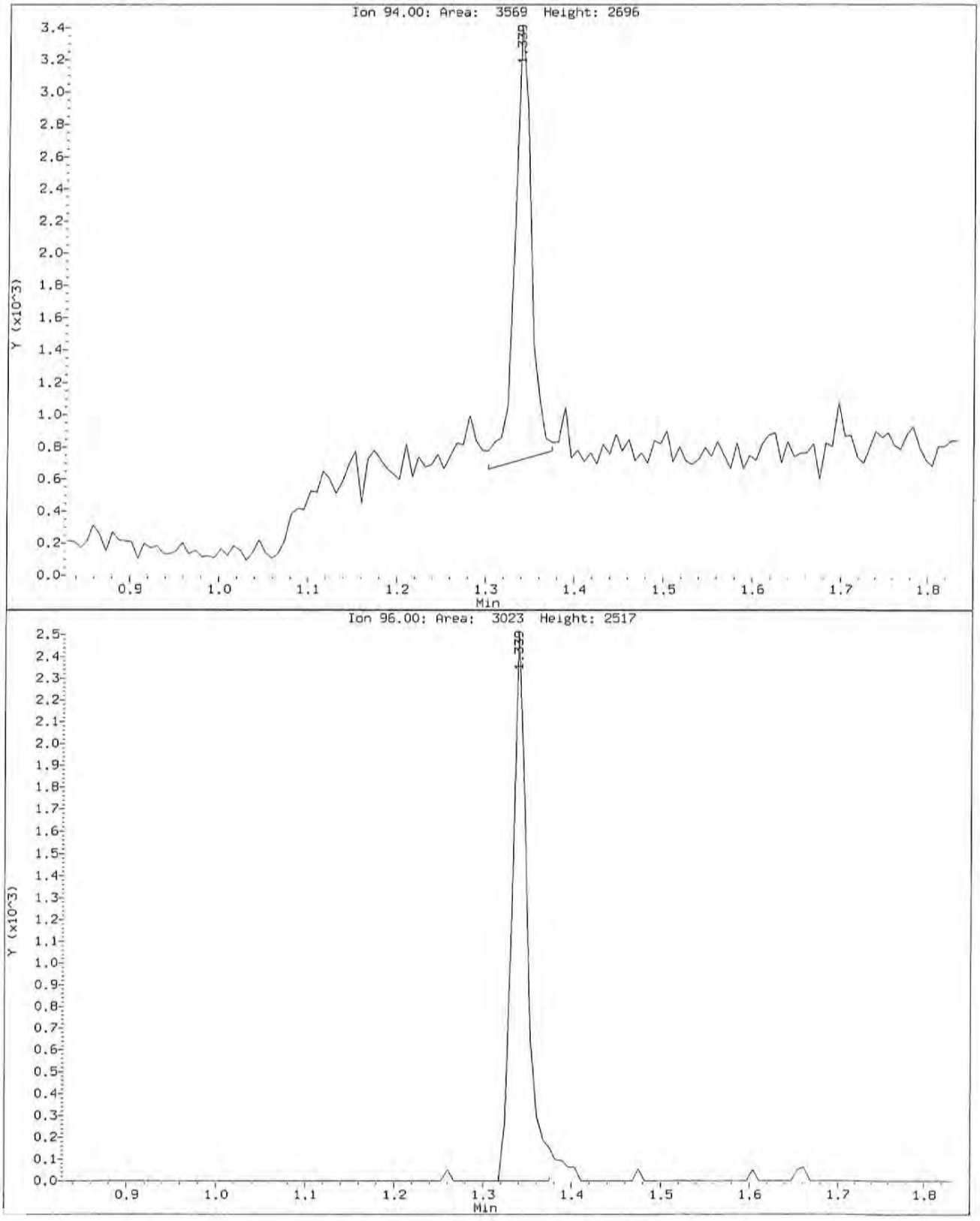
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



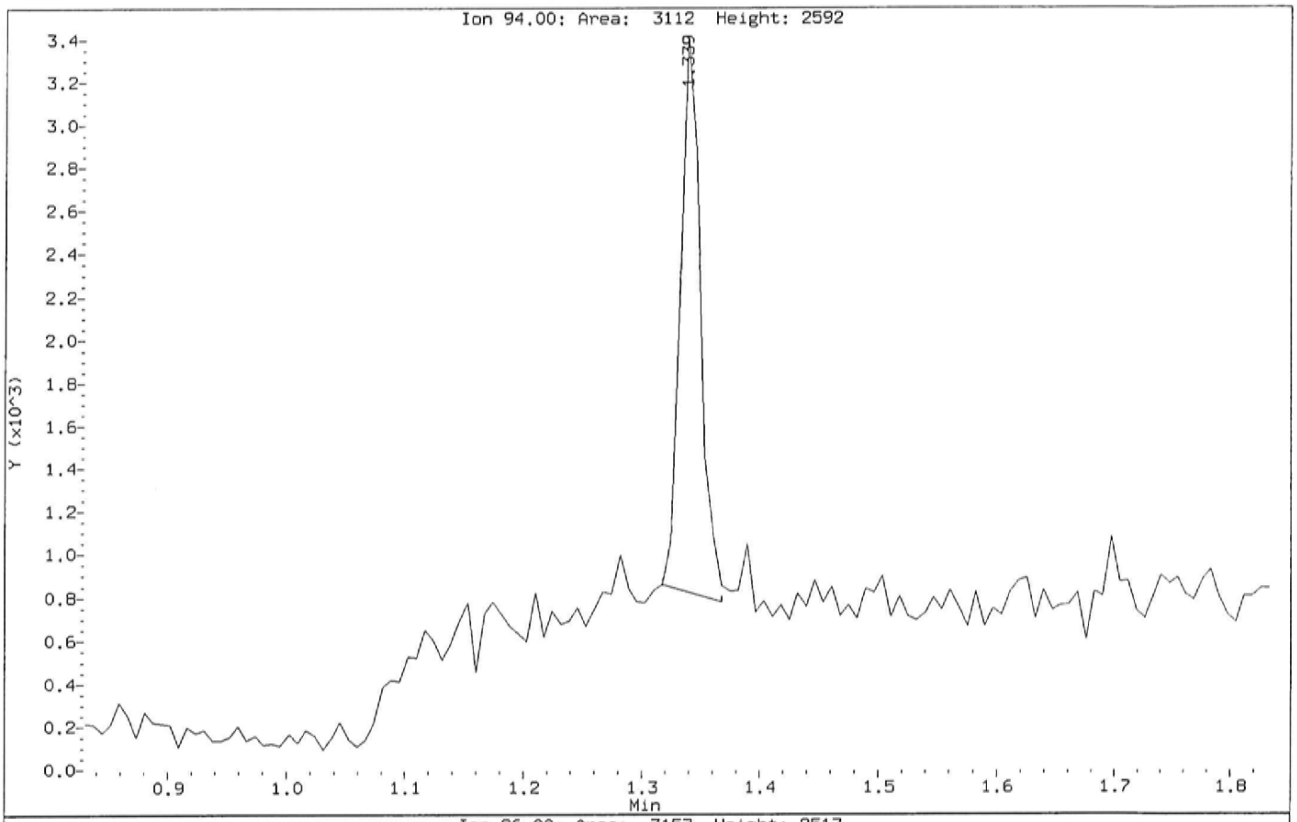
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

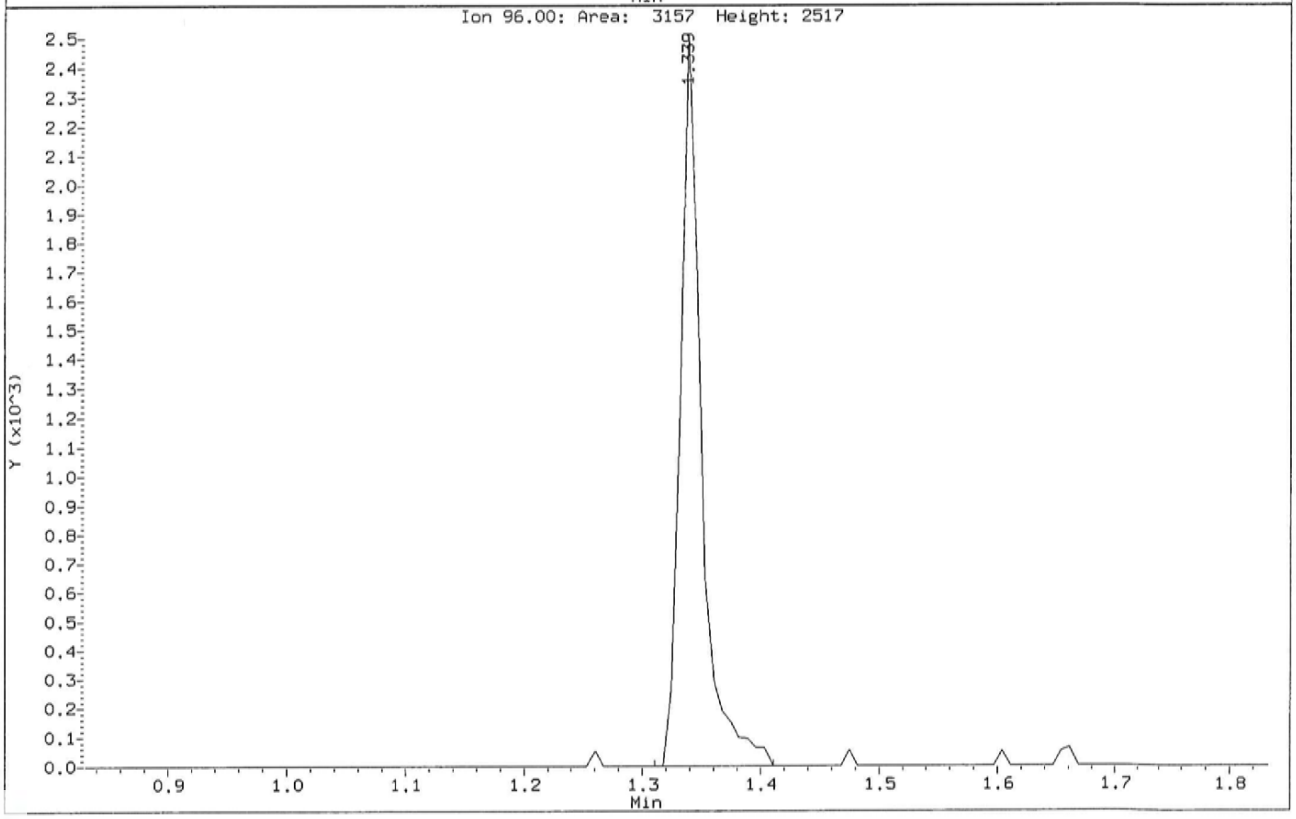
Compound: Bromomethane
CAS Number: 74-83-9



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

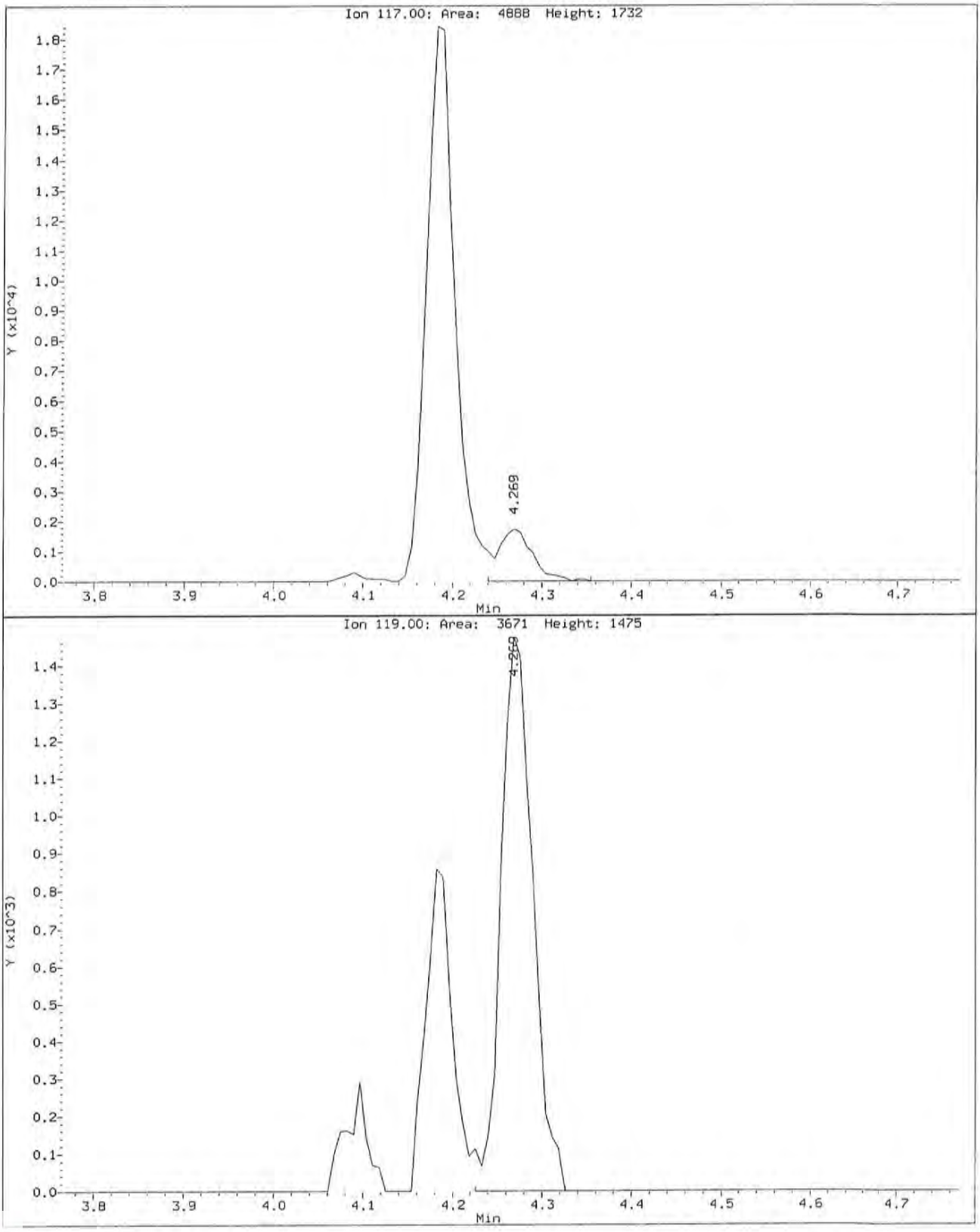
Compound: Bromomethane
CAS Number: 74-83-9



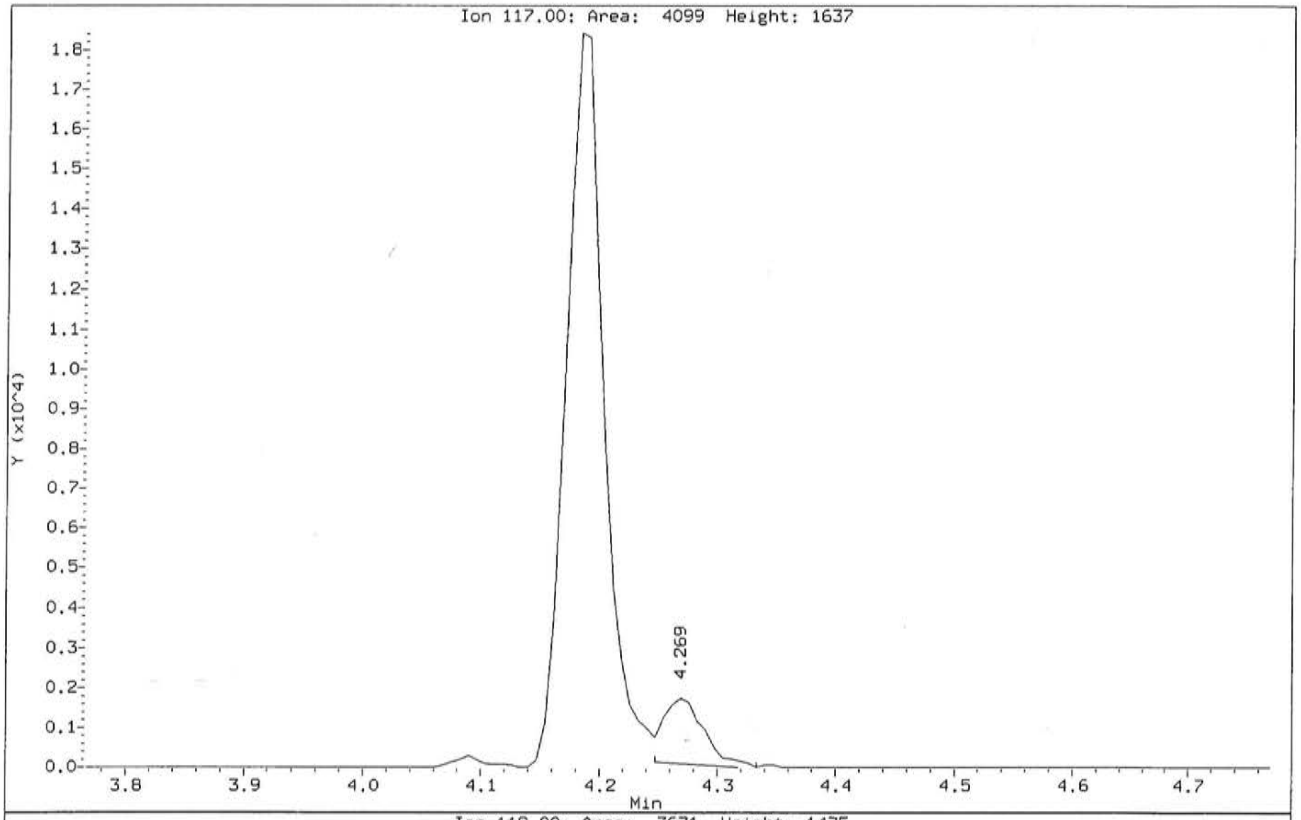
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

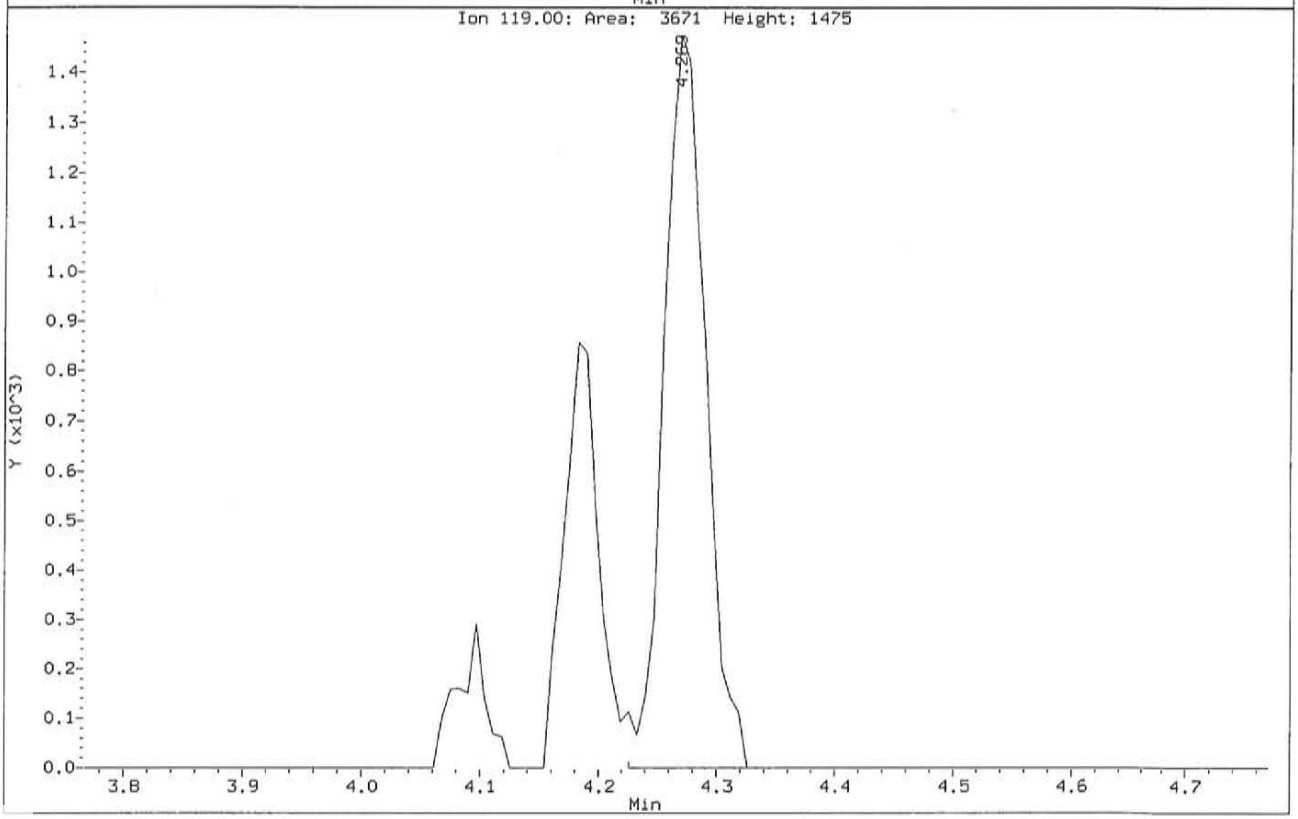
Compound: Carbon Tetrachloride
CAS Number: 56-23-5



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

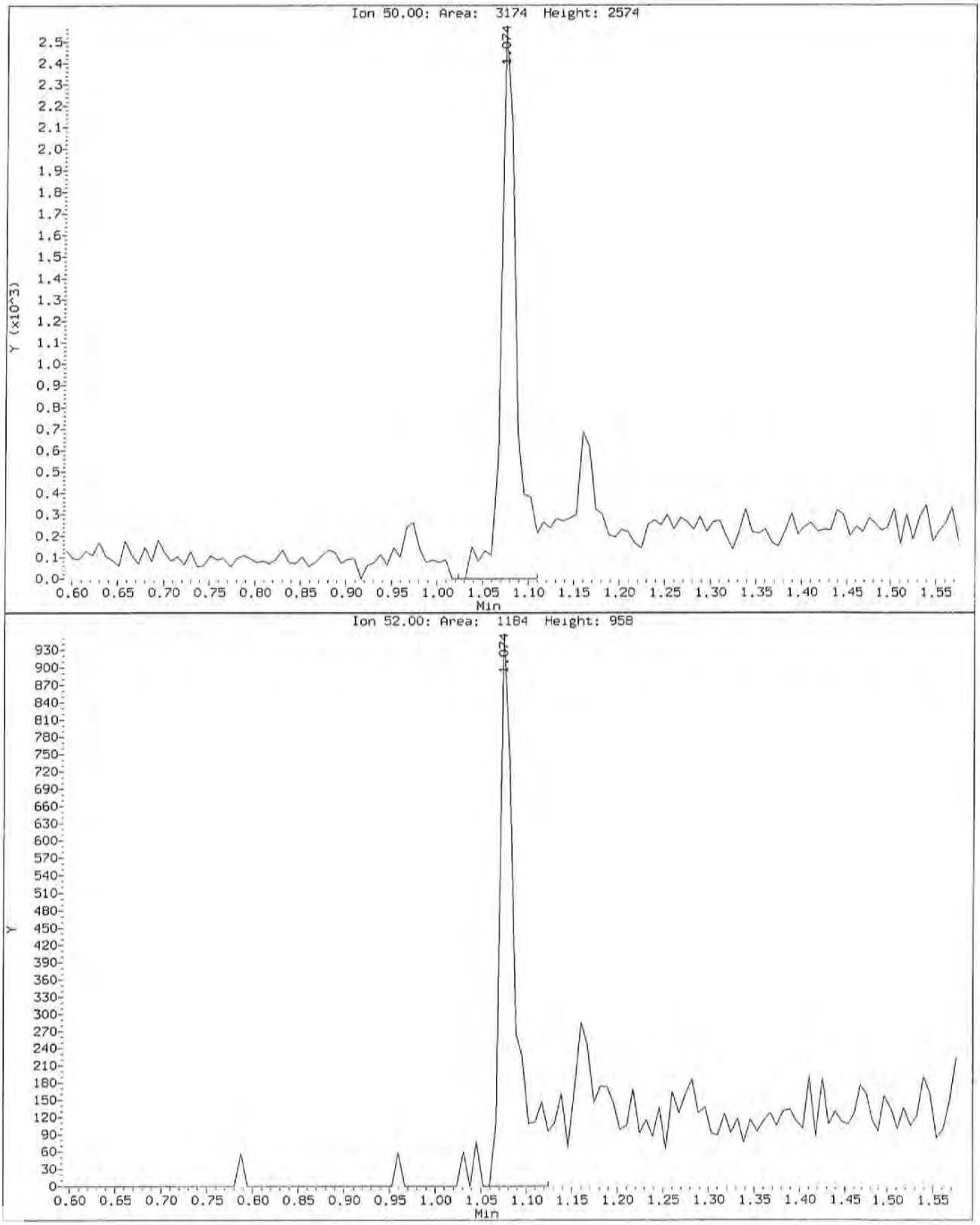
Compound: Carbon Tetrachloride
CAS Number: 56-23-5



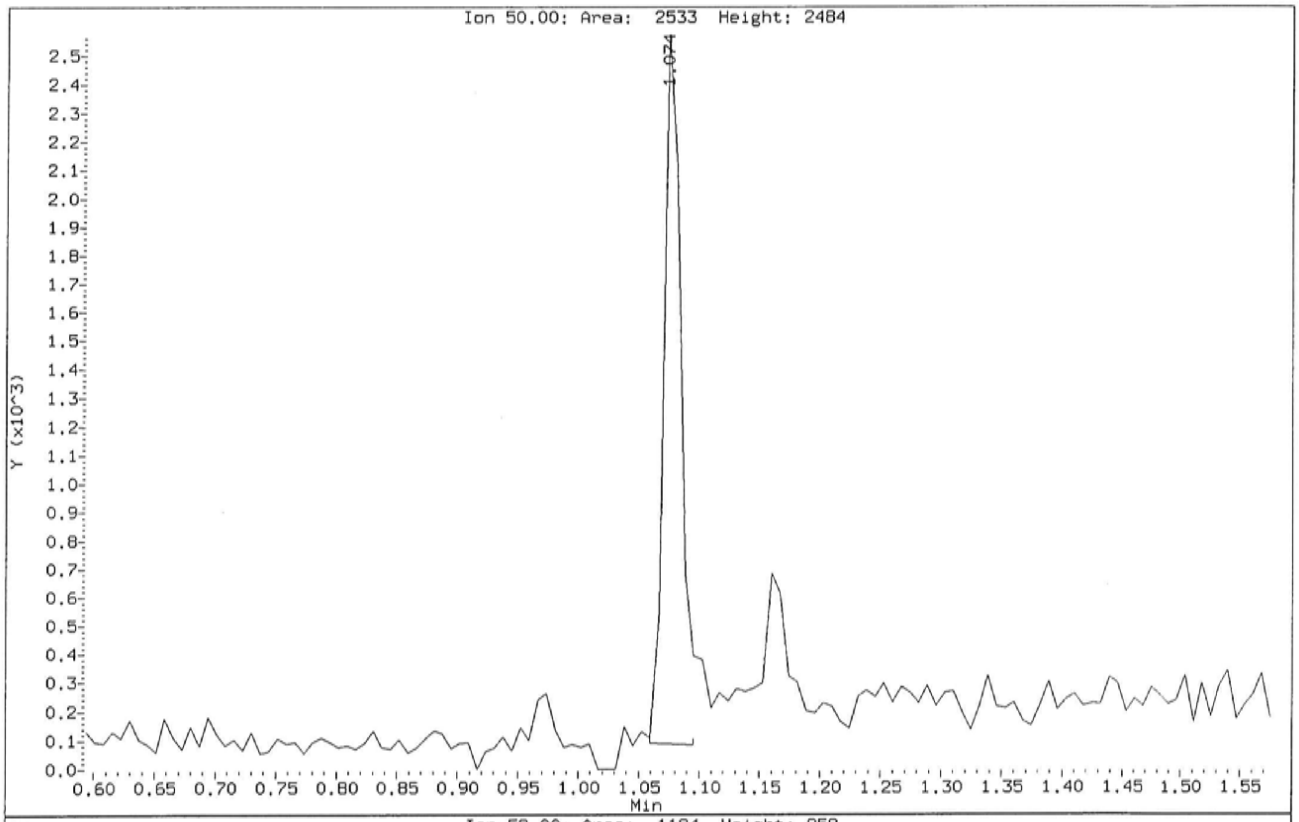
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

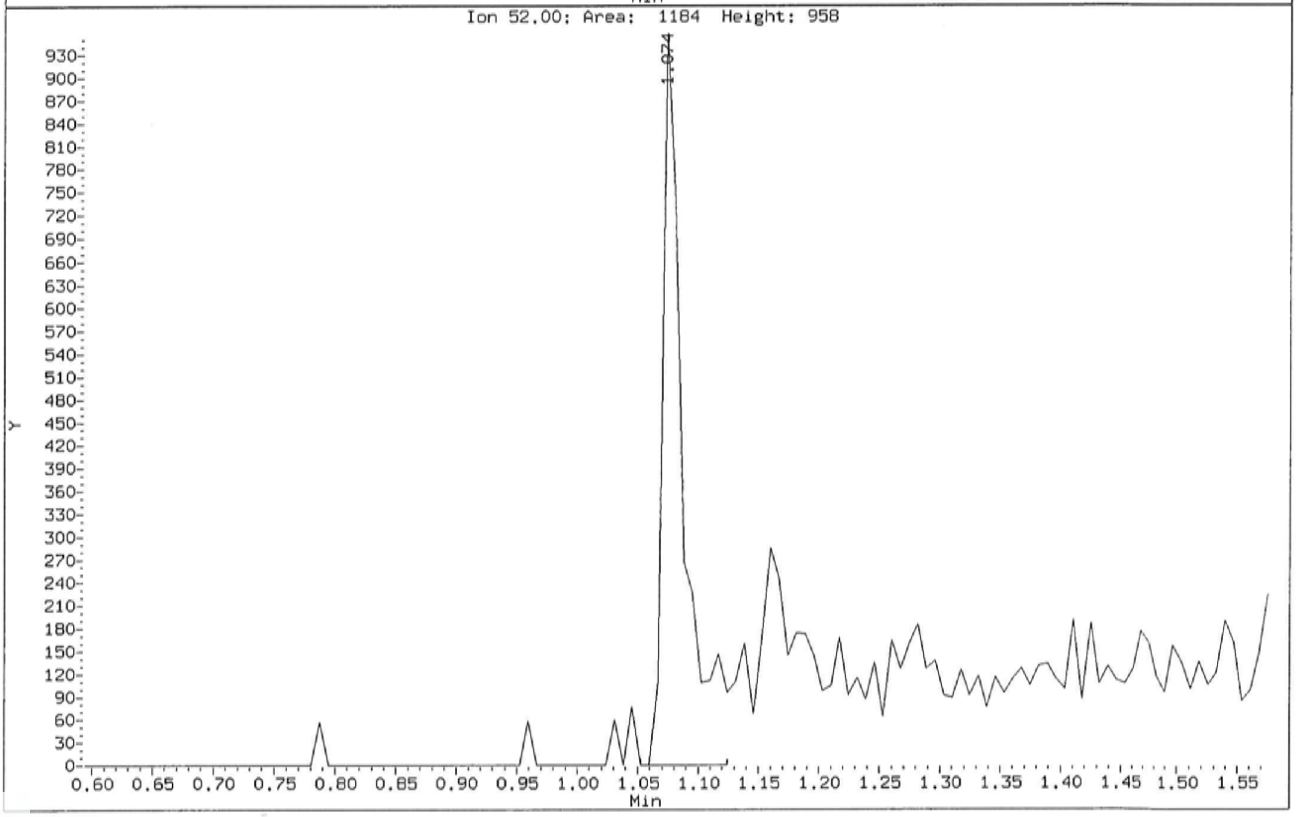
Compound: Chloromethane
CAS Number: 74-87-3



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

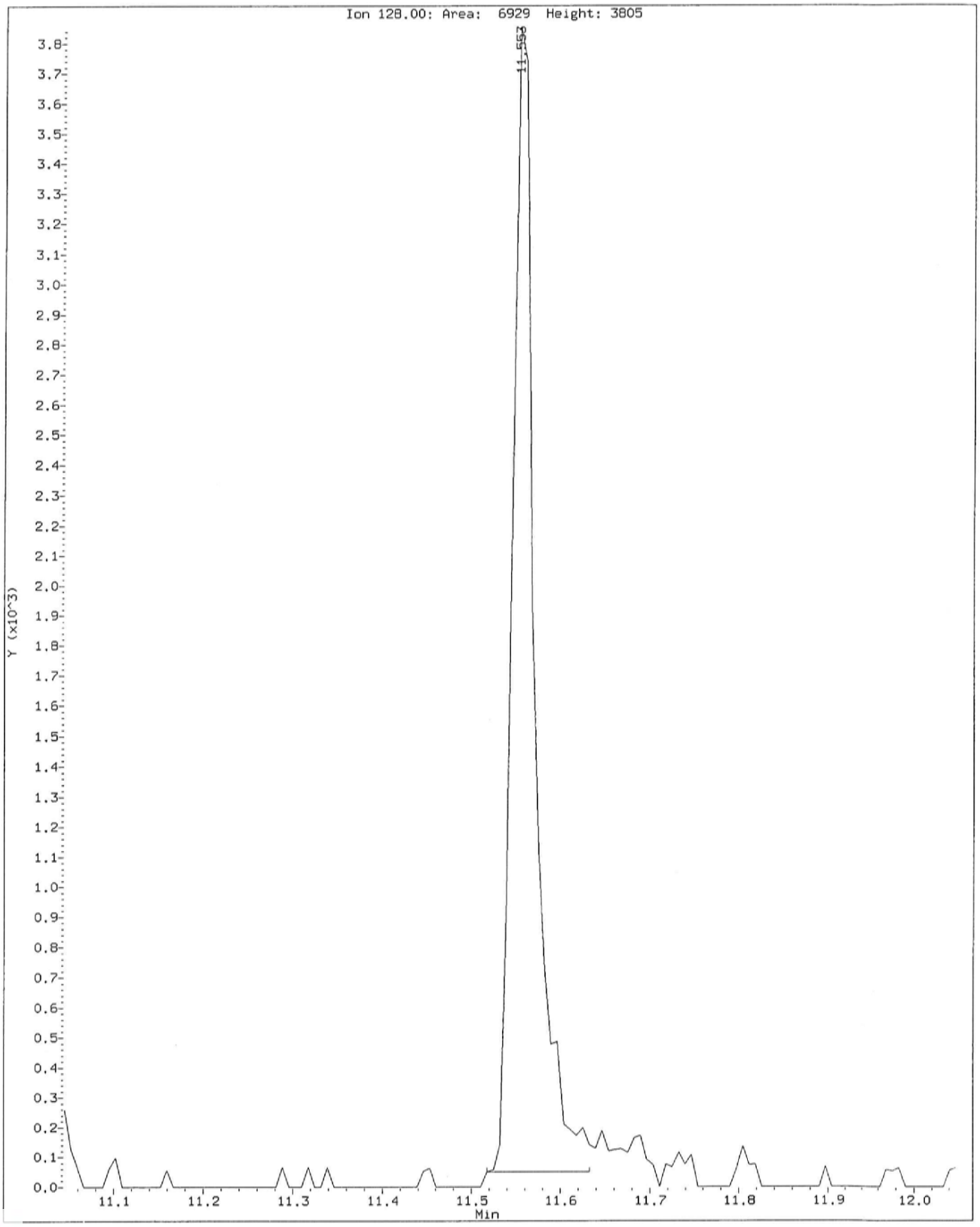
Compound: Chloromethane
CAS Number: 74-87-3



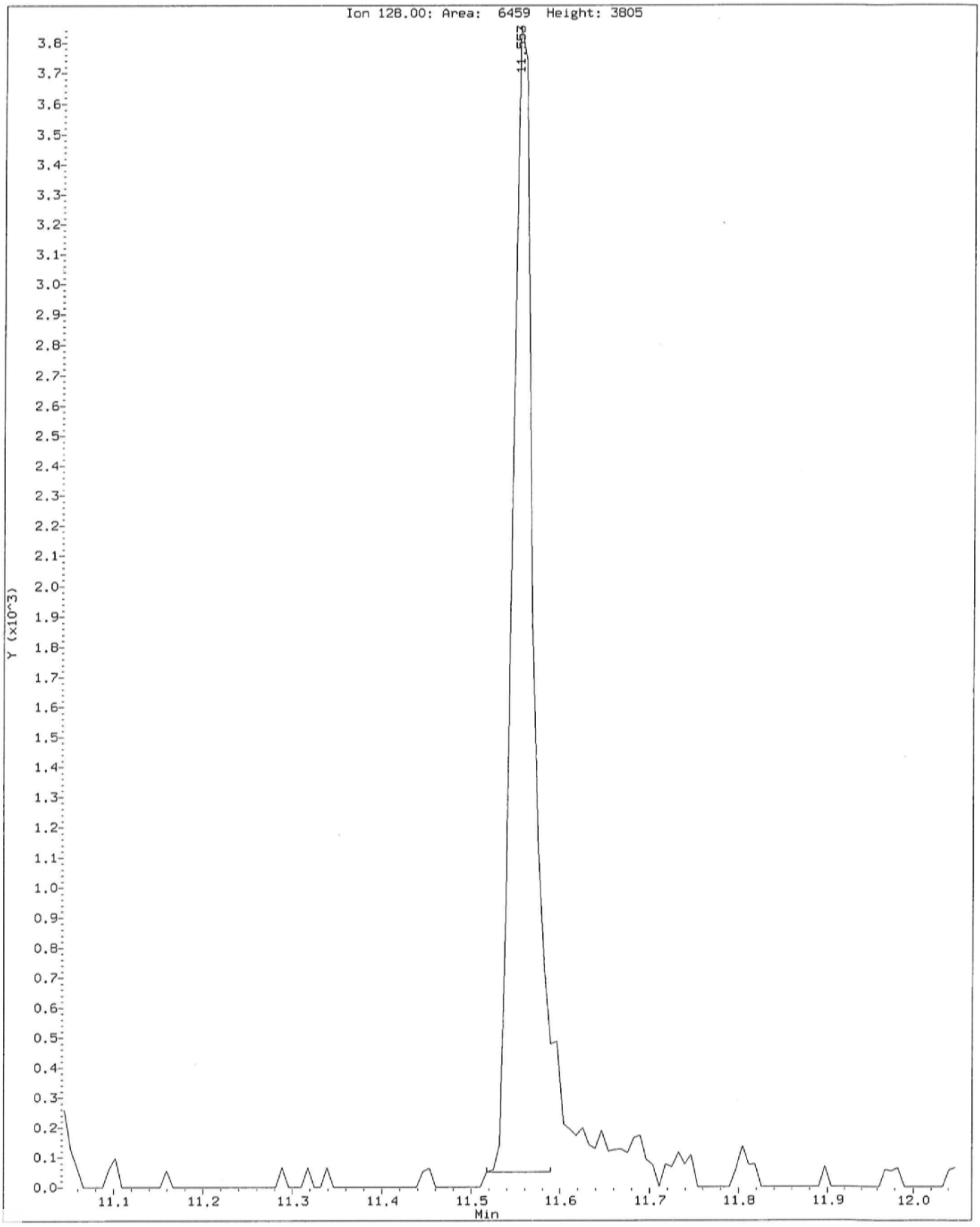
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Naphthalene
CAS Number: 91-20-3



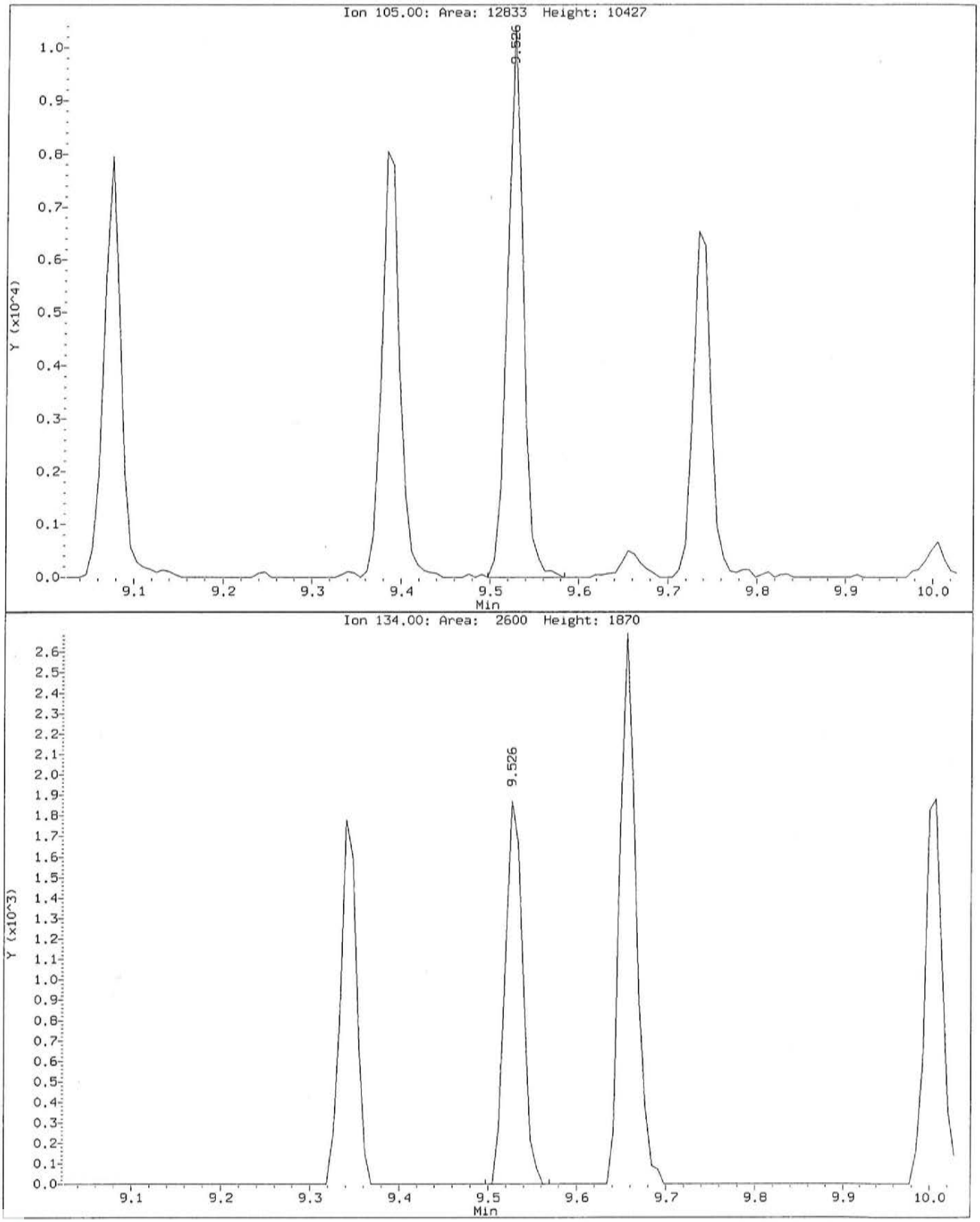
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Naphthalene
CAS Number: 91-20-3



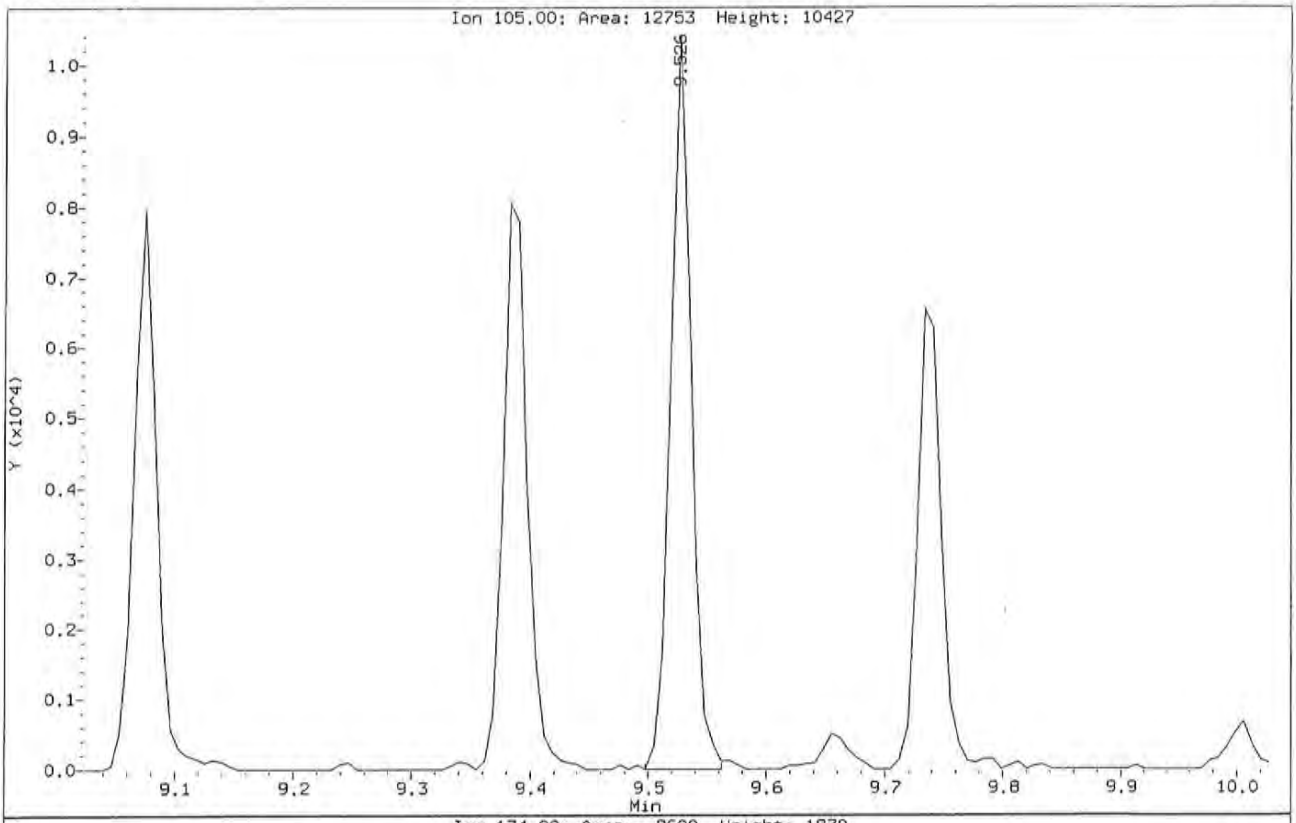
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

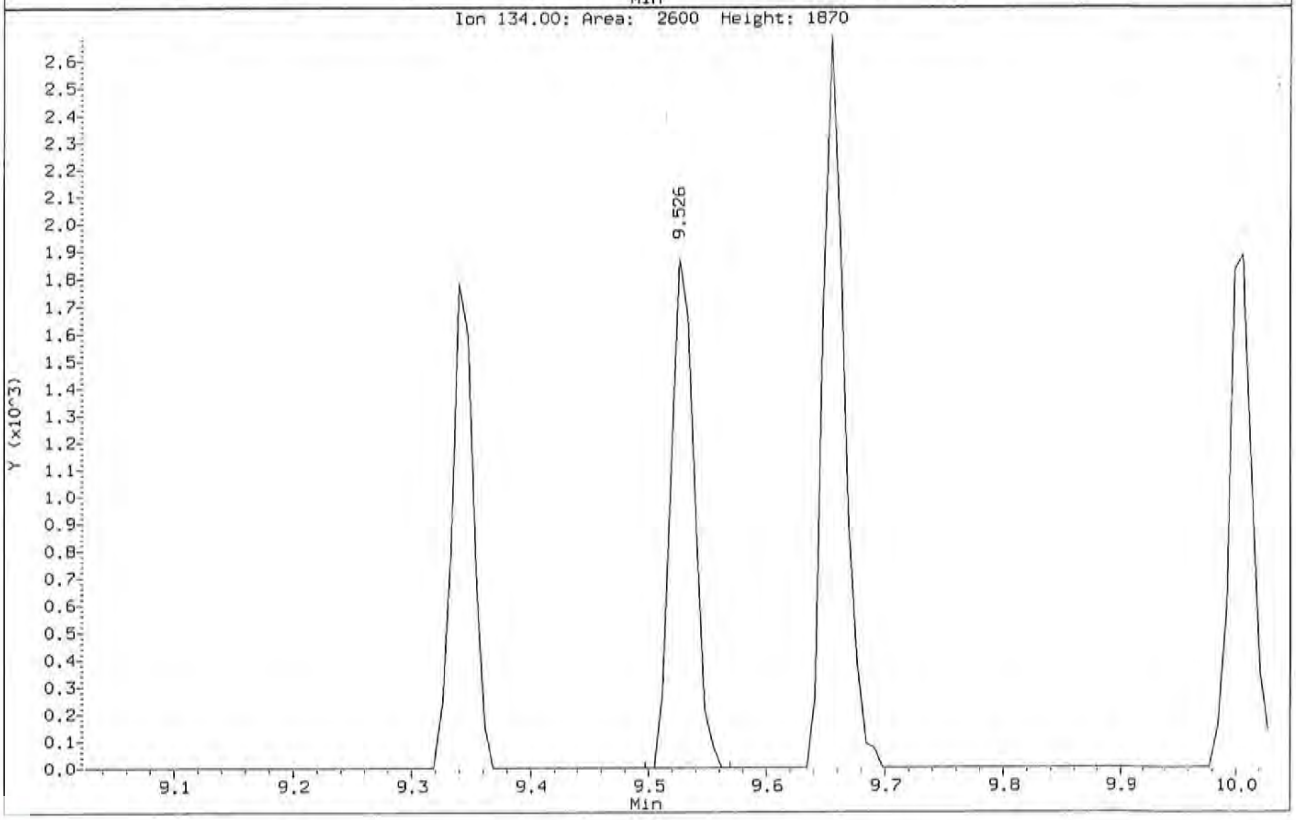
Compound: sec-Butylbenzene
CAS Number: 135-98-8



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

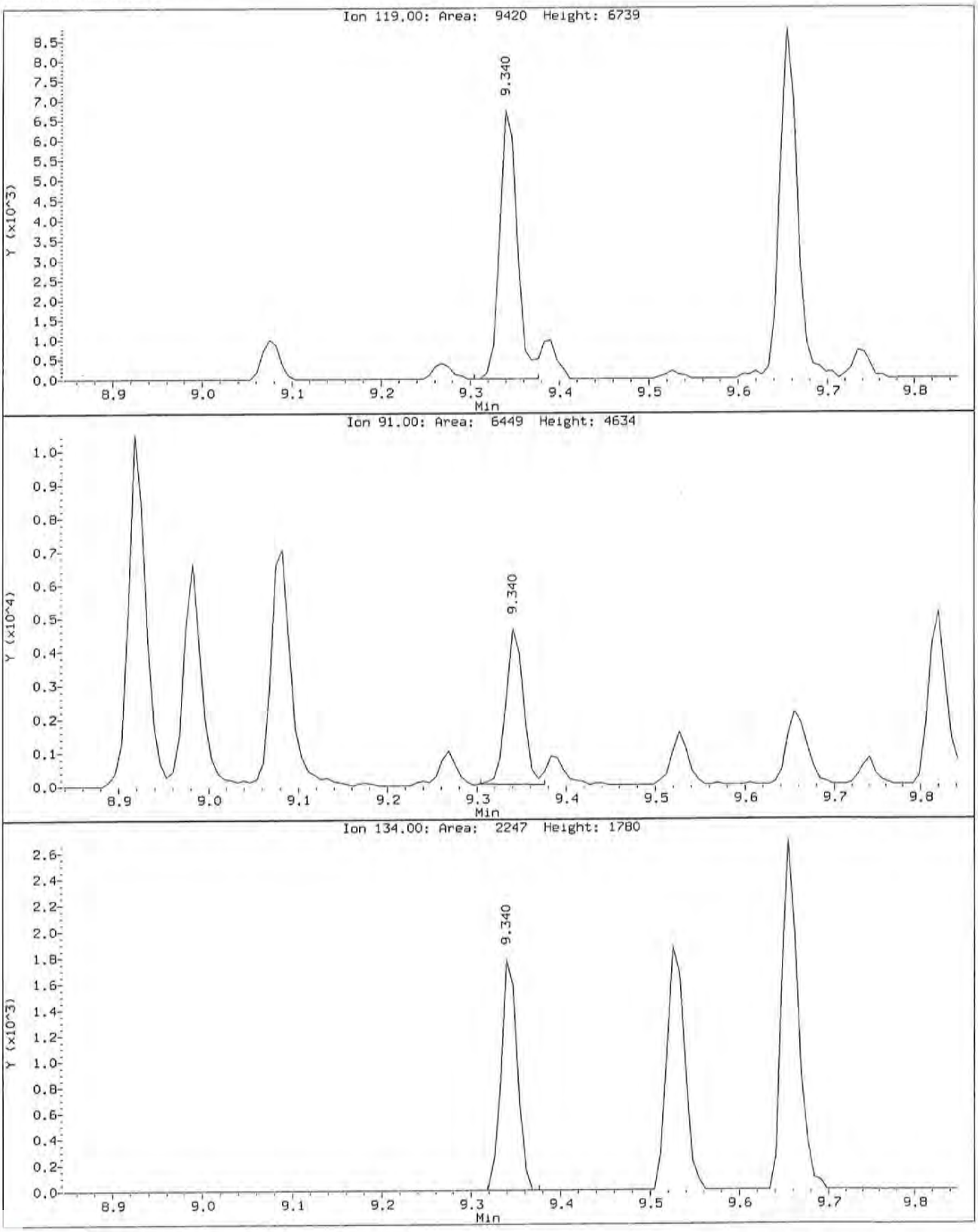
Compound: sec-Butylbenzene
CAS Number: 135-98-8



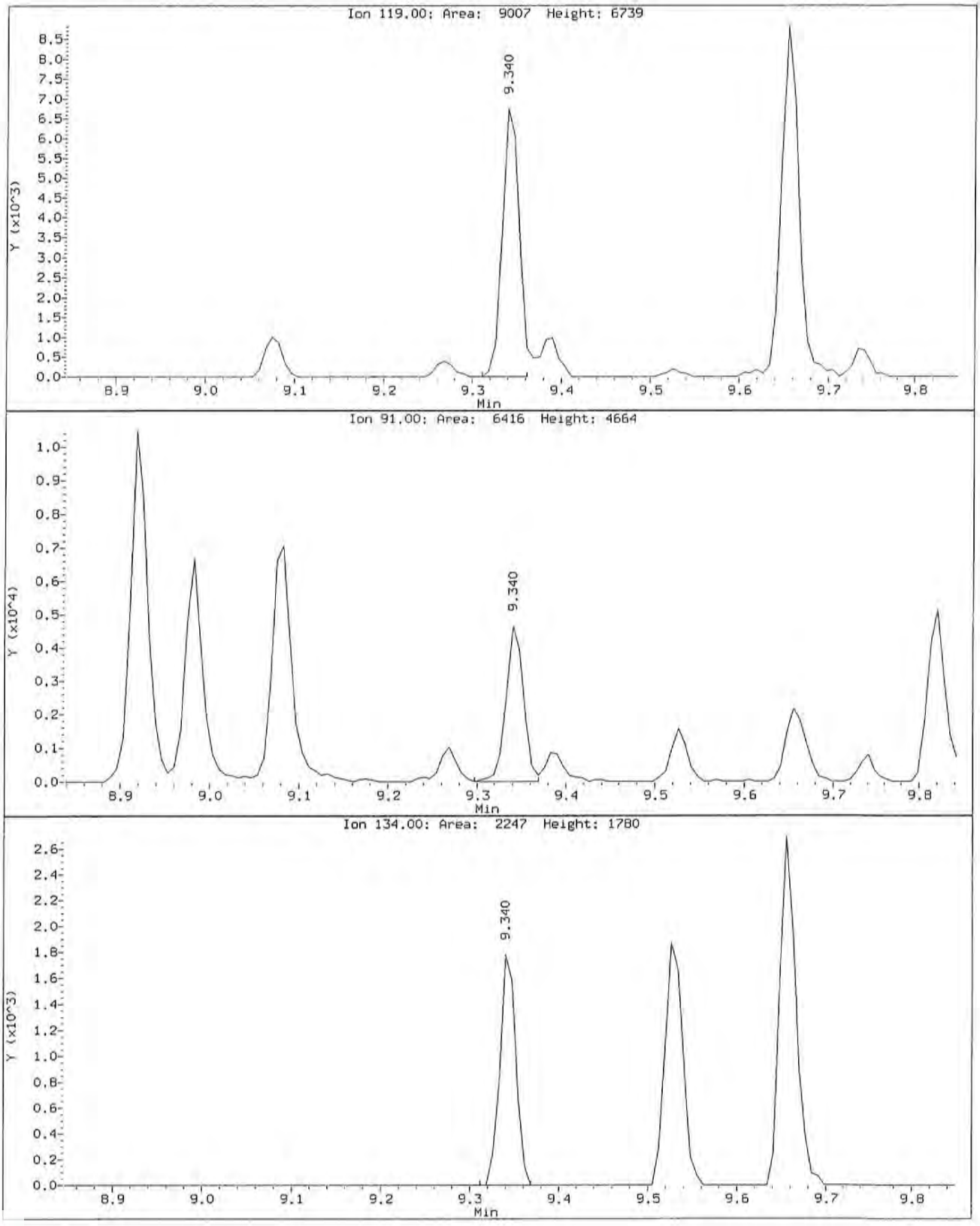
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: tert-Butylbenzene
CAS Number: 98-06-6



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080603.D
Injection Date: 06-AUG-2019 11:46
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: tert-Butylbenzene
CAS Number: 98-06-6



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080604.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 06-AUG-2019 12:10
Operator : DG Inst ID: voa6.i
Smp Info : VSTD001;VSTD001;1;3;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 12:10 Cal File: X080604.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

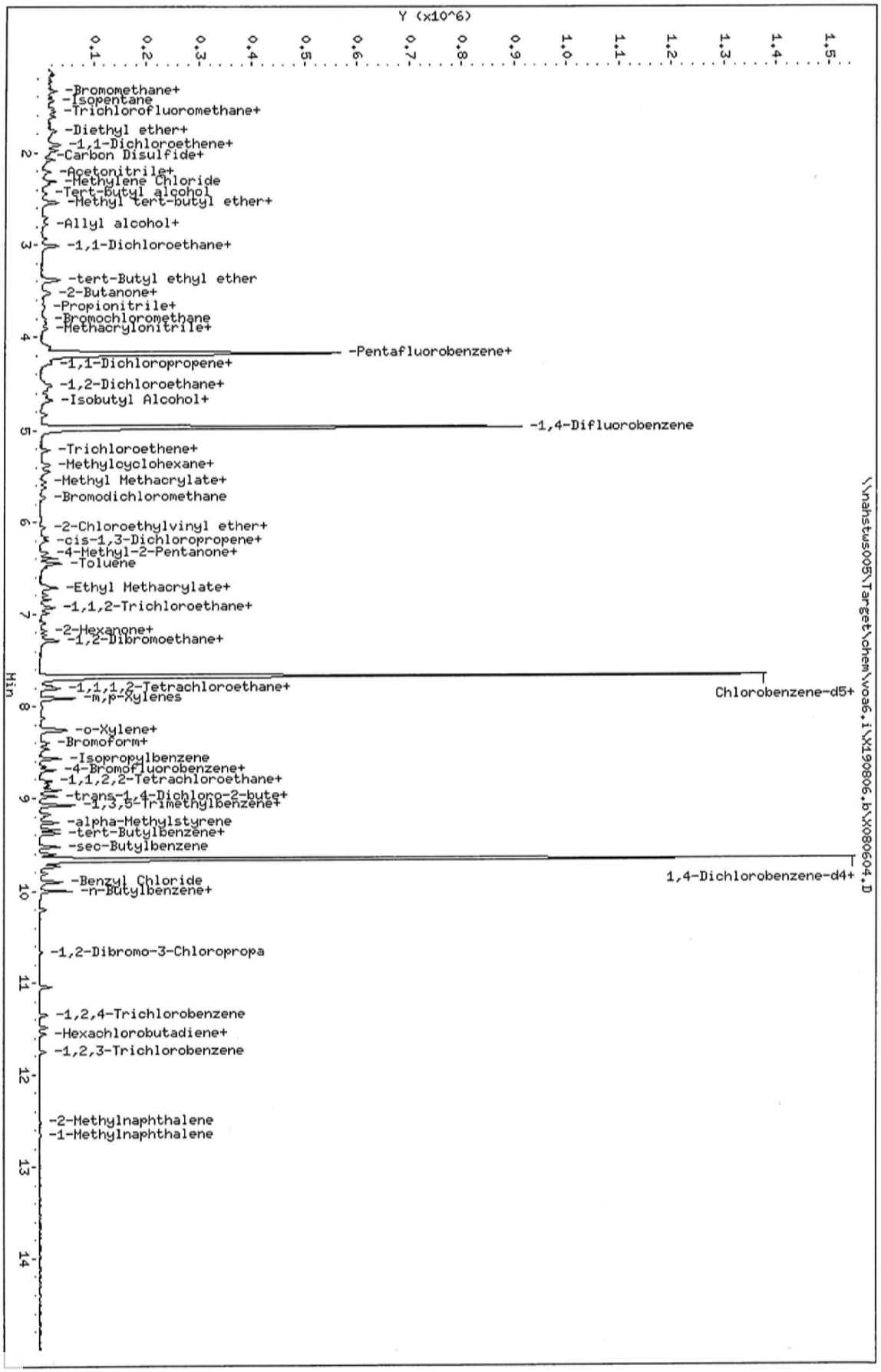
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 496999 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 753369 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 686510 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 366153 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 6125 | 1.00000 | 0.52(aM) |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 8436 | 1.00000 | 0.35(a) |
| $ 30 Dibromofluoromethane | 113 | 4.111 | 4.104 | (0.983) | 4938 | 1.00000 | 0.41(a) |
| $ 48 Toluene-d8 | 98 | 6.396 | 6.389 | (0.834) | 19066 | 1.00000 | 1.03(a) |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 5124 | 1.00000 | 1.00(a) |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 7336 | 1.00000 | 0.99(a) |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.846 | 8.845 | (0.915) | 6626 | 1.00000 | 1.40(a) |
| 138 Freon TF | 101 | 1.919 | 1.912 | (0.459) | 4221 | 1.00000 | 2.49(a) |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 4195 | 1.00000 | 1.03(a) |
| 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.700) | 9543 | 1.00000 | 1.09(a) |
| 11 1,1-Dichloroethene | 96 | 1.919 | 1.912 | (0.459) | 4161 | 1.00000 | 1.08(a) |
| 32 1,1-Dichloropropene | 75 | 4.290 | 4.283 | (0.863) | 7356 | 1.00000 | 1.10(a) |
| 93 1,2,3-Trichlorobenzene | 180 | 11.747 | 11.747 | (1.215) | 3988 | 1.00000 | 3.34(a) |
| 71 1,2,3-Trichloropropane | 75 | 8.874 | 8.867 | (0.918) | 5681 | 1.00000 | 1.09(aM) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.353 | 11.345 | (1.174) | 5354 | 1.00000 | 2.93(aM) |
| 79 1,2,4-Trimethylbenzene | 105 | 9.390 | 9.383 | (0.971) | 18552 | 1.00000 | 0.99(a) |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.658 | (1.103) | 976 | 1.00000 | 2.36(a) |
| 57 1,2-Dibromoethane | 107 | 7.270 | 7.270 | (0.948) | 5328 | 1.00000 | 1.00(a) |
| 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 11264 | 1.00000 | 1.17(a) |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.569 | 4.562 | (0.919) | 7854 | 1.00000 | 1.10 (a) |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 4797 | 1.00000 | 0.99 (aM) |
| 75 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 18431 | 1.00000 | 1.03 (a) |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 11579 | 1.00000 | 1.02 (a) |
| 54 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.911) | 8839 | 1.00000 | 1.06 (a) |
| 84 1,4-Dichlorobenzene | 146 | 9.691 | 9.691 | (1.002) | 12600 | 1.00000 | 1.68 (a) |
| 26 2,2-Dichloropropane | 77 | 3.509 | 3.516 | (0.839) | 7763 | 1.00000 | 1.07 (a) |
| 24 2-Butanone | 43 | 3.595 | 3.581 | (0.860) | 4994 | 2.00000 | 2.18 (a) |
| 76 2-Chlorotoluene | 91 | 8.982 | 8.982 | (0.929) | 15151 | 1.00000 | 1.00 (a) |
| 52 2-Hexanone | 43 | 7.098 | 7.091 | (0.925) | 6914 | 2.00000 | 2.93 (a) |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 18717 | 1.00000 | 1.06 (a) |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 18156 | 1.00000 | 0.97 (a) |
| 45 4-Methyl-2-Pentanone | 43 | 6.338 | 6.331 | (0.826) | 10277 | 2.00000 | 1.94 (a) |
| 10 Acetone | 43 | 1.969 | 1.976 | (0.471) | 6802 | 2.00000 | (aM) |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 19459 | 1.00000 | 1.01 (a) |
| 74 Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 7160 | 1.00000 | 1.05 (a) |
| 29 Bromochloromethane | 128 | 3.810 | 3.803 | (0.911) | 3339 | 1.00000 | 1.10 (a) |
| 39 Bromodichloromethane | 83 | 5.730 | 5.730 | (1.153) | 6653 | 1.00000 | 0.98 (a) |
| 66 Bromoform | 173 | 8.416 | 8.416 | (1.097) | 3794 | 1.00000 | 0.90 (Ta) |
| 6 Bromomethane | 94 | 1.339 | 1.331 | (0.320) | 5663 | 1.00000 | 1.05 (a) |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 25553 | 2.00000 | 2.08 (a) |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 7897 | 1.00000 | 1.15 (a) |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 14409 | 1.00000 | 1.04 (a) |
| 7 Chloroethane | 64 | 1.403 | 1.396 | (0.336) | 2528 | 1.00000 | 0.91 (a) |
| 28 Chloroform | 83 | 3.917 | 3.910 | (0.937) | 9577 | 1.00000 | 1.07 (a) |
| 3 Chloromethane | 50 | 1.074 | 1.074 | (0.257) | 5005 | 1.00000 | 1.11 (a) |
| 27 cis-1,2-Dichloroethene | 96 | 3.538 | 3.530 | (0.846) | 5884 | 1.00000 | 1.06 (a) |
| 46 cis-1,3-Dichloropropene | 75 | 6.167 | 6.159 | (1.241) | 7961 | 1.00000 | 0.97 (a) |
| 55 Dibromochloromethane | 129 | 7.184 | 7.184 | (0.937) | 5497 | 1.00000 | 0.99 (a) |
| 44 Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 3560 | 1.00000 | 1.01 (a) |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.233) | 4826 | 1.00000 | 2.73 (a) |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 7571 | 1.00000 | 1.06 (a) |
| 91 Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 2972 | 1.00000 | 2.83 (a) |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 22217 | 1.00000 | 1.06 (a) |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 18238 | 2.00000 | 2.12 (a) |
| 17 Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 5846 | 1.00000 | 1.09 (a) |
| 87 n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 14556 | 1.00000 | 0.94 (a) |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 24548 | 1.00000 | 1.00 (a) |
| 92 Naphthalene | 128 | 11.553 | 11.546 | (1.195) | 9234 | 1.00000 | 0.88 (a) |
| 63 o-Xylene | 106 | 8.251 | 8.244 | (1.076) | 8837 | 1.00000 | 1.04 (a) |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 20523 | 1.00000 | 0.99 (a) |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.078) | 15100 | 1.00000 | 1.03 (a) |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 16001 | 1.00000 | 1.06 (a) |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 4976 | 1.00000 | 1.10 (a) |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 21865 | 1.00000 | 1.06 (a) |
| 20 trans-1,2-Dichloroethene | 96 | 2.535 | 2.528 | (0.606) | 4895 | 1.00000 | 1.05 (a) |
| 51 trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 7188 | 1.00000 | 0.96 (a) |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 5606 | 1.00000 | 1.03 (a) |
| 8 Trichlorofluoromethane | 101 | 1.561 | 1.553 | (0.373) | 7478 | 1.00000 | 1.03 (a) |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 4641 | 1.00000 | 0.97 (a) |

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

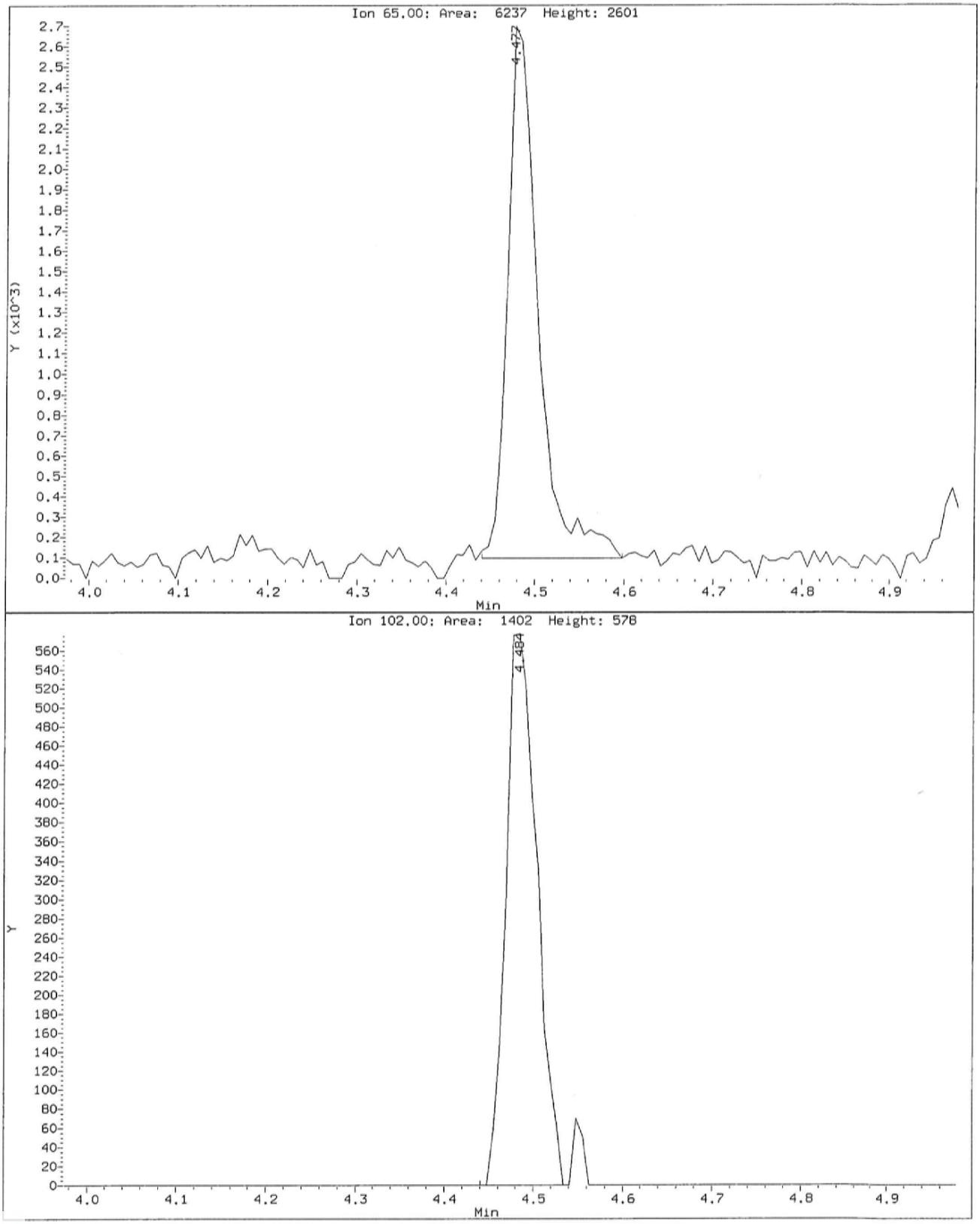



Data File: \\nahstws005\Target\chem\voa6.i\VX190806.b\X080604.D
Date : 06-AUG-2019 12:10
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;3;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080604.D
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0



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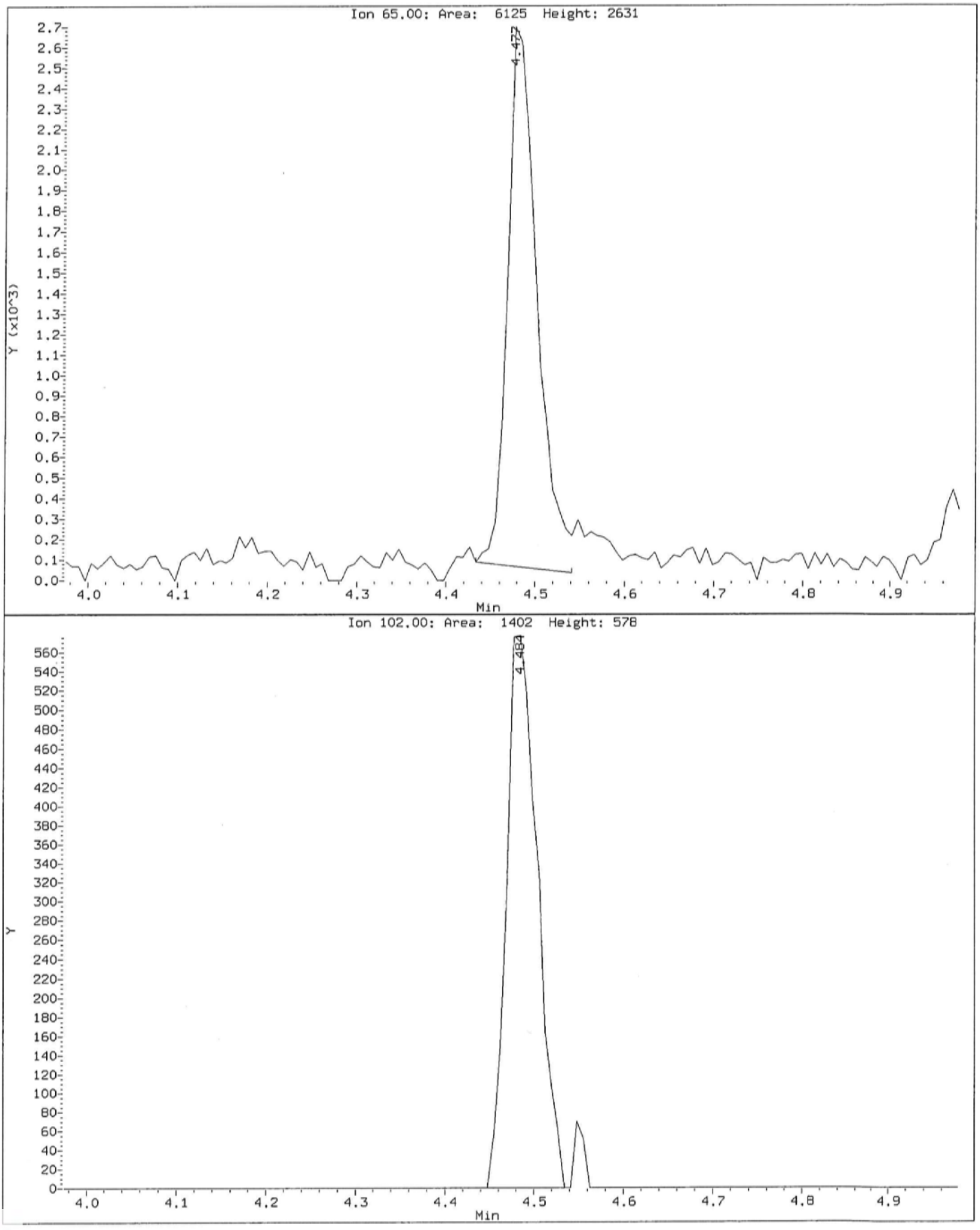
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloroethane-d4
CAS Number: 17060-07-0



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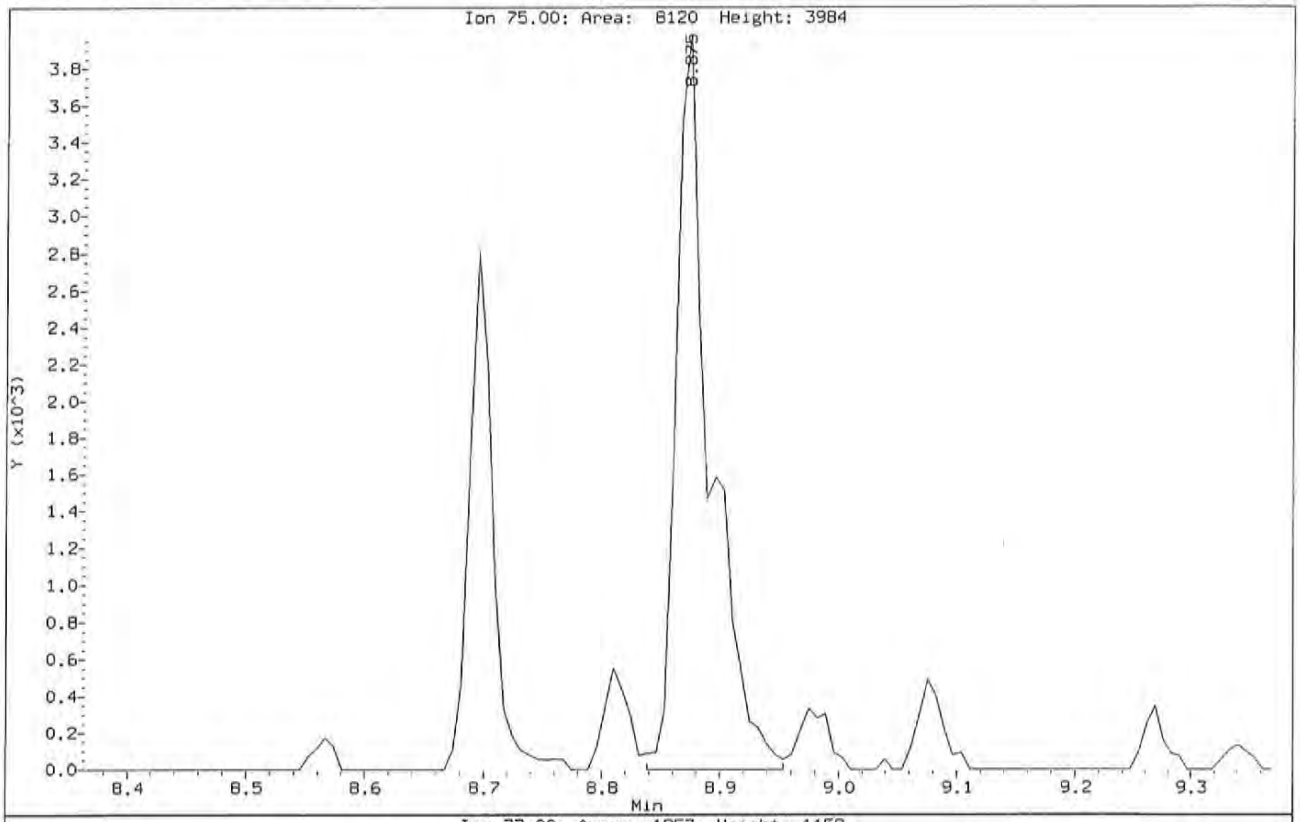
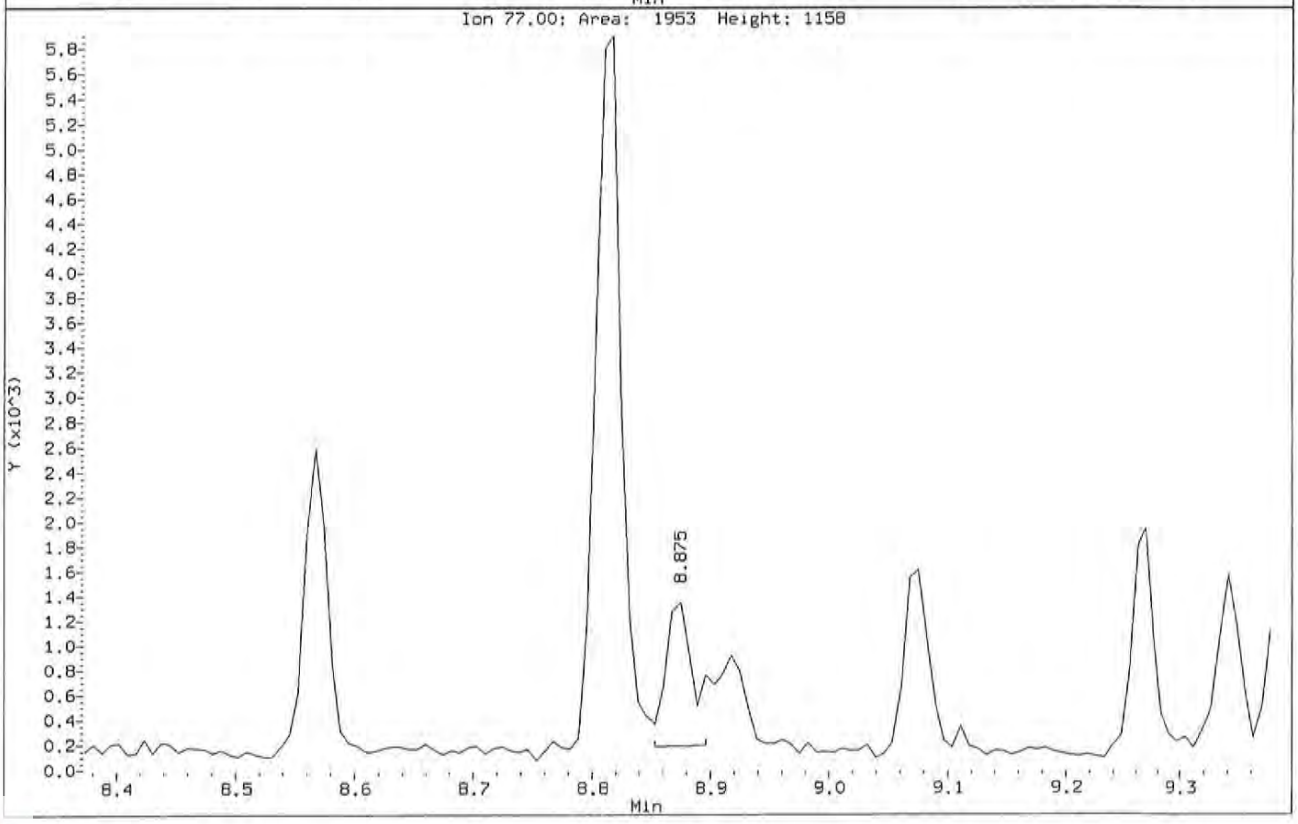
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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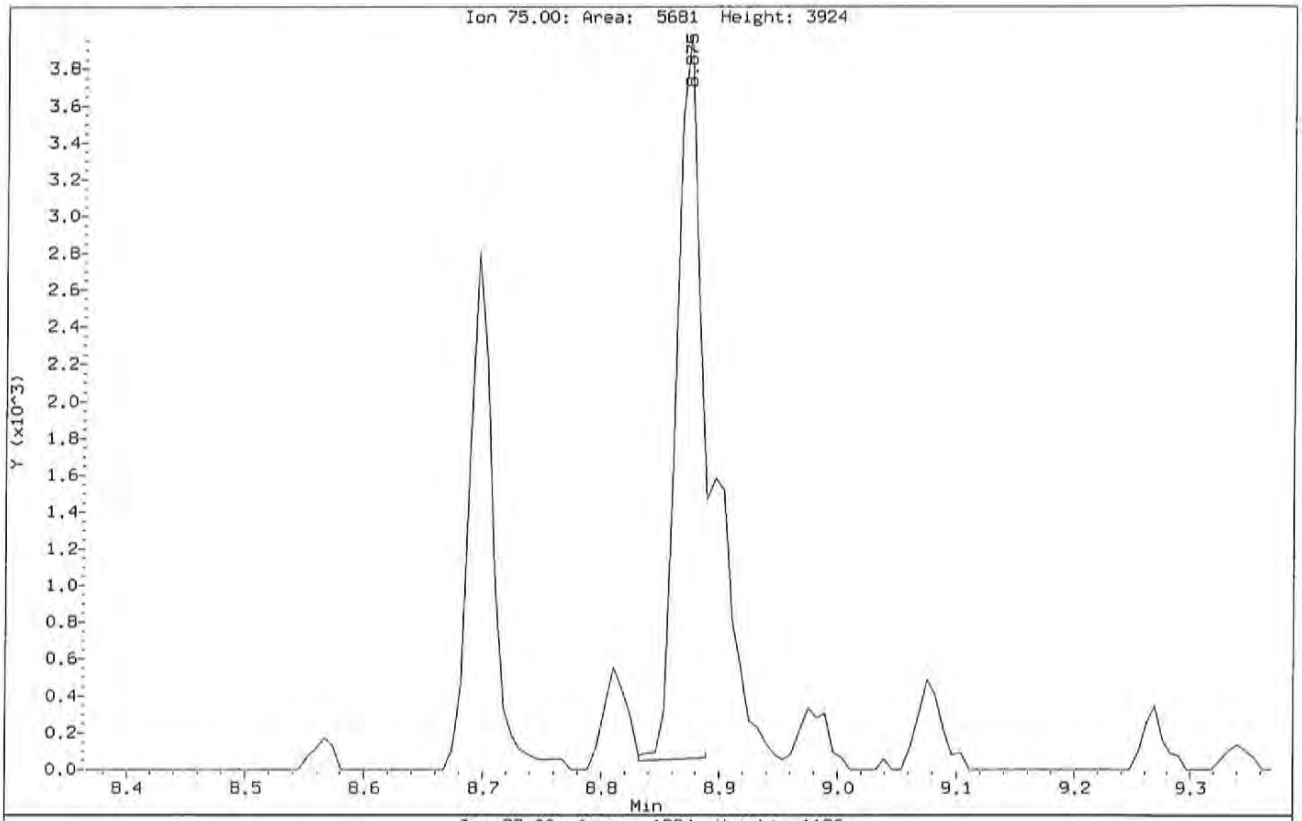
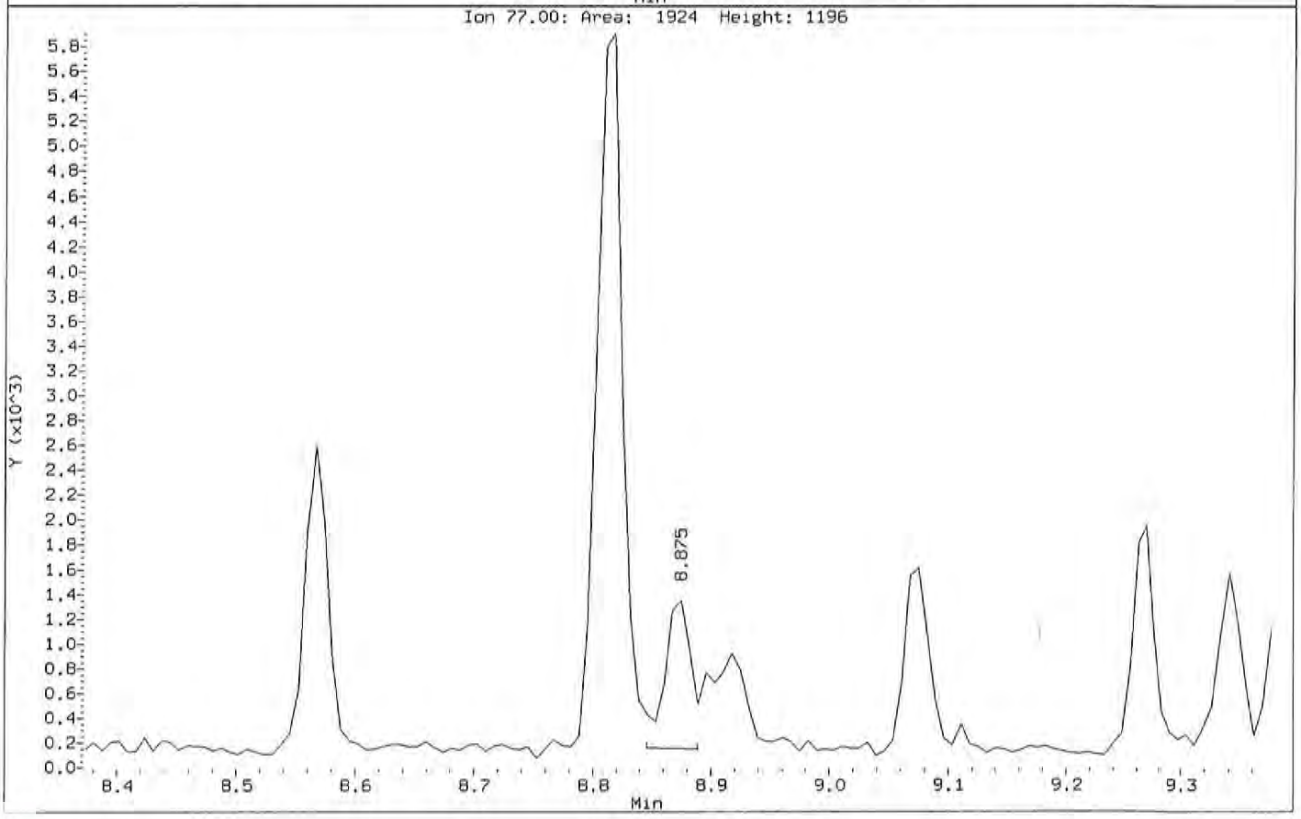
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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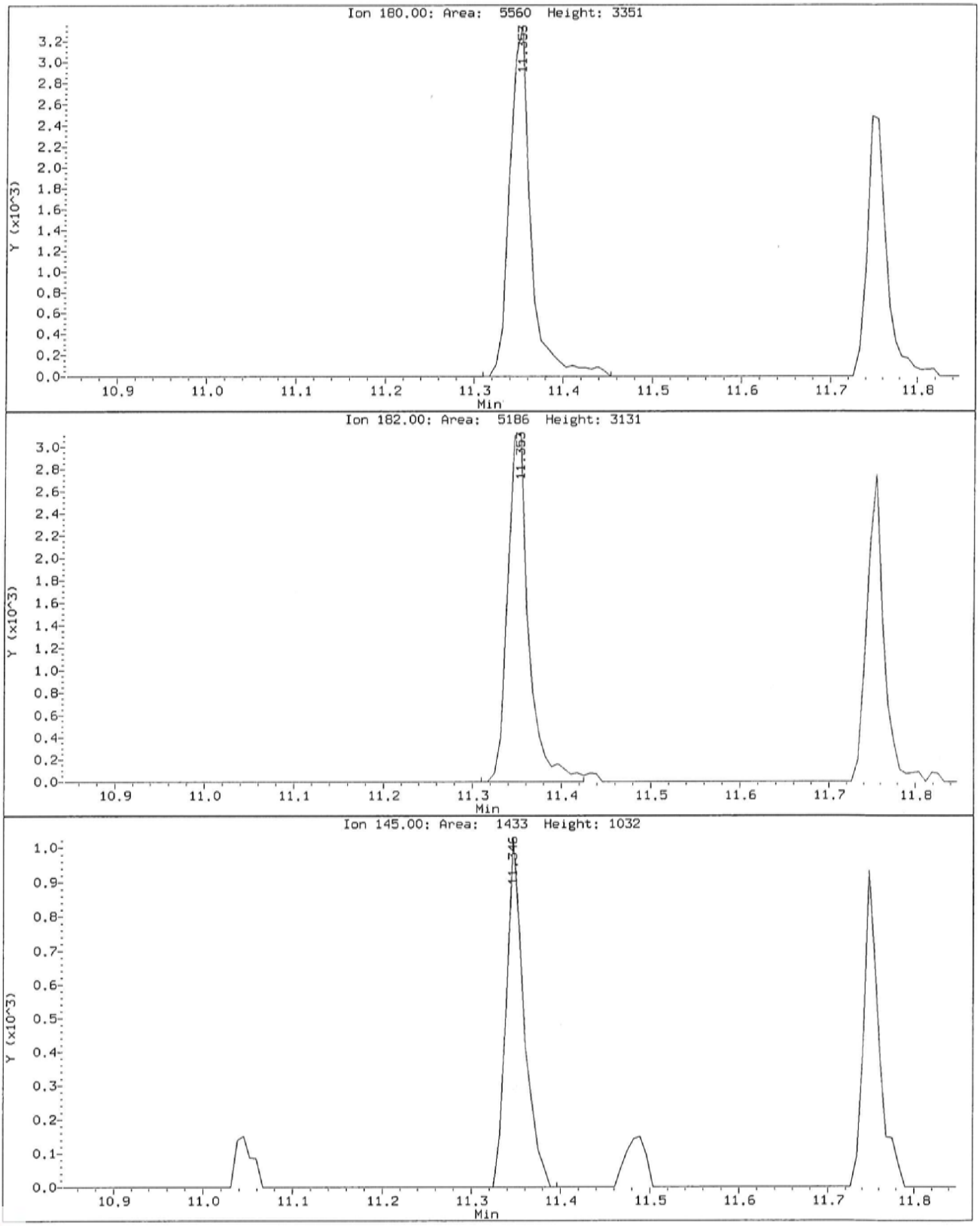
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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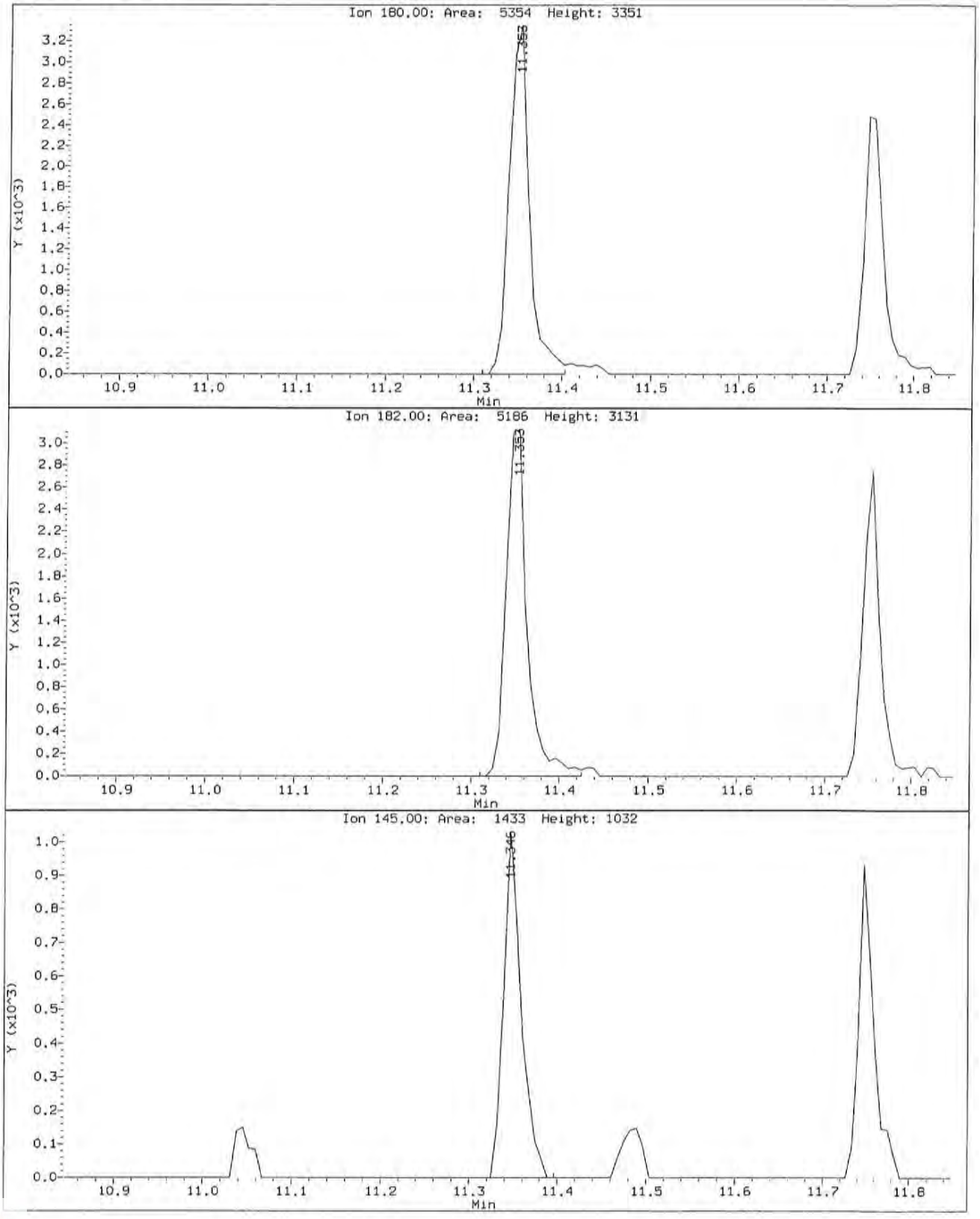
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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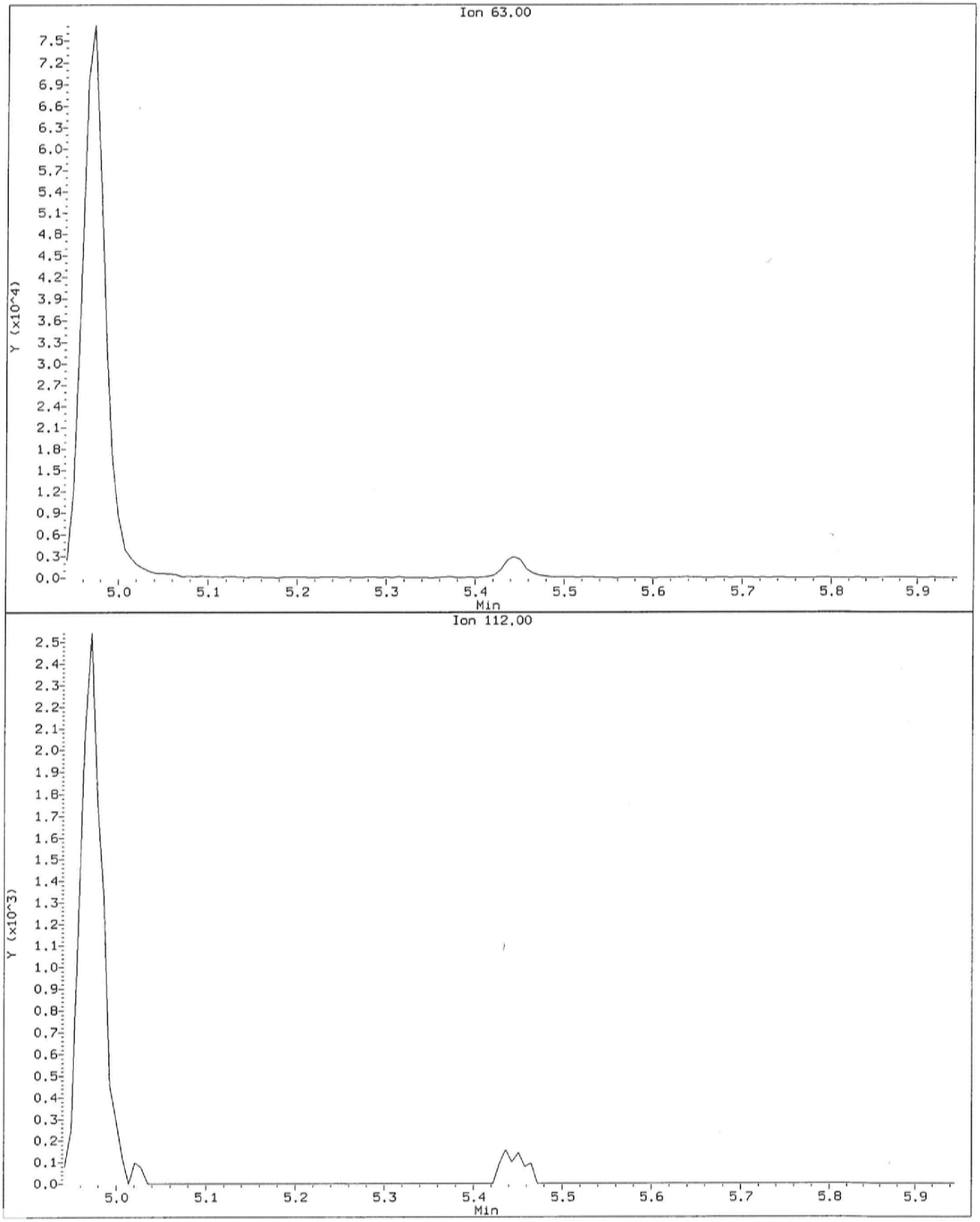
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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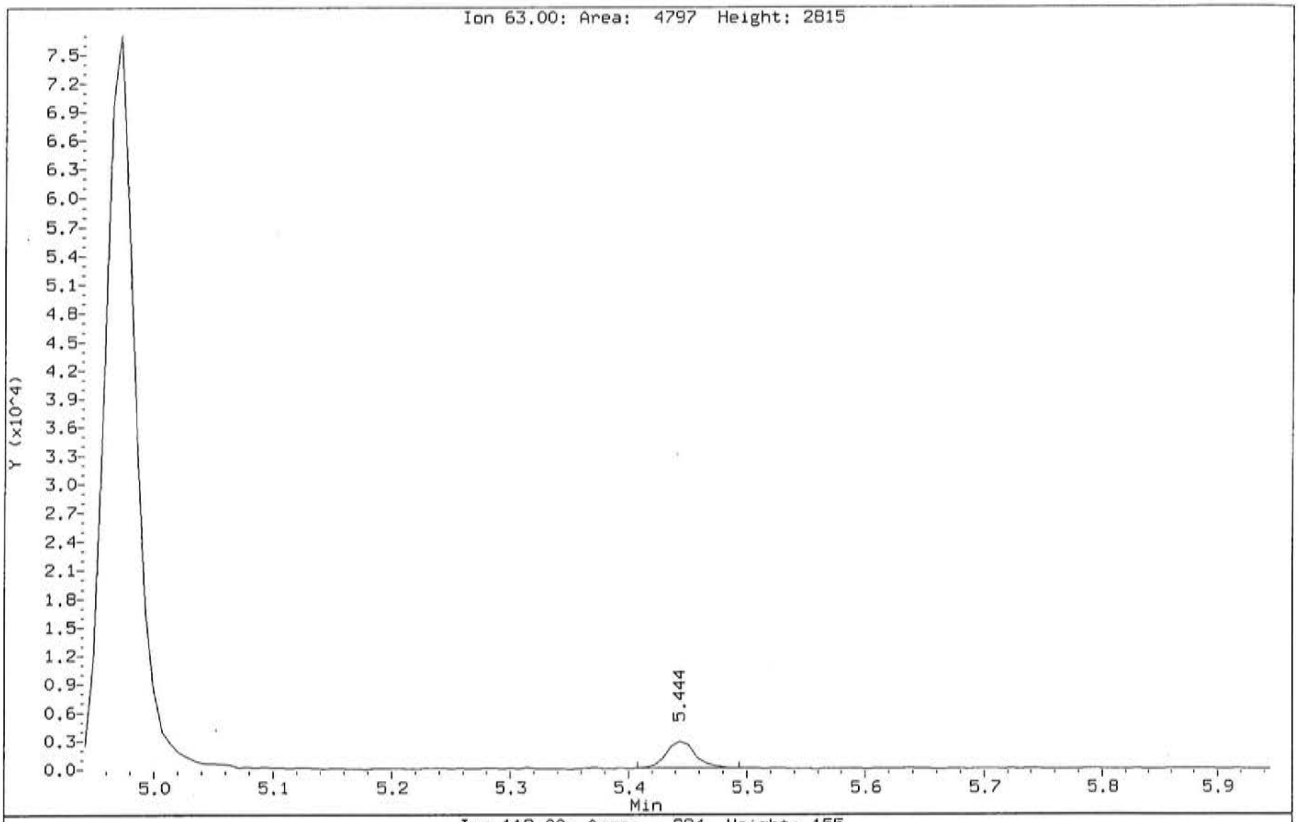
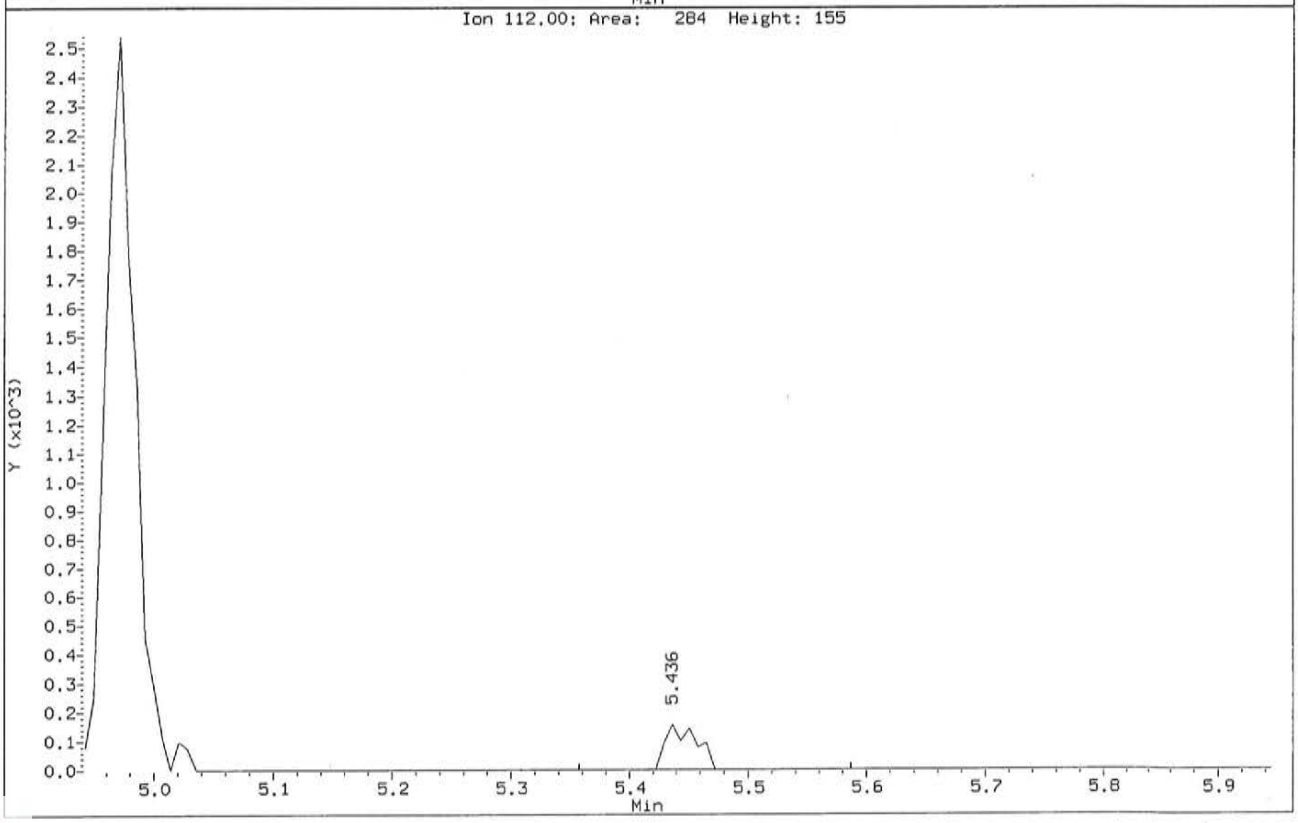
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

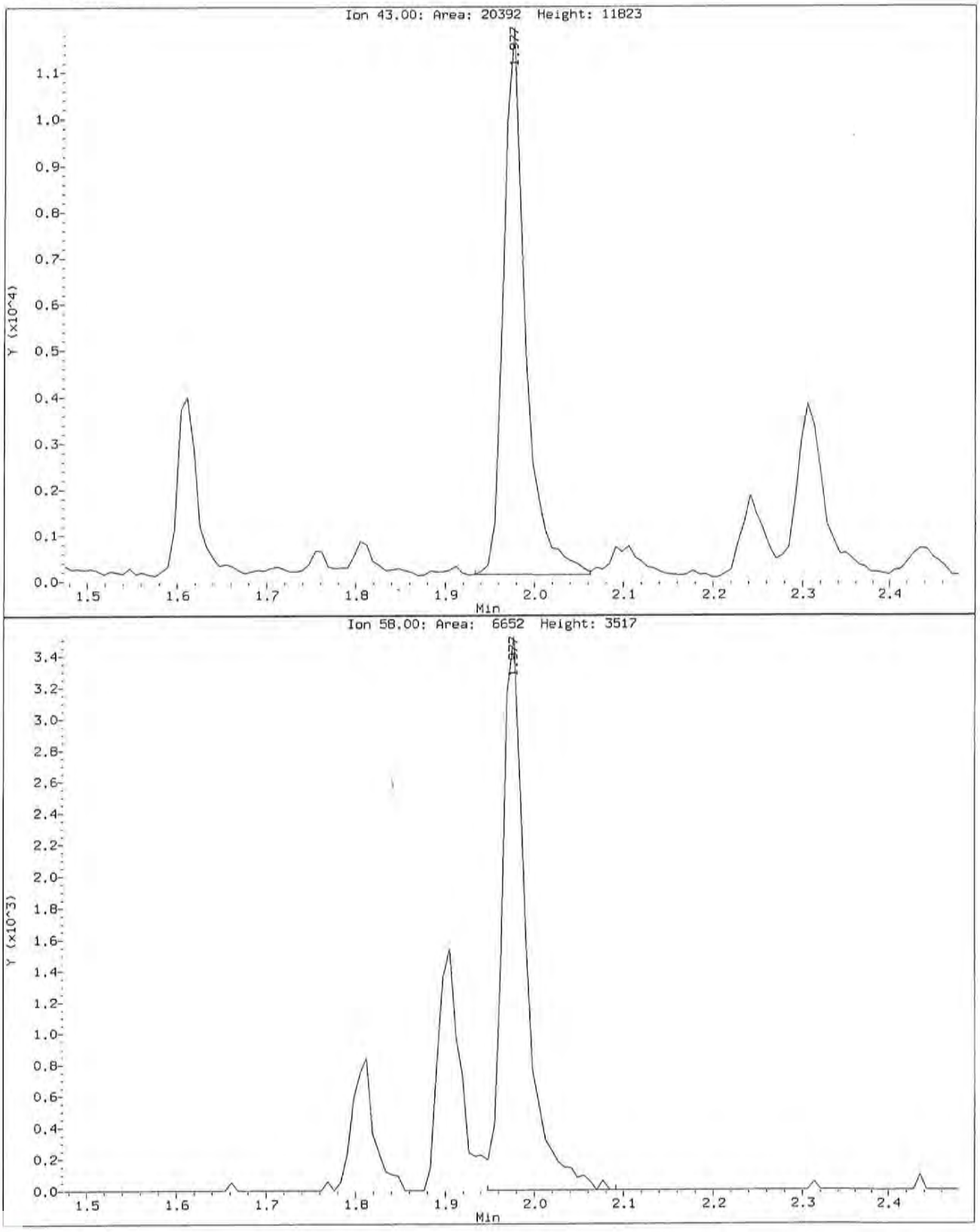
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



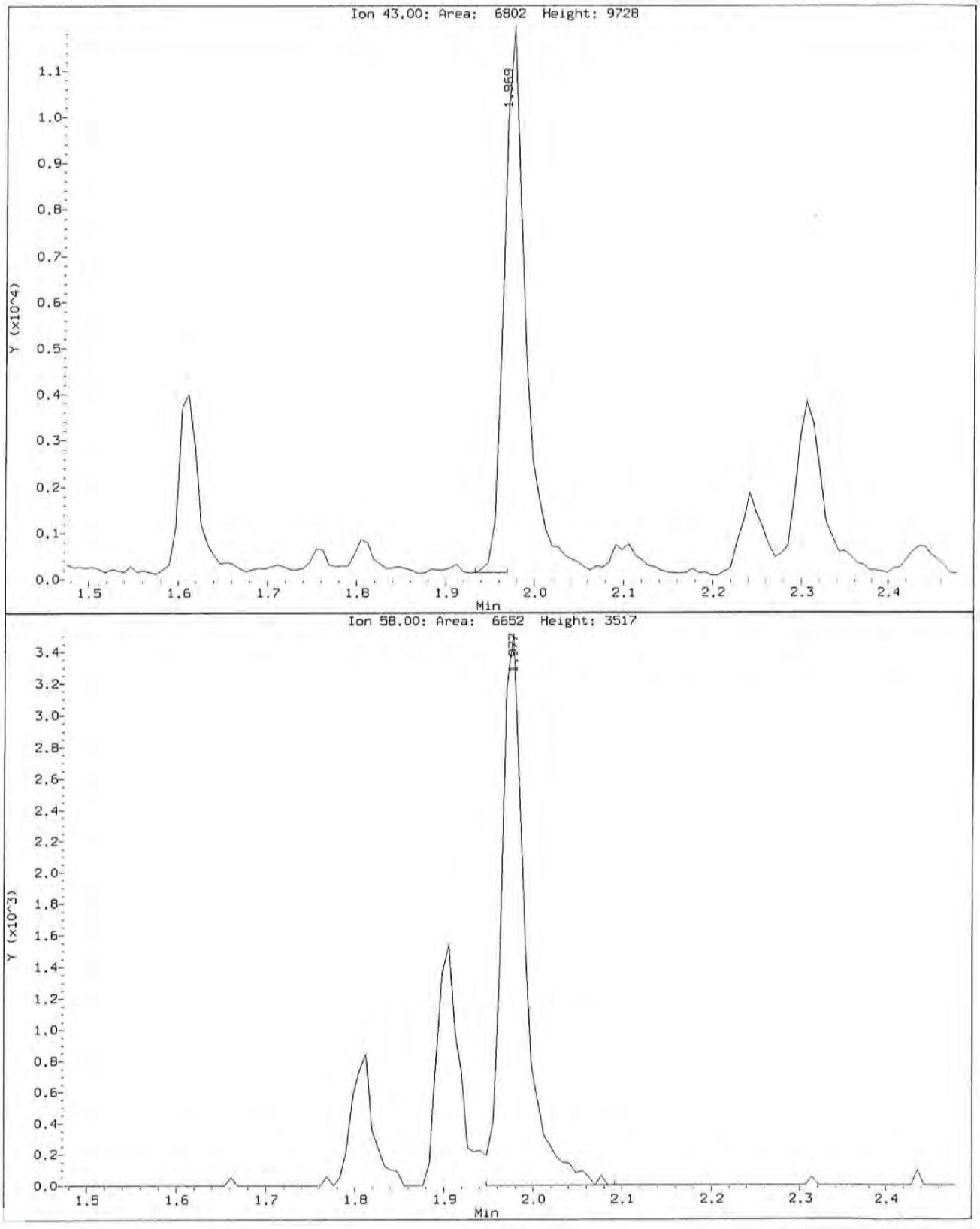
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080604.D
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Acetone
CAS Number: 67-64-1



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080604.D
Injection Date: 06-AUG-2019 12:10
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Acetone
CAS Number: 67-64-1



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080605.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 06-AUG-2019 12:34
Operator : DG Inst ID: voa6.i
Smp Info : VSTD002;VSTD002;1;4;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 12:34 Cal File: X080605.D
Als bottle: 6 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

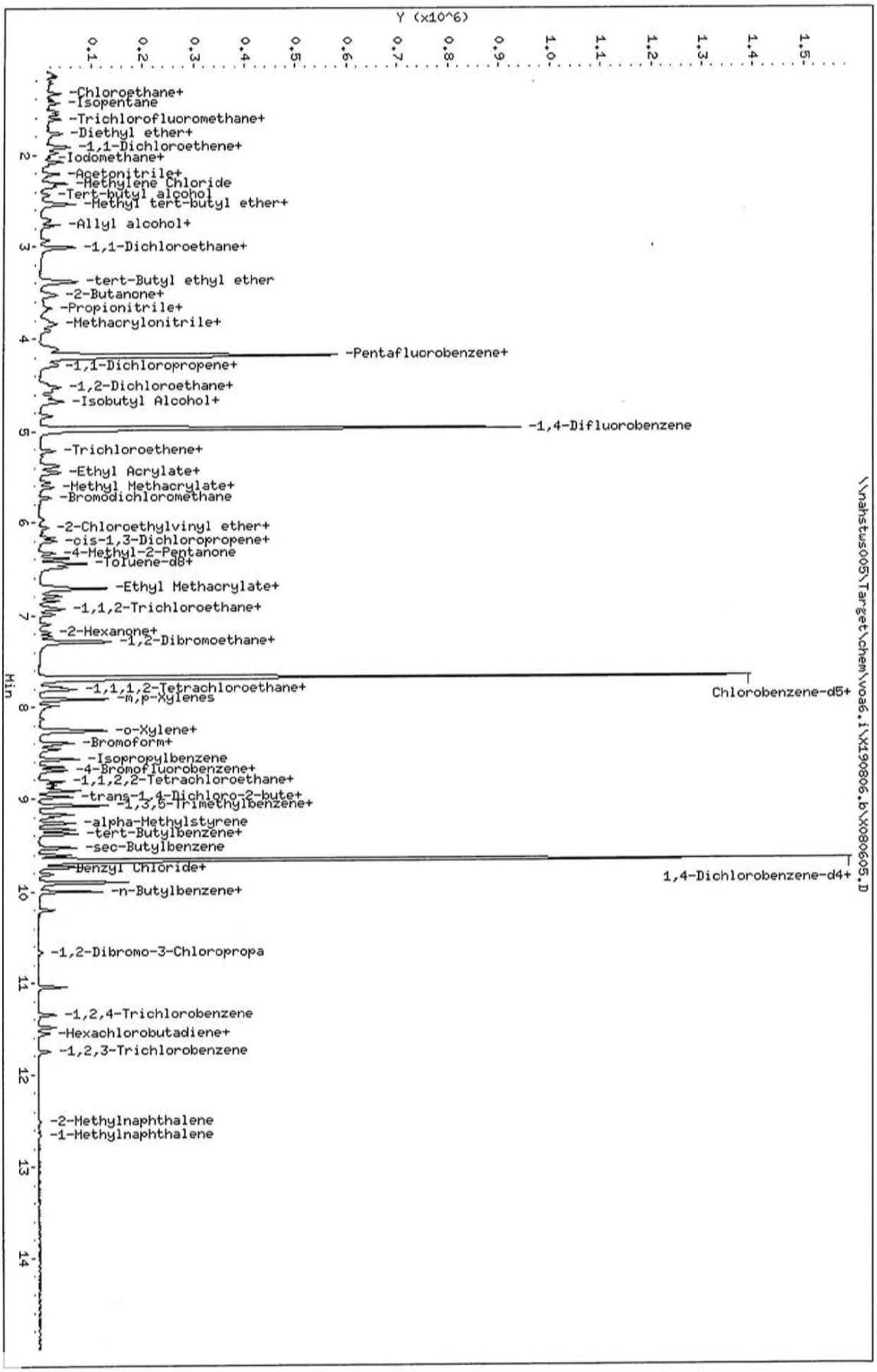
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 506395 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 768081 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 690791 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 368724 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.483 | 4.476 | (1.072) | 12388 | 2.00000 | 1.61(a) |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 14521 | 2.00000 | 1.30(a) |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.104 | (0.981) | 9646 | 2.00000 | 1.37(a) |
| $ 48 Toluene-d8 | 98 | 6.396 | 6.389 | (0.834) | 36802 | 2.00000 | 1.98(a) |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 9744 | 2.00000 | 1.90(a) |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 14831 | 2.00000 | 1.97(a) |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 12756 | 2.00000 | 2.34(a) |
| 138 Freon TF | 101 | 1.912 | 1.912 | (0.457) | 8238 | 2.00000 | 3.47(a) |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 7994 | 2.00000 | 1.96(a) |
| 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.700) | 17779 | 2.00000 | 1.99(a) |
| 11 1,1-Dichloroethene | 96 | 1.919 | 1.912 | (0.459) | 7716 | 2.00000 | 1.97(a) |
| 32 1,1-Dichloropropene | 75 | 4.290 | 4.283 | (0.863) | 13852 | 2.00000 | 2.04(a) |
| 93 1,2,3-Trichlorobenzene | 180 | 11.754 | 11.747 | (1.216) | 7459 | 2.00000 | 4.14(a) |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 10452 | 2.00000 | 2.00(aM) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 10935 | 2.00000 | 3.80(a) |
| 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 36472 | 2.00000 | 1.95(a) |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.658 | (1.103) | 1858 | 2.00000 | 3.14(a) |
| 57 1,2-Dibromoethane | 107 | 7.269 | 7.270 | (0.948) | 10626 | 2.00000 | 1.99(a) |
| 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 21519 | 2.00000 | 2.16(a) |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 13369 | 2.00000 | 1.84(a) |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 9359 | 2.00000 | 1.89(aM) |
| 75 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 35853 | 2.00000 | 1.99(a) |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 22161 | 2.00000 | 1.95(a) |
| 54 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.911) | 16230 | 2.00000 | 1.93(a) |
| 84 1,4-Dichlorobenzene | 146 | 9.691 | 9.691 | (1.002) | 23714 | 2.00000 | 2.67(a) |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 14556 | 2.00000 | 1.97(a) |
| 24 2-Butanone | 43 | 3.595 | 3.581 | (0.860) | 9660 | 4.00000 | 4.14(a) |
| 76 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 30909 | 2.00000 | 2.03(a) |
| 52 2-Hexanone | 43 | 7.098 | 7.091 | (0.925) | 14348 | 4.00000 | 4.92(a) |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 35001 | 2.00000 | 1.97(a) |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 36476 | 2.00000 | 1.95(a) |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 19897 | 4.00000 | 3.74(a) |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.473) | 13368 | 4.00000 | 3.19(aM) |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 38258 | 2.00000 | 1.95(a) |
| 74 Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 13380 | 2.00000 | 1.95(a) |
| 29 Bromochloromethane | 128 | 3.803 | 3.803 | (0.909) | 6172 | 2.00000 | 2.01(a) |
| 39 Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 13207 | 2.00000 | 1.92(a) |
| 66 Bromoform | 173 | 8.416 | 8.416 | (1.097) | 7593 | 2.00000 | 1.80(a) |
| 6 Bromomethane | 94 | 1.338 | 1.331 | (0.320) | 10787 | 2.00000 | 2.28(aM) |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 48713 | 4.00000 | 3.90(a) |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 13951 | 2.00000 | 1.99(a) |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 28681 | 2.00000 | 2.07(a) |
| 7 Chloroethane | 64 | 1.403 | 1.396 | (0.336) | 5812 | 2.00000 | 2.05(a) |
| 28 Chloroform | 83 | 3.917 | 3.910 | (0.937) | 17955 | 2.00000 | 1.98(a) |
| 3 Chloromethane | 50 | 1.073 | 1.074 | (0.257) | 9333 | 2.00000 | 2.04(a) |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 10977 | 2.00000 | 1.95(a) |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 15428 | 2.00000 | 1.85(a) |
| 55 Dibromochloromethane | 129 | 7.184 | 7.184 | (0.937) | 10239 | 2.00000 | 1.84(a) |
| 44 Dibromomethane | 93 | 5.557 | 5.558 | (1.118) | 7202 | 2.00000 | 2.02(a) |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.233) | 9700 | 2.00000 | 3.61(a) |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 14438 | 2.00000 | 2.01(a) |
| 91 Hexachlorobutadiene | 225 | 11.488 | 11.489 | (1.188) | 5995 | 2.00000 | 3.82(a) |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 42799 | 2.00000 | 2.04(a) |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 34498 | 4.00000 | 3.99(a) |
| 17 Methylene Chloride | 84 | 2.305 | 2.306 | (0.551) | 11085 | 2.00000 | 2.13(a) |
| 87 n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 30858 | 2.00000 | 1.98(a) |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 49218 | 2.00000 | 2.00(a) |
| 92 Naphthalene | 128 | 11.553 | 11.546 | (1.195) | 19351 | 2.00000 | 1.84(a) |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 17023 | 2.00000 | 2.00(a) |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 41182 | 2.00000 | 1.98(a) |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.078) | 29774 | 2.00000 | 2.02(a) |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 30804 | 2.00000 | 2.03(a) |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 9547 | 2.00000 | 2.10(a) |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 41384 | 2.00000 | 2.00(a) |
| 20 trans-1,2-Dichloroethene | 96 | 2.535 | 2.528 | (0.606) | 9371 | 2.00000 | 1.98(a) |
| 51 trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 14093 | 2.00000 | 1.84(a) |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 11018 | 2.00000 | 1.98(a) |
| 8 Trichlorofluoromethane | 101 | 1.561 | 1.553 | (0.373) | 14526 | 2.00000 | 1.96(a) |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 9770 | 2.00000 | 2.01(a) |

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

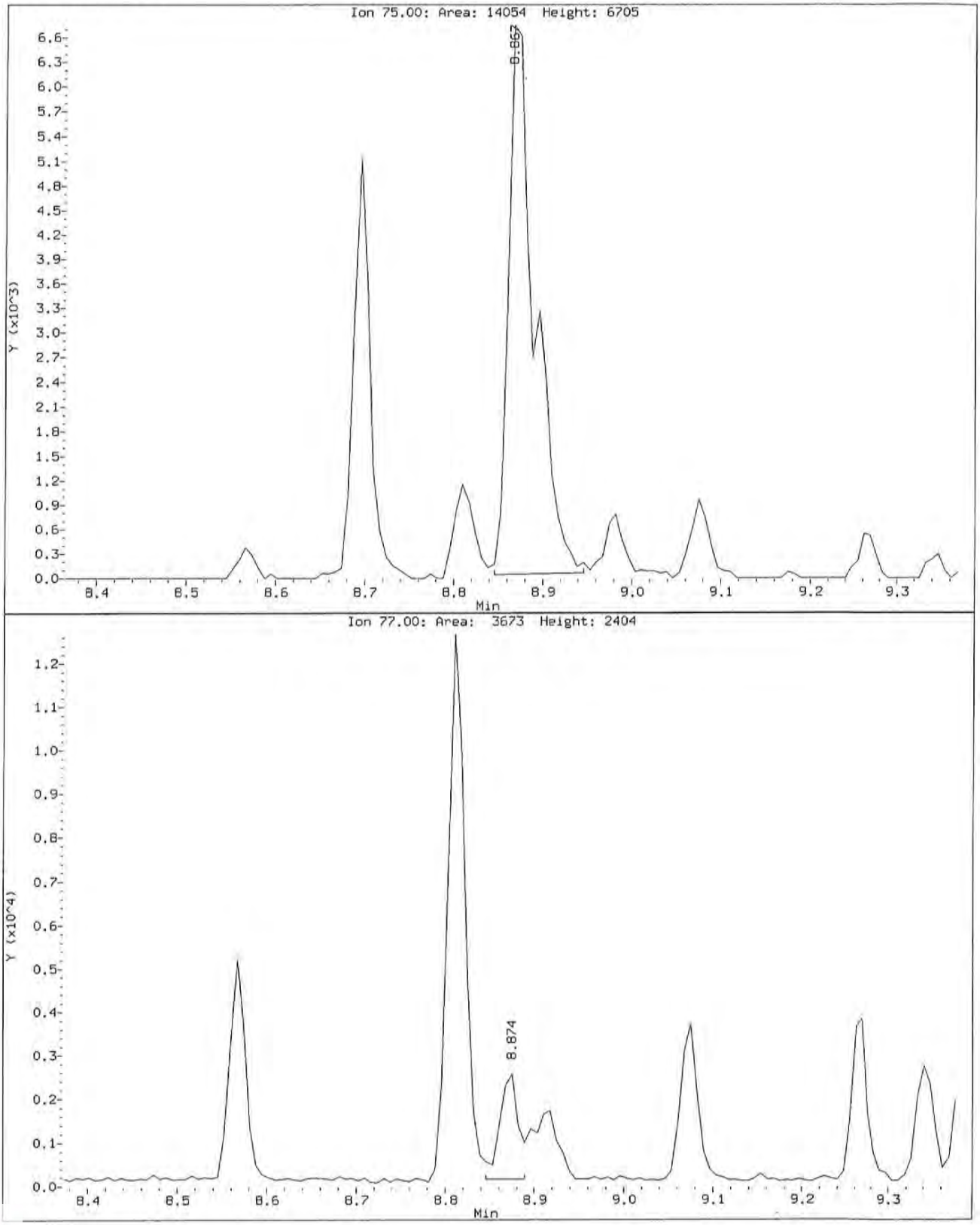



Data File: \\nahstus005\Target\chem\voa6.i\X190806.b\X080605.D
Date : 06-AUG-2019 12:34
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

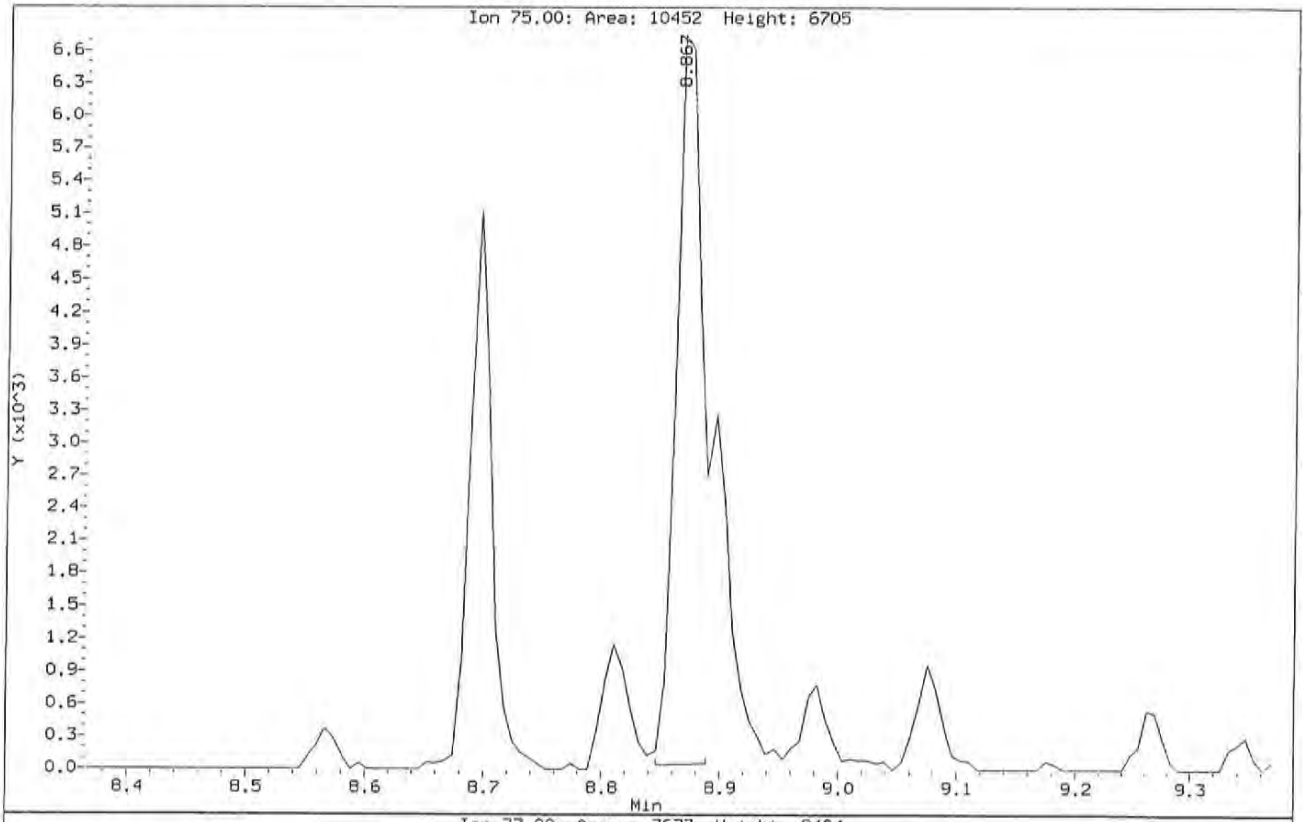
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

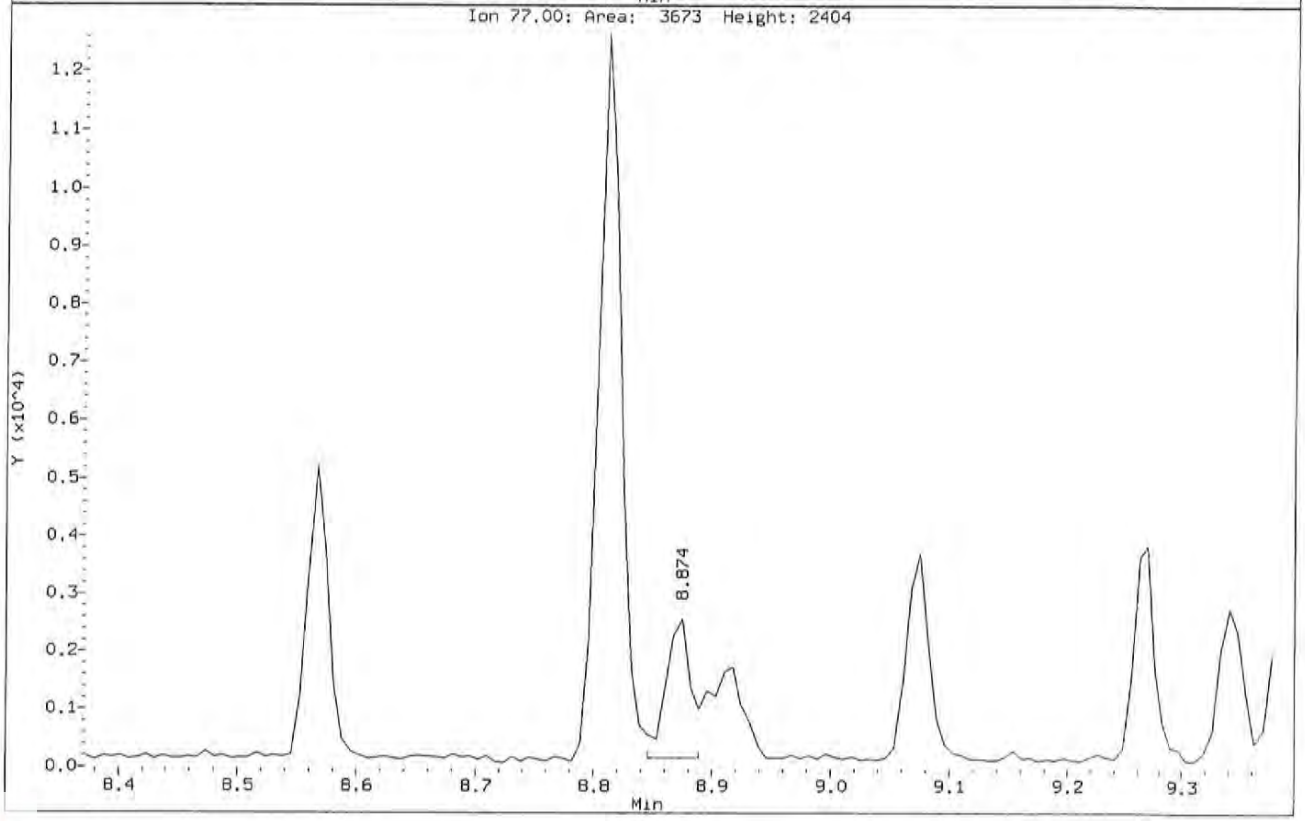
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

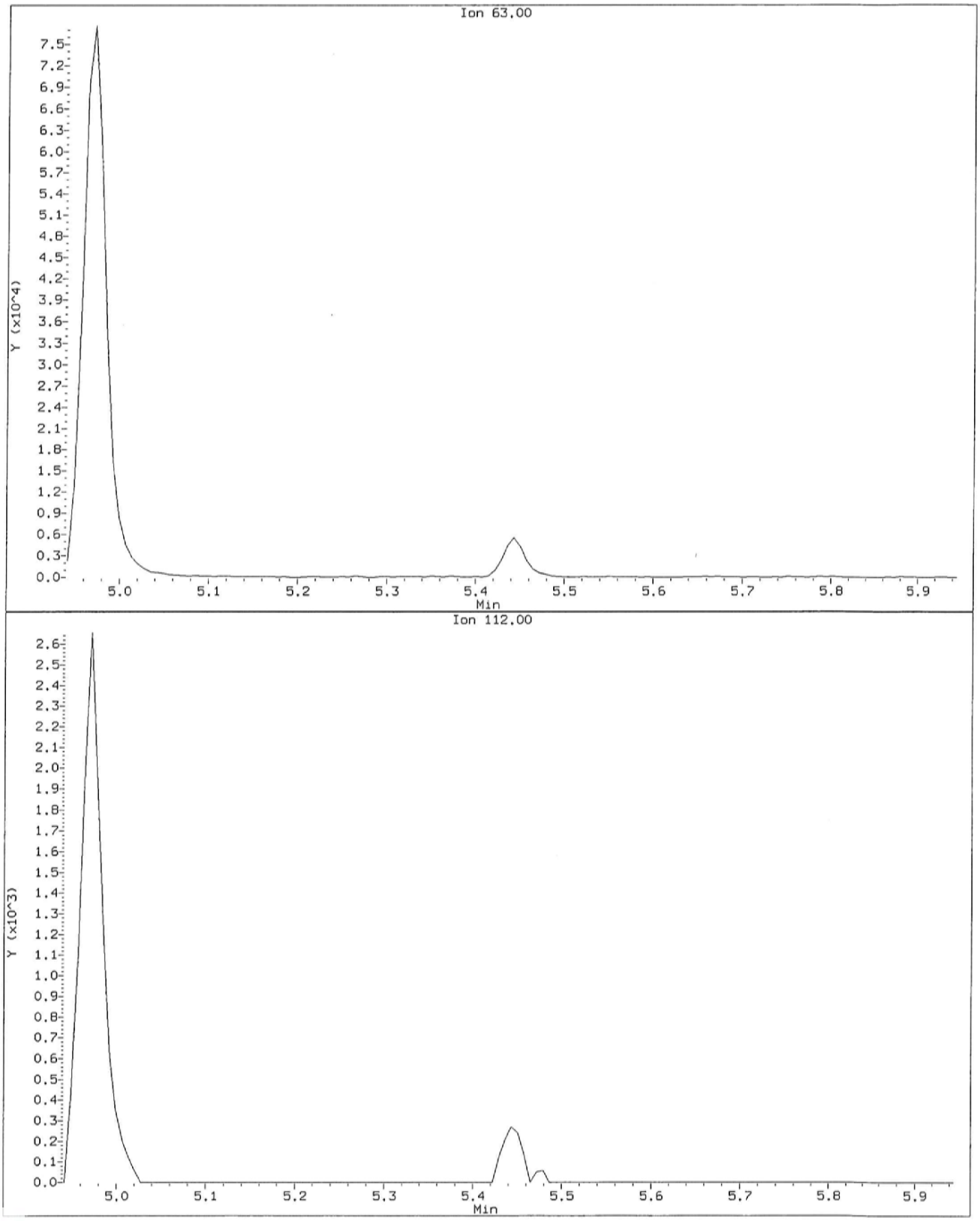
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



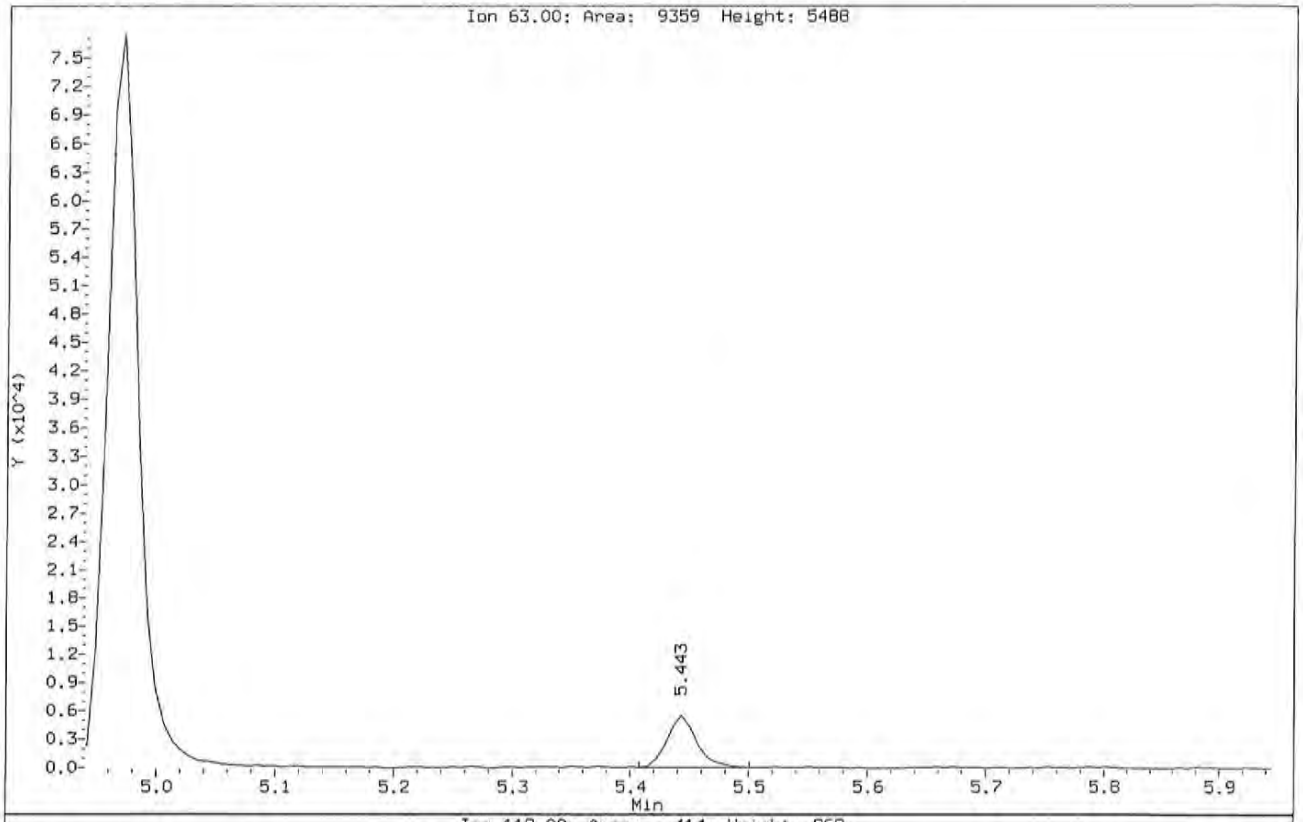
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

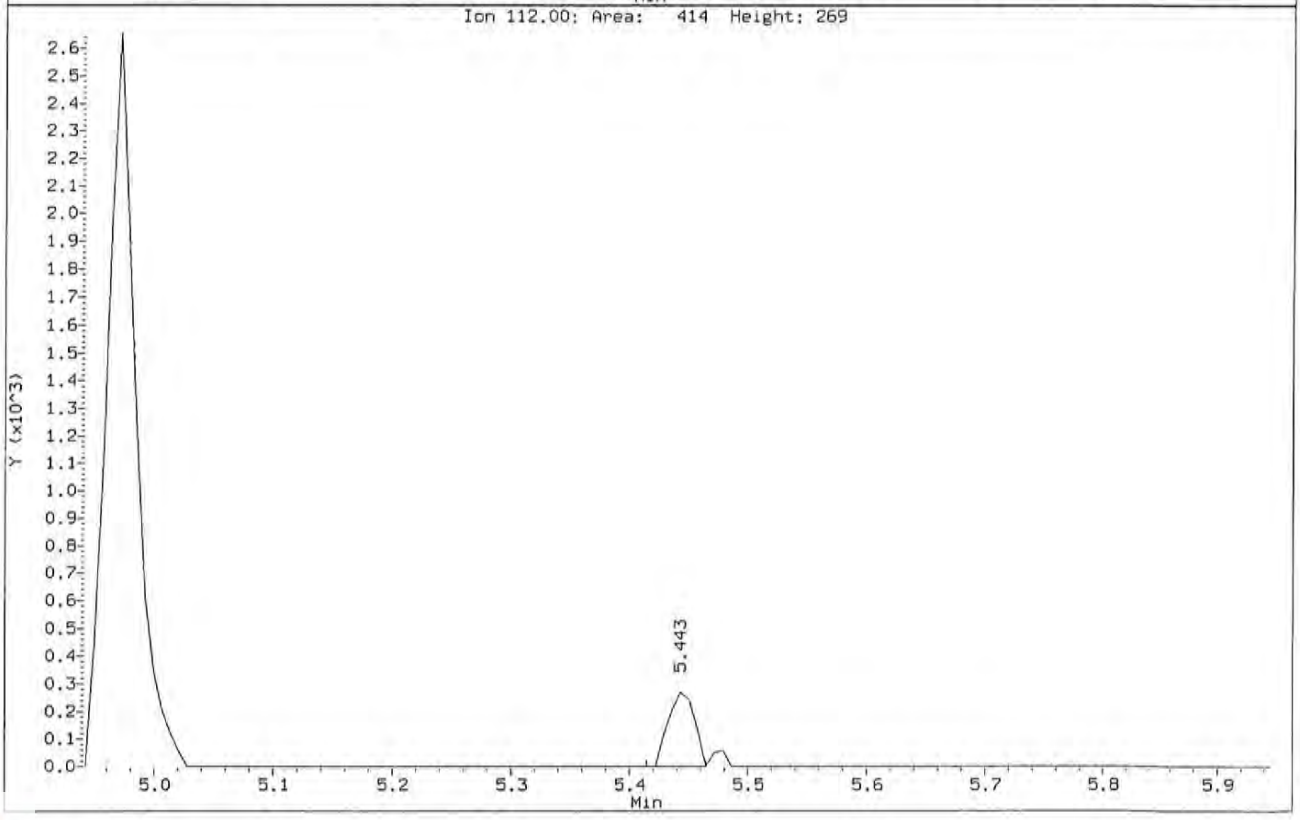
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

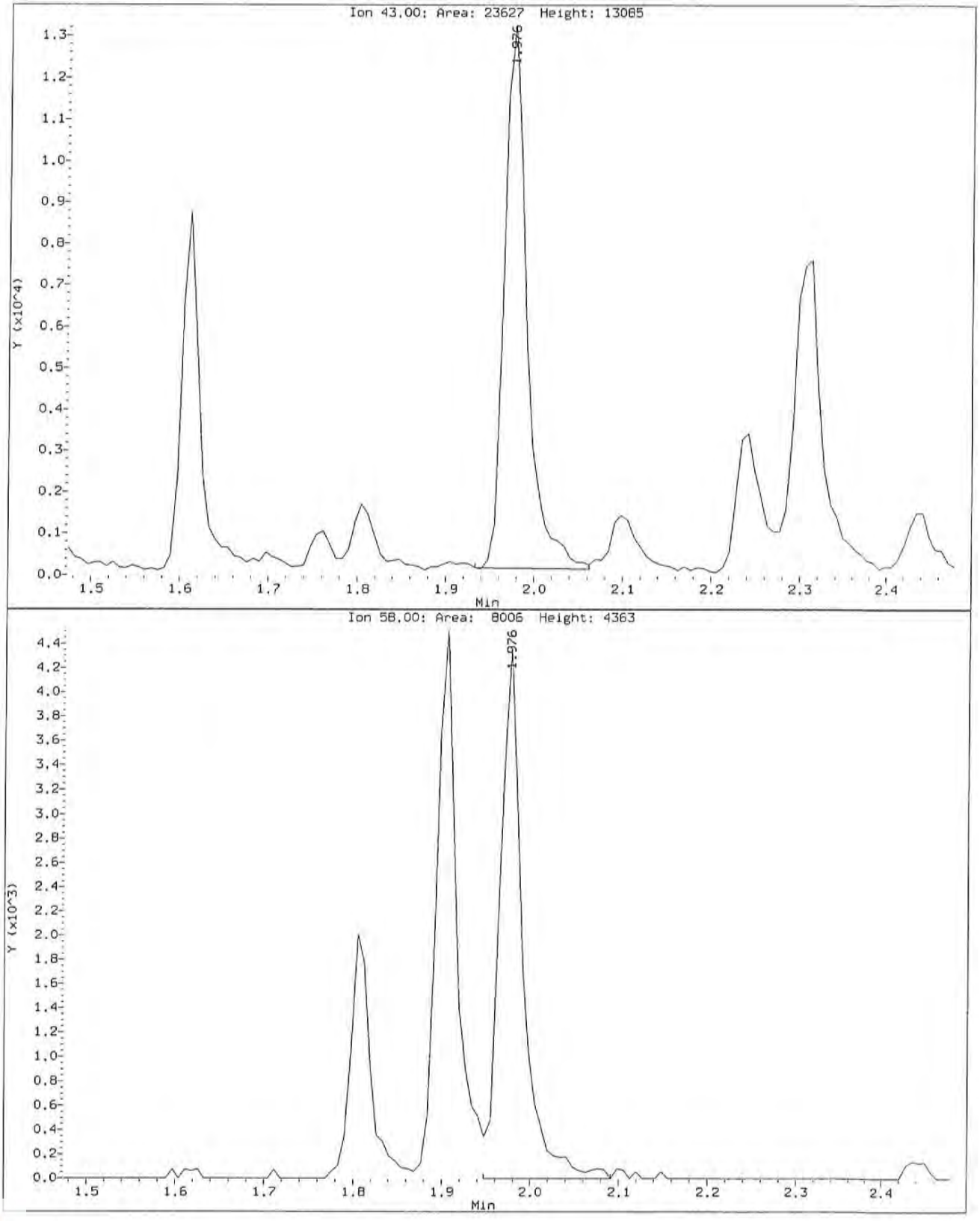
Compound: 1.2-Dichloropropane
CAS Number: 78-87-5



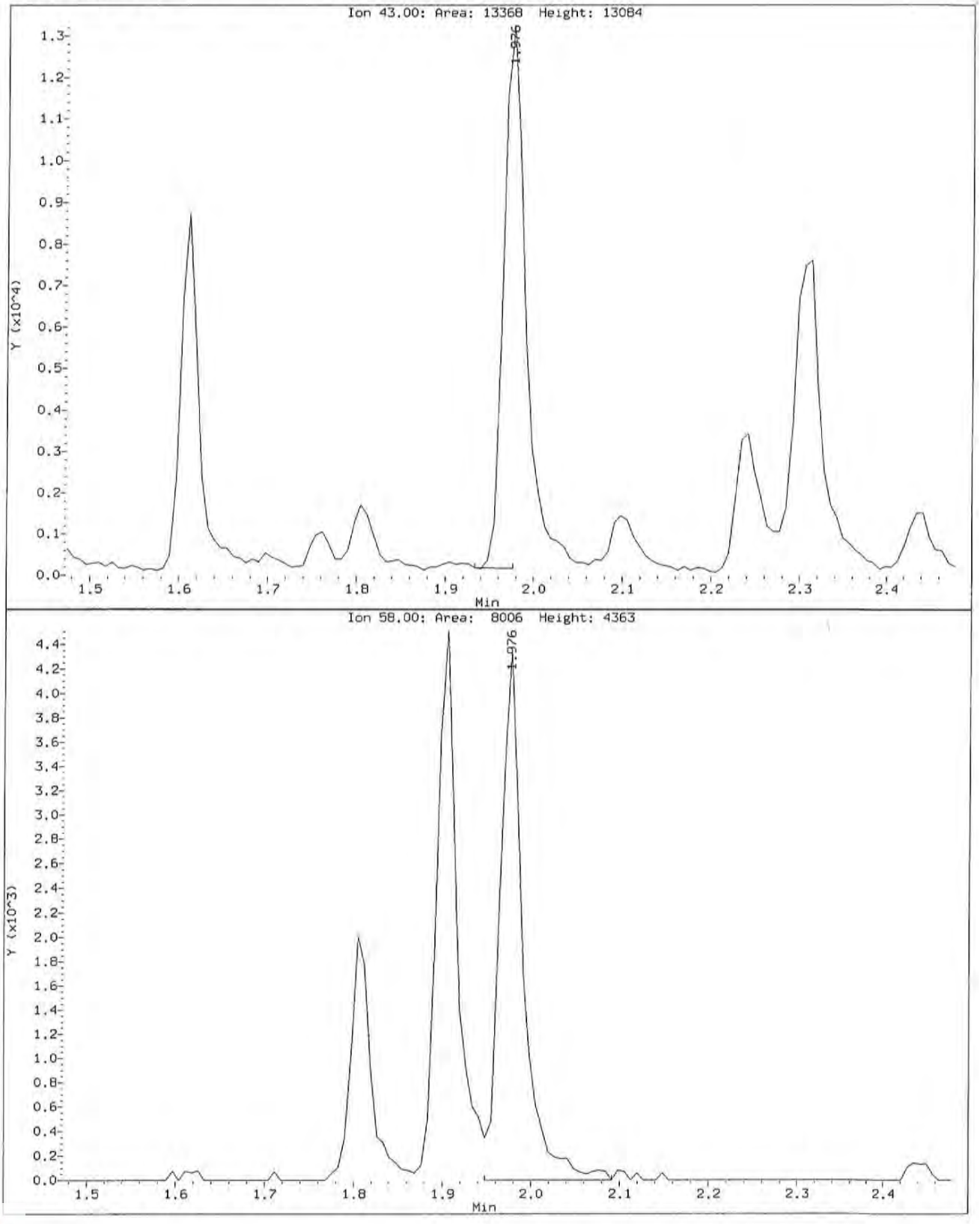
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Acetone
CAS Number: 67-64-1



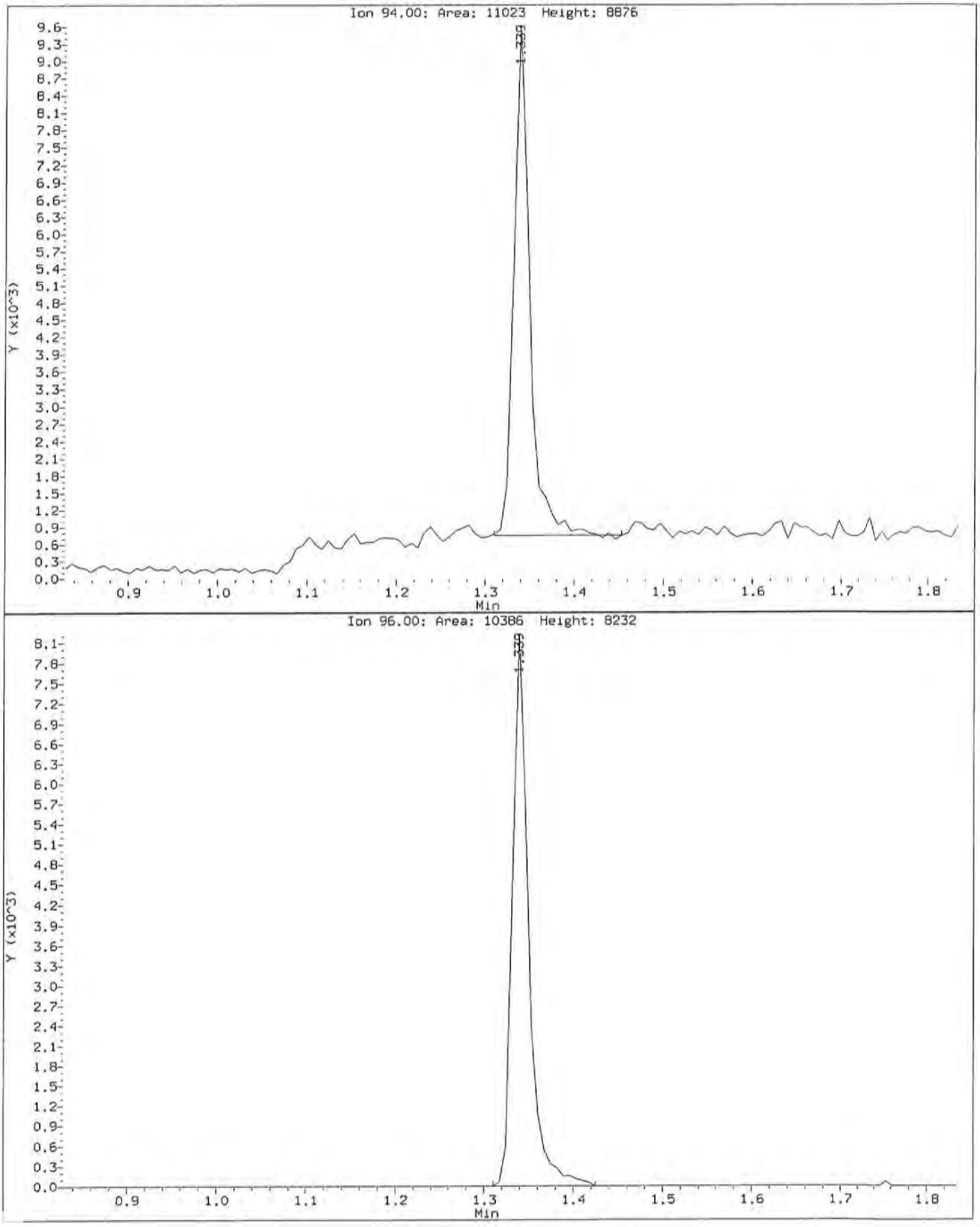
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Acetone
CAS Number: 67-64-1



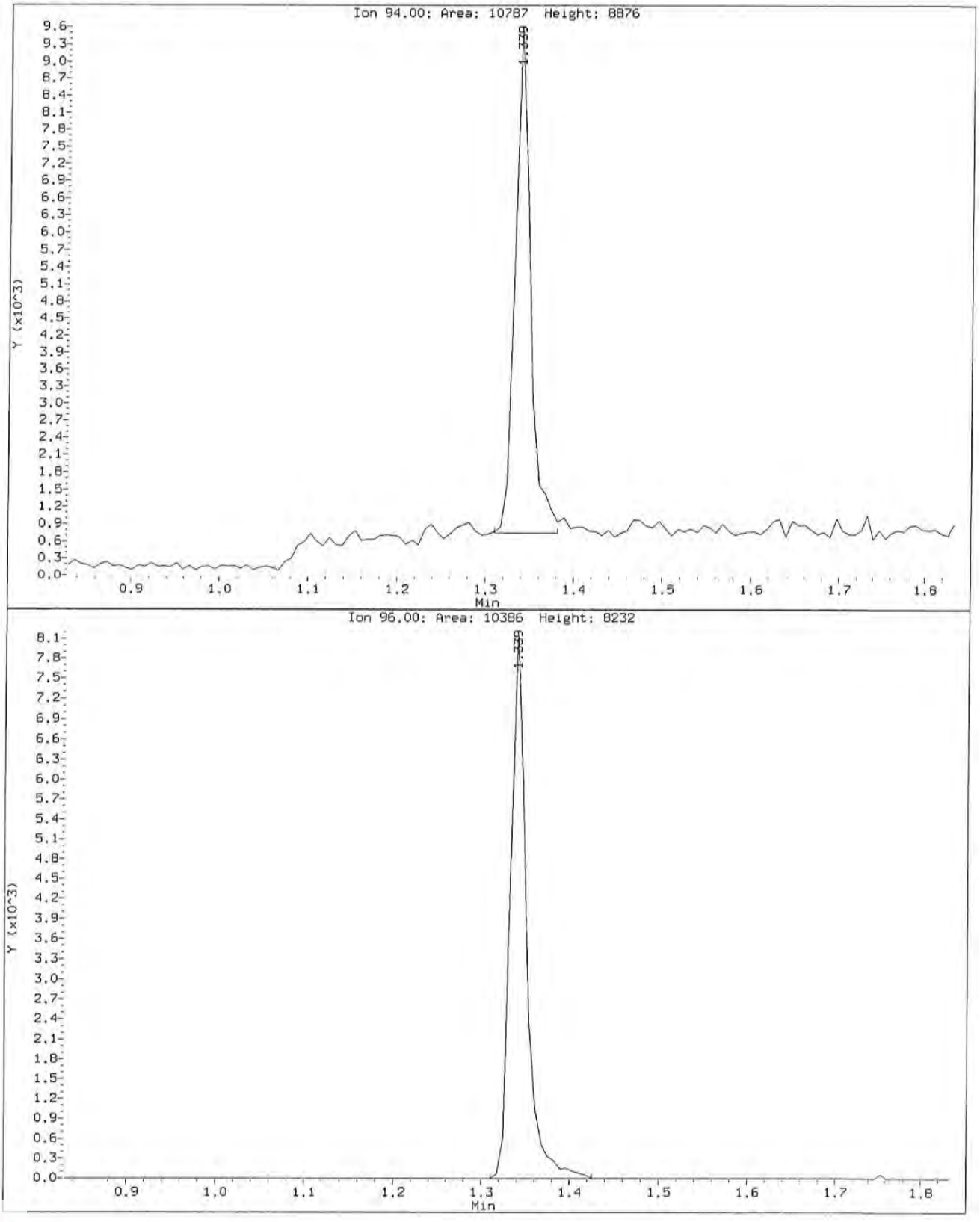
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Bromomethane
CAS Number: 74-83-9



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080605.D
Injection Date: 06-AUG-2019 12:34
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Bromomethane
CAS Number: 74-83-9



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080606.D Page 1
Report Date: 27-Aug-2019 17:57

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080606.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 06-AUG-2019 12:58
Operator : DG Inst ID: voa6.i
Smp Info : VSTD005;VSTD005;1;5;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 12:58 Cal File: X080606.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

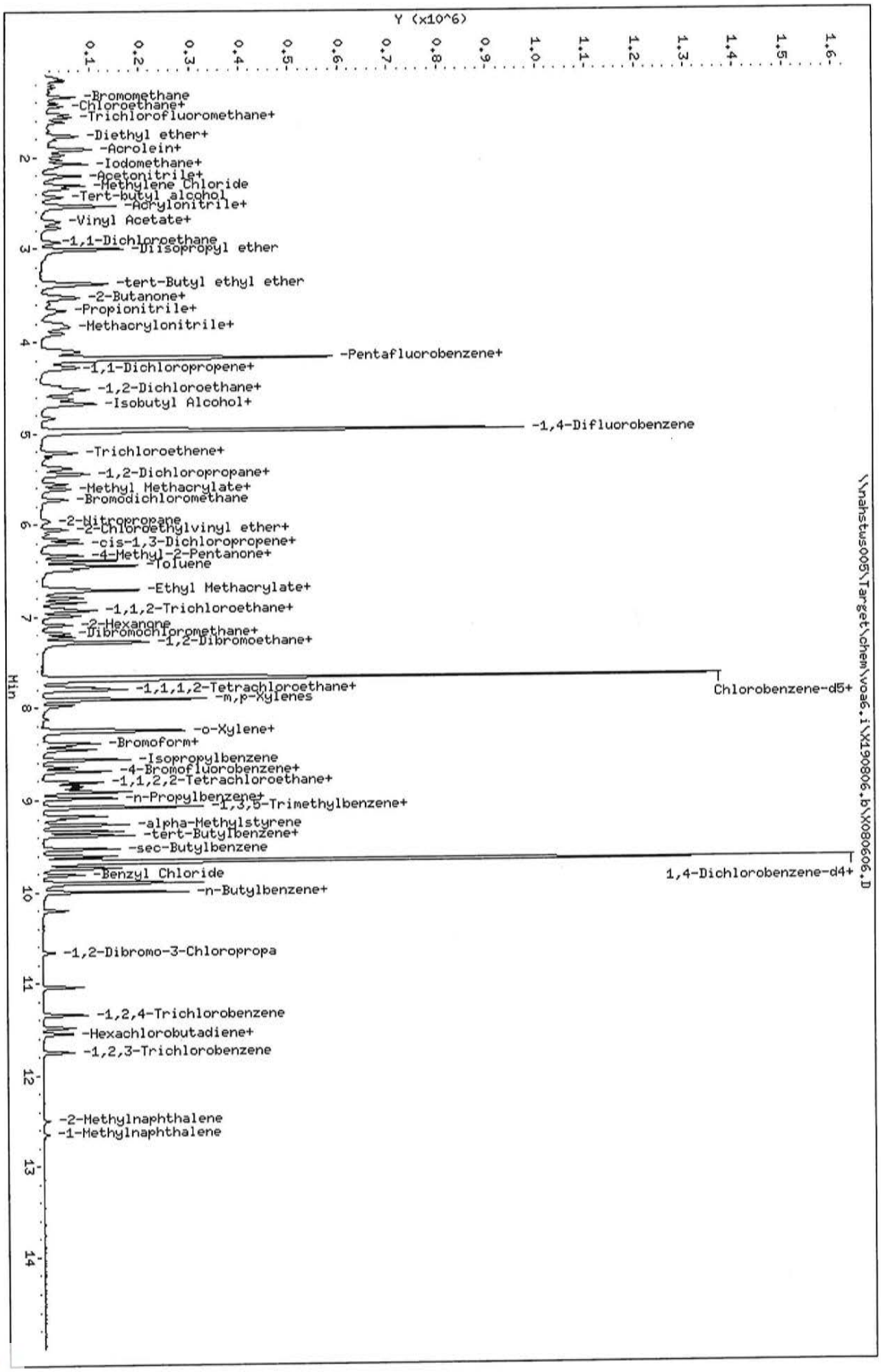
| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.189 | 4.182 | (1.000) | 509597 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 760098 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.670 | 7.678 | (1.000) | 682789 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 364504 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.068) | 31797 | 5.00000 | 5.00 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 36874 | 5.00000 | 4.86(a) |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.104 | (0.979) | 26693 | 5.00000 | 4.87(a) |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.389 | (0.833) | 94757 | 5.00000 | 5.17 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 24073 | 5.00000 | 4.75(a) |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.976) | 34466 | 5.00000 | 4.54(a) |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 31907 | 5.00000 | 5.39 |
| 138 Freon TF | 101 | 1.919 | 1.912 | (0.458) | 16200 | 5.00000 | 5.41 |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 19529 | 5.00000 | 4.85(a) |
| 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.699) | 41042 | 5.00000 | 4.57(a) |
| 11 1,1-Dichloroethene | 96 | 1.919 | 1.912 | (0.458) | 16816 | 5.00000 | 4.28(a) |
| 32 1,1-Dichloropropene | 75 | 4.290 | 4.283 | (0.863) | 28919 | 5.00000 | 4.31(a) |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.747 | (1.215) | 18555 | 5.00000 | 6.74 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 28632 | 5.00000 | 5.57(M) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 26308 | 5.00000 | 6.25 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.382 | 9.383 | (0.970) | 84480 | 5.00000 | 4.56(a) |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.658 | (1.103) | 4986 | 5.00000 | 5.99 |
| 57 1,2-Dibromoethane | 107 | 7.269 | 7.270 | (0.948) | 26130 | 5.00000 | 4.95(a) |
| 88 1,2-Dichlorobenzene | 146 | 9.998 | 9.999 | (1.034) | 52130 | 5.00000 | 5.20 |

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080606.D Page 2
Report Date: 27-Aug-2019 17:57

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 35815 | 5.00000 | 4.98(a) |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 23844 | 5.00000 | 4.89(a) |
| 75 1,3,5-Trimethylbenzene | 105 | 9.074 | 9.075 | (0.939) | 80541 | 5.00000 | 4.52(a) |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 52187 | 5.00000 | 4.65(a) |
| 54 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.911) | 40925 | 5.00000 | 4.94(a) |
| 84 1,4-Dichlorobenzene | 146 | 9.690 | 9.691 | (1.002) | 53180 | 5.00000 | 5.37 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.839) | 33574 | 5.00000 | 4.52(a) |
| 24 2-Butanone | 43 | 3.588 | 3.581 | (0.856) | 23706 | 10.0000 | 10.09 |
| 76 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 70733 | 5.00000 | 4.71(a) |
| 52 2-Hexanone | 43 | 7.090 | 7.091 | (0.924) | 35565 | 10.0000 | 10.74 |
| 77 4-Chlorotoluene | 91 | 9.074 | 9.075 | (0.939) | 80004 | 5.00000 | 4.56(a) |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 80290 | 5.00000 | 4.35(a) |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 50249 | 10.0000 | 9.57 |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.472) | 34711 | 10.0000 | 15.14 |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 91133 | 5.00000 | 4.70(a) |
| 74 Bromobenzene | 156 | 8.809 | 8.810 | (0.911) | 31778 | 5.00000 | 4.70(a) |
| 29 Bromochloromethane | 128 | 3.802 | 3.803 | (0.908) | 14452 | 5.00000 | 4.68(a) |
| 39 Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 31967 | 5.00000 | 4.70(a) |
| 66 Bromoform | 173 | 8.415 | 8.416 | (1.097) | 19261 | 5.00000 | 4.62(a) |
| 6 Bromomethane | 94 | 1.338 | 1.331 | (0.320) | 23188 | 5.00000 | 5.28 |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.494) | 107472 | 10.0000 | 8.55 |
| 34 Carbon Tetrachloride | 117 | 4.275 | 4.268 | (0.860) | 28559 | 5.00000 | 4.13(a) |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 65770 | 5.00000 | 4.81(a) |
| 7 Chloroethane | 64 | 1.403 | 1.396 | (0.335) | 13714 | 5.00000 | 4.81(a) |
| 28 Chloroform | 83 | 3.917 | 3.910 | (0.935) | 43426 | 5.00000 | 4.75(a) |
| 3 Chloromethane | 50 | 1.073 | 1.074 | (0.256) | 20683 | 5.00000 | 4.50(a) |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.843) | 26801 | 5.00000 | 4.74(a) |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 39203 | 5.00000 | 4.77(a) |
| 55 Dibromochloromethane | 129 | 7.183 | 7.184 | (0.937) | 25904 | 5.00000 | 4.72(a) |
| 44 Dibromomethane | 93 | 5.557 | 5.558 | (1.118) | 16870 | 5.00000 | 4.78(a) |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.232) | 19920 | 5.00000 | 5.47 |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 32629 | 5.00000 | 4.59(a) |
| 91 Hexachlorobutadiene | 225 | 11.488 | 11.489 | (1.188) | 11573 | 5.00000 | 5.71 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 95808 | 5.00000 | 4.62(a) |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 80098 | 10.0000 | 9.38 |
| 17 Methylene Chloride | 84 | 2.305 | 2.306 | (0.550) | 25173 | 5.00000 | 4.97(a) |
| 87 n-Butylbenzene | 91 | 9.998 | 9.999 | (1.034) | 66578 | 5.00000 | 4.32(a) |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 109098 | 5.00000 | 4.49(a) |
| 92 Naphthalene | 128 | 11.553 | 11.546 | (1.195) | 48392 | 5.00000 | 4.65(a) |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 40543 | 5.00000 | 4.82(a) |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 88546 | 5.00000 | 4.32(a) |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.078) | 70746 | 5.00000 | 4.86(a) |
| 78 tert-Butylbenzene | 119 | 9.339 | 9.347 | (0.966) | 67057 | 5.00000 | 4.49(a) |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 19814 | 5.00000 | 4.41(a) |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 98596 | 5.00000 | 4.83(a) |
| 20 trans-1,2-Dichloroethene | 96 | 2.535 | 2.528 | (0.605) | 21774 | 5.00000 | 4.58(a) |
| 51 trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 35179 | 5.00000 | 4.66(a) |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 25083 | 5.00000 | 4.57(a) |
| 8 Trichlorofluoromethane | 101 | 1.560 | 1.553 | (0.373) | 30228 | 5.00000 | 4.06(a) |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 20464 | 5.00000 | 4.19(a) |

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

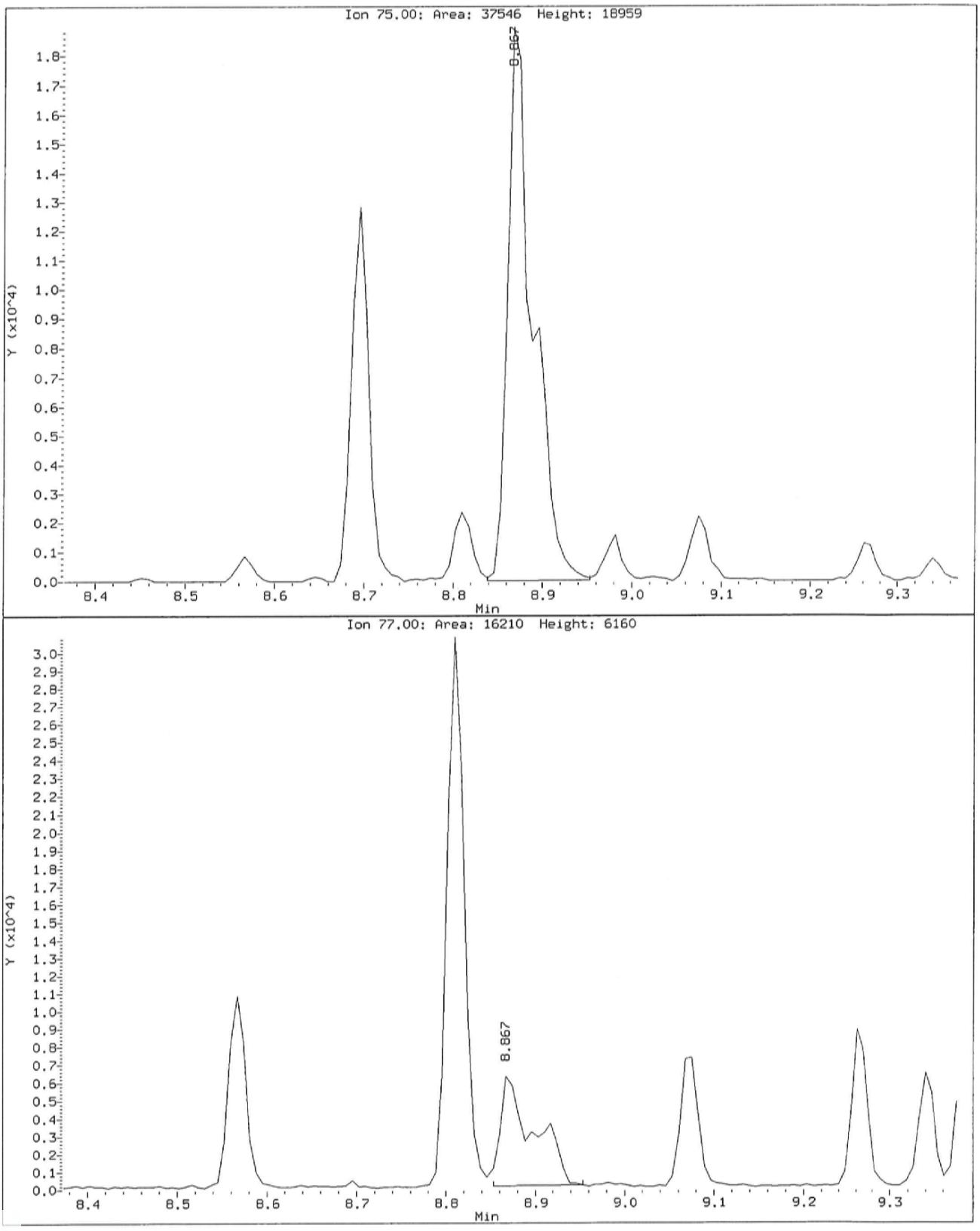



Data File: \\nahstus005\Target\chem\voa6.i\VX190806.b\V080606.D
Date : 06-AUG-2019 12:58
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

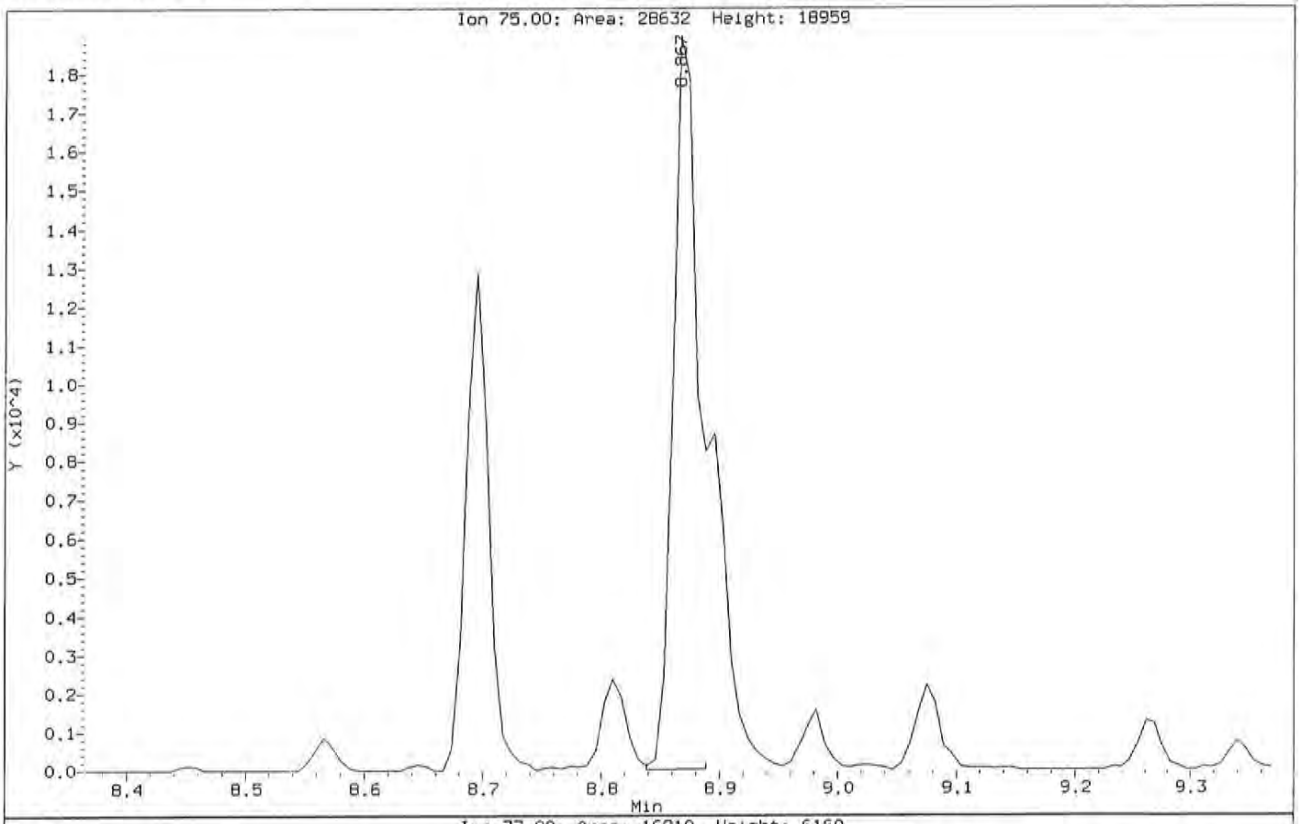
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080606.D
Injection Date: 06-AUG-2019 12:58
Instrument: voa6.i
Client Sample ID: VSTD005

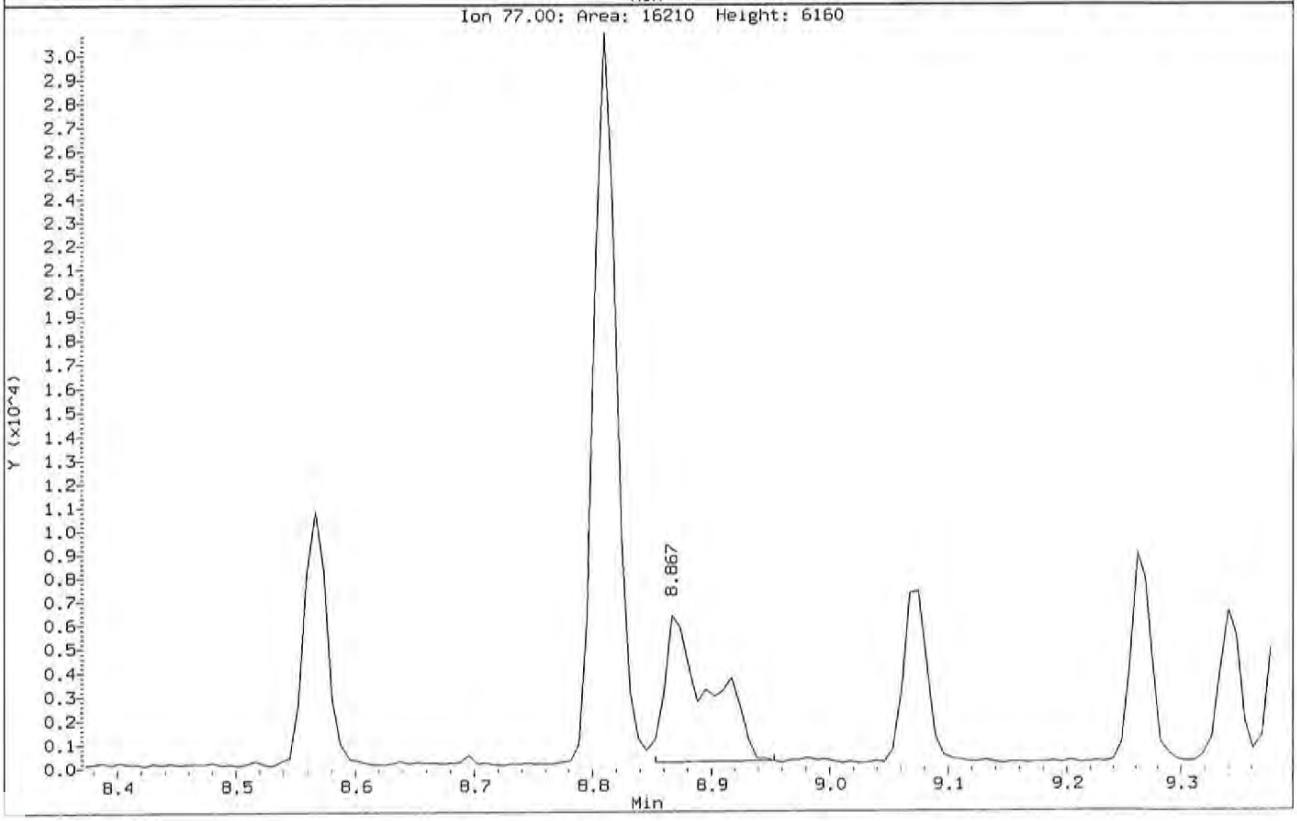
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080606.D
Injection Date: 06-AUG-2019 12:58
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080607.D Page 1
Report Date: 27-Aug-2019 17:57

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080607.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 06-AUG-2019 13:22
Operator : DG Inst ID: voa6.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 13:22 Cal File: X080607.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

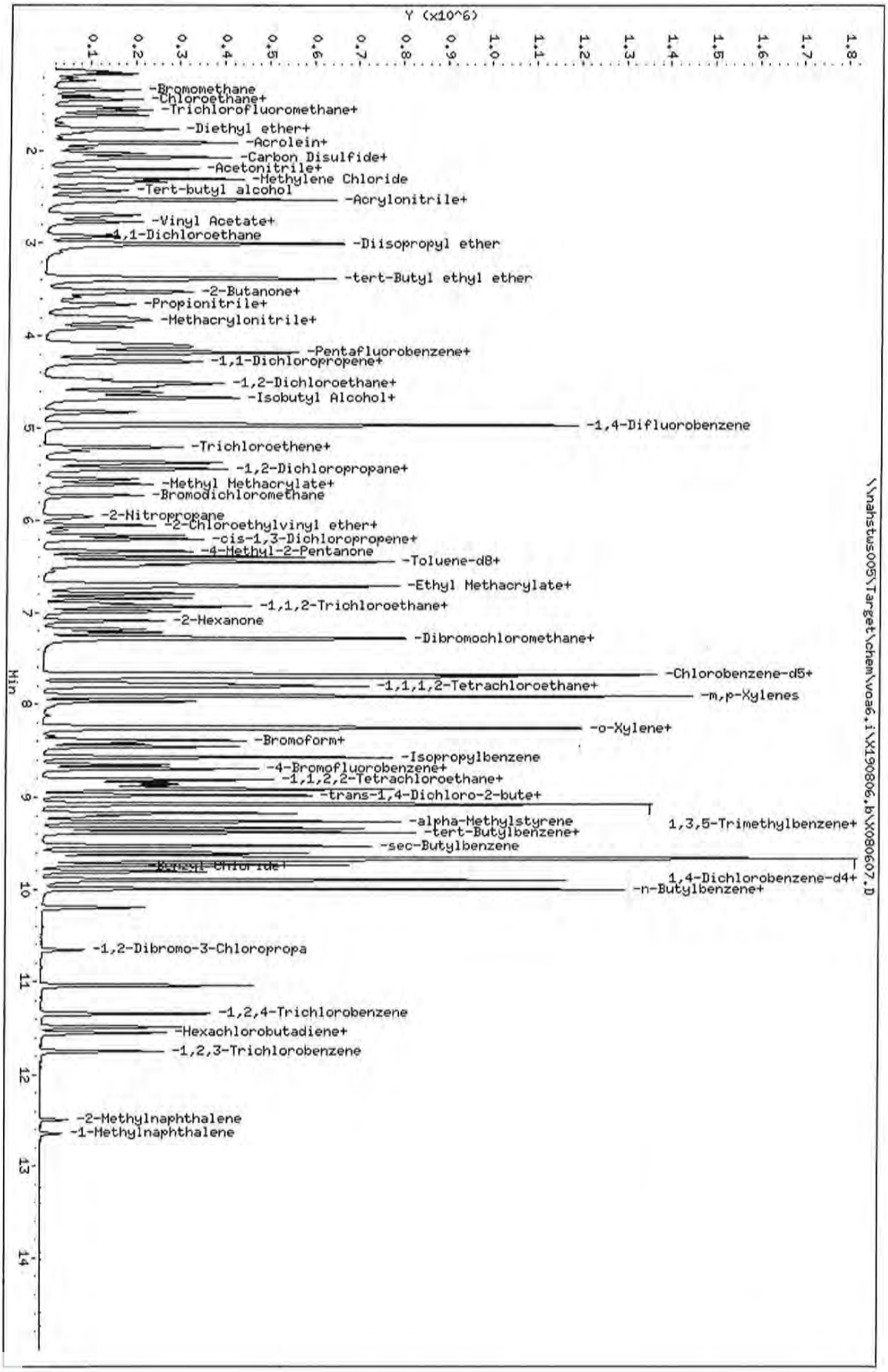
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 483790 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 731943 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 666969 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 357535 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 110423 | 20.0000 | 19.85 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 127818 | 20.0000 | 19.74 |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.104 | (0.981) | 94840 | 20.0000 | 19.98 |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.389 | (0.833) | 337165 | 20.0000 | 18.83 |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 98363 | 20.0000 | 19.87 |
| | 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 146964 | 20.0000 | 20.43 |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 120938 | 20.0000 | 19.82 |
| | 138 Freon TF | 101 | 1.919 | 1.912 | (0.459) | 79363 | 20.0000 | 21.85 |
| | 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 76871 | 20.0000 | 19.57 |
| | 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.700) | 168432 | 20.0000 | 19.77 |
| | 11 1,1-Dichloroethene | 96 | 1.919 | 1.912 | (0.459) | 74093 | 20.0000 | 19.86 |
| | 32 1,1-Dichloropropene | 75 | 4.283 | 4.283 | (0.862) | 125160 | 20.0000 | 19.39 |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.747 | (1.215) | 72953 | 20.0000 | 19.77 |
| | 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 99015 | 20.0000 | 19.65(M) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 111065 | 20.0000 | 20.00 |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 367202 | 20.0000 | 20.24 |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.658 | (1.103) | 19142 | 20.0000 | 19.12 |
| | 57 1,2-Dibromoethane | 107 | 7.262 | 7.270 | (0.947) | 102086 | 20.0000 | 19.80 |
| | 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 208489 | 20.0000 | 20.99 |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 135041 | 20.0000 | 19.51 |
| 42 | 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 95062 | 20.0000 | 20.24 |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.067 | 9.075 | (0.938) | 353851 | 20.0000 | 20.28 |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 216140 | 20.0000 | 19.64 |
| 54 | 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.911) | 157052 | 20.0000 | 19.42 |
| 84 | 1,4-Dichlorobenzene | 146 | 9.683 | 9.691 | (1.001) | 218428 | 20.0000 | 20.78 |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 142049 | 20.0000 | 20.17 |
| 24 | 2-Butanone | 43 | 3.581 | 3.581 | (0.856) | 91361 | 40.0000 | 40.99 |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 291090 | 20.0000 | 19.78 |
| 52 | 2-Hexanone | 43 | 7.090 | 7.091 | (0.924) | 140453 | 40.0000 | 40.17 |
| 77 | 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 337182 | 20.0000 | 19.62 |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 370064 | 20.0000 | 20.44 |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 192655 | 40.0000 | 37.57 |
| 10 | Acetone | 43 | 1.976 | 1.976 | (0.473) | 83748 | 40.0000 | 45.22 |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 371854 | 20.0000 | 19.91 |
| 74 | Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 128963 | 20.0000 | 19.46 |
| 29 | Bromochloromethane | 128 | 3.803 | 3.803 | (0.909) | 58381 | 20.0000 | 19.93 |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 130054 | 20.0000 | 19.88 |
| 66 | Bromoform | 173 | 8.416 | 8.416 | (1.097) | 79714 | 20.0000 | 19.57 |
| 6 | Bromomethane | 94 | 1.339 | 1.331 | (0.320) | 79494 | 20.0000 | 20.01 |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 478845 | 40.0000 | 40.13 |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 127590 | 20.0000 | 19.19 |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 263843 | 20.0000 | 19.75 |
| 7 | Chloroethane | 64 | 1.403 | 1.396 | (0.336) | 57503 | 20.0000 | 21.28 |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.935) | 173670 | 20.0000 | 20.05 |
| 3 | Chloromethane | 50 | 1.073 | 1.074 | (0.257) | 82077 | 20.0000 | 18.81 |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 107949 | 20.0000 | 20.12 |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 156210 | 20.0000 | 19.74 |
| 55 | Dibromochloromethane | 129 | 7.184 | 7.184 | (0.937) | 104121 | 20.0000 | 19.43 |
| 44 | Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 67410 | 20.0000 | 19.86 |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.233) | 98359 | 20.0000 | 20.78 |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 139816 | 20.0000 | 20.17 |
| 91 | Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 57379 | 20.0000 | 21.26 |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 416157 | 20.0000 | 20.54 |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 341113 | 40.0000 | 40.92 |
| 17 | Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 98183 | 20.0000 | 20.79 |
| 87 | n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 315198 | 20.0000 | 20.87 |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 484350 | 20.0000 | 20.32 |
| 92 | Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 188565 | 20.0000 | 18.51 |
| 63 | o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 166310 | 20.0000 | 20.27 |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 413639 | 20.0000 | 20.57 |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 291410 | 20.0000 | 20.51 |
| 78 | tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 297388 | 20.0000 | 20.30 |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 87886 | 20.0000 | 20.05 |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 396620 | 20.0000 | 19.92 |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.528 | (0.606) | 90836 | 20.0000 | 20.12 |
| 51 | trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 143365 | 20.0000 | 19.74 |
| 38 | Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 105709 | 20.0000 | 20.02 |
| 8 | Trichlorofluoromethane | 101 | 1.561 | 1.553 | (0.373) | 143970 | 20.0000 | 20.38 |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 92068 | 20.0000 | 19.85 |

QC Flag Legend

M - Compound response manually integrated.

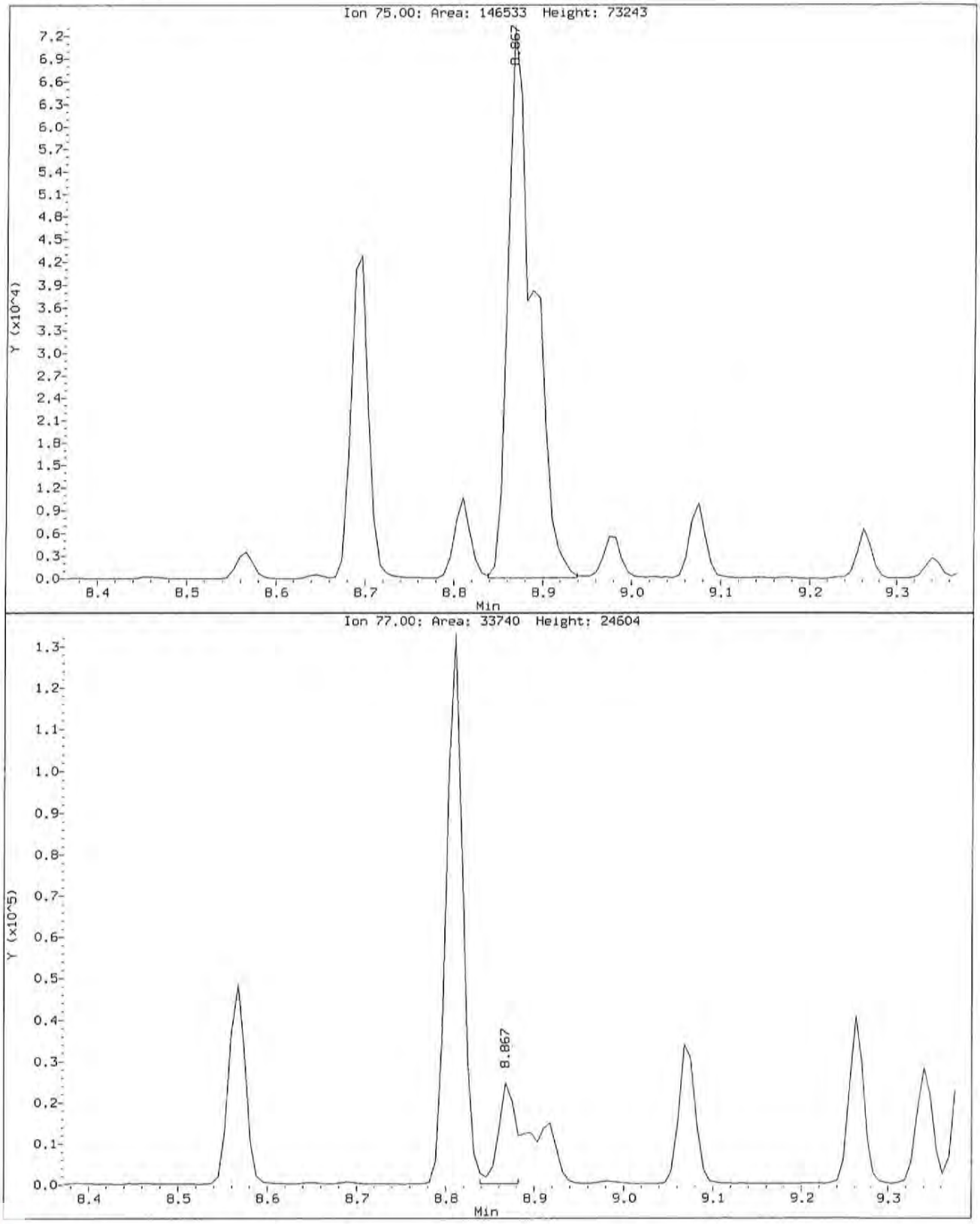



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080607.D
Date : 06-AUG-2019 13:22
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080607.D
Injection Date: 06-AUG-2019 13:22
Instrument: voa6.i
Client Sample ID: VSTD020

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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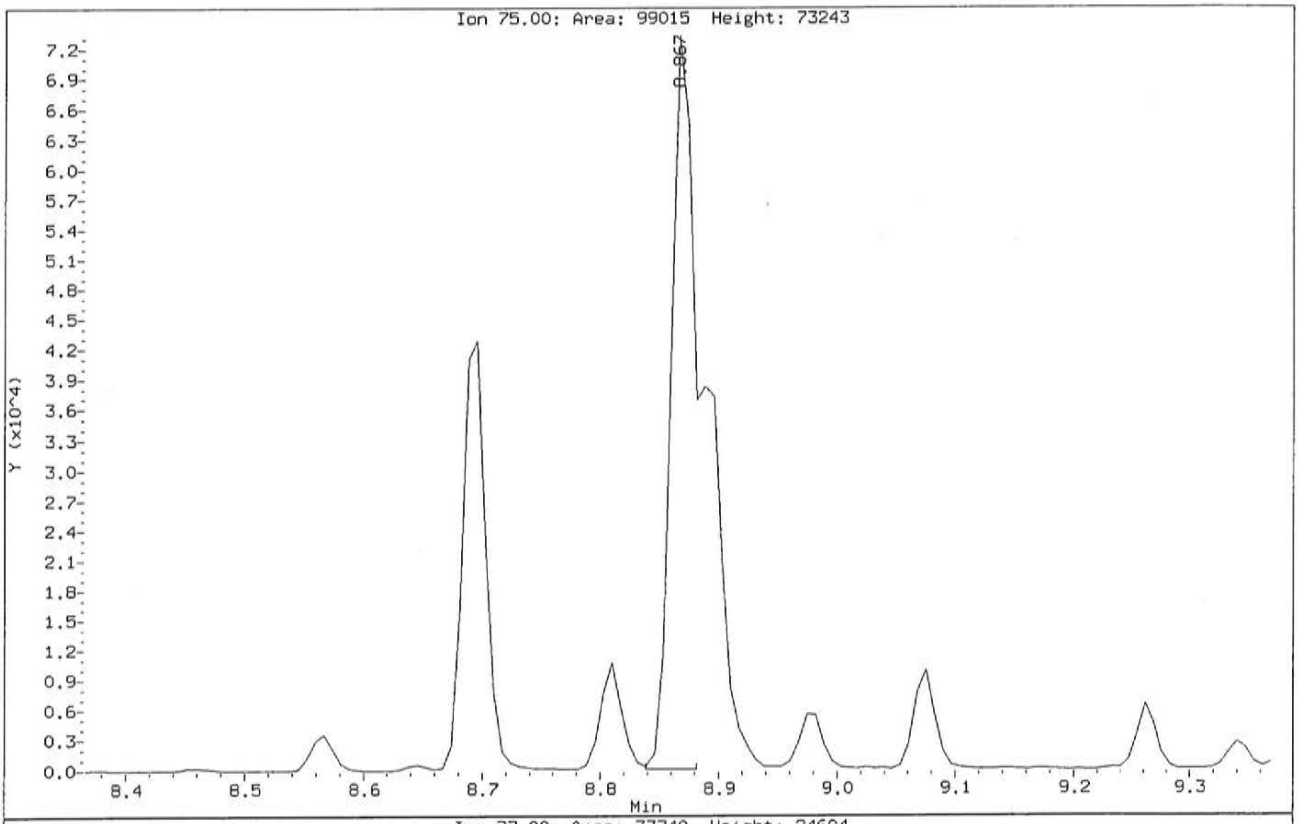
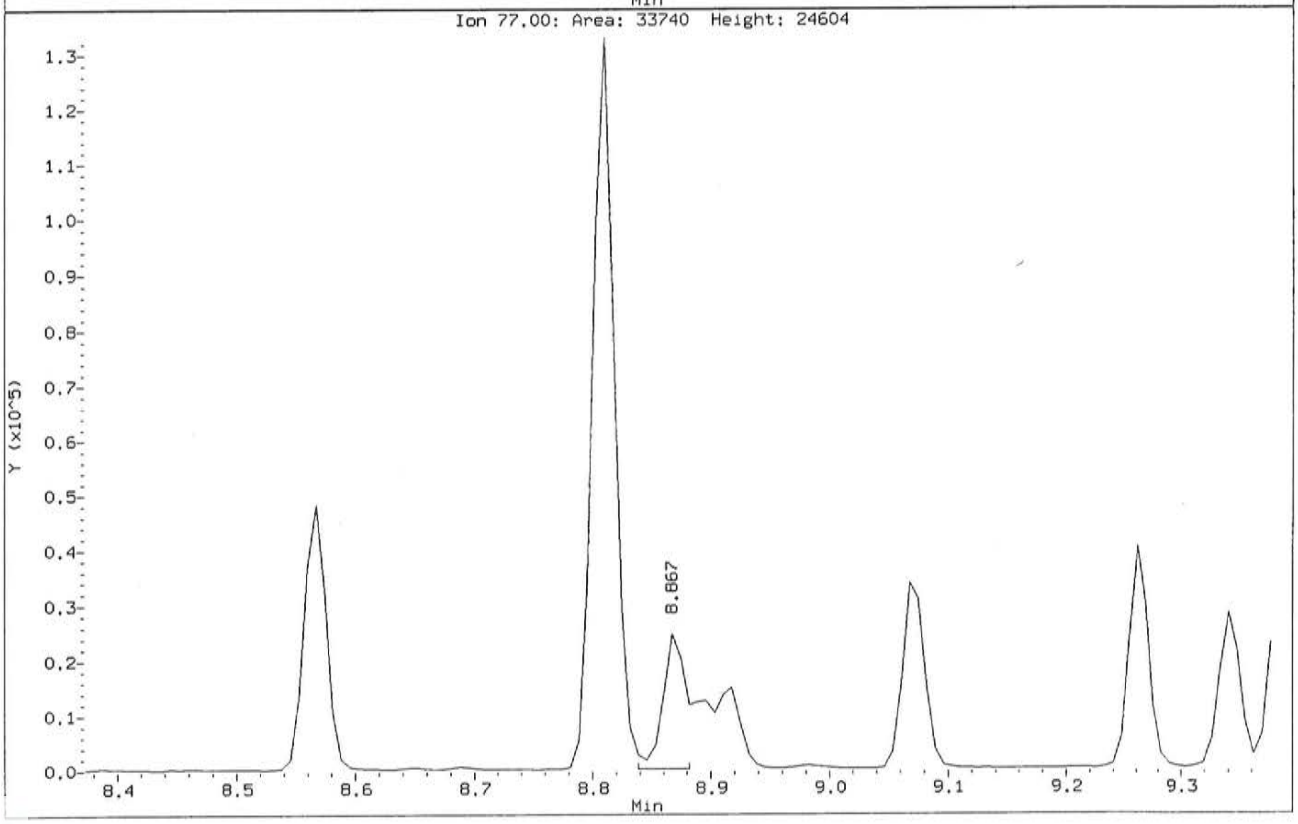
Injection Date: 06-AUG-2019 13:22
Instrument: voa6.i
Client Sample ID: VSTD020

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080608.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 06-AUG-2019 13:46
Operator : DG Inst ID: voa6.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

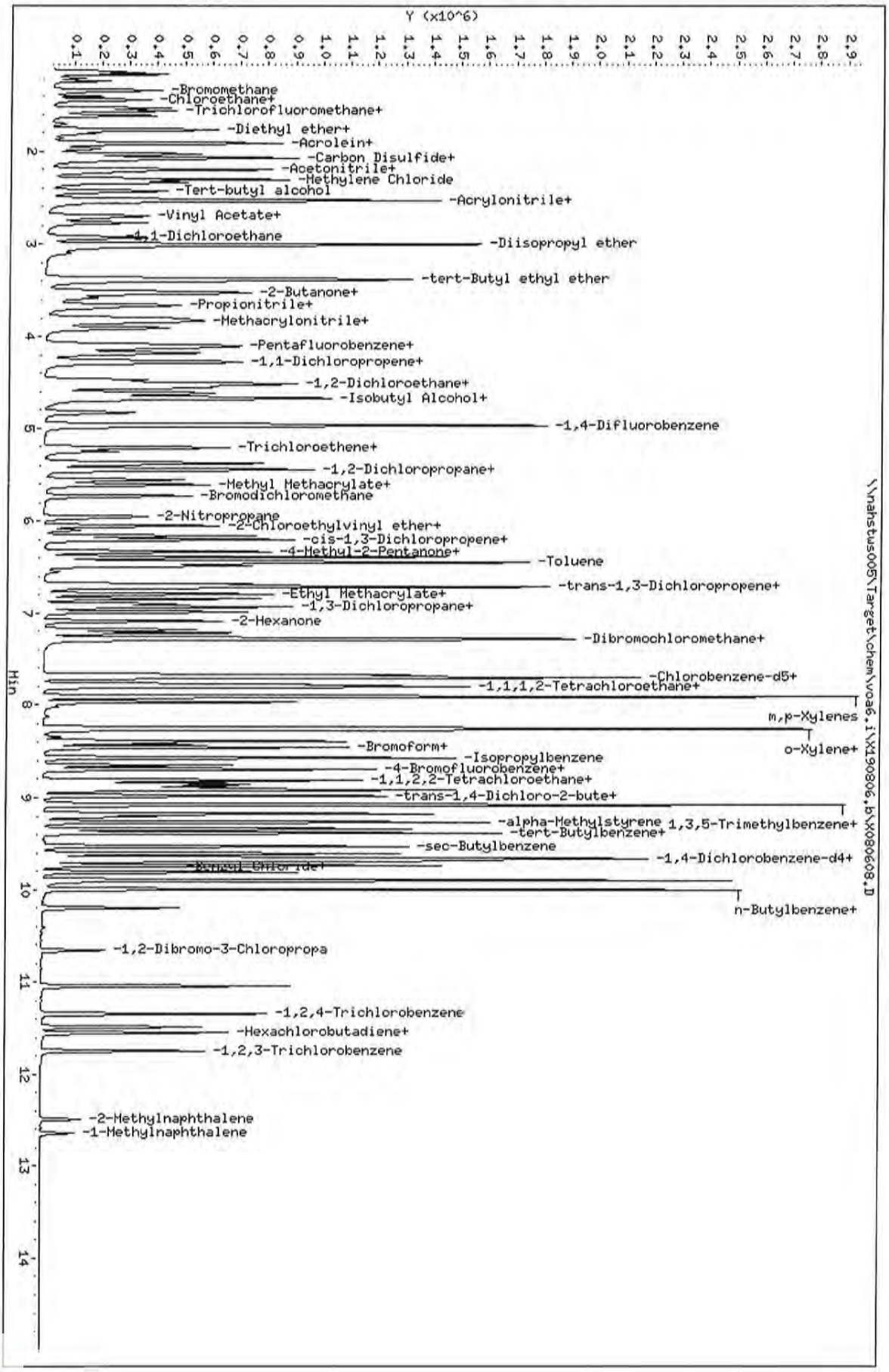
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 474376 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 708732 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 644960 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 341102 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 273642 | 50.0000 | 51.05 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 314351 | 50.0000 | 51.70 |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.104 | (0.981) | 236755 | 50.0000 | 51.84 |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.389 | (0.833) | 827031 | 50.0000 | 47.78 |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 225117 | 50.0000 | 47.04 |
| | 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 312274 | 50.0000 | 44.28 |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 287320 | 50.0000 | 48.83 |
| | 138 Freon TF | 101 | 1.911 | 1.912 | (0.457) | 146243 | 50.0000 | 39.59 |
| | 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 179774 | 50.0000 | 47.34 |
| | 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.700) | 386432 | 50.0000 | 46.26 |
| | 11 1,1-Dichloroethene | 96 | 1.911 | 1.912 | (0.457) | 158568 | 50.0000 | 43.36 |
| | 32 1,1-Dichloropropene | 75 | 4.282 | 4.283 | (0.862) | 257751 | 50.0000 | 41.25 |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.747 | (1.215) | 156716 | 50.0000 | 41.49 |
| | 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 236991 | 50.0000 | 49.31(M) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.338 | 11.345 | (1.173) | 235388 | 50.0000 | 41.88 |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 726435 | 50.0000 | 41.98 |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.658 | (1.103) | 46273 | 50.0000 | 46.16 |
| | 57 1,2-Dibromoethane | 107 | 7.262 | 7.270 | (0.947) | 240188 | 50.0000 | 48.18 |
| | 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 441748 | 50.0000 | 46.54 |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 313147 | 50.0000 | 46.72 |
| 42 | 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 219978 | 50.0000 | 48.38 |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 689893 | 50.0000 | 41.45 |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 450878 | 50.0000 | 42.96 |
| 54 | 1,3-Dichloropropane | 76 | 6.983 | 6.990 | (0.910) | 367423 | 50.0000 | 46.98 |
| 84 | 1,4-Dichlorobenzene | 146 | 9.691 | 9.691 | (1.002) | 462233 | 50.0000 | 45.43 |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 307207 | 50.0000 | 44.50 |
| 24 | 2-Butanone | 43 | 3.580 | 3.581 | (0.856) | 201044 | 100.000 | 92.00 |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 592235 | 50.0000 | 42.19 |
| 52 | 2-Hexanone | 43 | 7.090 | 7.091 | (0.924) | 327757 | 100.000 | 95.43 |
| 77 | 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 705461 | 50.0000 | 43.03 |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 684969 | 50.0000 | 39.66 |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 464761 | 100.000 | 93.74 |
| 10 | Acetone | 43 | 1.976 | 1.976 | (0.473) | 165174 | 100.000 | 95.37 |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 843399 | 50.0000 | 46.65 |
| 74 | Bromobenzene | 156 | 8.809 | 8.810 | (0.911) | 284453 | 50.0000 | 45.00 |
| 29 | Bromochloromethane | 128 | 3.795 | 3.803 | (0.908) | 135224 | 50.0000 | 47.08 |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 307998 | 50.0000 | 48.62 |
| 66 | Bromoform | 173 | 8.416 | 8.416 | (1.097) | 192595 | 50.0000 | 48.91 |
| 6 | Bromomethane | 94 | 1.338 | 1.331 | (0.320) | 184765 | 50.0000 | 47.93 |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 1056252 | 100.000 | 90.29 |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 263538 | 50.0000 | 40.94 |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 591570 | 50.0000 | 45.80 |
| 7 | Chloroethane | 64 | 1.403 | 1.396 | (0.336) | 122604 | 50.0000 | 46.28 |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.935) | 400605 | 50.0000 | 47.16 |
| 3 | Chloromethane | 50 | 1.073 | 1.074 | (0.257) | 182699 | 50.0000 | 42.71 |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 245929 | 50.0000 | 46.76 |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 368890 | 50.0000 | 48.14 |
| 55 | Dibromochloromethane | 129 | 7.183 | 7.184 | (0.937) | 250098 | 50.0000 | 48.27 |
| 44 | Dibromomethane | 93 | 5.557 | 5.558 | (1.118) | 157921 | 50.0000 | 48.07 |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.233) | 206989 | 50.0000 | 42.50 |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 287089 | 50.0000 | 42.84 |
| 91 | Hexachlorobutadiene | 225 | 11.488 | 11.489 | (1.188) | 102746 | 50.0000 | 38.00 |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 796933 | 50.0000 | 40.69 |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 700578 | 100.000 | 86.92 |
| 17 | Methylene Chloride | 84 | 2.305 | 2.306 | (0.551) | 223622 | 50.0000 | 48.45 |
| 87 | n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 570859 | 50.0000 | 39.63 |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 931235 | 50.0000 | 40.95 |
| 92 | Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 436578 | 50.0000 | 44.92 |
| 63 | o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 352997 | 50.0000 | 44.50 |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 742461 | 50.0000 | 38.71 |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 643546 | 50.0000 | 46.85 |
| 78 | tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 548017 | 50.0000 | 39.22 |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 173024 | 50.0000 | 40.82 |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 871081 | 50.0000 | 45.25 |
| 20 | trans-1,2-Dichloroethene | 96 | 2.528 | 2.528 | (0.604) | 203747 | 50.0000 | 46.03 |
| 51 | trans-1,3-Dichloropropene | 75 | 6.682 | 6.689 | (1.344) | 344706 | 50.0000 | 49.03 |
| 38 | Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 233280 | 50.0000 | 45.63 |
| 8 | Trichlorofluoromethane | 101 | 1.560 | 1.553 | (0.373) | 300131 | 50.0000 | 43.33 |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 204885 | 50.0000 | 45.06 |

QC Flag Legend

M - Compound response manually integrated.

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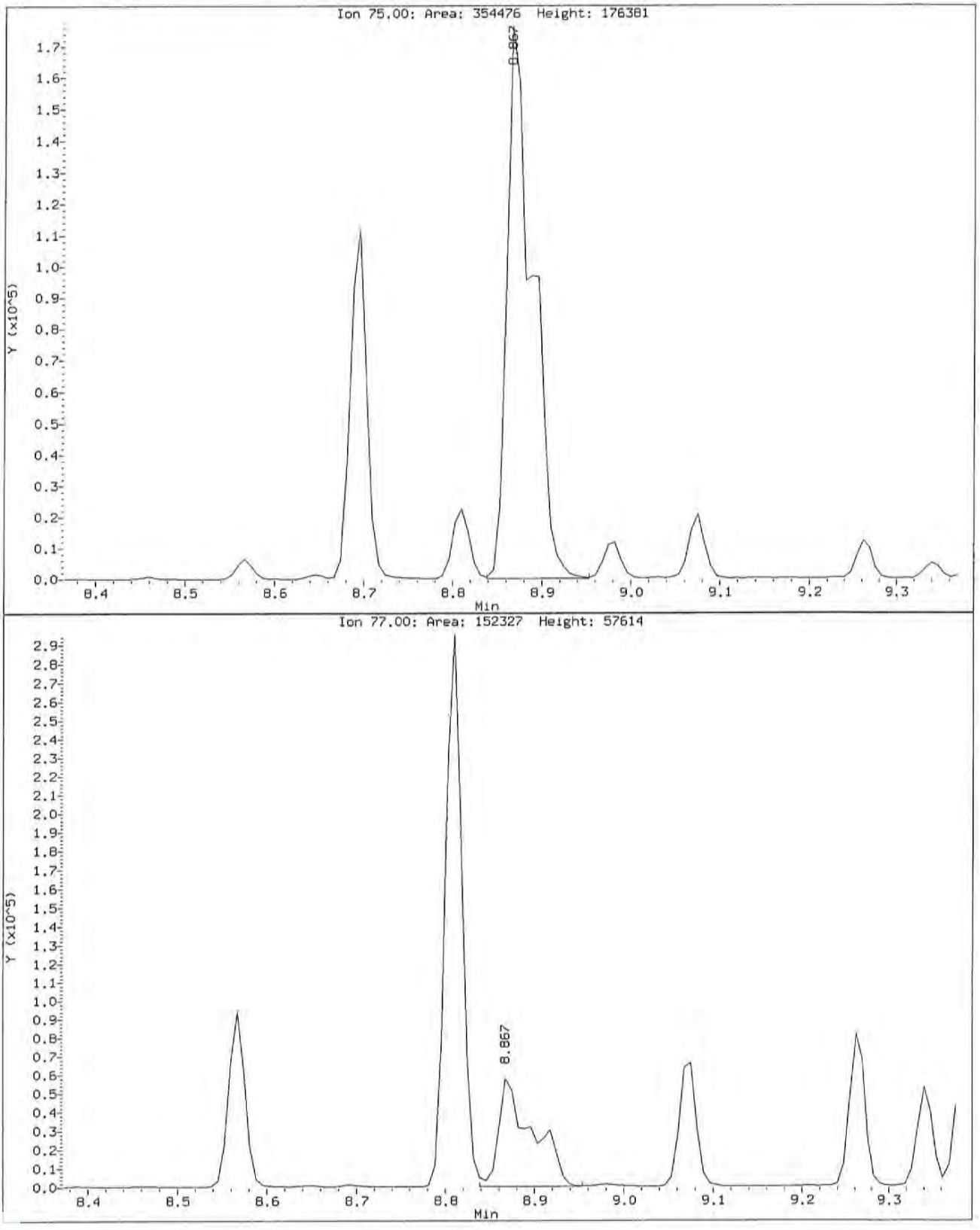
Date : 06-AUG-2019 13:46
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080608.D
Injection Date: 06-AUG-2019 13:46
Instrument: voa6.i
Client Sample ID: VSTD050

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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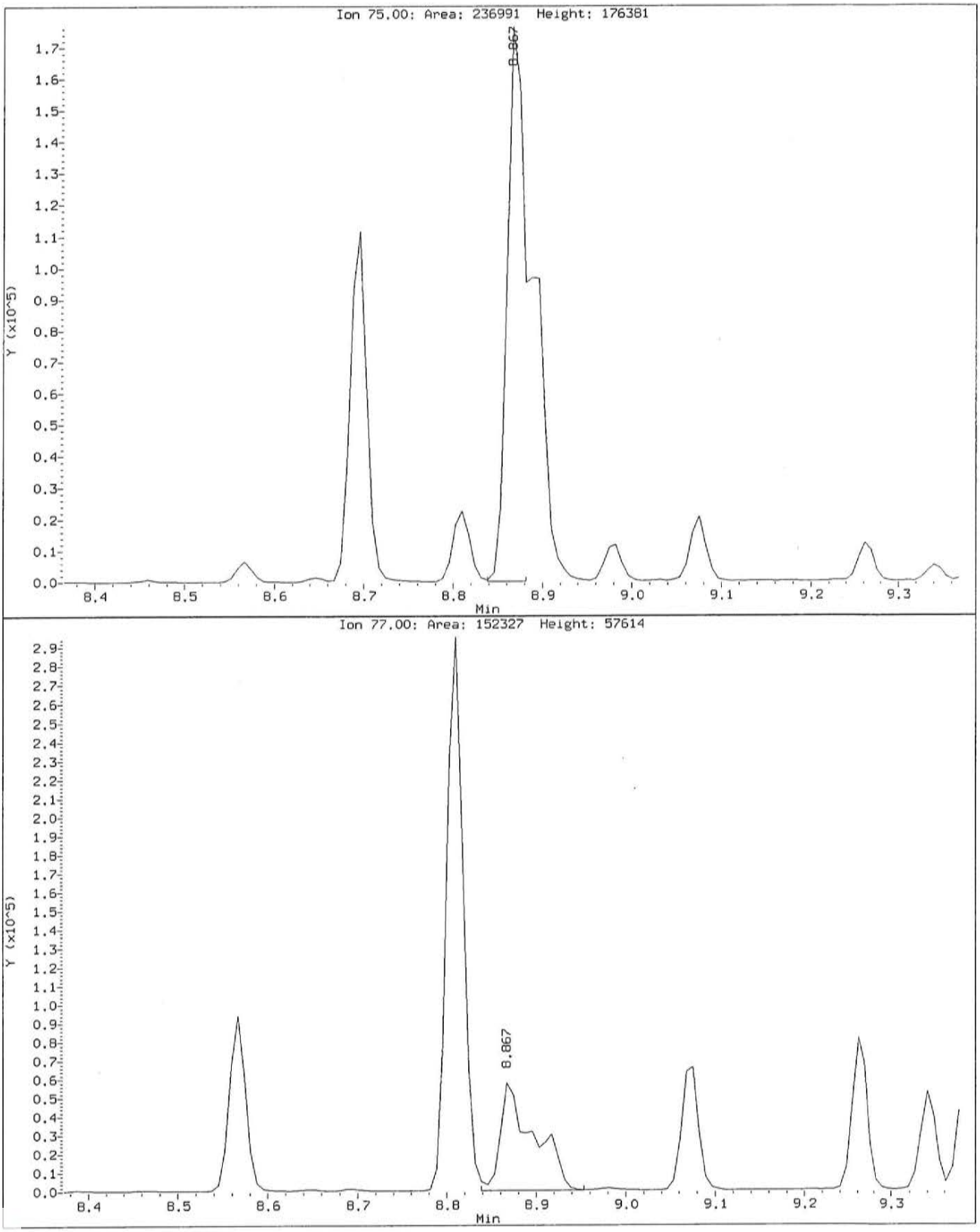
Injection Date: 06-AUG-2019 13:46
Instrument: voa6.i
Client Sample ID: VSTD050

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080609.D  Page 1
Report Date: 27-Aug-2019 17:57

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080609.D
Lab Smp Id: VSTD100  Client Smp ID: VSTD100
Inj Date : 06-AUG-2019 14:10
Operator : DG  Inst ID: voa6.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i  Quant Type: ISTD
Cal Date : 06-AUG-2019 14:10  Cal File: X080609.D
Als bottle: 10  Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

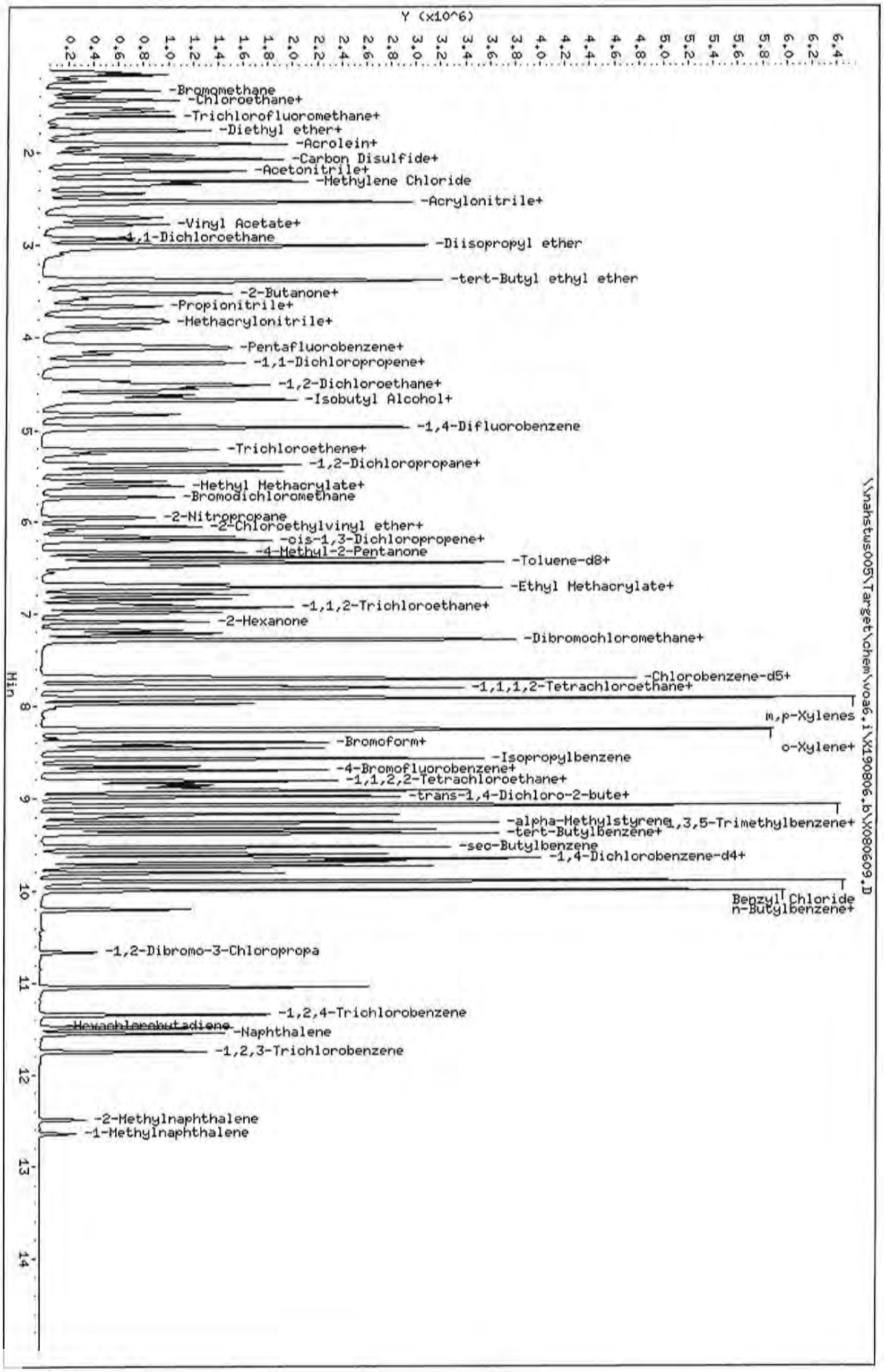
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) | |
|---|---|---|---|---|---|---|---|---|---|
| * 1 | Pentafluorobenzene | 168 | 4.189 | 4.182 | (1.000) | 461233 | 50.0000 | | |
| * 36 | 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 682714 | 50.0000 | | |
| * 47 | Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 629475 | 50.0000 | | |
| * 70 | 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 329268 | 50.0000 | | |
| $ 35 | 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.068) | 523547 | 100.000 | 101.01 | |
| $ 69 | 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 601330 | 100.000 | 102.27 | , |
| $ 30 | Dibromofluoromethane | 113 | 4.103 | 4.104 | (0.979) | 445659 | 100.000 | 100.95 | |
| $ 48 | Toluene-d8 | 98 | 6.388 | 6.389 | (0.833) | 1588273 | 100.000 | 94.02 | |
| 60 | 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 461270 | 100.000 | 98.77 | |
| 31 | 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.976) | 686874 | 100.000 | 100.18 | |
| 68 | 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 556744 | 100.000 | 97.67 | |
| 138 | Freon TF | 101 | 1.912 | 1.912 | (0.456) | 378648 | 100.000 | 100.94 | |
| 53 | 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 349958 | 100.000 | 94.42 | |
| 22 | 1,1-Dichloroethane | 63 | 2.922 | 2.922 | (0.697) | 779127 | 100.000 | 95.94 | |
| 11 | 1,1-Dichloroethene | 96 | 1.912 | 1.912 | (0.456) | 346828 | 100.000 | 97.54 | |
| 32 | 1,1-Dichloropropene | 75 | 4.283 | 4.283 | (0.862) | 587529 | 100.000 | 97.61 | |
| 93 | 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.747 | (1.215) | 361440 | 100.000 | 95.77 | |
| 71 | 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 457316 | 100.000 | 98.59 | (M) |
| 90 | 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 543527 | 100.000 | 97.26 | |
| 79 | 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 1659897 | 100.000 | 99.38 | |
| 89 | 1,2-Dibromo-3-Chloropropane | 155 | 10.658 | 10.658 | (1.102) | 94870 | 100.000 | 96.37 | |
| 57 | 1,2-Dibromoethane | 107 | 7.262 | 7.270 | (0.947) | 468852 | 100.000 | 96.36 | |
| 88 | 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 917056 | 100.000 | 100.02 | |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 608738 | 100.000 | 94.29 |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 435267 | 100.000 | 99.39 |
| 75 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 1614368 | 100.000 | 100.49 |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 975995 | 100.000 | 96.34 |
| 54 1,3-Dichloropropane | 76 | 6.983 | 6.990 | (0.910) | 720346 | 100.000 | 94.38 |
| 84 1,4-Dichlorobenzene | 146 | 9.691 | 9.691 | (1.002) | 984312 | 100.000 | 99.58 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.839) | 653272 | 100.000 | 97.34 |
| 24 2-Butanone | 43 | 3.581 | 3.581 | (0.855) | 409942 | 200.000 | 192.94 |
| 76 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 1316834 | 100.000 | 97.19 |
| 52 2-Hexanone | 43 | 7.090 | 7.091 | (0.924) | 667493 | 200.000 | 197.98 |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 1540736 | 100.000 | 97.37 |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 1703622 | 100.000 | 102.19 |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 922450 | 200.000 | 190.64 |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.472) | 324584 | 200.000 | 197.22 |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 1712088 | 100.000 | 98.32 |
| 74 Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 580836 | 100.000 | 95.20 |
| 29 Bromochloromethane | 128 | 3.803 | 3.803 | (0.908) | 263138 | 100.000 | 94.23 |
| 39 Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 610142 | 100.000 | 99.99 |
| 66 Bromoform | 173 | 8.416 | 8.416 | (1.097) | 384236 | 100.000 | 99.99 |
| 6 Bromomethane | 94 | 1.331 | 1.331 | (0.318) | 383833 | 100.000 | 102.80 |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.494) | 2290650 | 200.000 | 201.39(A) |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 612246 | 100.000 | 98.74 |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 1211247 | 100.000 | 96.08 |
| 7 Chloroethane | 64 | 1.396 | 1.396 | (0.333) | 260634 | 100.000 | 101.18 |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.933) | 795851 | 100.000 | 96.37 |
| 3 Chloromethane | 50 | 1.073 | 1.074 | (0.256) | 397266 | 100.000 | 95.52 |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.843) | 494037 | 100.000 | 96.61 |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 744785 | 100.000 | 100.91 |
| 55 Dibromochloromethane | 129 | 7.184 | 7.184 | (0.937) | 500101 | 100.000 | 98.91 |
| 44 Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 311144 | 100.000 | 98.32 |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.232) | 471218 | 100.000 | 97.08 |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 645244 | 100.000 | 98.66 |
| 91 Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 283349 | 100.000 | 101.67 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 1909026 | 100.000 | 99.87 |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 1557082 | 200.000 | 197.94 |
| 17 Methylene Chloride | 84 | 2.306 | 2.306 | (0.550) | 445589 | 100.000 | 99.41 |
| 87 n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 1455913 | 100.000 | 104.71 |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 2236668 | 100.000 | 101.90 |
| 92 Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 954180 | 100.000 | 101.71 |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 760297 | 100.000 | 98.21 |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 1881790 | 100.000 | 101.66 |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.078) | 1329698 | 100.000 | 99.20 |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 1347357 | 100.000 | 99.90 |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 406449 | 100.000 | 98.25 |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 1813723 | 100.000 | 96.54 |
| 20 trans-1,2-Dichloroethene | 96 | 2.528 | 2.528 | (0.603) | 420875 | 100.000 | 97.81 |
| 51 trans-1,3-Dichloropropene | 75 | 6.682 | 6.689 | (1.344) | 681456 | 100.000 | 100.62 |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 496796 | 100.000 | 100.87 |
| 8 Trichlorofluoromethane | 101 | 1.561 | 1.553 | (0.373) | 686456 | 100.000 | 101.93 |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 446399 | 100.000 | 100.98 |

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

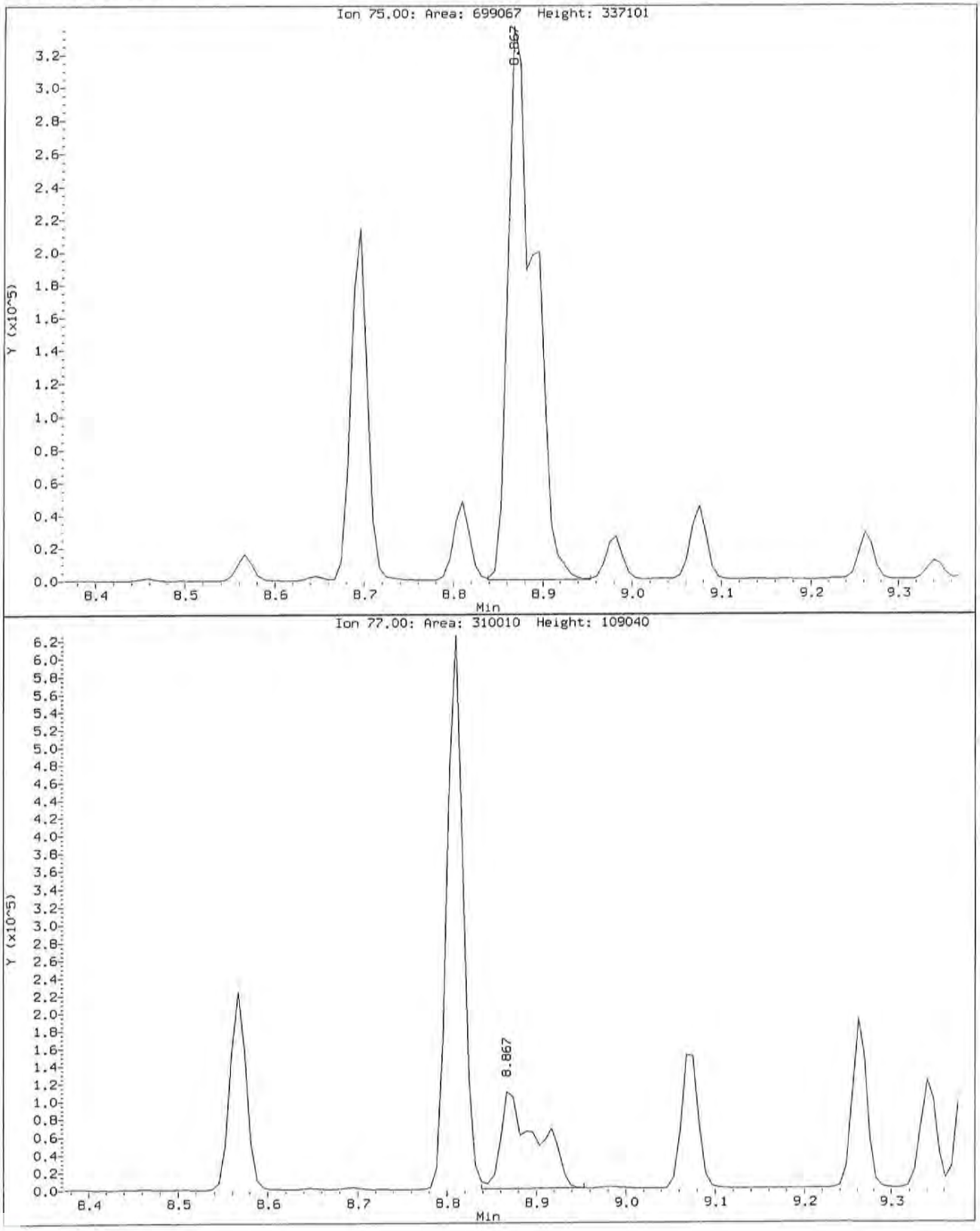



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080609.D
Date : 06-AUG-2019 14:10
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

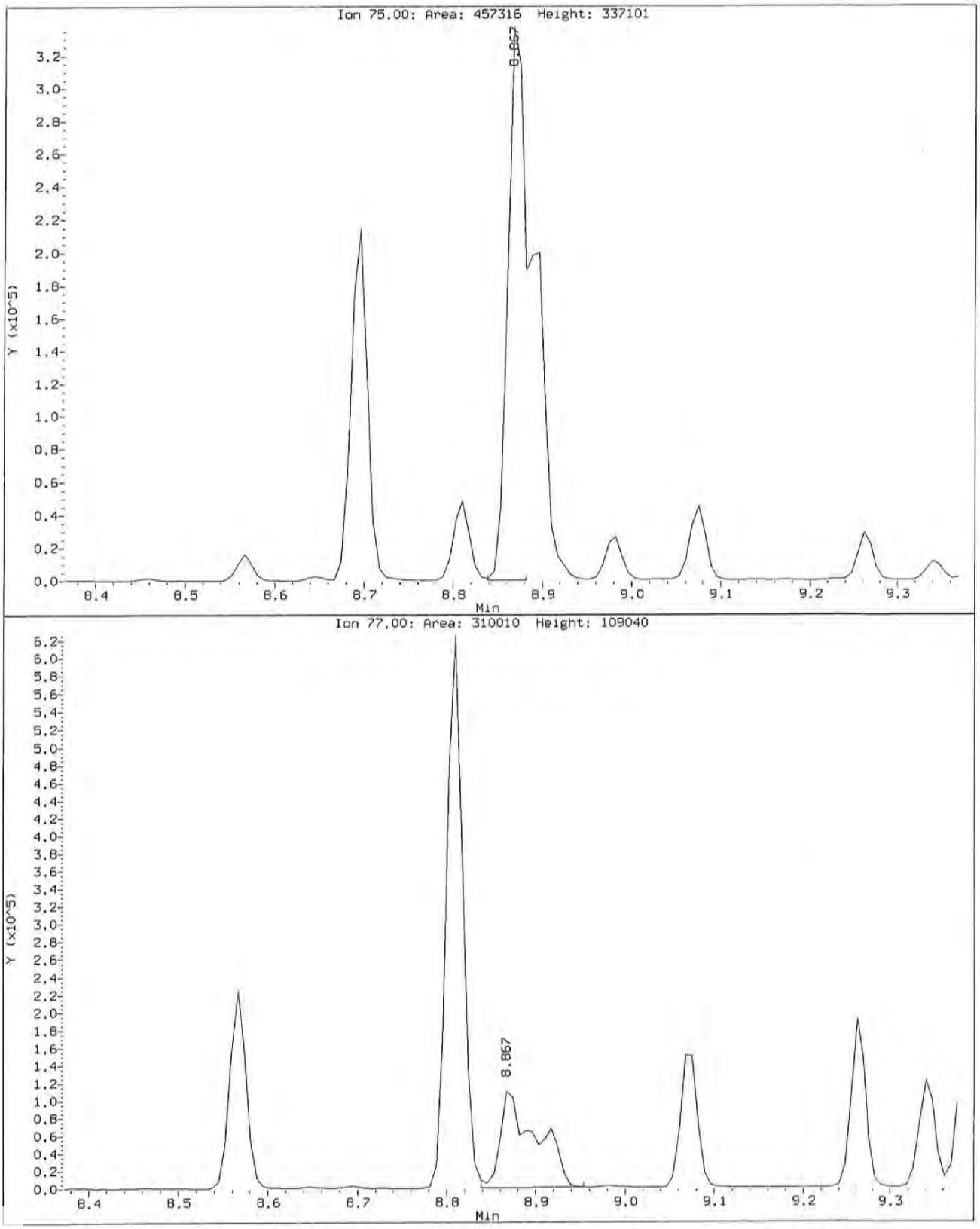
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080609.D
Injection Date: 06-AUG-2019 14:10
Instrument: voa6.i
Client Sample ID: VSTD100

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080609.D
Injection Date: 06-AUG-2019 14:10
Instrument: voa6.i
Client Sample ID: VSTD100

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080610.D
Lab Smp Id: VSTD150 Client Smp ID: VSTD150
Inj Date : 06-AUG-2019 14:34
Operator : DG Inst ID: voa6.i
Smp Info : VSTD150;VSTD150;1;9;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 14:34 Cal File: X080610.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

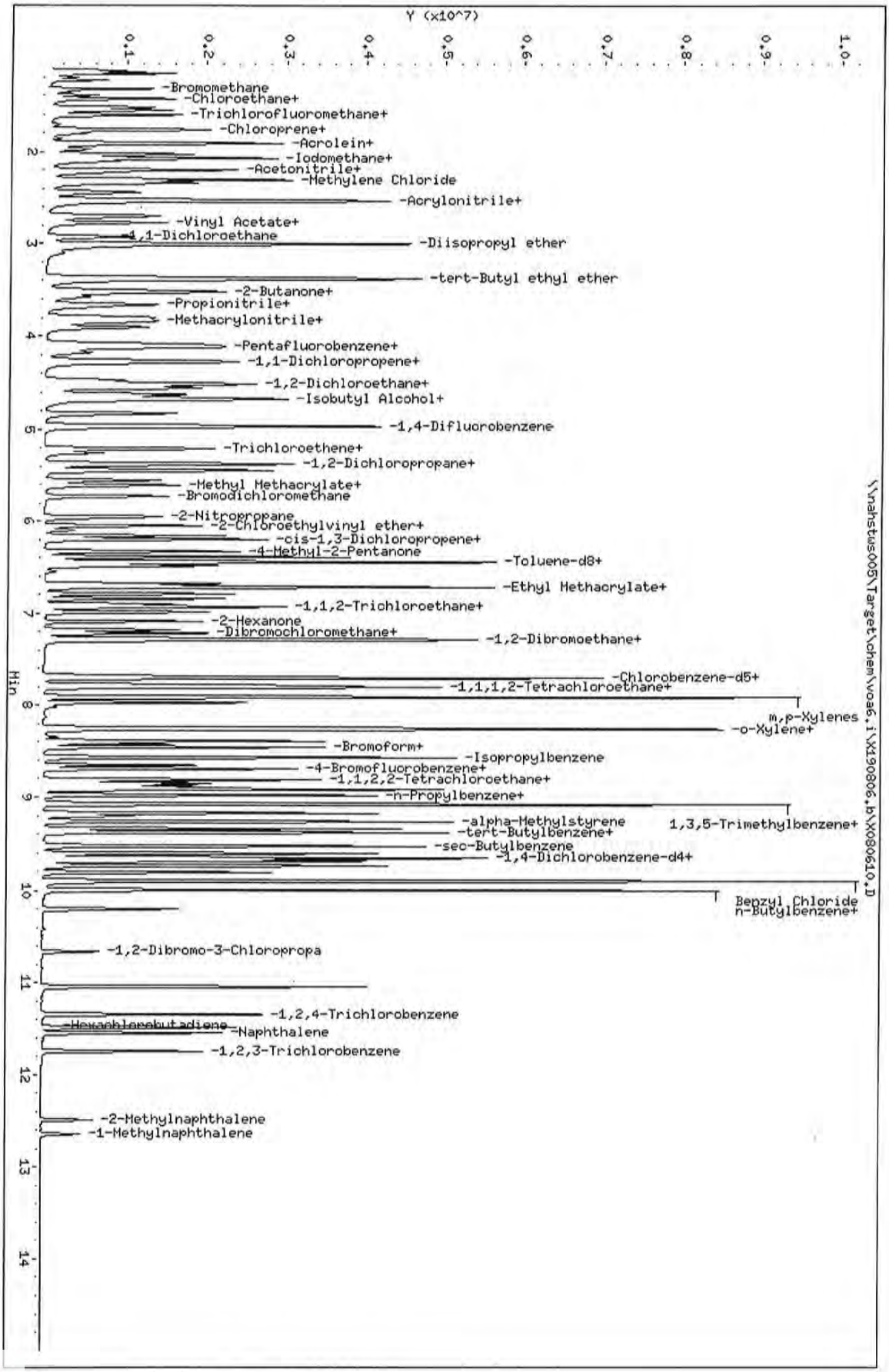
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 439666 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 653749 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.678 | 7.678 | (1.000) | 605635 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 310710 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 741103 | 150.000 | 150.29 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.132) | 846206 | 150.000 | 150.03 |
| $ | 30 Dibromofluoromethane | 113 | 4.104 | 4.104 | (0.981) | 629862 | 150.000 | 149.99 |
| $ | 48 Toluene-d8 | 98 | 6.389 | 6.389 | (0.832) | 2228184 | 150.000 | 137.10 |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.013) | 681359 | 150.000 | 151.65 |
| | 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 1025344 | 150.000 | 156.88 |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 815822 | 150.000 | 151.47 |
| | 138 Freon TF | 101 | 1.912 | 1.912 | (0.457) | 575070 | 150.000 | 156.78 |
| | 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.892) | 518852 | 150.000 | 145.50 |
| | 22 1,1-Dichloroethane | 63 | 2.922 | 2.922 | (0.699) | 1158747 | 150.000 | 149.68 |
| | 11 1,1-Dichloroethene | 96 | 1.912 | 1.912 | (0.457) | 526167 | 150.000 | 155.24 |
| | 32 1,1-Dichloropropene | 75 | 4.283 | 4.283 | (0.862) | 881395 | 150.000 | 152.92 |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.747 | (1.215) | 546758 | 150.000 | 152.08 |
| | 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 668211 | 150.000 | 152.66(M) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 813621 | 150.000 | 153.06 |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 2420993 | 150.000 | 153.61 |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.658 | 10.658 | (1.102) | 141880 | 150.000 | 151.87 |
| | 57 1,2-Dibromoethane | 107 | 7.262 | 7.270 | (0.946) | 688496 | 150.000 | 147.08 |
| | 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 1331014 | 150.000 | 153.80 |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 900959 | 150.000 | 145.74 |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 647977 | 150.000 | 154.52 |
| 75 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 2345989 | 150.000 | 154.75 |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 1419088 | 150.000 | 148.45 |
| 54 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.910) | 1063784 | 150.000 | 144.86 |
| 84 1,4-Dichlorobenzene | 146 | 9.691 | 9.691 | (1.002) | 1423510 | 150.000 | 152.34 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 967761 | 150.000 | 151.27 |
| 24 2-Butanone | 43 | 3.581 | 3.581 | (0.856) | 607464 | 300.000 | 299.92(A) |
| 76 2-Chlorotoluene | 91 | 8.982 | 8.982 | (0.929) | 1945571 | 150.000 | 152.17 |
| 52 2-Hexanone | 43 | 7.090 | 7.091 | (0.924) | 977647 | 300.000 | 300.83(A) |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 2251615 | 150.000 | 150.79 |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 2503066 | 150.000 | 159.11 |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 1371976 | 300.000 | 294.70(A) |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.473) | 473170 | 300.000 | 303.93(A) |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 2541169 | 150.000 | 152.40 |
| 74 Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 853713 | 150.000 | 148.28 |
| 29 Bromochloromethane | 128 | 3.803 | 3.803 | (0.909) | 393090 | 150.000 | 147.68 |
| 39 Bromodichloromethane | 83 | 5.730 | 5.730 | (1.153) | 902225 | 150.000 | 154.42 |
| 66 Bromoform | 173 | 8.416 | 8.416 | (1.096) | 571389 | 150.000 | 154.54 |
| 6 Bromomethane | 94 | 1.331 | 1.331 | (0.318) | 528681 | 150.000 | 148.70 |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 3466286 | 300.000 | 319.70(A) |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 927462 | 150.000 | 156.21 |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.003) | 1776764 | 150.000 | 146.49 |
| 7 Chloroethane | 64 | 1.396 | 1.396 | (0.334) | 390819 | 150.000 | 159.17 |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.935) | 1173096 | 150.000 | 149.02 |
| 3 Chloromethane | 50 | 1.074 | 1.074 | (0.257) | 624077 | 150.000 | 157.43 |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 726211 | 150.000 | 148.98 |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 1113354 | 150.000 | 157.53 |
| 55 Dibromochloromethane | 129 | 7.184 | 7.184 | (0.936) | 742603 | 150.000 | 152.66 |
| 44 Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 458013 | 150.000 | 151.14 |
| 2 Dichlorodifluoromethane | 85 | 0.966 | 0.966 | (0.231) | 722804 | 150.000 | 155.10 |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.017) | 955524 | 150.000 | 151.86 |
| 91 Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 427791 | 150.000 | 156.44 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.116) | 2804008 | 150.000 | 152.47 |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.030) | 2280901 | 300.000 | 301.37(A) |
| 17 Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 648169 | 150.000 | 151.77 |
| 87 n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 2105689 | 150.000 | 160.49 |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 3264217 | 150.000 | 157.60 |
| 92 Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 1446512 | 150.000 | 163.40 |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.074) | 1103062 | 150.000 | 148.09 |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 2777437 | 150.000 | 159.00 |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.076) | 1933510 | 150.000 | 149.92 |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.347 | (0.966) | 1954597 | 150.000 | 153.58 |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.903) | 599437 | 150.000 | 150.61 |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.840) | 2682443 | 150.000 | 148.41 |
| 20 trans-1,2-Dichloroethene | 96 | 2.528 | 2.528 | (0.604) | 620864 | 150.000 | 151.36 |
| 51 trans-1,3-Dichloropropene | 75 | 6.682 | 6.689 | (1.344) | 1017256 | 150.000 | 156.86 |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 741911 | 150.000 | 157.32 |
| 8 Trichlorofluoromethane | 101 | 1.553 | 1.553 | (0.372) | 1045448 | 150.000 | 162.86 |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 692839 | 150.000 | 164.42 |

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

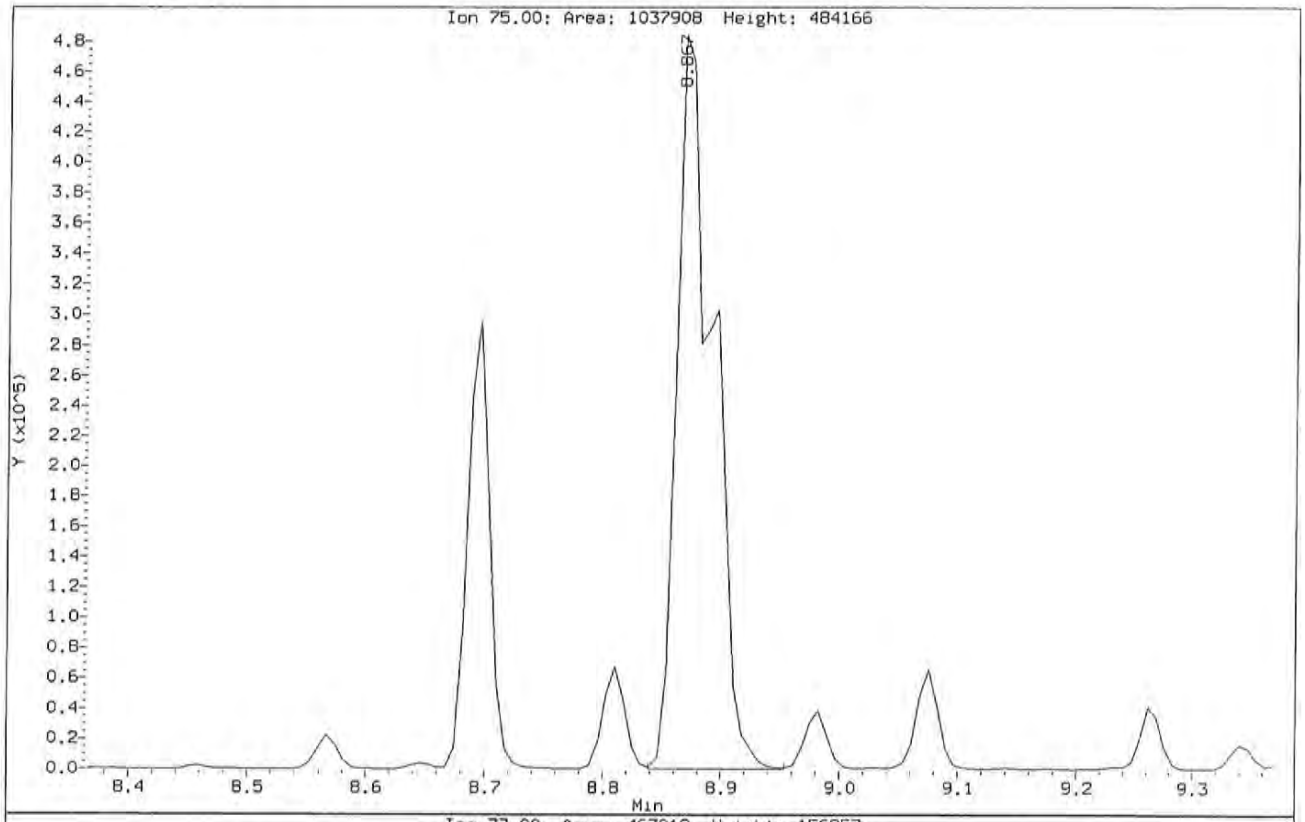


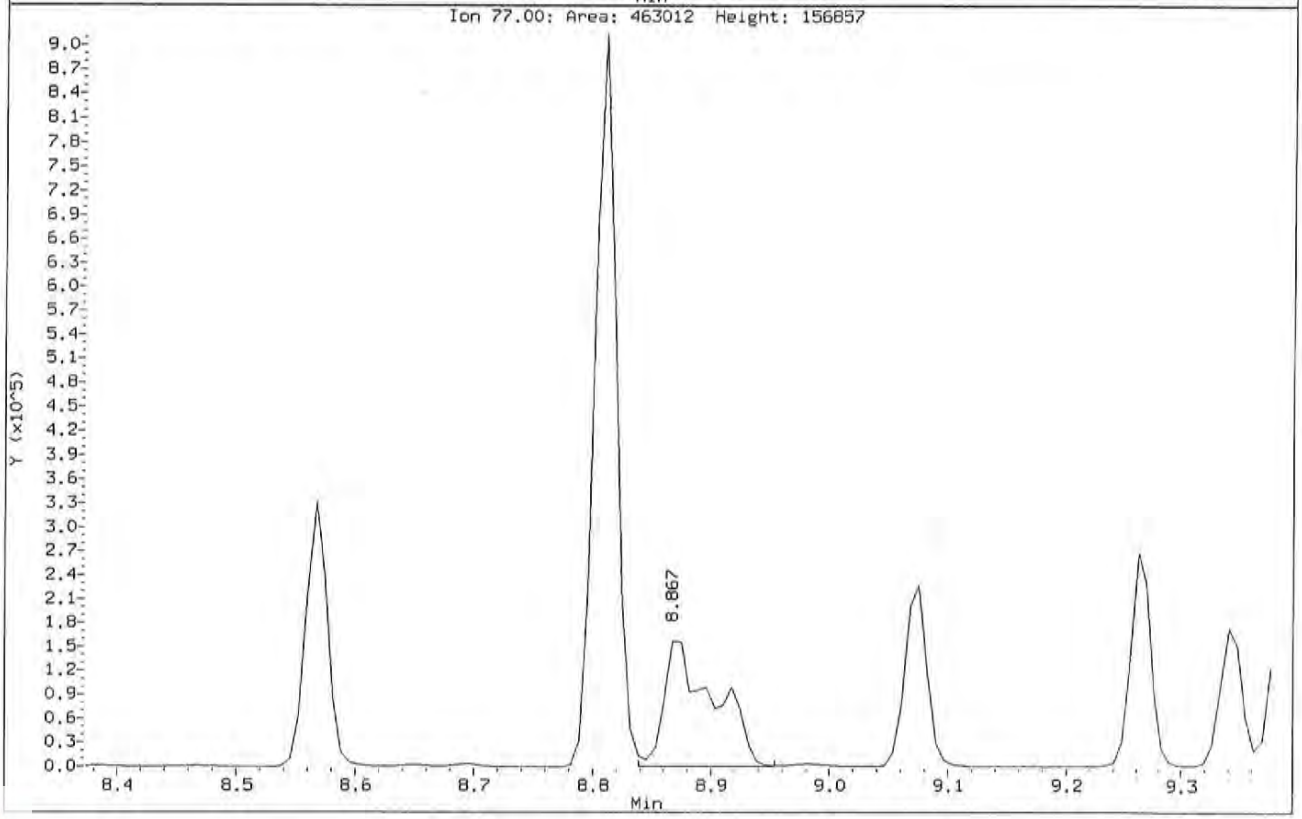

Data File: \\nahstus005\Target\chem\voa6.i\X190806.b\X080610.D
Date : 06-AUG-2019 14:34
Client ID: VSTD150
Sample Info: VSTD150;VSTD150;1;9;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080610.D
Injection Date: 06-AUG-2019 14:34
Instrument: voa6.i
Client Sample ID: VSTD150

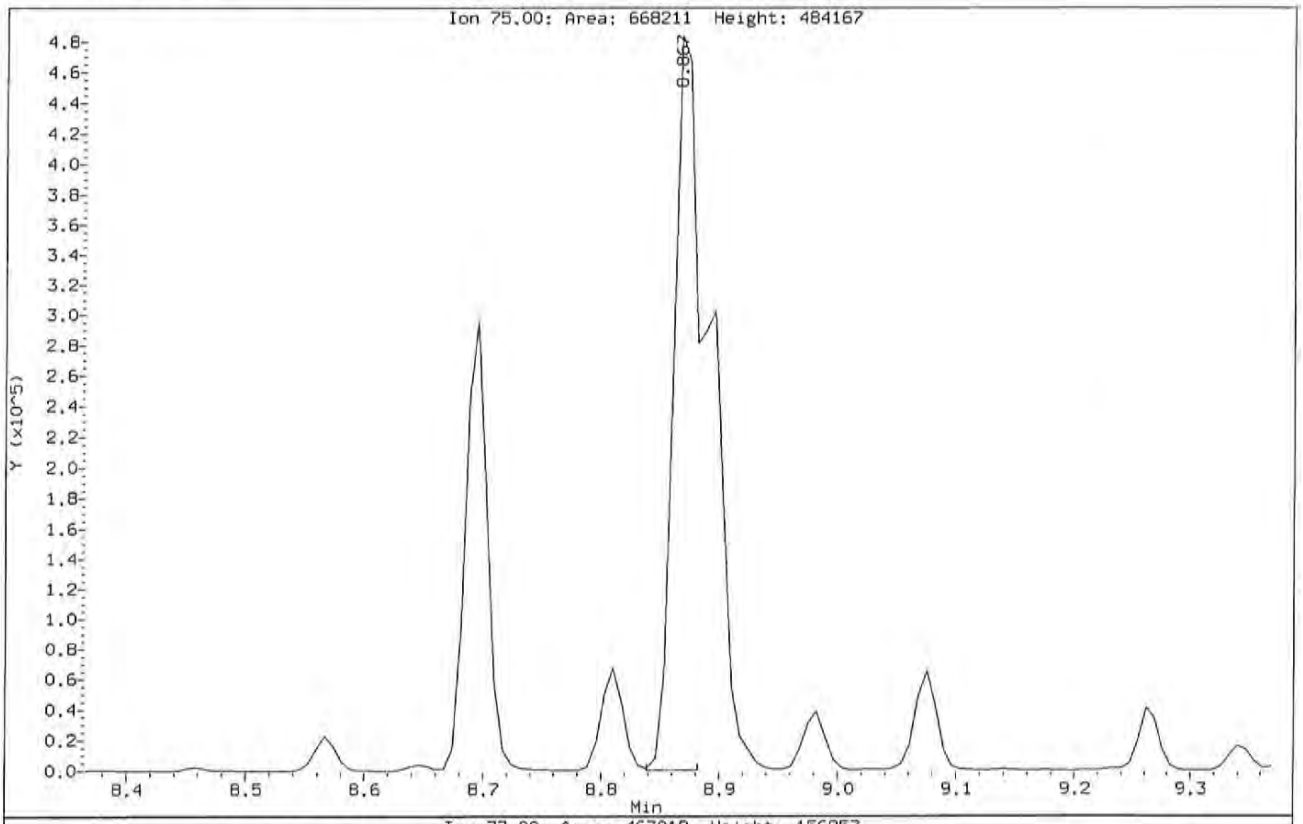
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

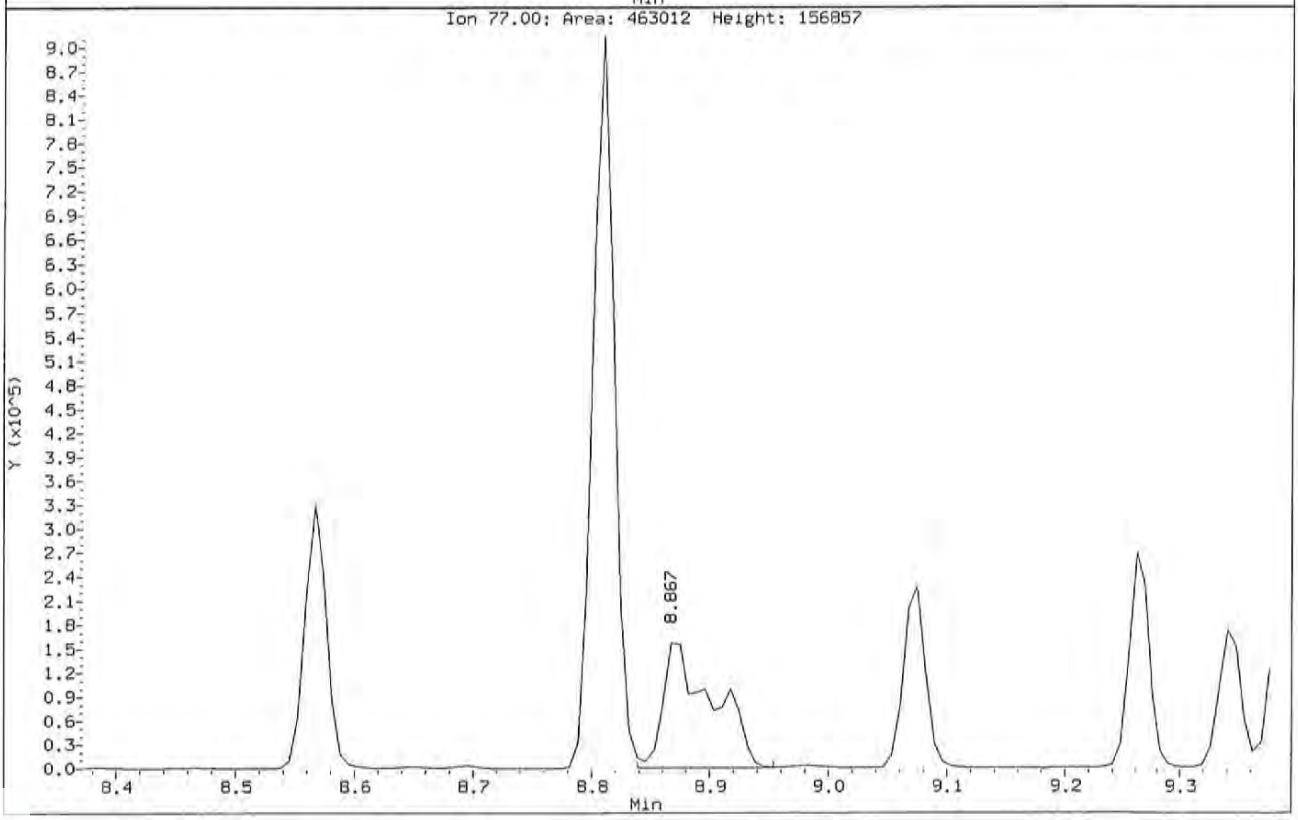


Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080610.D
Injection Date: 06-AUG-2019 14:34
Instrument: voa6.i
Client Sample ID: VSTD150

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080611.D Page 1
Report Date: 27-Aug-2019 17:57

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080611.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 06-AUG-2019 14:58
Operator : DG Inst ID: voa6.i
Smp Info : VSTD200;VSTD200;1;10;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i Quant Type: ISTD
Cal Date : 06-AUG-2019 14:58 Cal File: X080611.D
Als bottle: 12 Calibration Sample, Level: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

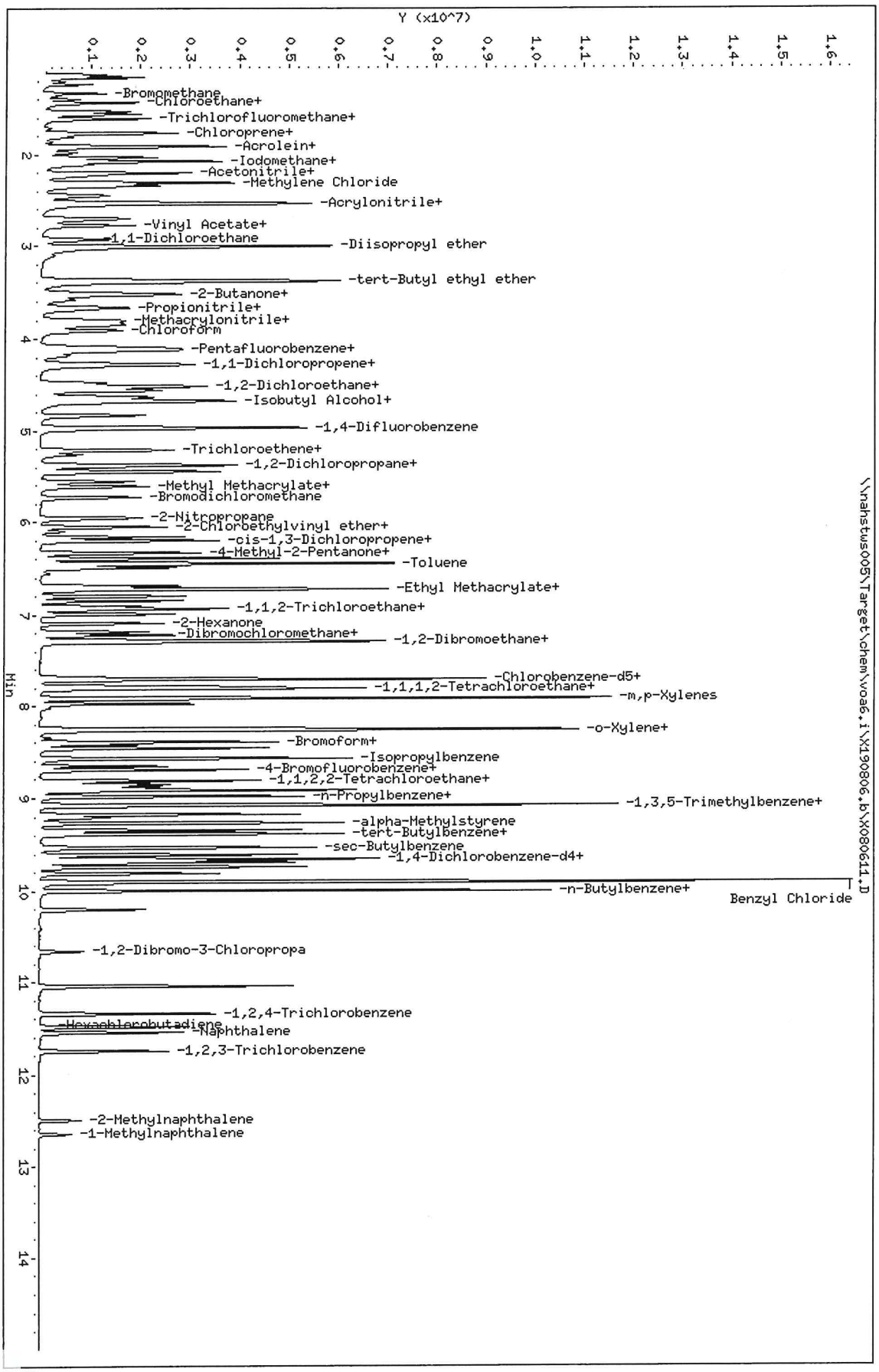
| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * 1 | Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 434022 | 50.0000 | |
| * 36 | 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 637906 | 50.0000 | |
| * 47 | Chlorobenzene-d5 | 117 | 7.678 | 7.678 | (1.000) | 593795 | 50.0000 | |
| * 70 | 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 302523 | 50.0000 | |
| $ 35 | 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 967848 | 200.000 | 199.01 |
| $ 69 | 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.132) | 1095385 | 200.000 | 198.39 |
| $ 30 | Dibromofluoromethane | 113 | 4.104 | 4.104 | (0.981) | 824306 | 200.000 | 199.05 |
| $ 48 | Toluene-d8 | 98 | 6.389 | 6.389 | (0.832) | 2917252 | 200.000 | 183.07 |
| 60 | 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.013) | 876559 | 200.000 | 198.98 |
| 31 | 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 1317826 | 200.000 | 204.25(A) |
| 68 | 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 1051001 | 200.000 | 200.30(A) |
| 138 | Freon TF | 101 | 1.912 | 1.912 | (0.457) | 721454 | 200.000 | 195.91 |
| 53 | 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.892) | 664968 | 200.000 | 190.20 |
| 22 | 1,1-Dichloroethane | 63 | 2.922 | 2.922 | (0.699) | 1502400 | 200.000 | 196.60 |
| 11 | 1,1-Dichloroethene | 96 | 1.912 | 1.912 | (0.457) | 673823 | 200.000 | 201.39(A) |
| 32 | 1,1-Dichloropropene | 75 | 4.283 | 4.283 | (0.862) | 1133650 | 200.000 | 201.57(A) |
| 93 | 1,2,3-Trichlorobenzene | 180 | 11.747 | 11.747 | (1.215) | 709991 | 200.000 | 202.02(A) |
| 71 | 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 847337 | 200.000 | 198.83(M) |
| 90 | 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 1041364 | 200.000 | 200.55(A) |
| 79 | 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 3065577 | 200.000 | 199.77 |
| 89 | 1,2-Dibromo-3-Chloropropane | 155 | 10.658 | 10.658 | (1.102) | 183452 | 200.000 | 201.20(A) |
| 57 | 1,2-Dibromoethane | 107 | 7.270 | 7.270 | (0.947) | 883020 | 200.000 | 192.39 |
| 88 | 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 1666102 | 200.000 | 197.72 |

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080611.D Page 2
Report Date: 27-Aug-2019 17:57

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 1153972 | 200.000 | 191.31 |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 840258 | 200.000 | 205.35(A) |
| 75 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 2966510 | 200.000 | 200.98(A) |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 1802562 | 200.000 | 193.66 |
| 54 1,3-Dichloropropane | 76 | 6.990 | 6.990 | (0.910) | 1365446 | 200.000 | 189.65 |
| 84 1,4-Dichlorobenzene | 146 | 9.691 | 9.691 | (1.002) | 1815176 | 200.000 | 199.34 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 1227308 | 200.000 | 194.34 |
| 24 2-Butanone | 43 | 3.581 | 3.581 | (0.856) | 785894 | 400.000 | 393.07(A) |
| 76 2-Chlorotoluene | 91 | 8.982 | 8.982 | (0.929) | 2461496 | 200.000 | 197.73 |
| 52 2-Hexanone | 43 | 7.091 | 7.091 | (0.924) | 1280044 | 400.000 | 401.38(A) |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 2842621 | 200.000 | 195.53 |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 3137283 | 200.000 | 204.82(A) |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 1788972 | 400.000 | 391.94(A) |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.473) | 610663 | 400.000 | 398.68(A) |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 3267468 | 200.000 | 200.83(A) |
| 74 Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 1088686 | 200.000 | 194.21 |
| 29 Bromochloromethane | 128 | 3.803 | 3.803 | (0.909) | 485038 | 200.000 | 184.59 |
| 39 Bromodichloromethane | 83 | 5.730 | 5.730 | (1.153) | 1174074 | 200.000 | 205.94(A) |
| 66 Bromoform | 173 | 8.416 | 8.416 | (1.096) | 737209 | 200.000 | 203.37(A) |
| 6 Bromomethane | 94 | 1.331 | 1.331 | (0.318) | 433171 | 200.000 | 123.36 |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 4453060 | 400.000 | 416.06(A) |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 1193756 | 200.000 | 206.05(A) |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.003) | 2276020 | 200.000 | 191.40 |
| 7 Chloroethane | 64 | 1.396 | 1.396 | (0.334) | 498640 | 200.000 | 205.73(A) |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.935) | 1509212 | 200.000 | 194.21 |
| 3 Chloromethane | 50 | 1.074 | 1.074 | (0.257) | 832492 | 200.000 | 212.73(A) |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 933124 | 200.000 | 193.91 |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 1440395 | 200.000 | 208.87(A) |
| 55 Dibromochloromethane | 129 | 7.184 | 7.184 | (0.936) | 964469 | 200.000 | 202.22(A) |
| 44 Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 587189 | 200.000 | 198.58 |
| 2 Dichlorodifluoromethane | 85 | 0.966 | 0.966 | (0.231) | 917264 | 200.000 | 198.87 |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.017) | 1217547 | 200.000 | 197.36 |
| 91 Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 536967 | 200.000 | 196.06 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.116) | 3553020 | 200.000 | 197.06 |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.030) | 2877386 | 400.000 | 387.76(A) |
| 17 Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 839760 | 200.000 | 199.23 |
| 87 n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 2629946 | 200.000 | 205.87(A) |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 4138980 | 200.000 | 205.24(A) |
| 92 Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 1887187 | 200.000 | 218.95(A) |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.074) | 1396718 | 200.000 | 191.26 |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 3496042 | 200.000 | 205.56(A) |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.076) | 2455740 | 200.000 | 194.22 |
| 78 tert-Butylbenzene | 119 | 9.347 | 9.347 | (0.967) | 2459814 | 200.000 | 198.51 |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.903) | 763358 | 200.000 | 195.62 |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.840) | 3412760 | 200.000 | 192.58 |
| 20 trans-1,2-Dichloroethene | 96 | 2.528 | 2.528 | (0.604) | 795581 | 200.000 | 196.48 |
| 51 trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 1313854 | 200.000 | 207.63(A) |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 955684 | 200.000 | 207.68(A) |
| 8 Trichlorofluoromethane | 101 | 1.553 | 1.553 | (0.372) | 1332098 | 200.000 | 210.22(A) |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 906271 | 200.000 | 217.87(A) |

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

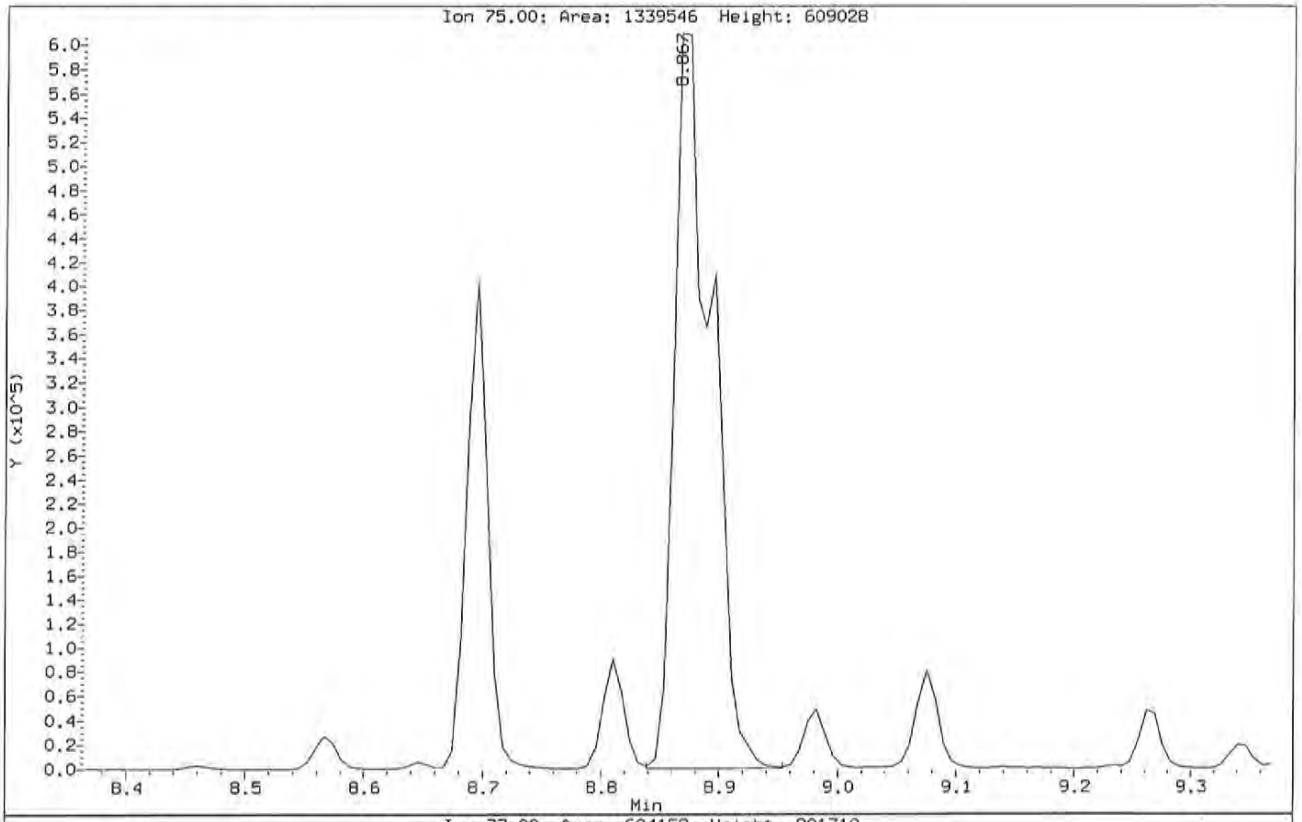


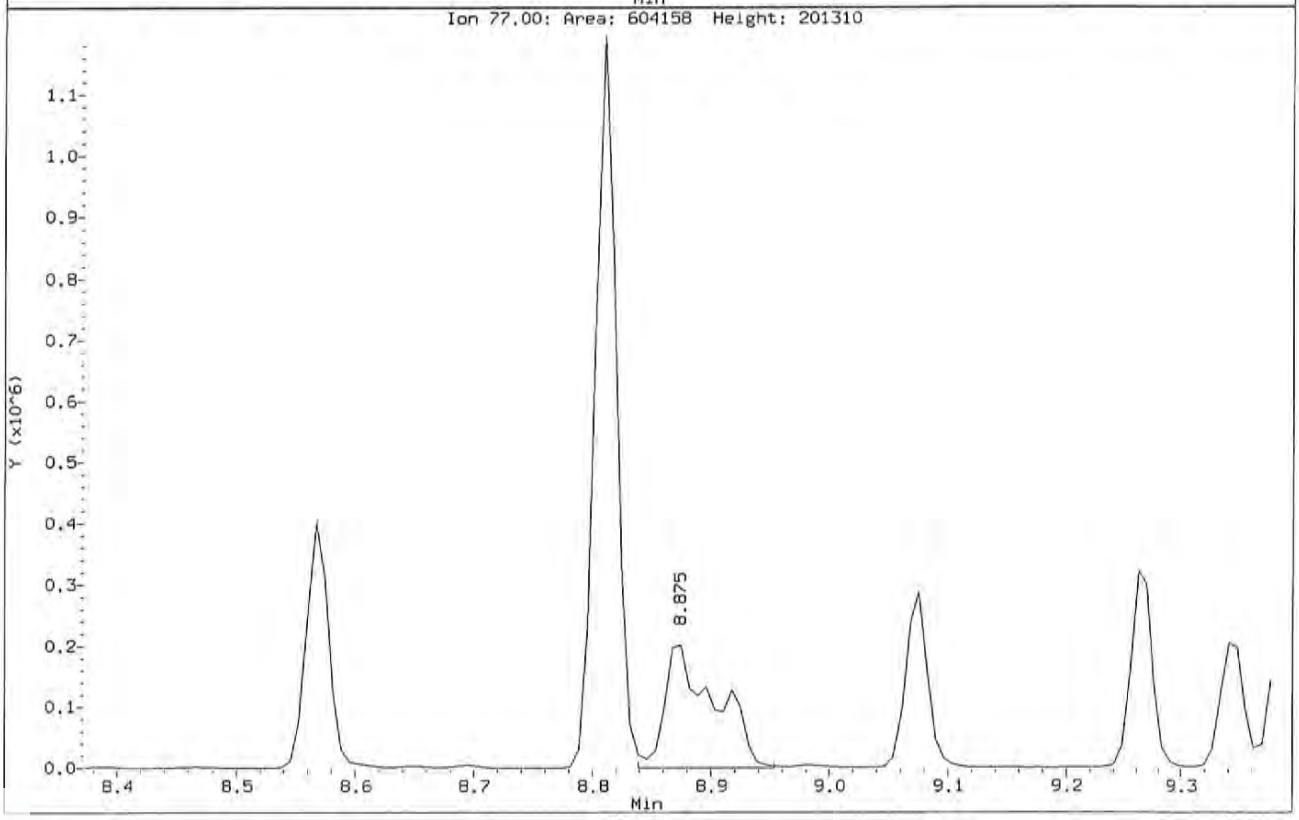

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080611.D
Date : 06-AUG-2019 14:58
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;10;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080611.D
Injection Date: 06-AUG-2019 14:58
Instrument: voa6.i
Client Sample ID: VSTD200

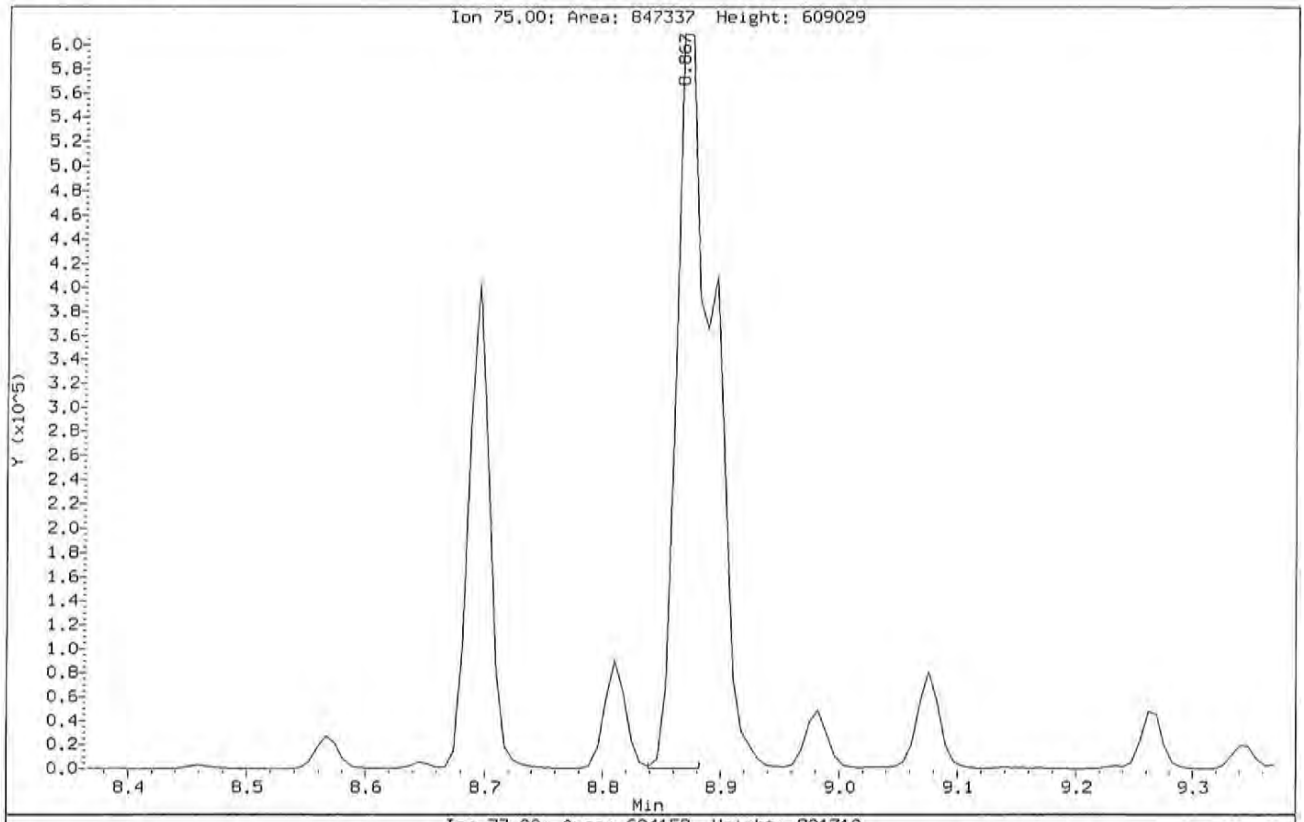
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4

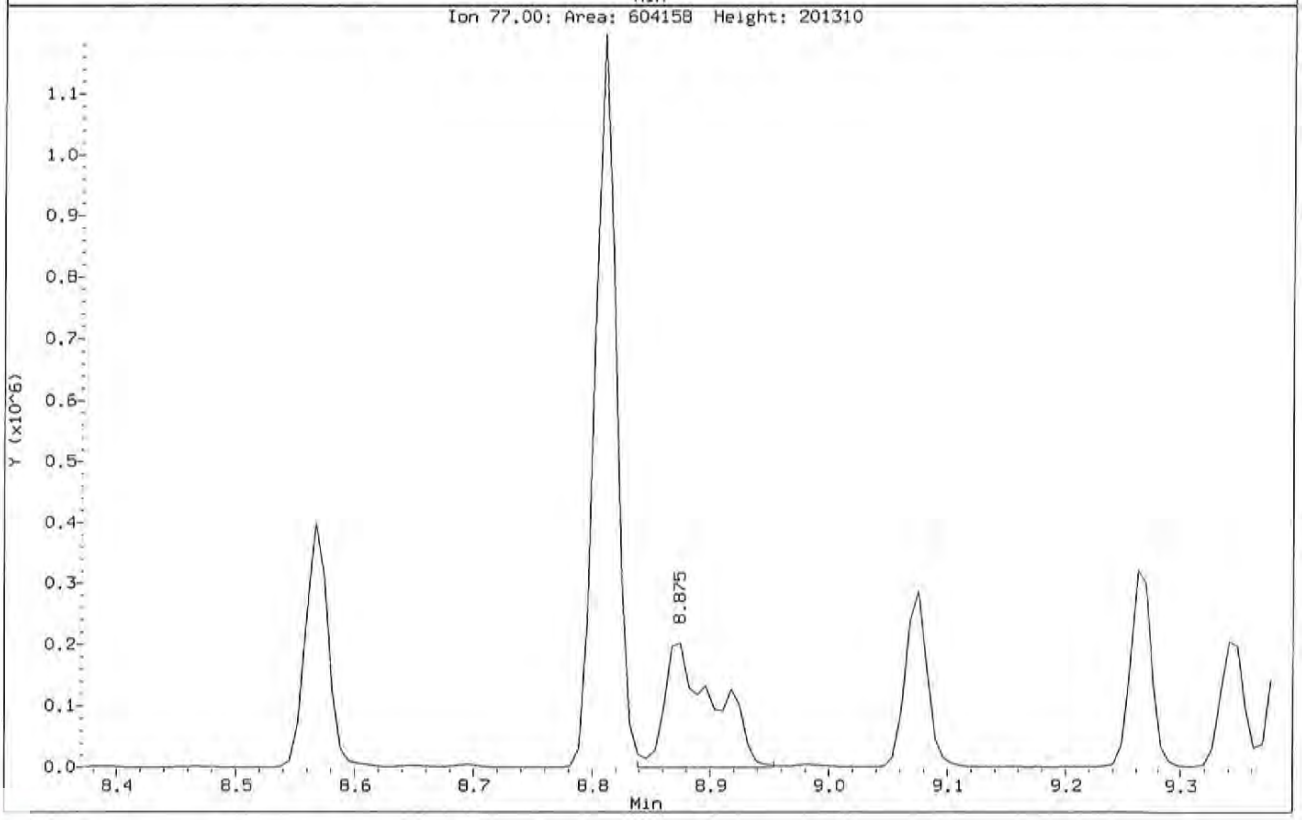


Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080611.D
Injection Date: 06-AUG-2019 14:58
Instrument: voa6.i
Client Sample ID: VSTD200

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190806.b\X080614.D
Lab Smp Id: ICV  Client Smp ID: ICV
Inj Date : 06-AUG-2019 16:10
Operator : DG  Inst ID: voa6.i
Smp Info : ICV;ICV;2;;ICV
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190806.b\8260W.m
Meth Date : 27-Aug-2019 17:57 voa6.i  Quant Type: ISTD
Cal Date : 06-AUG-2019 14:58  Cal File: X080611.D
Als bottle: 15  QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

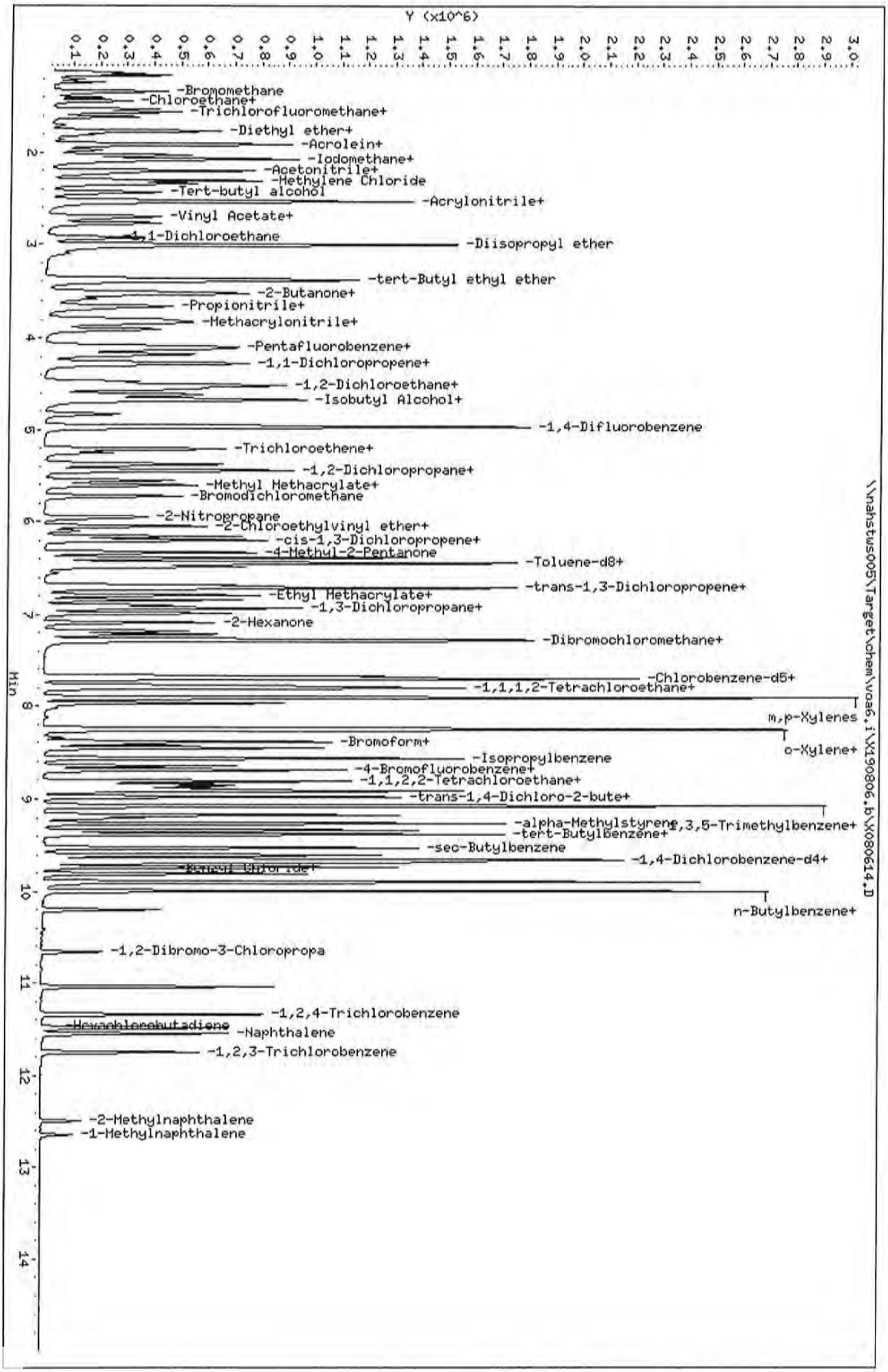
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 464994 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 687051 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.670 | 7.678 | (1.000) | 621938 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 329355 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 258413 | 49.1634 | 49.16 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 301562 | 51.4321 | 51.43 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.104 | (0.981) | 224674 | 50.1716 | 50.17 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.389 | (0.833) | 790889 | 47.3878 | 47.38 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 222482 | 48.2203 | 48.22 |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 322941 | 46.7203 | 46.72 |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 275519 | 48.5034 | 48.50 |
| 138 Freon TF | 101 | 1.919 | 1.912 | (0.459) | 172218 | 47.1627 | 47.16 |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 172131 | 47.0078 | 47.00 |
| 22 1,1-Dichloroethane | 63 | 2.929 | 2.922 | (0.700) | 380444 | 46.4687 | 46.46 |
| 11 1,1-Dichloroethene | 96 | 1.911 | 1.912 | (0.457) | 166913 | 46.5656 | 46.56 |
| 32 1,1-Dichloropropene | 75 | 4.282 | 4.283 | (0.862) | 275577 | 45.4961 | 45.49 |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.747 | (1.215) | 162055 | 44.2672 | 44.26 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 228621 | 49.2738 | 49.27(M) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 243398 | 44.7025 | 44.70 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.382 | 9.383 | (0.970) | 752479 | 45.0427 | 45.04 |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.658 | (1.103) | 45508 | 46.9935 | 46.99 |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.270 | (0.947) | 228822 | 47.6016 | 47.60 |
| 88 1,2-Dichlorobenzene | 146 | 9.998 | 9.999 | (1.034) | 444136 | 48.4657 | 48.46 |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | CONCENTRATIONS FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 301140 | 46.3533 | 46.35 |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 213260 | 48.3906 | 48.39 |
| 75 1,3,5-Trimethylbenzene | 105 | 9.074 | 9.075 | (0.939) | 718685 | 44.7254 | 44.72 |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 460768 | 45.4723 | 45.47 |
| 54 1,3-Dichloropropane | 76 | 6.983 | 6.990 | (0.910) | 352208 | 46.7075 | 46.70 |
| 84 1,4-Dichlorobenzene | 146 | 9.690 | 9.691 | (1.002) | 464872 | 47.3069 | 47.30 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 330412 | 48.8363 | 48.83 |
| 24 2-Butanone | 43 | 3.580 | 3.581 | (0.856) | 206185 | 96.2567 | 96.25 |
| 76 2-Chlorotoluene | 91 | 8.981 | 8.982 | (0.929) | 615303 | 45.4013 | 45.40 |
| 52 2-Hexanone | 43 | 7.090 | 7.091 | (0.924) | 320182 | 96.6696 | 96.66 |
| 77 4-Chlorotoluene | 91 | 9.074 | 9.075 | (0.939) | 719964 | 45.4883 | 45.48 |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 730952 | 43.8345 | 43.83 |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 446045 | 93.3013 | 93.30 |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.473) | 174971 | 103.425 | 103.42 |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 828199 | 47.2637 | 47.26 |
| 74 Bromobenzene | 156 | 8.809 | 8.810 | (0.911) | 282434 | 46.2796 | 46.27 |
| 29 Bromochloromethane | 128 | 3.802 | 3.803 | (0.909) | 130588 | 46.3895 | 46.38 |
| 39 Bromodichloromethane | 83 | 5.729 | 5.730 | (1.153) | 292305 | 47.6046 | 47.60 |
| 66 Bromoform | 173 | 8.415 | 8.416 | (1.097) | 184658 | 48.6367 | 48.63 |
| 6 Bromomethane | 94 | 1.338 | 1.331 | (0.320) | 202997 | 53.7647 | 53.76 |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 1101337 | 96.0474 | 96.04 |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 280358 | 44.9316 | 44.93 |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 588718 | 47.2688 | 47.26 |
| 7 Chloroethane | 64 | 1.403 | 1.396 | (0.336) | 125363 | 48.2776 | 48.27 |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.935) | 389678 | 46.8065 | 46.80 |
| 3 Chloromethane | 50 | 1.073 | 1.074 | (0.257) | 185897 | 44.3408 | 44.34 |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 241499 | 46.8443 | 46.84 |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 363102 | 48.8887 | 48.88 |
| 55 Dibromochloromethane | 129 | 7.183 | 7.184 | (0.937) | 239951 | 48.0355 | 48.03 |
| 44 Dibromomethane | 93 | 5.557 | 5.558 | (1.118) | 151854 | 47.6830 | 47.68 |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.966 | (0.233) | 224715 | 46.8848 | 46.88 |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 299137 | 46.2954 | 46.29 |
| 91 Hexachlorobutadiene | 225 | 11.488 | 11.489 | (1.188) | 124532 | 47.0223 | 47.02 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 841355 | 44.5523 | 44.55 |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 726438 | 93.4668 | 93.46 |
| 17 Methylene Chloride | 84 | 2.305 | 2.306 | (0.551) | 220849 | 48.8178 | 48.81 |
| 87 n-Butylbenzene | 91 | 9.998 | 9.999 | (1.034) | 624631 | 44.9131 | 44.91 |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 987122 | 44.9613 | 44.96 |
| 92 Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 450507 | 48.0094 | 48.00 |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 355408 | 46.4666 | 46.46 |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 801583 | 43.2930 | 43.29 |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.078) | 641229 | 48.4190 | 48.41 |
| 78 tert-Butylbenzene | 119 | 9.339 | 9.347 | (0.966) | 575735 | 42.6783 | 42.67 |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 185122 | 45.2940 | 45.29 |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 869751 | 46.8598 | 46.85 |
| 20 trans-1,2-Dichloroethene | 96 | 2.527 | 2.528 | (0.604) | 204715 | 47.1912 | 47.19 |
| 51 trans-1,3-Dichloropropene | 75 | 6.682 | 6.689 | (1.344) | 332164 | 48.7396 | 48.73 |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 234346 | 47.2850 | 47.28 |
| 8 Trichlorofluoromethane | 101 | 1.560 | 1.553 | (0.373) | 320606 | 47.2253 | 47.22 |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 213026 | 47.8020 | 47.80 |

QC Flag Legend

M - Compound response manually integrated.

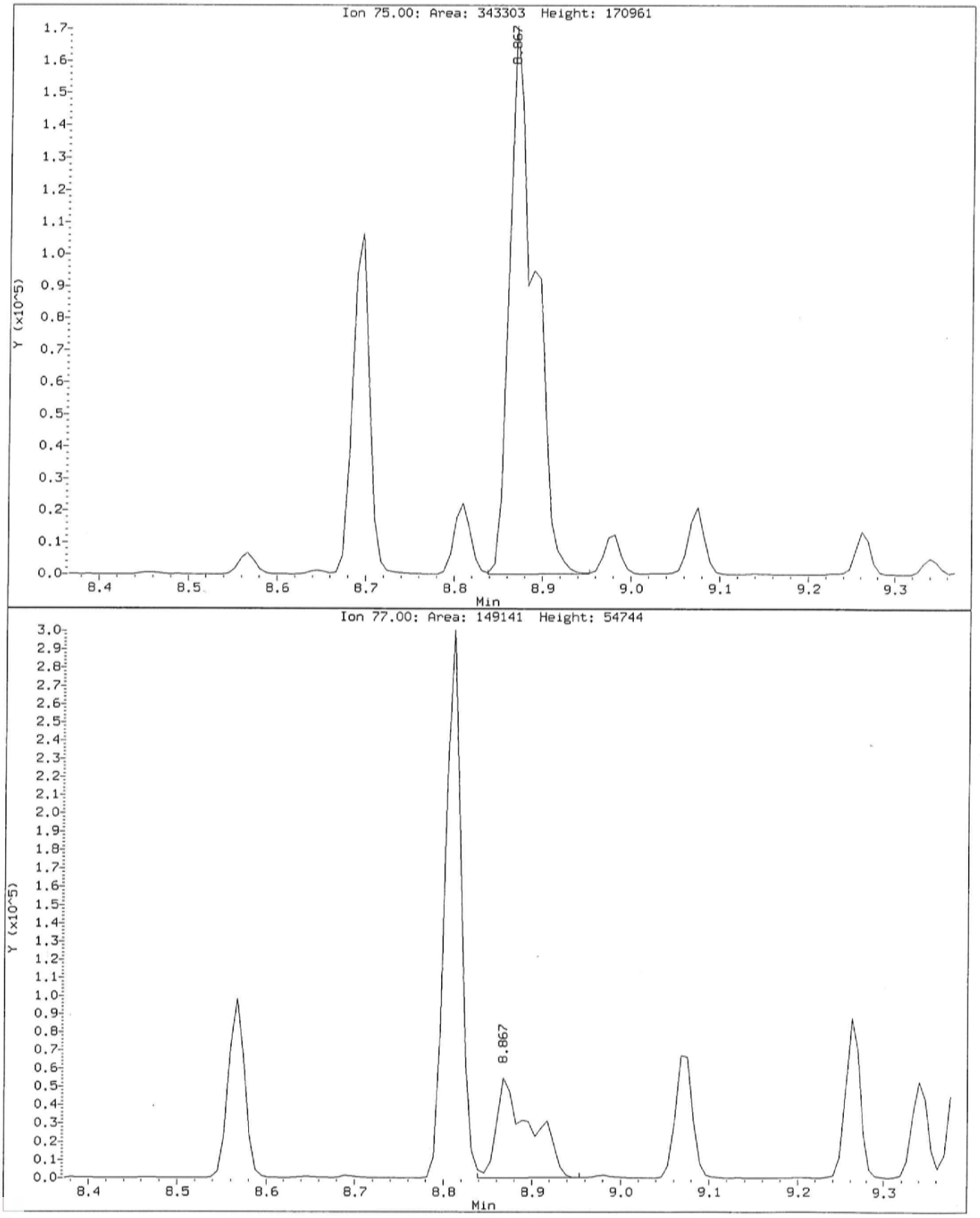



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080614.D
Date : 06-AUG-2019 16:10
Client ID: ICV
Sample Info: ICV;ICV;2;;ICV
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: DG
Column diameter: 0.18

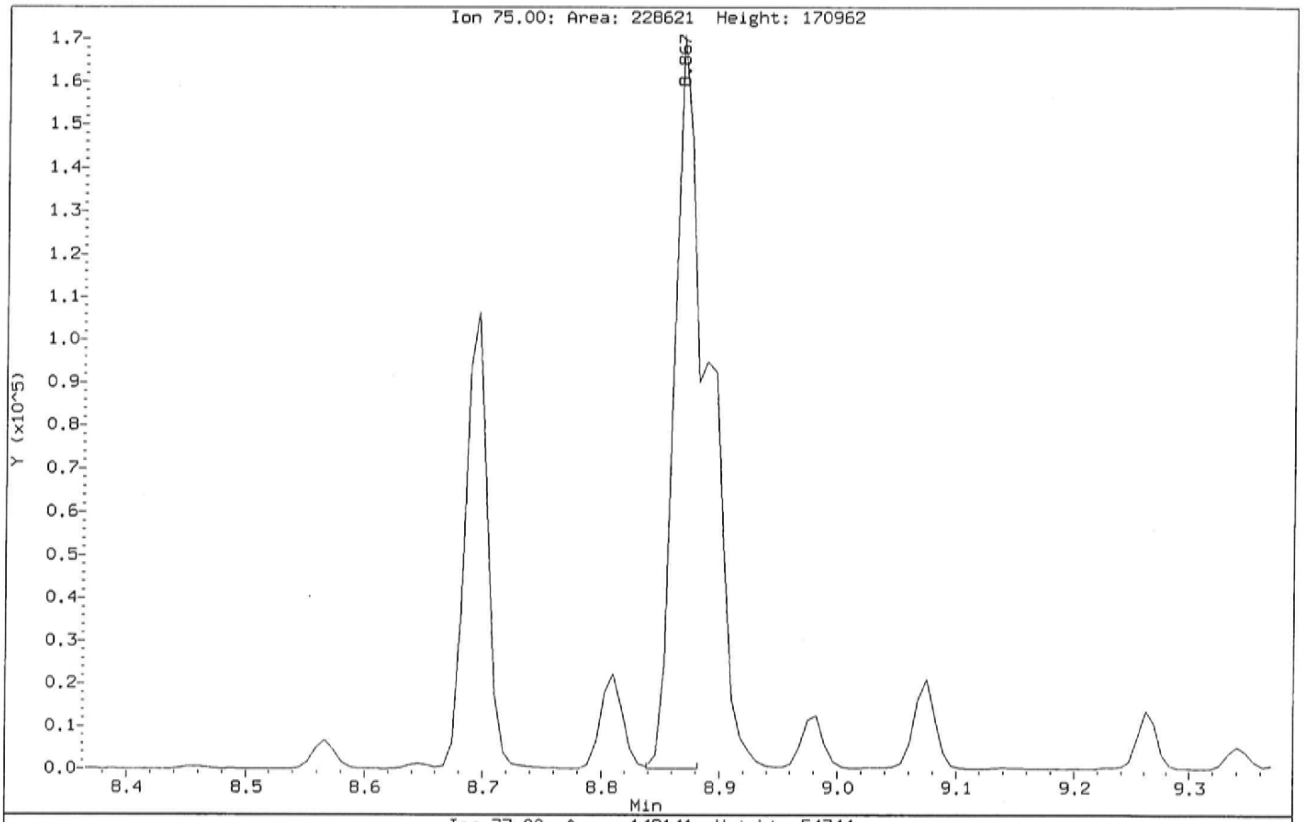
Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\BEFORE\X080614.D
Injection Date: 06-AUG-2019 16:10
Instrument: voa6.i
Client Sample ID: ICV

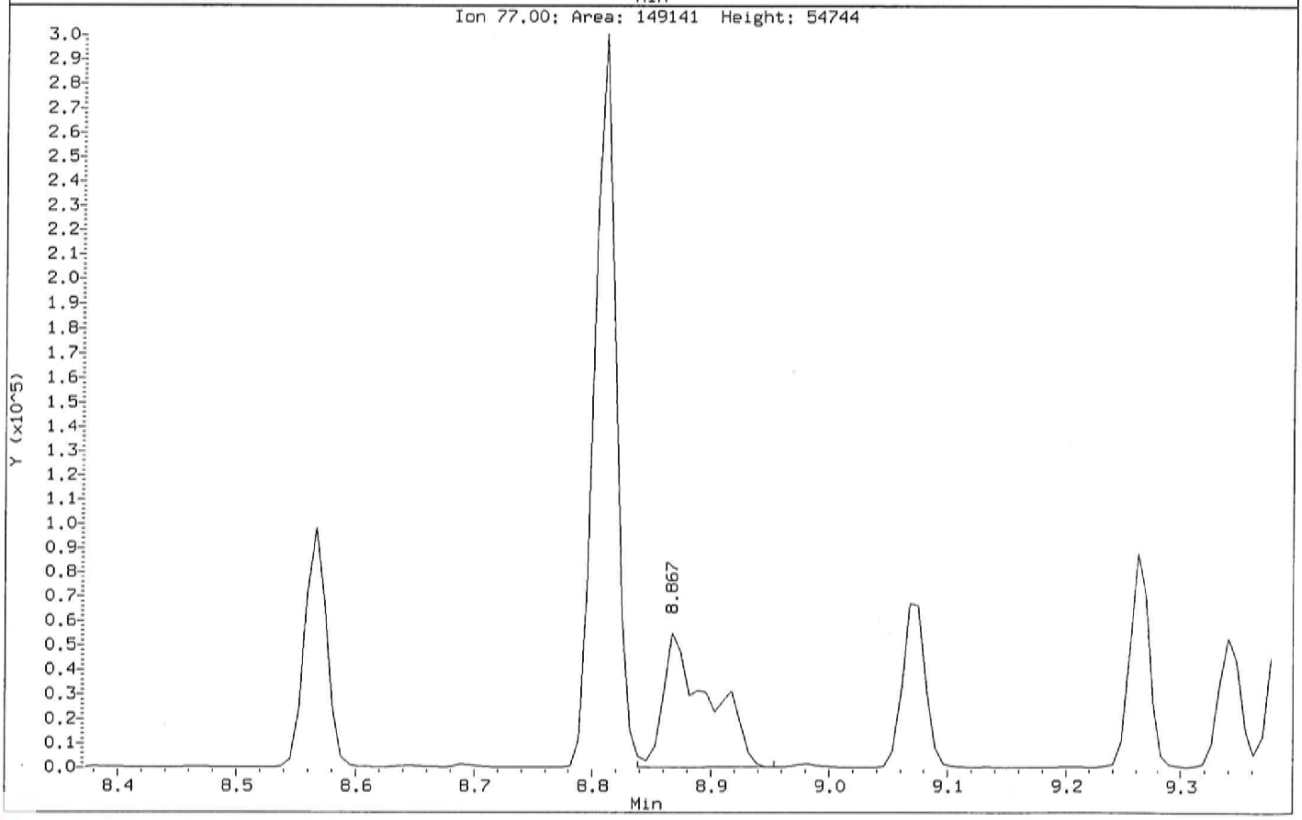
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X190806.b\X080614.D
Injection Date: 06-AUG-2019 16:10
Instrument: voa6.i
Client Sample ID: ICV

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



# MSVOA06 -Logbook

**Batch:** 37000
**Date:** 08-14-2019
**Method:** 8260
**Comments:**

**Analyst:** Presenta Cabascango
**Reviewer:**
**Laboratory:** Houston

| # | Samp ID | Type | Analyzed | DF | Init Wt/Vol | Final Vol | File ID | Matrix | Status | pH |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BFB | TUNE | 08-14-2019 10:36 am | 1.00 | 0.00 mL | 0.00 mL | X081401.D | Liquid | Y | NA |
| | *Auto find/purged* | | | | | | | | | |
| 2 | CCV | CCV | 08-14-2019 11:00 am | 1.00 | 5.00 mL | 0.00 mL | X081402a.D | Liquid | Y | NA |
| | *10 uL cal std/50 mL DI* | | | | | | | | | |
| 3 | CCV | CCV | 08-14-2019 11:24 am | 1.00 | 5.00 mL | 0.00 mL | X081403.D | Liquid | Y | NA |
| | *10 uL cal std/50 mL DI* | | | | | | | | | |
| 4 | VLCSW-190814 | LCS | 08-14-2019 11:48 am | 1.00 | 5.00 mL | 0.00 mL | X081404.D | Liquid | Y | NA |
| | *4 uL LCS std/50 mL DI* | | | | | | | | | |
| 5 | BLK | SAMP | 08-14-2019 12:12 pm | 1.00 | 5.00 mL | 0.00 mL | X081405.D | Liquid | Y | NA |
| | *Cleanup blk* | | | | | | | | | |
| 6 | VBLKW-190814 | MBLK | 08-14-2019 12:36 pm | 1.00 | 5.00 mL | 0.00 mL | X081406.D | Liquid | Y | NA |
| 7 | HS19080637-09 | SAMP | 08-14-2019 01:00 pm | 1.00 | 5.00 mL | 0.00 mL | X081407.D | Liquid | Y | <2 |
| 8 | HS19080637-01 | SAMP | 08-14-2019 01:24 pm | 1.00 | 5.00 mL | 0.00 mL | X081408.D | Liquid | Y | <2 |
| 9 | HS19080637-02 | SAMP | 08-14-2019 01:48 pm | 1.00 | 5.00 mL | 0.00 mL | X081409.D | Liquid | Y | <2 |
| 10 | HS19080637-03 | SAMP | 08-14-2019 02:12 pm | 1.00 | 5.00 mL | 0.00 mL | X081410.D | Liquid | Y | <2 |
| 11 | HS19080637-04 | SAMP | 08-14-2019 02:36 pm | 1.00 | 5.00 mL | 0.00 mL | X081411.D | Liquid | Y | <2 |
| 12 | HS19080684-02 | SAMP | 08-14-2019 03:00 pm | 1.00 | 5.00 mL | 0.00 mL | X081412.D | Liquid | Y | <2 |
| 13 | HS19080684-07 | SAMP | 08-14-2019 03:24 pm | 1.00 | 5.00 mL | 0.00 mL | X081413.D | Liquid | Y | <2 |
| 14 | HS19080684-03 | SAMP | 08-14-2019 03:48 pm | 1.00 | 5.00 mL | 0.00 mL | X081414.D | Liquid | Y | <2 |
| 15 | HS19080684-02MS | MS | 08-14-2019 04:12 pm | 1.00 | 5.00 mL | 0.00 mL | X081415.D | Liquid | Y | NA |
| | *3.2 uL cal std/40 mL sample* | | | | | | | | | |
| 16 | HS19080684-02MSD | MSD | 08-14-2019 04:36 pm | 1.00 | 5.00 mL | 0.00 mL | X081416.D | Liquid | Y | NA |
| | *3.2 uL cal std/40 mL sample* | | | | | | | | | |
| 17 | BLK | SAMP | 08-14-2019 05:00 pm | 1.00 | 5.00 mL | 0.00 mL | X081417.D | Liquid | Y | <2 |
| | *Cleanup blk* | | | | | | | | | |
| 18 | HS19080637-05 | SAMP | 08-14-2019 05:24 pm | 1.00 | 5.00 mL | 0.00 mL | X081418.D | Liquid | Y | <2 |
| 19 | HS19080637-06 | SAMP | 08-14-2019 05:48 pm | 1.00 | 5.00 mL | 0.00 mL | X081419.D | Liquid | Y | <2 |
| 20 | HS19080637-07 | SAMP | 08-14-2019 06:12 pm | 1.00 | 5.00 mL | 0.00 mL | X081420.D | Liquid | Y | <2 |
| 21 | HS19080637-08 | SAMP | 08-14-2019 06:37 pm | 1.00 | 5.00 mL | 0.00 mL | X081421.D | Liquid | Y | <2 |
| 22 | HS19080684-01 | SAMP | 08-14-2019 07:01 pm | 1.00 | 5.00 mL | 0.00 mL | X081422.D | Liquid | Y | <2 |
| 23 | HS19080684-04 | SAMP | 08-14-2019 07:25 pm | 1.00 | 5.00 mL | 0.00 mL | X081423.D | Liquid | Y | <2 |
| 24 | HS19080684-05 | SAMP | 08-14-2019 07:49 pm | 1.00 | 5.00 mL | 0.00 mL | X081424.D | Liquid | Y | <2 |
| 25 | HS19080684-06 | SAMP | 08-14-2019 08:13 pm | 1.00 | 5.00 mL | 0.00 mL | X081425.D | Liquid | Y | <2 |
| 26 | CCV-END | CCV | 08-14-2019 08:37 pm | 1.00 | 5.00 mL | 0.00 mL | X081426.D | Liquid | Y | NA |
| | *10 uL cal std/50 mL DI* | | | | | | | | | |
| 27 | HS19080709-01 | SAMP | 08-14-2019 09:01 pm | 1.00 | 5.00 mL | 0.00 mL | X081427.D | Liquid | Y | NA |
| | *NEAT* | | | | | | | | | |
| 28 | HS19080709-02 | SAMP | 08-14-2019 09:25 pm | 1.00 | 5.00 mL | 0.00 mL | X081428.D | Liquid | Y | NA |
| | *NEAT* | | | | | | | | | |
| 29 | HS19080709-03 | SAMP | 08-14-2019 09:49 pm | 1.00 | 5.00 mL | 0.00 mL | X081429.D | Liquid | Y | NA |
| | *NEAT* | | | | | | | | | |

# MSVOA06 -Logbook

| Chemical | Value |
|---|---|
| SURR SPK ID | 30502-86-03 |
| IS ID | 30502-86-04 |
| ICV STD ID | 30603-79-01/02 |
| LCS/MS ID | 30603-79-01/02 |
| CAL STD ID | 30502-89-01 |
| BFB ID | 30502-86-03 |
| pH Paper | 634-64-10 |

# FORM 2
## WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

| | CLIENT SAMPLE NO. | SMC1 # | SMC2 # | SMC3 (TOL) # | OTHER (DCE) # | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | VLCSW-190814 | 104 | 103 | 96 | 102 | 0 |
| 02 | VBLKW-190814 | 103 | 92 | 103 | 88 | 0 |
| 03 | HS19080684-0 | 100 | 93 | 102 | 91 | 0 |
| 04 | HS19080684-0 | 100 | 93 | 101 | 90 | 0 |
| 05 | HS19080684-0 | 103 | 90 | 101 | 88 | 0 |
| 06 | HS19080684-0 | 99 | 91 | 105 | 88 | 0 |
| 07 | HS19080684-0 | 102 | 92 | 102 | 89 | 0 |
| 08 | HS19080684-0 | 101 | 93 | 102 | 90 | 0 |
| 09 | HS19080684-0 | 103 | 92 | 100 | 89 | 0 |
| 10 | | | | | | |
| 11 | | | | | | |
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| 28 | | | | | | |

| | | QC LIMITS |
|---|---|---|
| SMC1 | = 4-Bromofluorobenzene | (70-130) |
| SMC2 | = Dibromofluoromethane | (70-130) |
| SMC3 (TOL) | = Toluene-d8 | ( 0-130) |
| OTHER(DCE) | = 1,2-Dichloroethane-d4 | ( 0-130) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

VBLKW-190814

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Lab File ID: X081406 Lab Sample ID: VBLKW-190814

Date Analyzed: 08/14/19 Time Analyzed: 1236

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

Instrument ID: VOA6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 01 | VLCSW-190814 | VLCSW-190814 | X081404 | 1148 |
| 02 | HS19080684-0 | HS19080684-02 | X081412 | 1500 |
| 03 | HS19080684-0 | HS19080684-07 | X081413 | 1524 |
| 04 | HS19080684-0 | HS19080684-03 | X081414 | 1548 |
| 05 | HS19080684-0 | HS19080684-02M | X081415 | 1612 |
| 06 | HS19080684-0 | HS19080684-02M | X081416 | 1636 |
| 07 | HS19080684-0 | HS19080684-01 | X081422 | 1901 |
| 08 | HS19080684-0 | HS19080684-04 | X081423 | 1925 |
| 09 | HS19080684-0 | HS19080684-05 | X081424 | 1949 |
| 10 | HS19080684-0 | HS19080684-06 | X081425 | 2013 |
| 11 | | | | |
| 12 | | | | |
| 13 | | | | |
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| 30 | | | | |

COMMENTS:

# FORM 5
## VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
## BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Lab File ID: X081401 BFB Injection Date: 08/14/19

Instrument ID: VOA6 BFB Injection Time: 1036

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 15.0 - 40.0% of mass 95 | 19.5 |
| 75 | 30.0 - 60.0% of mass 95 | 48.1 |
| 95 | Base Peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 7.2 |
| 173 | Less than 2.0% of mass 174 | 0.6 ( 0.9)1 |
| 174 | Greater than 50.0% of mass 95 | 63.9 |
| 175 | 5.0 - 9.0% of mass 174 | 5.1 ( 8.0)1 |
| 176 | 95.0 - 101.0% of mass 174 | 62.7 ( 98.1)1 |
| 177 | 5.0 - 9.0% of mass 176 | 4.5 ( 7.2)2 |

1-Value is % mass 174 2-Value is % mass 176

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

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | CCV | CCV | X081403 | 08/14/19 | 1124 |
| 02 | VLCSW-190814 | VLCSW-190814 | X081404 | 08/14/19 | 1148 |
| 03 | VBLKW-190814 | VBLKW-190814 | X081406 | 08/14/19 | 1236 |
| 04 | HS19080684-0 | HS19080684-02 | X081412 | 08/14/19 | 1500 |
| 05 | HS19080684-0 | HS19080684-07 | X081413 | 08/14/19 | 1524 |
| 06 | HS19080684-0 | HS19080684-03 | X081414 | 08/14/19 | 1548 |
| 07 | HS19080684-0 | HS19080684-02M | X081415 | 08/14/19 | 1612 |
| 08 | HS19080684-0 | HS19080684-02M | X081416 | 08/14/19 | 1636 |
| 09 | HS19080684-0 | HS19080684-01 | X081422 | 08/14/19 | 1901 |
| 10 | HS19080684-0 | HS19080684-04 | X081423 | 08/14/19 | 1925 |
| 11 | HS19080684-0 | HS19080684-05 | X081424 | 08/14/19 | 1949 |
| 12 | HS19080684-0 | HS19080684-06 | X081425 | 08/14/19 | 2013 |
| 13 | CCV-END | CCV-END | X081426 | 08/14/19 | 2037 |
| 14 | | | | | |
| 15 | | | | | |
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| 18 | | | | | |
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| 22 | | | | | |

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Instrument ID: VOA6 Calibration Date: 08/14/19 Time: 1124

Lab File ID: X081403 Init. Calib. Date(s): 08/06/19 08/06/19

Init. Calib. Times: 1058 1458

GC Column: DB624 ID: 0.18 (mm)

| COMPOUND | RRF or AMOUNT | RRF50.000 or AMOUNT | CCAL RRF50.000 | MIN RRF | %D or %DRIFT | MAX %D or %DRIFT | CURV TYPE |
|---|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | 0.5400000 | 0.5219346 | 0.5219346 | 0.2 | 3.34 | 20.00 | AVRG |
| trans-1,3-Dichloropropene | 0.4960000 | 0.4683309 | 0.4683309 | 0.1 | 5.58 | 20.00 | AVRG |
| 1,3-Dichlorobenzene | 1.5380000 | 1.3852699 | 1.3852699 | 0.6 | 9.93 | 20.00 | AVRG |
| 2,2-Dichloropropane | 0.7280000 | 0.6232722 | 0.6232722 | 0.1 | 14.38 | 20.00 | AVRG |
| 1,1-Dichloropropene | 0.4400000 | 0.3961129 | 0.3961129 | 0.1 | 9.97 | 20.00 | AVRG |
| Dibromomethane | 0.2320000 | 0.2196110 | 0.2196110 | 0.1 | 5.34 | 20.00 | AVRG |
| 1,2-Dibromoethane | 0.3860000 | 0.3665816 | 0.3665816 | 0.1 | 5.03 | 20.00 | AVRG |
| trans-1,2-Dichloroethene | 0.4660000 | 0.4539569 | 0.4539569 | 0.1 | 2.58 | 20.00 | AVRG |
| 1,1,1,2-Tetrachloroethane | 0.3710000 | 0.3571620 | 0.3571620 | 0.1 | 3.73 | 20.00 | AVRG |
| 1,1,1-Trichloroethane | 0.7430000 | 0.6912869 | 0.6912869 | 0.1 | 6.96 | 20.00 | AVRG |
| 1,1,2,2-Tetrachloroethane | 50.764962 | 50.000000 | 0.8194903 | 0.3 | -1.53 | 20.00 | LINR |
| Toluene | 1.4920000 | 1.4410156 | 1.4410156 | 0.4 | 3.42 | 20.00 | AVRG |
| 1,1,2-Trichloroethane | 0.2940000 | 0.2818875 | 0.2818875 | 0.1 | 4.12 | 20.00 | AVRG |
| 1,1-Dichloroethane | 0.8800000 | 0.8588233 | 0.8588233 | 0.2 | 2.41 | 20.00 | AVRG |
| 1,1-Dichloroethene | 0.3850000 | 0.3836974 | 0.3836974 | 0.1 | 0.34 | 20.00 | AVRG |
| Trichlorofluoromethane | 0.7300000 | 0.6966991 | 0.6966991 | 0.1 | 4.56 | 20.00 | AVRG |
| 1,2,3-Trichlorobenzene | 50.157789 | 50.000000 | 0.4571922 | 0.1 | -0.32 | 20.00 | LINR |
| Tetrachloroethene | 0.3280000 | 0.2880343 | 0.2880343 | 0.2 | 12.18 | 20.00 | AVRG |
| 1,2,4-Trichlorobenzene | 49.893083 | 50.000000 | 0.7085999 | 0.2 | 0.21 | 20.00 | LINR |
| 1,2,4-Trimethylbenzene | 2.5360000 | 2.3215192 | 2.3215192 | 0.1 | 8.46 | 20.00 | AVRG |
| tert-Butylbenzene | 2.0480000 | 1.7630687 | 1.7630687 | 0.1 | 13.91 | 20.00 | AVRG |
| Trichloroethene | 0.3600000 | 0.3459338 | 0.3459338 | 0.2 | 3.91 | 20.00 | AVRG |
| 1,2-Dichlorobenzene | 50.290577 | 50.000000 | 1.3375882 | 0.4 | -0.58 | 20.00 | LINR |
| 1,2-Dichloroethane | 0.4730000 | 0.4255449 | 0.4255449 | 0.1 | 10.03 | 20.00 | AVRG |
| 1,2-Dichloropropane | 0.3210000 | 0.3187123 | 0.3187123 | 0.1 | 0.71 | 20.00 | AVRG |
| 1,3,5-Trimethylbenzene | 2.4390000 | 2.2277948 | 2.2277948 | 0.1 | 8.66 | 20.00 | AVRG |
| 1,3-Dichloropropane | 0.6060000 | 0.5772822 | 0.5772822 | 0.1 | 4.74 | 20.00 | AVRG |
| 1,4-Dichlorobenzene | 49.928439 | 50.000000 | 1.4241785 | 0.4 | 0.14 | 20.00 | LINR |
| 2-Butanone | 0.2300000 | 0.2094370 | 0.2094370 | 0.1 | 8.94 | 20.00 | AVRG |
| 2-Chlorotoluene | 2.0570000 | 1.8853822 | 1.8853822 | 0.1 | 8.34 | 20.00 | AVRG |
| 2-Hexanone | 98.164998 | 100.00000 | 0.2508956 | 0.1 | 1.84 | 20.00 | LINR |
| 4-Chlorotoluene | 2.4030000 | 2.1982276 | 2.1982276 | 0.1 | 8.52 | 20.00 | AVRG |
| Styrene | 1.0650000 | 1.0325888 | 1.0325888 | 0.3 | 3.04 | 20.00 | AVRG |
| 4-Methyl-2-Pentanone | 0.3840000 | 0.3656388 | 0.3656388 | 0.1 | 4.78 | 20.00 | AVRG |
| Acetone | 86.046892 | 100.00000 | 0.1488485 | 0.1 | 13.95 | 20.00 | LINR |
| Benzene | 1.2750000 | 1.2354695 | 1.2354695 | 0.5 | 3.10 | 20.00 | AVRG |
| Bromobenzene | 0.9260000 | 0.8582338 | 0.8582338 | 0.1 | 7.32 | 20.00 | AVRG |
| Bromochloromethane | 0.3030000 | 0.2840570 | 0.2840570 | 0.1 | 6.25 | 20.00 | AVRG |
| Bromodichloromethane | 0.4470000 | 0.4274506 | 0.4274506 | 0.2 | 4.37 | 20.00 | AVRG |
| Bromoform | 0.3050000 | 0.2883317 | 0.2883317 | 0.1 | 5.46 | 20.00 | AVRG |
| Bromomethane | 56.163494 | 50.000000 | 0.4185131 | 0.1 | -12.33 | 20.00 | LINR |
| Carbon Disulfide | 1.2330000 | 1.2374019 | 1.2374019 | 0.1 | -0.36 | 20.00 | AVRG |



FORM VII VOA

# FORM 7B
## VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1908068

Instrument ID: VOA6 Calibration Date: 08/14/19 Time: 1124

Lab File ID: X081403 Init. Calib. Date(s): 08/06/19 08/06/19

Init. Calib. Times: 1058 1458

GC Column: DB624 ID: 0.18 (mm)

| COMPOUND | RRF or AMOUNT | RRF50.000 or AMOUNT | CCAL RRF50.000 | MIN RRF | %D or %DRIFT | MAX %D or %DRIFT | CURV TYPE |
|---|---|---|---|---|---|---|---|
| Carbon Tetrachloride | 0.4540000 | 0.3934683 | 0.3934683 | 0.1 | 13.33 | 20.00 | AVRG |
| Chlorobenzene | 1.0010000 | 0.9526509 | 0.9526509 | 0.5 | 4.83 | 20.00 | AVRG |
| Chloroethane | 0.2790000 | 0.3069981 | 0.3069981 | 0.1 | -10.04 | 20.00 | AVRG |
| Chloroform | 0.8950000 | 0.8507347 | 0.8507347 | 0.2 | 4.94 | 20.00 | AVRG |
| Chloromethane | 0.4510000 | 0.4015072 | 0.4015072 | 0.1 | 10.97 | 20.00 | AVRG |
| cis-1,2-Dichloroethene | 0.5540000 | 0.5361345 | 0.5361345 | 0.1 | 3.22 | 20.00 | AVRG |
| Dibromochloromethane | 0.4010000 | 0.3878188 | 0.3878188 | 0.1 | 3.29 | 20.00 | AVRG |
| Dichlorodifluoromethane | 45.105014 | 50.000000 | 0.4252543 | 0.1 | 9.79 | 20.00 | LINR |
| Ethylbenzene | 0.5190000 | 0.4843012 | 0.4843012 | 0.1 | 6.68 | 20.00 | AVRG |
| Hexachlorobutadiene | 55.468033 | 50.000000 | 0.3342310 | 0.1 | -10.94 | 20.00 | 2RDR |
| Isopropylbenzene | 1.5180000 | 1.3462297 | 1.3462297 | 0.1 | 11.32 | 20.00 | AVRG |
| m,p-Xylenes | 0.6250000 | 0.5823616 | 0.5823616 | 0.1 | 6.82 | 20.00 | AVRG |
| Methylene Chloride | 52.123073 | 50.000000 | 0.4933696 | 0.1 | -4.25 | 20.00 | LINR |
| n-Butylbenzene | 2.1110000 | 1.7800001 | 1.7800001 | 0.5 | 15.68 | 20.00 | AVRG |
| n-Propylbenzene | 3.3330000 | 2.9800946 | 2.9800946 | 0.1 | 10.59 | 20.00 | AVRG |
| Naphthalene | 1.4250000 | 1.2700408 | 1.2700408 | 0.2 | 10.87 | 20.00 | AVRG |
| o-Xylene | 0.6150000 | 0.5826349 | 0.5826349 | 0.3 | 5.26 | 20.00 | AVRG |
| sec-Butylbenzene | 2.8110000 | 2.3645649 | 2.3645649 | 0.1 | 15.88 | 20.00 | AVRG |
| Vinyl Chloride | 0.4790000 | 0.4979550 | 0.4979550 | 0.1 | -3.96 | 20.00 | AVRG |
| 1,2,3-Trichloropropane | 51.000571 | 50.000000 | 1.0373754 | 0.1 | -2.00 | 20.00 | LINR |
| p-Isopropyltoluene | 2.5310000 | 2.1798389 | 2.1798389 | 0.1 | 13.87 | 20.00 | AVRG |
| 1,2-Dibromo-3-Chloropropane | 48.746600 | 50.000000 | 0.1333071 | 0.05 | 2.51 | 20.00 | LINR |
| Freon TF | 53.645457 | 50.000000 | 0.3449584 | 0.1 | -7.29 | 20.00 | 2RDR |
| 4-Bromofluorobenzene | 51.982371 | 50.000000 | 0.4820408 | 0.1 | -3.96 | 20.00 | LINR |
| Dibromofluoromethane | 50.947040 | 50.000000 | 0.4881515 | 0.1 | -1.89 | 20.00 | LINR |
| Toluene-d8 | 1.3420000 | 1.3108735 | 1.3108735 | 0.1 | 2.32 | 20.00 | AVRG |
| 1,2-Dichloroethane-d4 | 48.967090 | 50.000000 | 0.5588335 | 0.1 | 2.06 | 20.00 | LINR |

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Instrument ID: VOA6 Calibration Date: 08/14/19 Time: 2037

Lab File ID: X081426 Init. Calib. Date(s): 08/06/19 08/06/19

Init. Calib. Times: 1058 1458

GC Column: DB624 ID: 0.18 (mm)

| COMPOUND | RRF or AMOUNT | RRF50.000 or AMOUNT | CCAL RRF50.000 | MIN RRF | %D or %DRIFT | MAX %D or %DRIFT | CURV TYPE |
|---|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | 0.5400000 | 0.5219346 | 0.5219346 | 0.2 | 3.34 | 50.00 | AVRG |
| trans-1,3-Dichloropropene | 0.4960000 | 0.4683309 | 0.4683309 | 0.1 | 5.58 | 50.00 | AVRG |
| 1,3-Dichlorobenzene | 1.5380000 | 1.3852699 | 1.3852699 | 0.6 | 9.93 | 50.00 | AVRG |
| 2,2-Dichloropropane | 0.7280000 | 0.6232722 | 0.6232722 | 0.1 | 14.38 | 50.00 | AVRG |
| 1,1-Dichloropropene | 0.4400000 | 0.3961129 | 0.3961129 | 0.1 | 9.97 | 50.00 | AVRG |
| Dibromomethane | 0.2320000 | 0.2196110 | 0.2196110 | 0.1 | 5.34 | 50.00 | AVRG |
| 1,2-Dibromoethane | 0.3860000 | 0.3665816 | 0.3665816 | 0.1 | 5.03 | 50.00 | AVRG |
| trans-1,2-Dichloroethene | 0.4660000 | 0.4539569 | 0.4539569 | 0.1 | 2.58 | 50.00 | AVRG |
| 1,1,1,2-Tetrachloroethane | 0.3710000 | 0.3571620 | 0.3571620 | 0.1 | 3.73 | 50.00 | AVRG |
| 1,1,1-Trichloroethane | 0.7430000 | 0.6912869 | 0.6912869 | 0.1 | 6.96 | 50.00 | AVRG |
| 1,1,2,2-Tetrachloroethane | 47.522099 | 50.000000 | 0.8194903 | 0.3 | 4.96 | 50.00 | LINR |
| Toluene | 1.4920000 | 1.4410156 | 1.4410156 | 0.4 | 3.42 | 50.00 | AVRG |
| 1,1,2-Trichloroethane | 0.2940000 | 0.2818875 | 0.2818875 | 0.1 | 4.12 | 50.00 | AVRG |
| 1,1-Dichloroethane | 0.8800000 | 0.8588233 | 0.8588233 | 0.2 | 2.41 | 50.00 | AVRG |
| 1,1-Dichloroethene | 0.3850000 | 0.3836974 | 0.3836974 | 0.1 | 0.34 | 50.00 | AVRG |
| Trichlorofluoromethane | 0.7300000 | 0.6966991 | 0.6966991 | 0.1 | 4.56 | 50.00 | AVRG |
| 1,2,3-Trichlorobenzene | 41.303619 | 50.000000 | 0.4571922 | 0.1 | 17.39 | 50.00 | LINR |
| Tetrachloroethene | 0.3280000 | 0.2880343 | 0.2880343 | 0.2 | 12.18 | 50.00 | AVRG |
| 1,2,4-Trichlorobenzene | 42.949060 | 50.000000 | 0.7085999 | 0.2 | 14.10 | 50.00 | LINR |
| 1,2,4-Trimethylbenzene | 2.5360000 | 2.3215192 | 2.3215192 | 0.1 | 8.46 | 50.00 | AVRG |
| tert-Butylbenzene | 2.0480000 | 1.7630687 | 1.7630687 | 0.1 | 13.91 | 50.00 | AVRG |
| Trichloroethene | 0.3600000 | 0.3459338 | 0.3459338 | 0.2 | 3.91 | 50.00 | AVRG |
| 1,2-Dichlorobenzene | 48.073966 | 50.000000 | 1.3375882 | 0.4 | 3.85 | 50.00 | LINR |
| 1,2-Dichloroethane | 0.4730000 | 0.4255449 | 0.4255449 | 0.1 | 10.03 | 50.00 | AVRG |
| 1,2-Dichloropropane | 0.3210000 | 0.3187123 | 0.3187123 | 0.1 | 0.71 | 50.00 | AVRG |
| 1,3,5-Trimethylbenzene | 2.4390000 | 2.2277948 | 2.2277948 | 0.1 | 8.66 | 50.00 | AVRG |
| 1,3-Dichloropropane | 0.6060000 | 0.5772822 | 0.5772822 | 0.1 | 4.74 | 50.00 | AVRG |
| 1,4-Dichlorobenzene | 47.728229 | 50.000000 | 1.4241785 | 0.4 | 4.54 | 50.00 | LINR |
| 2-Butanone | 0.2300000 | 0.2094370 | 0.2094370 | 0.1 | 8.94 | 50.00 | AVRG |
| 2-Chlorotoluene | 2.0570000 | 1.8853822 | 1.8853822 | 0.1 | 8.34 | 50.00 | AVRG |
| 2-Hexanone | 94.251386 | 100.00000 | 0.2508956 | 0.1 | 5.75 | 50.00 | LINR |
| 4-Chlorotoluene | 2.4030000 | 2.1982276 | 2.1982276 | 0.1 | 8.52 | 50.00 | AVRG |
| Styrene | 1.0650000 | 1.0325888 | 1.0325888 | 0.3 | 3.04 | 50.00 | AVRG |
| 4-Methyl-2-Pentanone | 0.3840000 | 0.3656388 | 0.3656388 | 0.1 | 4.78 | 50.00 | AVRG |
| Acetone | 80.911182 | 100.00000 | 0.1488485 | 0.1 | 19.09 | 50.00 | LINR |
| Benzene | 1.2750000 | 1.2354695 | 1.2354695 | 0.5 | 3.10 | 50.00 | AVRG |
| Bromobenzene | 0.9260000 | 0.8582338 | 0.8582338 | 0.1 | 7.32 | 50.00 | AVRG |
| Bromochloromethane | 0.3030000 | 0.2840570 | 0.2840570 | 0.1 | 6.25 | 50.00 | AVRG |
| Bromodichloromethane | 0.4470000 | 0.4274506 | 0.4274506 | 0.2 | 4.37 | 50.00 | AVRG |
| Bromoform | 0.3050000 | 0.2883317 | 0.2883317 | 0.1 | 5.46 | 50.00 | AVRG |
| Bromomethane | 51.527738 | 50.000000 | 0.4185131 | 0.1 | -3.06 | 50.00 | LINR |
| Carbon Disulfide | 1.2330000 | 1.2374019 | 1.2374019 | 0.1 | -0.36 | 50.00 | AVRG |

# FORM 7B
## VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1908068

Instrument ID: VOA6 Calibration Date: 08/14/19 Time: 2037

Lab File ID: X081426 Init. Calib. Date(s): 08/06/19 08/06/19

Init. Calib. Times: 1058 1458

GC Column: DB624 ID: 0.18 (mm)

| COMPOUND | RRF or AMOUNT | RRF50.000 or AMOUNT | CCAL RRF50.000 | MIN RRF | %D or %DRIFT | MAX %D or %DRIFT | CURV TYPE |
|---|---|---|---|---|---|---|---|
| Carbon Tetrachloride | 0.4540000 | 0.3934683 | 0.3934683 | 0.1 | 13.33 | 50.00 | AVRG |
| Chlorobenzene | 1.0010000 | 0.9526509 | 0.9526509 | 0.5 | 4.83 | 50.00 | AVRG |
| Chloroethane | 0.2790000 | 0.3069981 | 0.3069981 | 0.1 | -10.04 | 50.00 | AVRG |
| Chloroform | 0.8950000 | 0.8507347 | 0.8507347 | 0.2 | 4.94 | 50.00 | AVRG |
| Chloromethane | 0.4510000 | 0.4015072 | 0.4015072 | 0.1 | 10.97 | 50.00 | AVRG |
| cis-1,2-Dichloroethene | 0.5540000 | 0.5361345 | 0.5361345 | 0.1 | 3.22 | 50.00 | AVRG |
| Dibromochloromethane | 0.4010000 | 0.3878188 | 0.3878188 | 0.1 | 3.29 | 50.00 | AVRG |
| Dichlorodifluoromethane | 41.476151 | 50.000000 | 0.4252543 | 0.1 | 17.05 | 50.00 | LINR |
| Ethylbenzene | 0.5190000 | 0.4843012 | 0.4843012 | 0.1 | 6.68 | 50.00 | AVRG |
| Hexachlorobutadiene | 41.885042 | 50.000000 | 0.3342310 | 0.1 | 16.23 | 50.00 | 2RDR |
| Isopropylbenzene | 1.5180000 | 1.3462297 | 1.3462297 | 0.1 | 11.32 | 50.00 | AVRG |
| m,p-Xylenes | 0.6250000 | 0.5823616 | 0.5823616 | 0.1 | 6.82 | 50.00 | AVRG |
| Methylene Chloride | 50.715587 | 50.000000 | 0.4933696 | 0.1 | -1.43 | 50.00 | LINR |
| n-Butylbenzene | 2.1110000 | 1.7800001 | 1.7800001 | 0.5 | 15.68 | 50.00 | AVRG |
| n-Propylbenzene | 3.3330000 | 2.9800946 | 2.9800946 | 0.1 | 10.59 | 50.00 | AVRG |
| Naphthalene | 1.4250000 | 1.2700408 | 1.2700408 | 0.2 | 10.87 | 50.00 | AVRG |
| o-Xylene | 0.6150000 | 0.5826349 | 0.5826349 | 0.3 | 5.26 | 50.00 | AVRG |
| sec-Butylbenzene | 2.8110000 | 2.3645649 | 2.3645649 | 0.1 | 15.88 | 50.00 | AVRG |
| Vinyl Chloride | 0.4790000 | 0.4979550 | 0.4979550 | 0.1 | -3.96 | 50.00 | AVRG |
| 1,2,3-Trichloropropane | 73.639804 | 50.000000 | 1.0373754 | 0.1 | -47.28 | 50.00 | LINR |
| p-Isopropyltoluene | 2.5310000 | 2.1798389 | 2.1798389 | 0.1 | 13.87 | 50.00 | AVRG |
| 1,2-Dibromo-3-Chloropropane | 45.390992 | 50.000000 | 0.1333071 | 0.05 | 9.22 | 50.00 | LINR |
| Freon TF | 44.069563 | 50.000000 | 0.3449584 | 0.1 | 11.86 | 50.00 | 2RDR |
| 4-Bromofluorobenzene | 51.125838 | 50.000000 | 0.4820408 | 0.1 | -2.25 | 50.00 | LINR |
| Dibromofluoromethane | 50.694745 | 50.000000 | 0.4881515 | 0.1 | -1.39 | 50.00 | LINR |
| Toluene-d8 | 1.3420000 | 1.3108735 | 1.3108735 | 0.1 | 2.32 | 50.00 | AVRG |
| 1,2-Dichloroethane-d4 | 49.440820 | 50.000000 | 0.5588335 | 0.1 | 1.12 | 50.00 | LINR |



FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Lab File ID (Standard): X081403 Date Analyzed: 08/14/19

Instrument ID: VOA6 Time Analyzed: 1124

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

| | | IS1(DCB) AREA # | RT # | IS2(CBZ) AREA # | RT # | IS3(DFB) AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 292454 | 9.67 | 557273 | 7.67 | 614382 | 4.97 |
| | UPPER LIMIT | 584908 | 10.17 | 1114546 | 8.17 | 1228764 | 5.47 |
| | LOWER LIMIT | 146227 | 9.17 | 278637 | 7.17 | 307191 | 4.47 |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | VLCSW-190814 | 310825 | 9.67 | 587564 | 7.67 | 638171 | 4.97 |
| 02 | VBLKW-190814 | 390898 | 9.67 | 743397 | 7.67 | 880456 | 4.97 |
| 03 | HS19080684-0 | 372945 | 9.67 | 725656 | 7.67 | 859926 | 4.97 |
| 04 | HS19080684-0 | 390254 | 9.67 | 730867 | 7.67 | 867863 | 4.97 |
| 05 | HS19080684-0 | 392150 | 9.67 | 747265 | 7.67 | 881598 | 4.97 |
| 06 | HS19080684-0 | 379894 | 9.67 | 739869 | 7.67 | 871306 | 4.97 |
| 07 | HS19080684-0 | 359195 | 9.67 | 693220 | 7.67 | 812761 | 4.97 |
| 08 | HS19080684-0 | 340398 | 9.67 | 702294 | 7.67 | 869024 | 4.97 |
| 09 | HS19080684-0 | 377364 | 9.67 | 722636 | 7.67 | 870071 | 4.97 |
| 10 | HS19080684-0 | 373920 | 9.67 | 717827 | 7.67 | 865265 | 4.97 |
| 11 | HS19080684-0 | 410379 | 9.67 | 767811 | 7.67 | 895063 | 4.97 |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (CBZ) = Chlorobenzene-d5
IS3 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

# FORM 8
## VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19080684

Lab File ID (Standard): X081403 Date Analyzed: 08/14/19

Instrument ID: VOA6 Time Analyzed: 1124

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

| | | IS4 AREA # | RT # | AREA # | RT # | AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 416403 | 4.18 | | | | |
| | UPPER LIMIT | 832806 | 4.68 | | | | |
| | LOWER LIMIT | 208202 | 3.68 | | | | |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | VLCSW-190814 | 420963 | 4.18 | | | | |
| 02 | VBLKW-190814 | 633883 | 4.18 | | | | |
| 03 | HS19080684-0 | 613347 | 4.18 | | | | |
| 04 | HS19080684-0 | 614059 | 4.18 | | | | |
| 05 | HS19080684-0 | 622838 | 4.18 | | | | |
| 06 | HS19080684-0 | 618211 | 4.18 | | | | |
| 07 | HS19080684-0 | 576568 | 4.18 | | | | |
| 08 | HS19080684-0 | 624026 | 4.18 | | | | |
| 09 | HS19080684-0 | 621149 | 4.18 | | | | |
| 10 | HS19080684-0 | 612074 | 4.18 | | | | |
| 11 | HS19080684-0 | 633893 | 4.18 | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081401.D Page 1

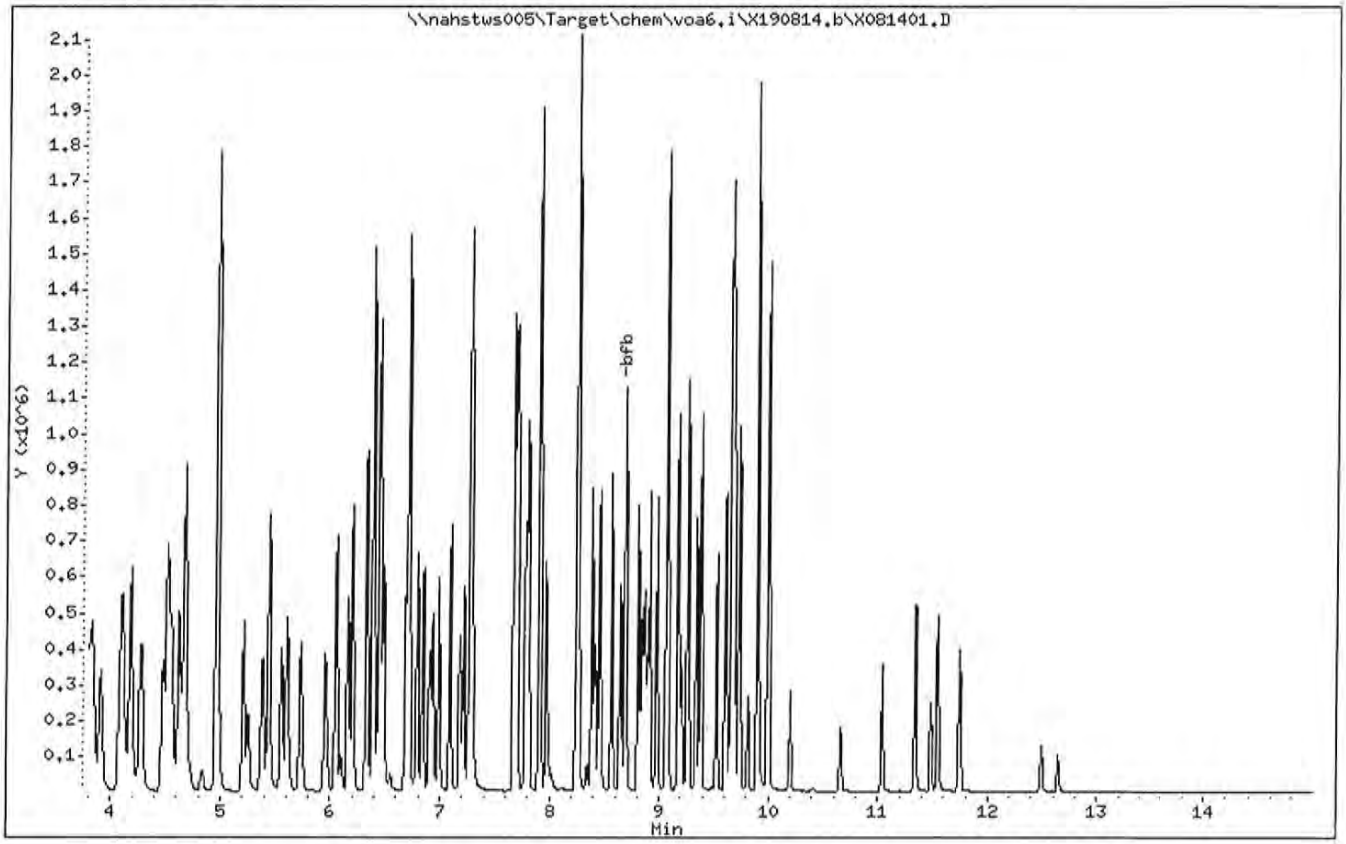
Date : 14-AUG-2019 10:36

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081401.D Page 2

Date : 14-AUG-2019 10:36

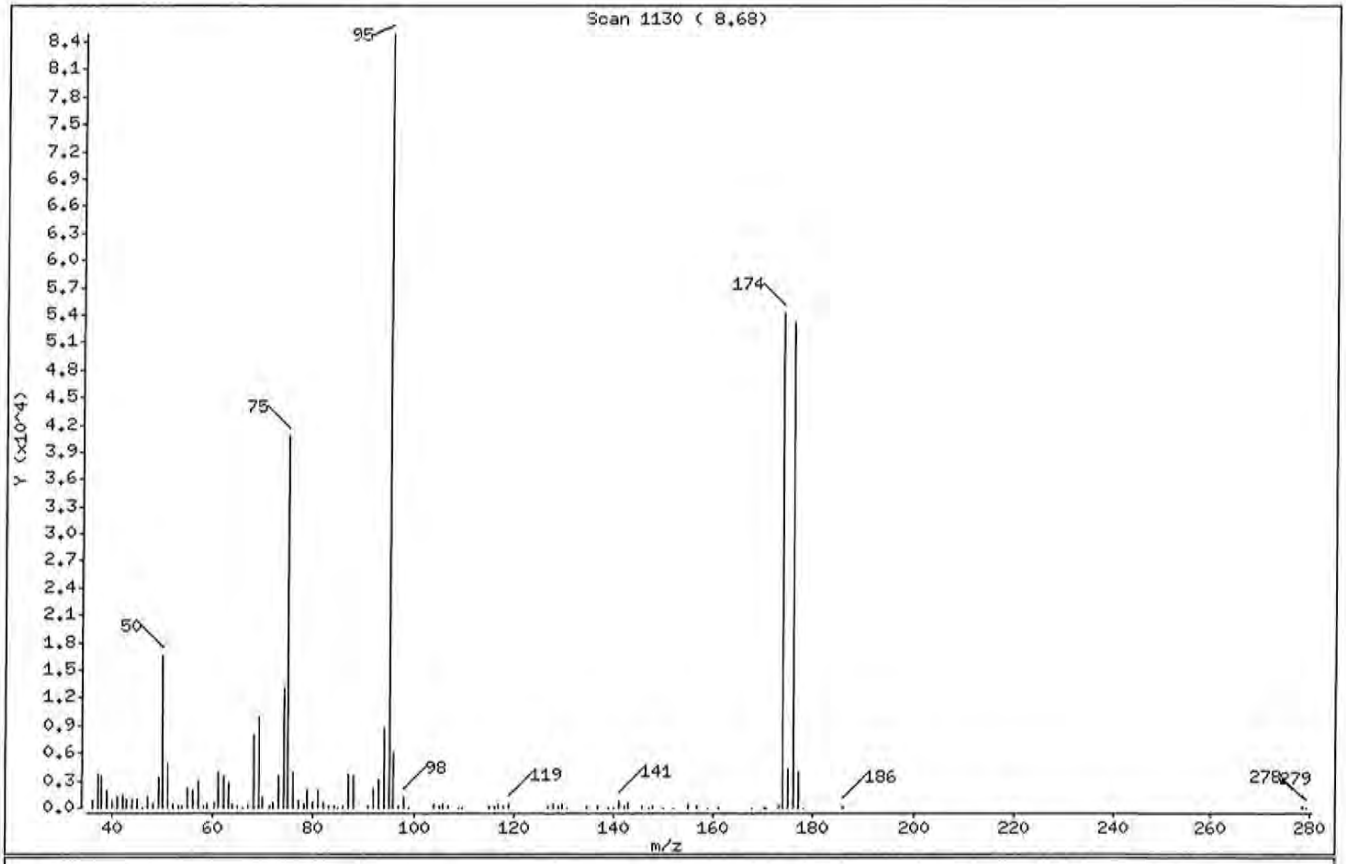
Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

1 bfb




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 95 | Base Peak, 100% relative abundance | 100.00 |
| 50 | 15.00 - 40.00% of mass 95 | 19.48 |
| 75 | 30.00 - 60.00% of mass 95 | 48.13 |
| 96 | 5.00 - 9.00% of mass 95 | 7.23 |
| 173 | Less than 2.00% of mass 174 | 0.55 ( 0.86) |
| 174 | Greater than 50.00% of mass 95 | 63.87 |
| 175 | 5.00 - 9.00% of mass 174 | 5.12 ( 8.02) |
| 176 | 95.00 - 101.00% of mass 174 | 62.67 ( 98.12) |
| 177 | 5.00 - 9.00% of mass 176 | 4.51 ( 7.20) |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081401.D Page 3

Date : 14-AUG-2019 10:36

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: X081401.D
Spectrum: Scan 1130 ( 8.68)
Location of Maximum: 95.00
Number of points: 106

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 36.00 | 846 | 63.10 | 2644 | 92.00 | 2073 | 140.00 | 83 |
| 37.10 | 3741 | 64.00 | 369 | 93.00 | 3061 | 140.90 | 698 |
| 38.00 | 3494 | 65.00 | 124 | 94.00 | 8865 | 142.00 | 233 |
| 39.00 | 1944 | 65.90 | 70 | 95.00 | 84800 | 142.90 | 548 |
| 40.00 | 696 | 67.00 | 304 | 96.00 | 6127 | 145.80 | 130 |
| 41.10 | 1165 | 68.00 | 8026 | 97.00 | 232 | 147.00 | 76 |
| 42.00 | 1447 | 69.00 | 9864 | 98.10 | 1103 | 147.90 | 205 |
| 43.00 | 1032 | 70.00 | 1215 | 99.10 | 79 | 150.00 | 97 |
| 43.90 | 942 | 71.20 | 140 | 103.90 | 333 | 152.10 | 60 |
| 45.10 | 955 | 72.00 | 506 | 105.00 | 204 | 154.80 | 315 |
| 46.00 | 55 | 73.00 | 3434 | 105.90 | 361 | 156.80 | 120 |
| 47.00 | 1149 | 74.00 | 13072 | 106.90 | 174 | 159.00 | 51 |
| 48.00 | 402 | 75.00 | 40816 | 109.00 | 97 | 160.90 | 88 |
| 49.10 | 3301 | 76.10 | 3986 | 109.80 | 70 | 167.90 | 71 |
| 50.00 | 16520 | 77.10 | 706 | 115.20 | 123 | 170.20 | 82 |
| 51.00 | 4824 | 78.00 | 375 | 116.00 | 240 | 170.70 | 88 |
| 52.00 | 293 | 78.90 | 1990 | 116.80 | 432 | 173.00 | 468 |
| 53.00 | 186 | 79.90 | 610 | 117.80 | 248 | 173.90 | 54160 |
| 53.90 | 177 | 80.90 | 2035 | 119.00 | 365 | 174.90 | 4342 |
| 55.00 | 2219 | 81.90 | 530 | 126.90 | 151 | 175.90 | 53144 |
| 56.00 | 1856 | 83.10 | 267 | 127.90 | 320 | 176.90 | 3828 |
| 57.10 | 2832 | 84.20 | 145 | 128.90 | 210 | 178.00 | 93 |
| 58.00 | 240 | 85.00 | 81 | 129.80 | 318 | 186.00 | 193 |
| 59.00 | 322 | 86.00 | 138 | 130.90 | 81 | 278.30 | 188 |
| 60.10 | 672 | 86.90 | 3649 | 134.80 | 128 | 279.20 | 50 |
| 61.00 | 3852 | 88.00 | 3457 | 136.80 | 146 | | |
| 62.00 | 3575 | 90.80 | 265 | 138.90 | 67 | | |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081403.D  Page 1
Report Date: 28-Aug-2019 16:05

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081403.D
Lab Smp Id: CCV  Client Smp ID: CCV
Inj Date : 14-AUG-2019 11:24
Operator : PC  Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:04 Devak.Giga  Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46  Cal File: X080608.D
Als bottle: 3  Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

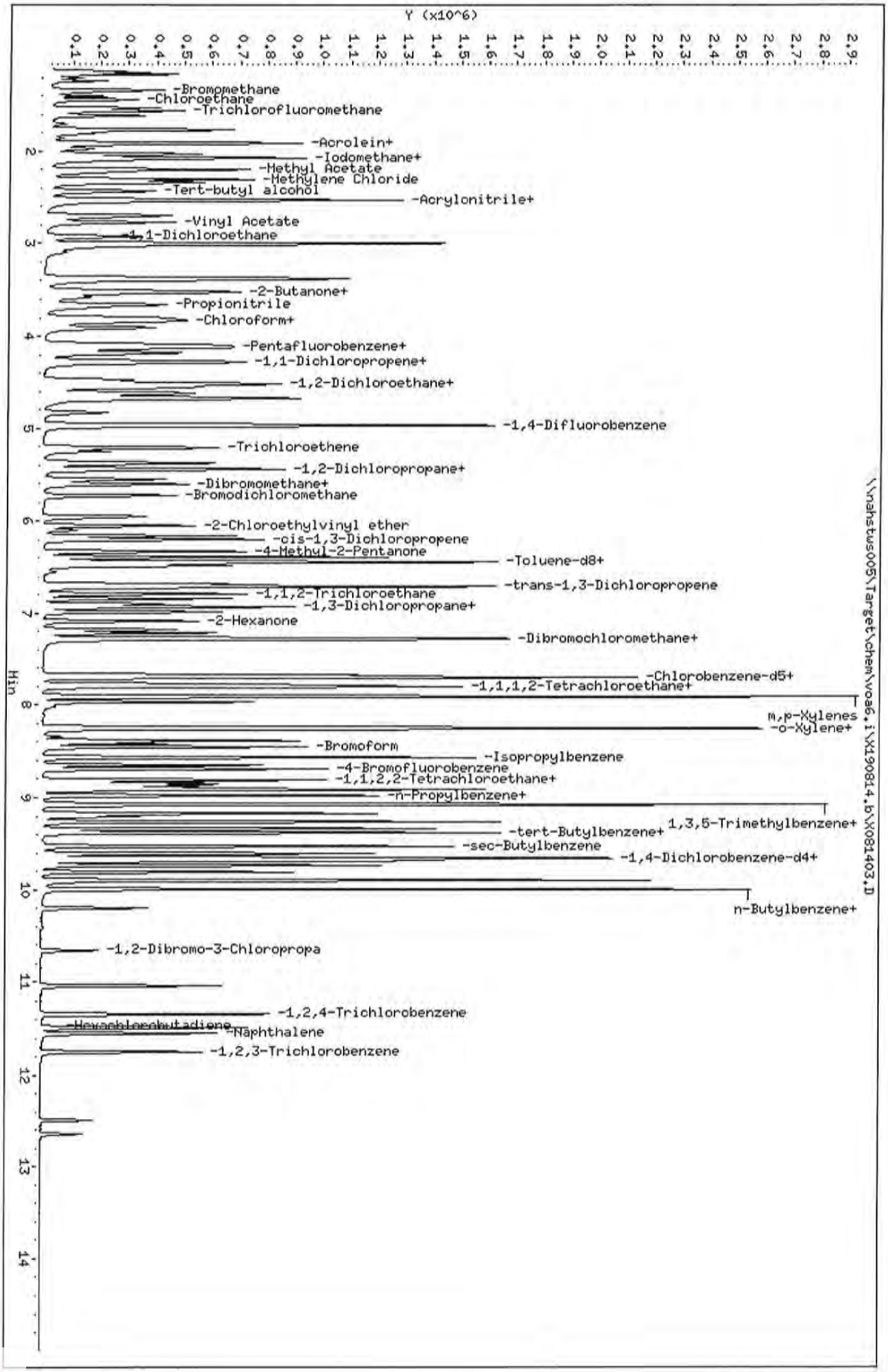
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 416403 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 614382 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 557273 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 292454 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 230496 | 50.0000 | 48.96 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 273045 | 50.0000 | 51.98 |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 204267 | 50.0000 | 50.94 |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 727073 | 50.0000 | 48.61 |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 206505 | 50.0000 | 49.95 |
| | 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 309070 | 50.0000 | 49.93 |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 256142 | 50.0000 | 50.76 |
| | 138 Freon TF | 101 | 1.919 | 1.919 | (0.459) | 176468 | 50.0000 | 53.64 |
| | 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 162291 | 50.0000 | 49.46 |
| | 22 1,1-Dichloroethane | 63 | 2.929 | 2.929 | (0.700) | 371766 | 50.0000 | 50.70 |
| | 11 1,1-Dichloroethene | 96 | 1.912 | 1.911 | (0.457) | 170201 | 50.0000 | 53.02 |
| | 32 1,1-Dichloropropene | 75 | 4.283 | 4.282 | (0.862) | 273099 | 50.0000 | 50.41 |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 164154 | 50.0000 | 50.15 |
| | 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 210120 | 50.0000 | 51.00(M) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 242458 | 50.0000 | 49.89 |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.382 | (0.970) | 739374 | 50.0000 | 49.84 |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.658 | 10.657 | (1.102) | 41966 | 50.0000 | 48.74 |
| | 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 209347 | 50.0000 | 48.60 |
| | 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.998 | (1.034) | 409246 | 50.0000 | 50.29 |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 270230 | 50.0000 | 46.51 |
| 42 | 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 210048 | 50.0000 | 53.29 |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.074 | (0.939) | 715912 | 50.0000 | 50.17 |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 437036 | 50.0000 | 48.57 |
| 54 | 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 332313 | 50.0000 | 49.18 |
| 84 | 1,4-Dichlorobenzene | 146 | 9.691 | 9.690 | (1.002) | 435927 | 50.0000 | 49.92 |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 312125 | 50.0000 | 51.51 |
| 24 | 2-Butanone | 43 | 3.581 | 3.580 | (0.856) | 182021 | 100.000 | 94.89 |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.981 | (0.929) | 587078 | 50.0000 | 48.78 |
| 52 | 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 291379 | 100.000 | 98.16 |
| 77 | 4-Chlorotoluene | 91 | 9.075 | 9.074 | (0.939) | 681217 | 50.0000 | 48.47 |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 749881 | 50.0000 | 50.64 |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 416983 | 100.000 | 97.34 |
| 10 | Acetone | 43 | 1.976 | 1.976 | (0.473) | 131427 | 100.000 | 86.04 |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 801297 | 50.0000 | 51.13 |
| 74 | Bromobenzene | 156 | 8.810 | 8.809 | (0.911) | 258554 | 50.0000 | 47.71 |
| 29 | Bromochloromethane | 128 | 3.803 | 3.802 | (0.909) | 120742 | 50.0000 | 47.89 |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 276586 | 50.0000 | 50.37 |
| 66 | Bromoform | 173 | 8.416 | 8.415 | (1.097) | 165941 | 50.0000 | 48.77 |
| 6 | Bromomethane | 94 | 1.338 | 1.338 | (0.320) | 189842 | 50.0000 | 56.16 |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 1097538 | 100.000 | 106.88 |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 270821 | 50.0000 | 48.53 |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 551060 | 50.0000 | 49.37 |
| 7 | Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 132111 | 50.0000 | 56.81 |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.935) | 367271 | 50.0000 | 49.26 |
| 3 | Chloromethane | 50 | 1.073 | 1.073 | (0.257) | 191208 | 50.0000 | 50.92 |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 227476 | 50.0000 | 49.27 |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 348948 | 50.0000 | 52.54 |
| 55 | Dibromochloromethane | 129 | 7.184 | 7.183 | (0.937) | 225567 | 50.0000 | 50.39 |
| 44 | Dibromomethane | 93 | 5.558 | 5.557 | (1.118) | 140328 | 50.0000 | 49.27 |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 193284 | 50.0000 | 45.10 |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 292549 | 50.0000 | 50.52 |
| 91 | Hexachlorobutadiene | 225 | 11.489 | 11.488 | (1.188) | 131828 | 50.0000 | 55.46 |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 846726 | 50.0000 | 50.03 |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 701898 | 100.000 | 100.78 |
| 17 | Methylene Chloride | 84 | 2.306 | 2.305 | (0.551) | 211129 | 50.0000 | 52.12 |
| 87 | n-Butylbenzene | 91 | 9.999 | 9.998 | (1.034) | 639540 | 50.0000 | 51.78 |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 983672 | 50.0000 | 50.45 |
| 92 | Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 419383 | 50.0000 | 50.33 |
| 63 | o-Xylene | 106 | 8.244 | 8.243 | (1.075) | 346061 | 50.0000 | 50.49 |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 838101 | 50.0000 | 50.97 |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 605765 | 50.0000 | 51.04 |
| 78 | tert-Butylbenzene | 119 | 9.340 | 9.339 | (0.966) | 593379 | 50.0000 | 49.53 |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 178894 | 50.0000 | 48.84 |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 836033 | 50.0000 | 50.26 |
| 20 | trans-1,2-Dichloroethene | 96 | 2.528 | 2.535 | (0.604) | 196544 | 50.0000 | 50.59 |
| 51 | trans-1,3-Dichloropropene | 75 | 6.682 | 6.682 | (1.344) | 310964 | 50.0000 | 51.02 |
| 38 | Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 226488 | 50.0000 | 51.10 |
| 8 | Trichlorofluoromethane | 101 | 1.561 | 1.560 | (0.373) | 317530 | 50.0000 | 52.23 |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 219617 | 50.0000 | 55.03 |

QC Flag Legend

M - Compound response manually integrated.




Data File: \\nahstus005\Target\chem\voa6.i\X190814.b\X081403.D
Date : 14-AUG-2019 11:24
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081404.D Page 1
Report Date: 28-Aug-2019 16:05

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081404.D
Lab Smp Id: VLCSW-190814 Client Smp ID: VLCSW-190814
Inj Date : 14-AUG-2019 11:48
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-190814;VLCSW-190814;3;;LCS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:04 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 4 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

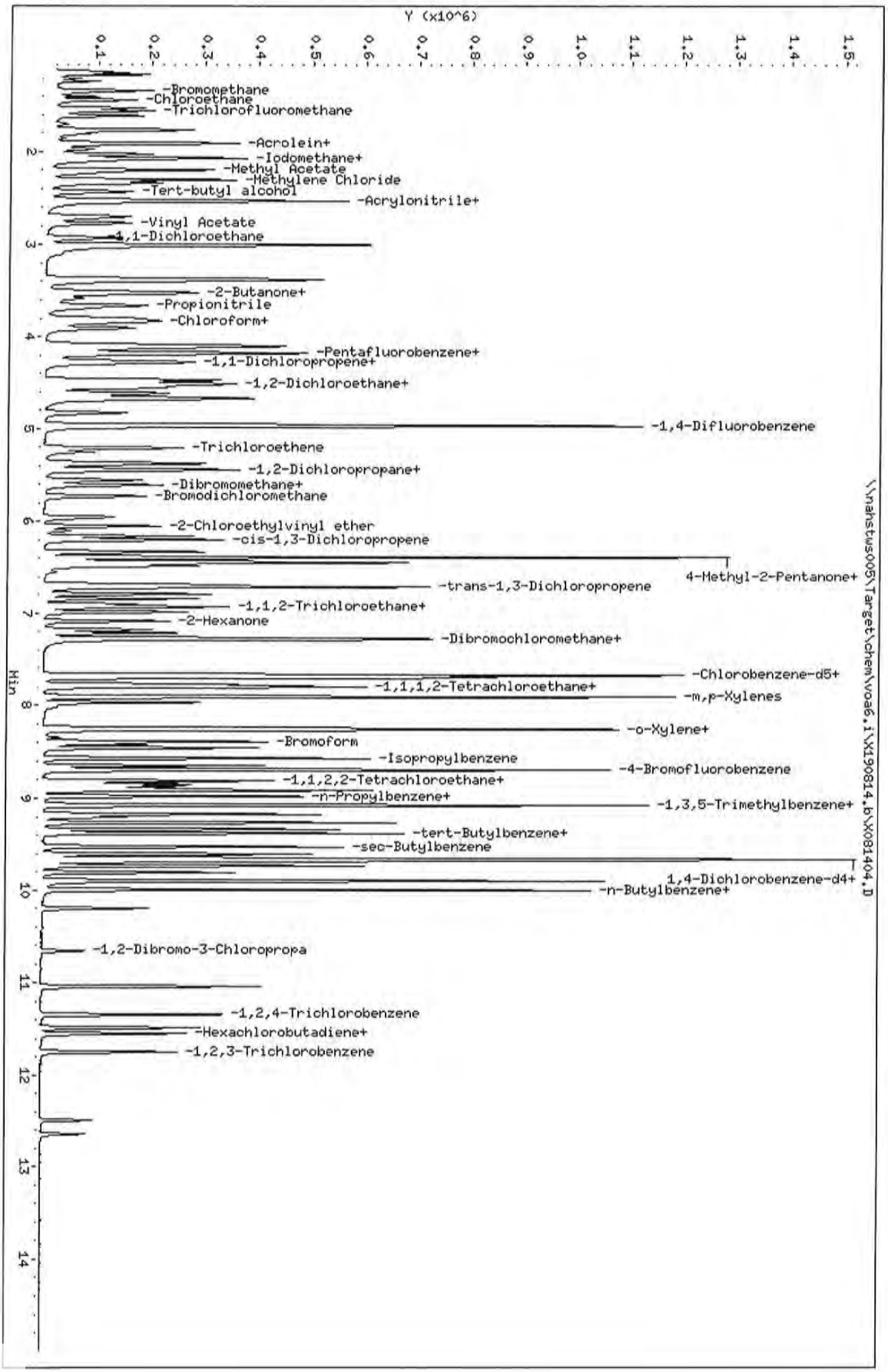
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 420963 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 638171 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 587564 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 310825 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 242065 | 50.8902 | 50.89 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 287045 | 51.8276 | 51.82 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 208298 | 51.3951 | 51.39 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 755021 | 47.8853 | 47.88 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 85238 | 19.5551 | 19.55 |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 121198 | 19.3679 | 19.36 |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 109971 | 20.7208 | 20.72 |
| 138 Freon TF | 101 | 1.919 | 1.919 | (0.459) | 62976 | 20.0709 | 20.07 |
| 53 1,1,2-Trichloroethane | 83 | 6.840 | 6.847 | (0.892) | 68680 | 19.8533 | 19.85 |
| 22 1,1-Dichloroethane | 63 | 2.921 | 2.929 | (0.699) | 151799 | 20.4806 | 20.48 |
| 11 1,1-Dichloroethene | 96 | 1.911 | 1.911 | (0.457) | 67713 | 20.8666 | 20.86 |
| 32 1,1-Dichloropropene | 75 | 4.282 | 4.282 | (0.862) | 105988 | 18.8382 | 18.83 |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 72126 | 22.1552 | 22.15 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 89424 | 20.4196 | 20.41(M) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 104387 | 21.4585 | 21.45 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.382 | 9.382 | (0.970) | 301286 | 19.1098 | 19.10 |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.657 | (1.103) | 17434 | 19.9603 | 19.96 |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 90618 | 19.9540 | 19.95 |
| 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.998 | (1.034) | 175509 | 20.3344 | 20.33 |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 117328 | 19.4431 | 19.44 |
| 42 | 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 87521 | 21.3804 | 21.38 |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.074 | 9.074 | (0.939) | 281568 | 18.5672 | 18.56 |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 179539 | 18.7747 | 18.77 |
| 54 | 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 141557 | 19.8706 | 19.87 |
| 84 | 1,4-Dichlorobenzene | 146 | 9.691 | 9.690 | (1.002) | 183190 | 20.0681 | 20.06 |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 126929 | 20.7229 | 20.72 |
| 24 | 2-Butanone | 43 | 3.580 | 3.580 | (0.856) | 78942 | 40.7085 | 40.70 |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.981 | (0.929) | 239395 | 18.7173 | 18.71 |
| 52 | 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 125082 | 40.6005 | 40.60 |
| 77 | 4-Chlorotoluene | 91 | 9.074 | 9.074 | (0.939) | 281101 | 18.8191 | 18.81 |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 288909 | 18.3585 | 18.35 |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 179130 | 39.6615 | 39.66 |
| 10 | Acetone | 43 | 1.976 | 1.976 | (0.473) | 67429 | 41.5160 | 41.51 |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 332611 | 20.4353 | 20.43 |
| 74 | Bromobenzene | 156 | 8.809 | 8.809 | (0.911) | 109757 | 19.0570 | 19.05 |
| 29 | Bromochloromethane | 128 | 3.802 | 3.802 | (0.909) | 51364 | 20.1548 | 20.15 |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 114615 | 20.0959 | 20.09 |
| 66 | Bromoform | 173 | 8.415 | 8.415 | (1.097) | 69785 | 19.4558 | 19.45 |
| 6 | Bromomethane | 94 | 1.338 | 1.338 | (0.320) | 80642 | 23.3945 | 23.39 |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 438851 | 42.2752 | 42.27 |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 103741 | 17.8995 | 17.89 |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 226281 | 19.2312 | 19.23 |
| 7 | Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 54452 | 23.1630 | 23.16 |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.935) | 153336 | 20.3445 | 20.34 |
| 3 | Chloromethane | 50 | 1.073 | 1.073 | (0.257) | 77675 | 20.4652 | 20.46 |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 95369 | 20.4339 | 20.43 |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 145218 | 21.0500 | 21.04 |
| 55 | Dibromochloromethane | 129 | 7.183 | 7.183 | (0.937) | 91773 | 19.4467 | 19.44 |
| 44 | Dibromomethane | 93 | 5.557 | 5.557 | (1.118) | 59207 | 20.0153 | 20.01 |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 71880 | 17.7471 | 17.74 |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 114440 | 18.7472 | 18.74 |
| 91 | Hexachlorobutadiene | 225 | 11.488 | 11.488 | (1.188) | 54933 | 23.2162 | 23.21 |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 327420 | 18.3522 | 18.35 |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 280768 | 38.2383 | 38.23 |
| 17 | Methylene Chloride | 84 | 2.305 | 2.305 | (0.551) | 88053 | 21.4344 | 21.43 |
| 87 | n-Butylbenzene | 91 | 9.999 | 9.998 | (1.034) | 250102 | 19.0553 | 19.05 |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 382049 | 18.4389 | 18.43 |
| 92 | Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 180941 | 20.4320 | 20.43 |
| 63 | o-Xylene | 106 | 8.244 | 8.243 | (1.075) | 139746 | 19.3395 | 19.33 |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 315337 | 18.0465 | 18.04 |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 248852 | 19.8900 | 19.89 |
| 78 | tert-Butylbenzene | 119 | 9.340 | 9.339 | (0.966) | 228918 | 17.9809 | 17.98 |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 68839 | 17.8283 | 17.82 |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 343708 | 19.6014 | 19.60 |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.535 | (0.606) | 80415 | 20.4763 | 20.47 |
| 51 | trans-1,3-Dichloropropene | 75 | 6.682 | 6.682 | (1.344) | 130596 | 20.6306 | 20.63 |
| 38 | Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 91147 | 19.7998 | 19.79 |
| 8 | Trichlorofluoromethane | 101 | 1.560 | 1.560 | (0.373) | 120575 | 19.6184 | 19.61 |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 85911 | 21.2944 | 21.29 |

QC Flag Legend

M - Compound response manually integrated.




Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081404.D
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Sample Info: VLCSW-190814;VLCSW-190814;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081406.D  Page 1
Report Date: 28-Aug-2019 16:05

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081406.D
Lab Smp Id: VBLKW-190814  Client Smp ID: VBLKW-190814
Inj Date : 14-AUG-2019 12:36
Operator : PC  Inst ID: voa6.i
Smp Info : VBLKW-190814;VBLKW-190814;3;;BLANK
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:04 Devak.Giga  Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46  Cal File: X080608.D
Als bottle: 6  QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

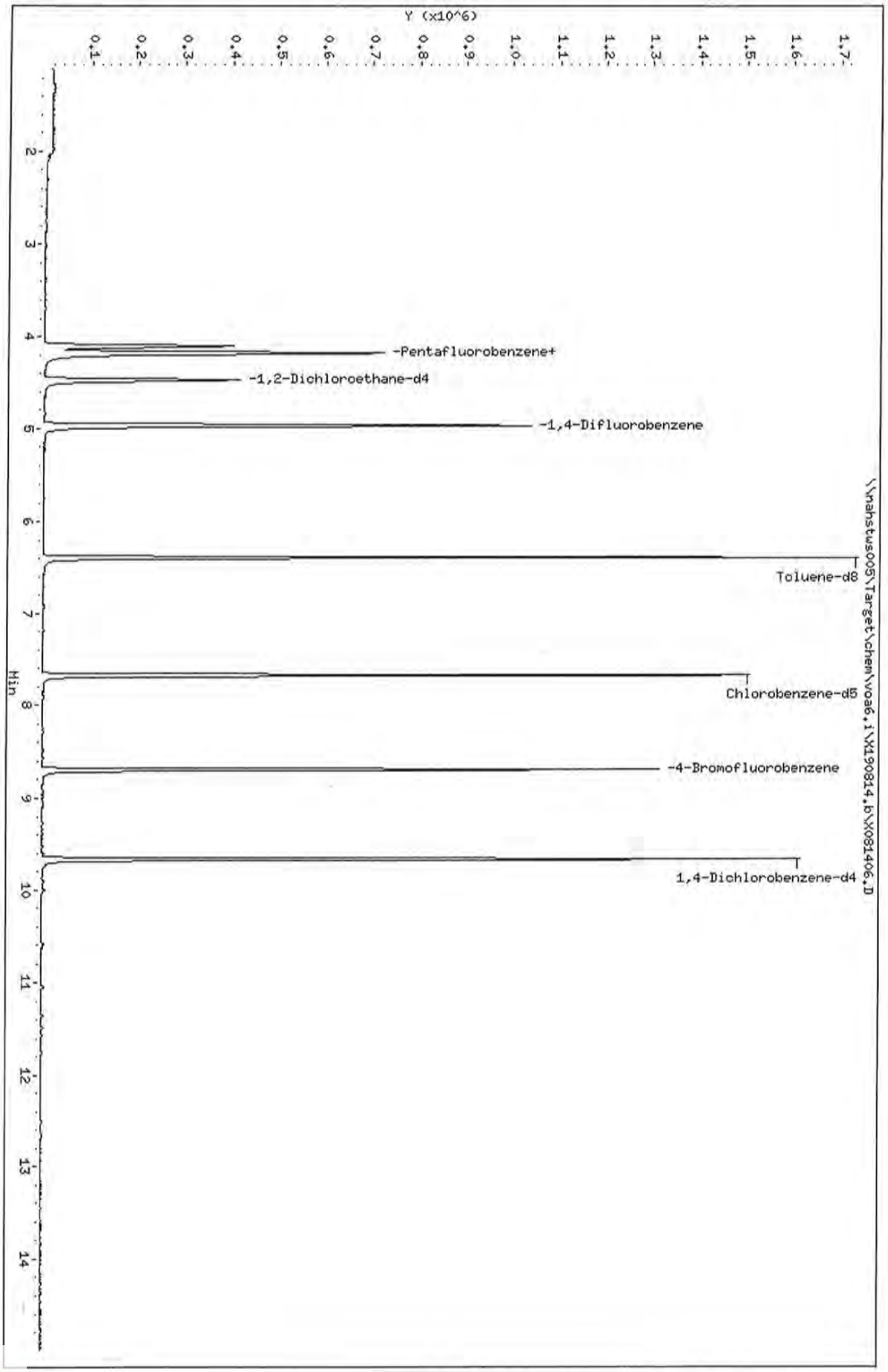
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 633883 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 880456 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 743397 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 390898 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 316676 | 44.1375 | 44.13 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 360495 | 51.4380 | 51.43 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 281387 | 46.0433 | 46.04 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 1025148 | 51.3883 | 51.38 |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081406.D
Date : 14-AUG-2019 12:36
Client ID: VBLKW-190814
Sample Info: VBLKW-190814;VBLKW-190814;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081407.D
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Inj Date  : 14-AUG-2019 13:00
Operator  : PC  Inst ID: voa6.i
Smp Info  : HS19080637-09;HS19080637-09;;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method    : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date  : 06-AUG-2019 13:46  Cal File: X080608.D
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version:  4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 610412 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 852947 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 723364 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 373956 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 303558 | 43.9334 | 43.93 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 346689 | 50.8267 | 50.82 |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 269962 | 45.8701 | 45.87 |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 993492 | 51.1807 | 51.18 |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081407.D
Date : 14-AUG-2019 13:00
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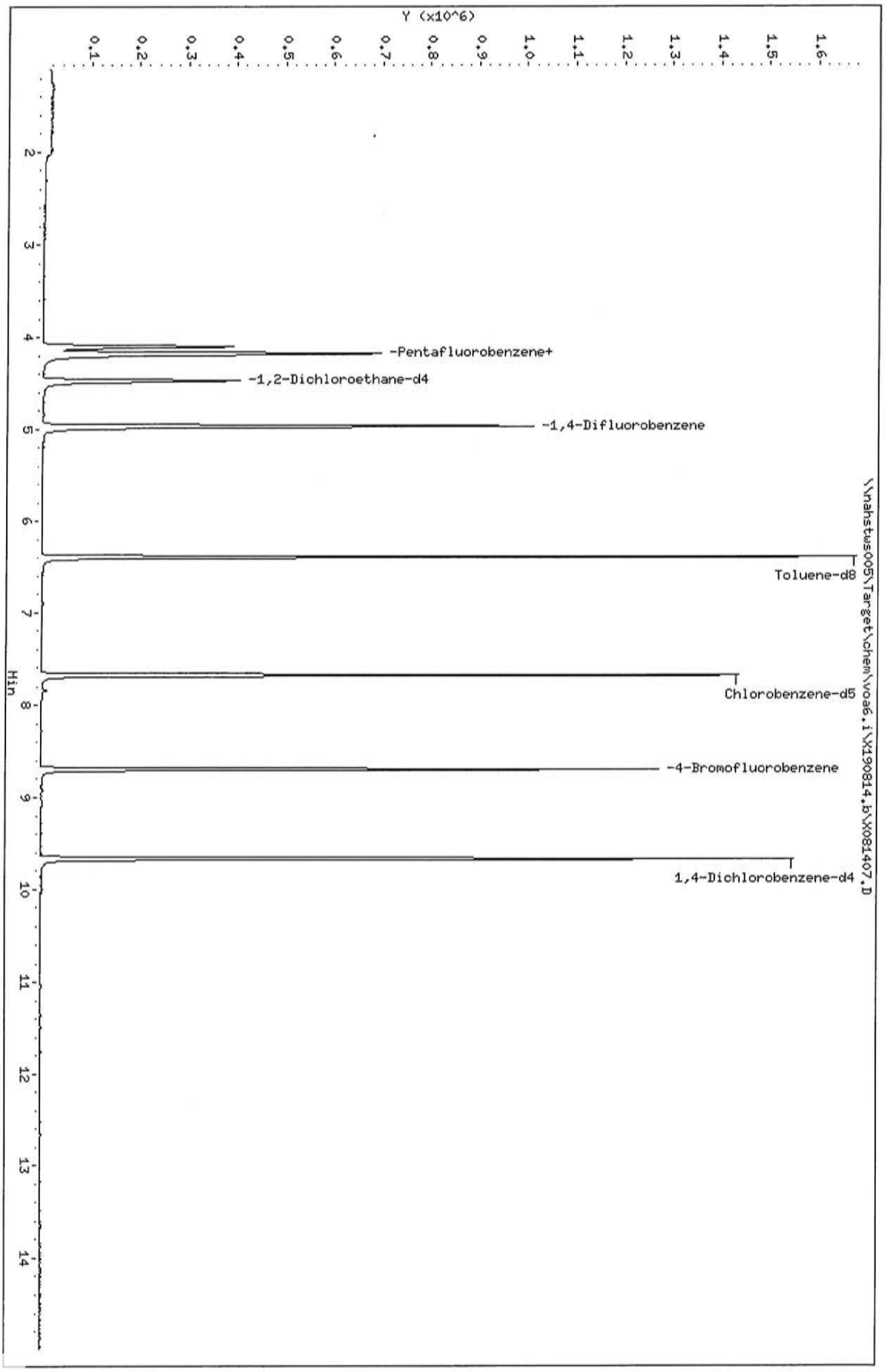
Sample Info: HS19080637-09;HS19080637-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081408.D  Page 1
Report Date: 28-Aug-2019 16:09

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081408.D
Lab Smp Id: HS19080637-01  Client Smp ID: HS19080637-01
Inj Date  : 14-AUG-2019 13:24
Operator  : PC  Inst ID: voa6.i
Smp Info  : HS19080637-01;HS19080637-01;;;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method    : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga  Quant Type: ISTD
Cal Date  : 06-AUG-2019 13:46  Cal File: X080608.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version:  4.14

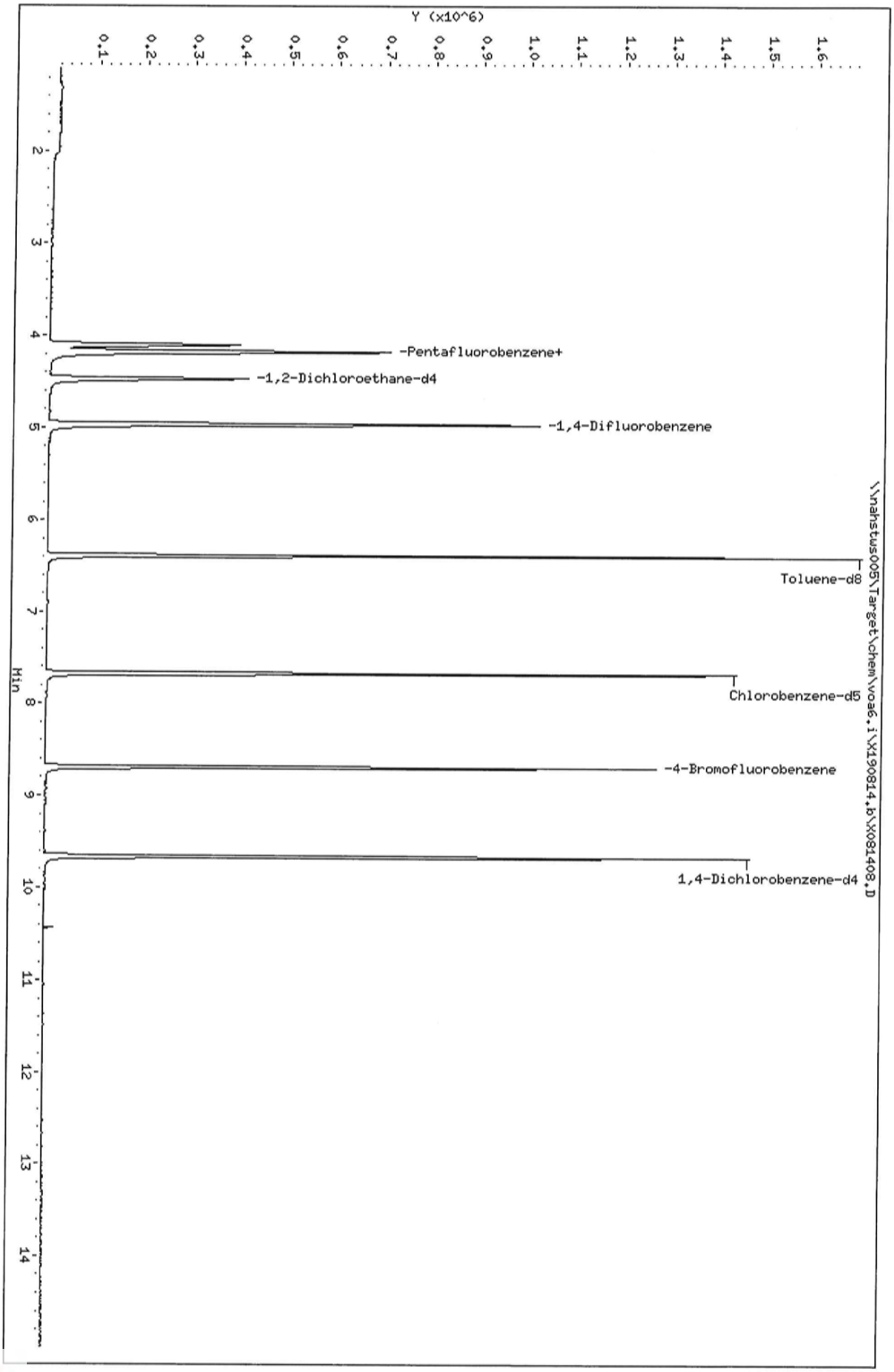
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | CONCENTRATIONS FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 615595 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 863536 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 719963 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 363144 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 308220 | 44.2364 | 44.23 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 343210 | 50.5492 | 50.54 |
| $ 30 Dibromofluoromethane | 113 | 4.104 | 4.103 | (0.981) | 272838 | 45.9698 | 45.96 |
| $ 48 Toluene-d8 | 98 | 6.389 | 6.388 | (0.833) | 998937 | 51.7043 | 51.70 |

Data File: \\nahstus005\Target\chem\voa6.i\X190814.b\X081408.D
Date : 14-AUG-2019 13:24
Client ID: HS19080637-01
Sample Info: HS19080637-01;HS19080637-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



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Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081409.D
Lab Smp Id: HS19080637-02 Client Smp ID: HS19080637-02
Inj Date : 14-AUG-2019 13:48
Operator : PC Inst ID: voa6.i
Smp Info : HS19080637-02;HS19080637-02;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

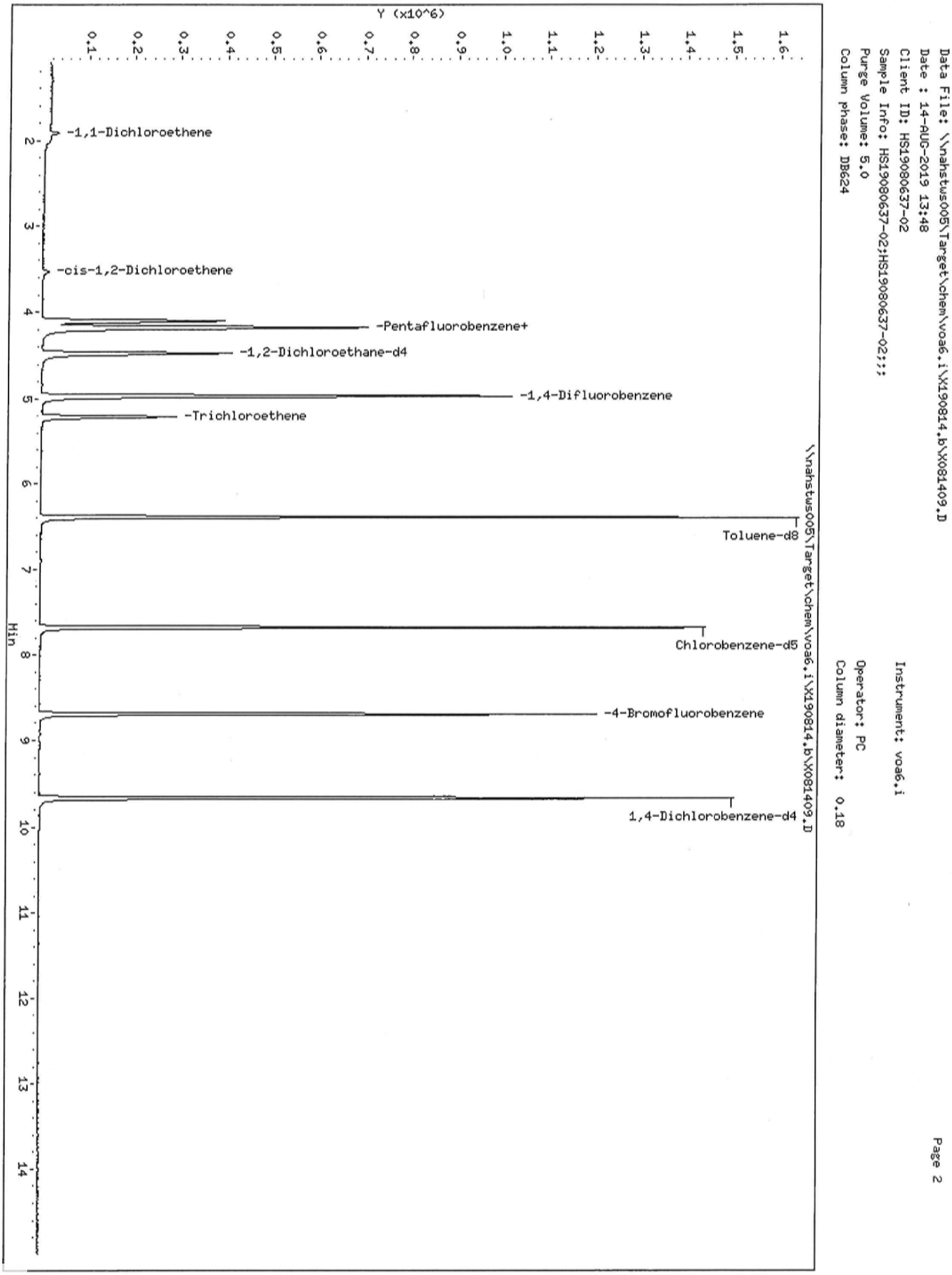
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 613162 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 859674 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 721225 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 363568 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 308813 | 44.5008 | 44.50 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 337456 | 49.5968 | 49.59 |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 270605 | 45.7718 | 45.77 |
| $ | 48 Toluene-d8 | 98 | 6.389 | 6.388 | (0.833) | 989317 | 51.1167 | 51.11 |
| | 11 1,1-Dichloroethene | 96 | 1.912 | 1.911 | (0.457) | 6910 | 1.46193 | 1.46(a) |
| | 27 cis-1,2-Dichloroethene | 96 | 3.538 | 3.530 | (0.846) | 7267 | 1.06898 | 1.06(a) |
| | 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 103415 | 16.6765 | 16.67 |

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).




Data File: \\nahstus005\Target\chem\voa6.i\X190814.b\X081409.D
Date : 14-AUG-2019 13:48
Client ID: HS190806637-02
Sample Info: HS190806637-02;HS190806637-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081409.D Page 3

Date : 14-AUG-2019 13:48

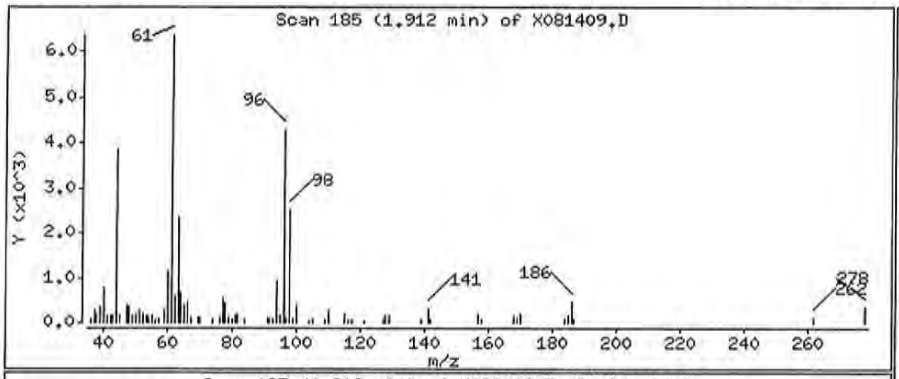
Client ID: HS19080637-02 Instrument: voa6.i

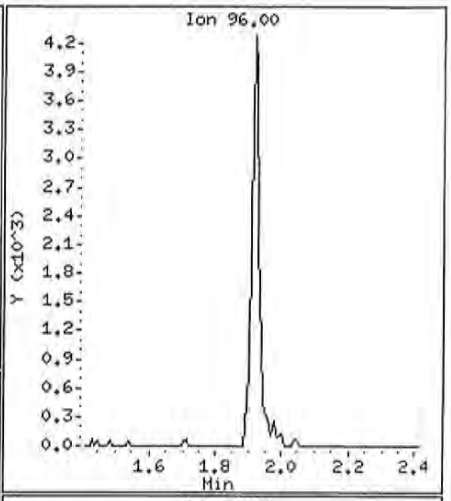
Sample Info: HS19080637-02;HS19080637-02;;;

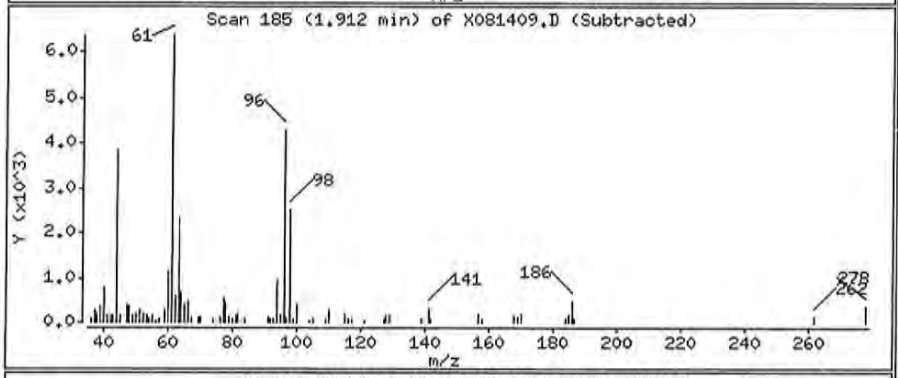
Purge Volume: 5.0 Operator: PC

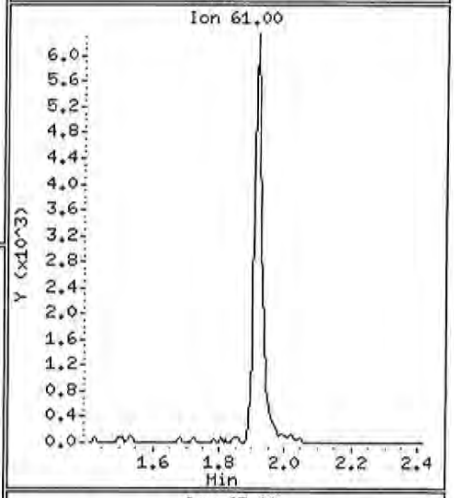
Column phase: DB624 Column diameter: 0.18

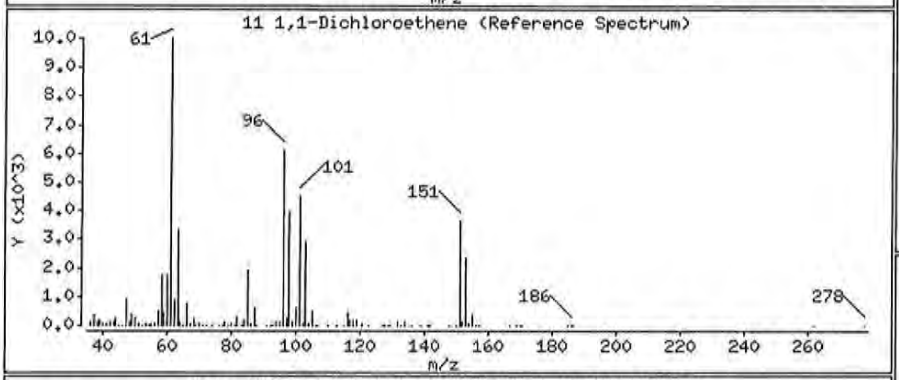
11 1,1-Dichloroethene Concentration: 1.46 ug/l

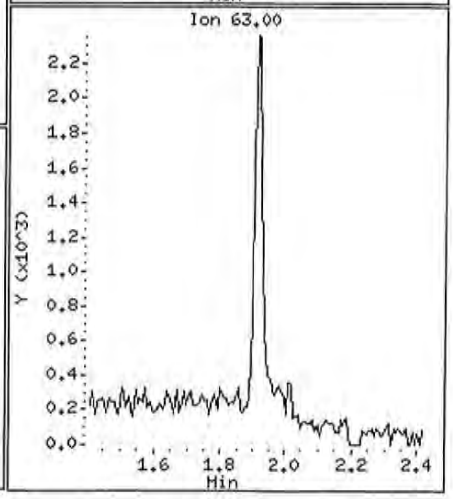


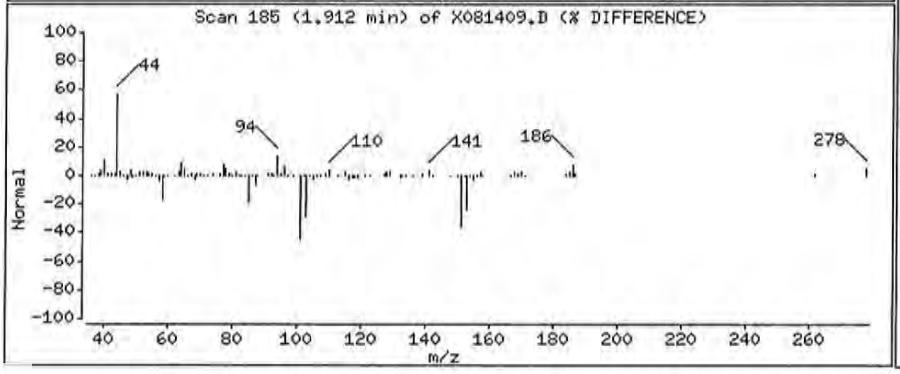



Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081409.D



Date : 14-AUG-2019 13:48

Client ID: HS19080637-02

Instrument: voa6.i

Sample Info: HS19080637-02;HS19080637-02;;;

Purge Volume: 5.0

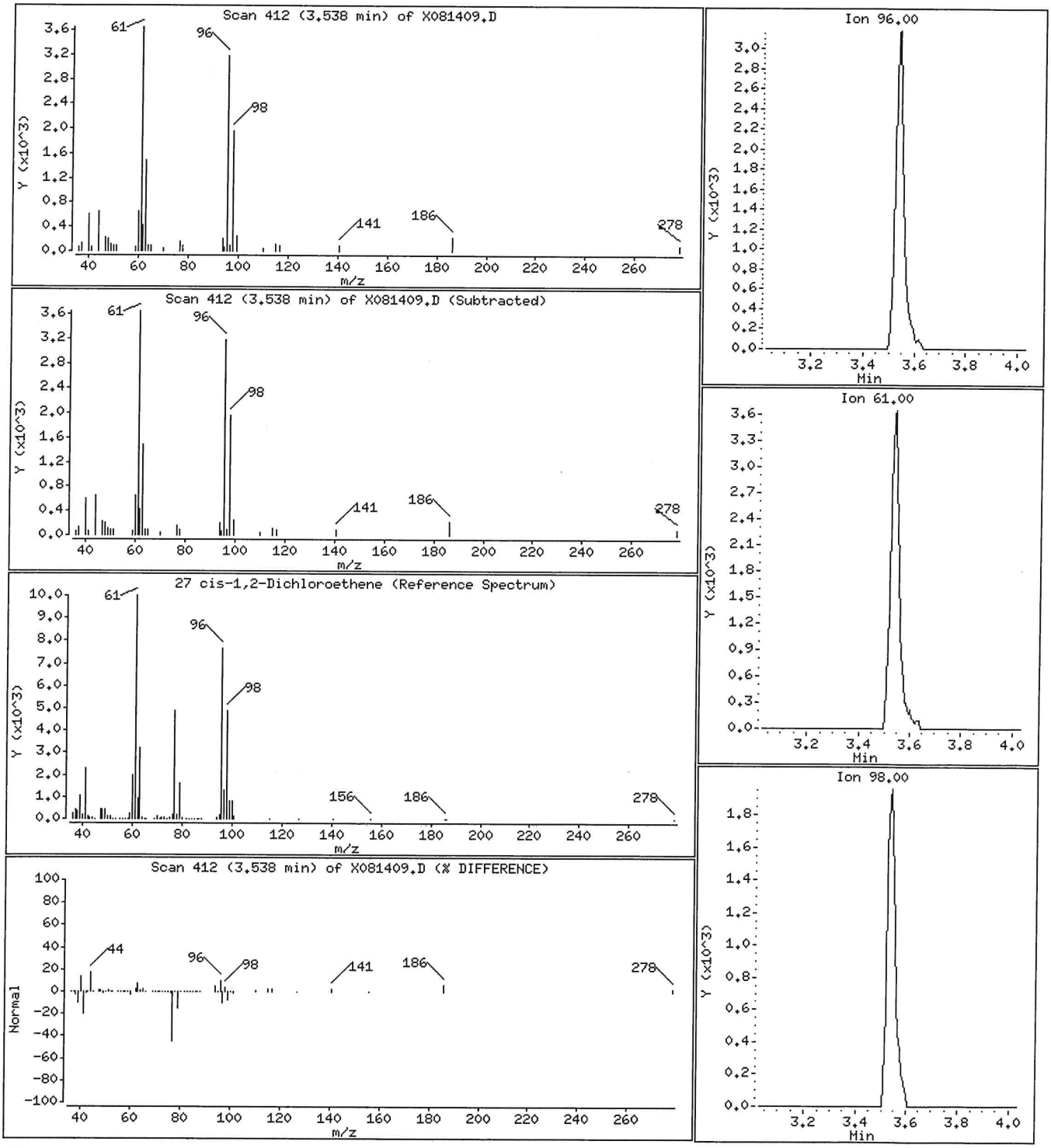
Operator: PC

Column phase: DB624

Column diameter: 0.18

27 cis-1,2-Dichloroethene

Concentration: 1.06 ug/l



Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081409.D



Date : 14-AUG-2019 13:48

Client ID: HS19080637-02

Instrument: voa6.i

Sample Info: HS19080637-02;HS19080637-02;;;

Purge Volume: 5.0

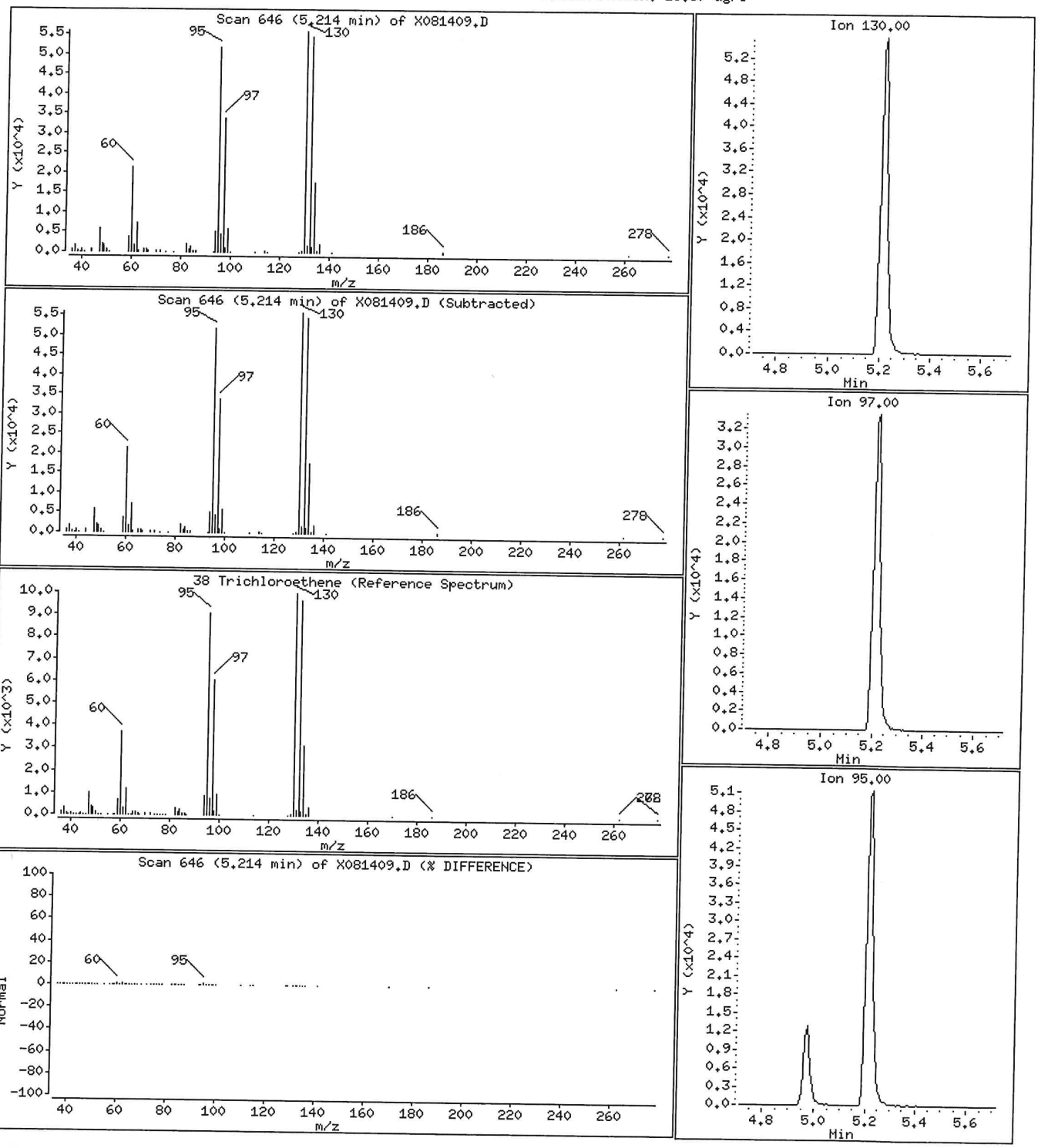
Operator: PC

Column phase: DB624

Column diameter: 0.18

38 Trichloroethene

Concentration: 16.67 ug/l



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081410.D
Lab Smp Id: HS19080637-03 Client Smp ID: HS19080637-03
Inj Date : 14-AUG-2019 14:12
Operator : PC Inst ID: voa6.i
Smp Info : HS19080637-03;HS19080637-03;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

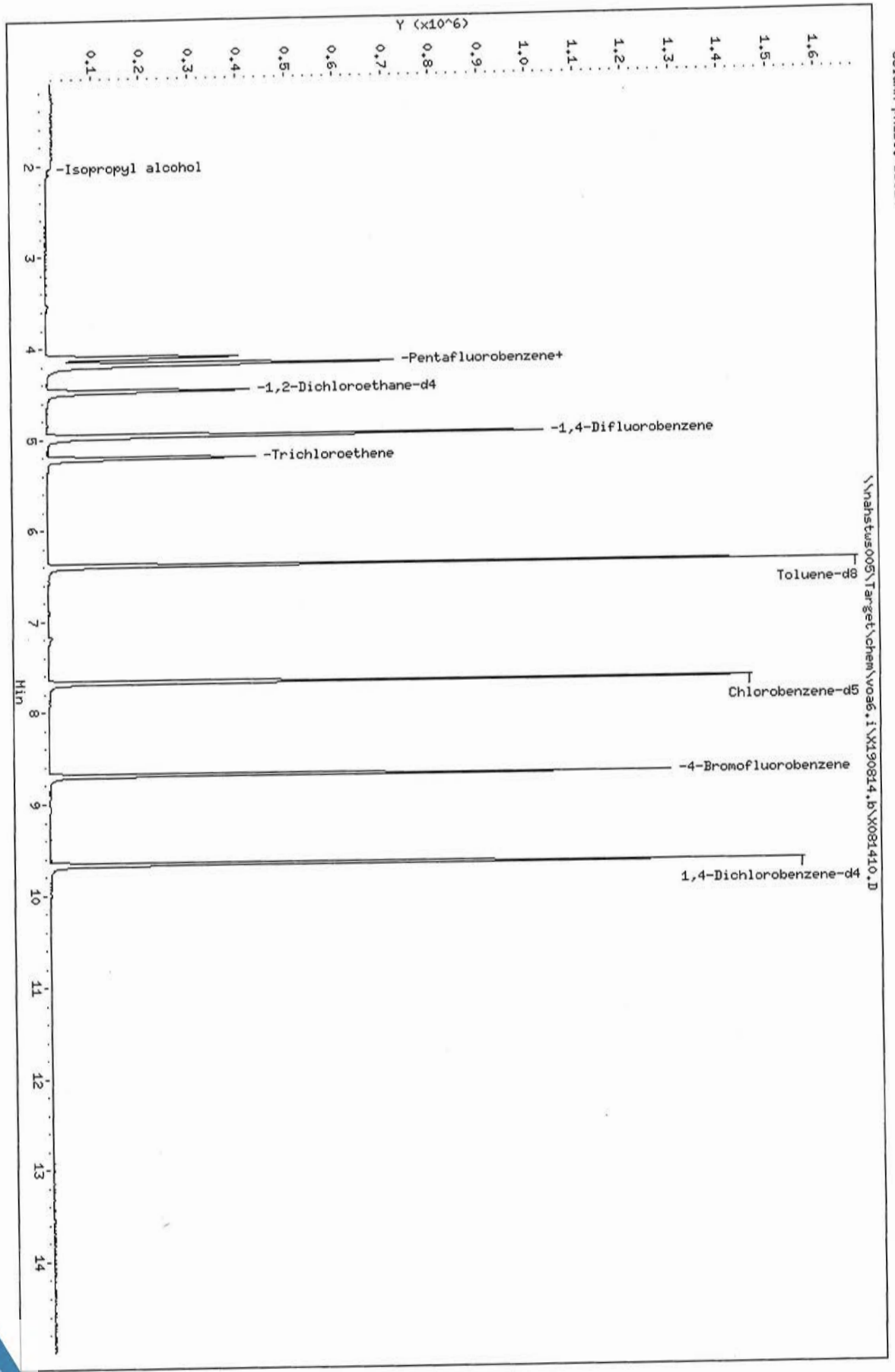
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 619801 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 871742 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 738231 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 377057 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 311219 | 44.3654 | 44.36 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 352017 | 50.5636 | 50.56 |
| $ | 30 Dibromofluoromethane | 113 | 4.104 | 4.103 | (0.981) | 277679 | 46.4747 | 46.47 |
| $ | 48 Toluene-d8 | 98 | 6.389 | 6.388 | (0.833) | 1012049 | 51.0867 | 51.08 |
| | 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 152555 | 24.2602 | 24.26 |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081410.D
Date : 14-AUG-2019 14:12
Client ID: HS19080637-03
Sample Info: HS19080637-03;HS19080637-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081410.D

Date : 14-AUG-2019 14:12

Client ID: HS19080637-03

Instrument: voa6.i

Sample Info: HS19080637-03;HS19080637-03;;;

Operator: PC

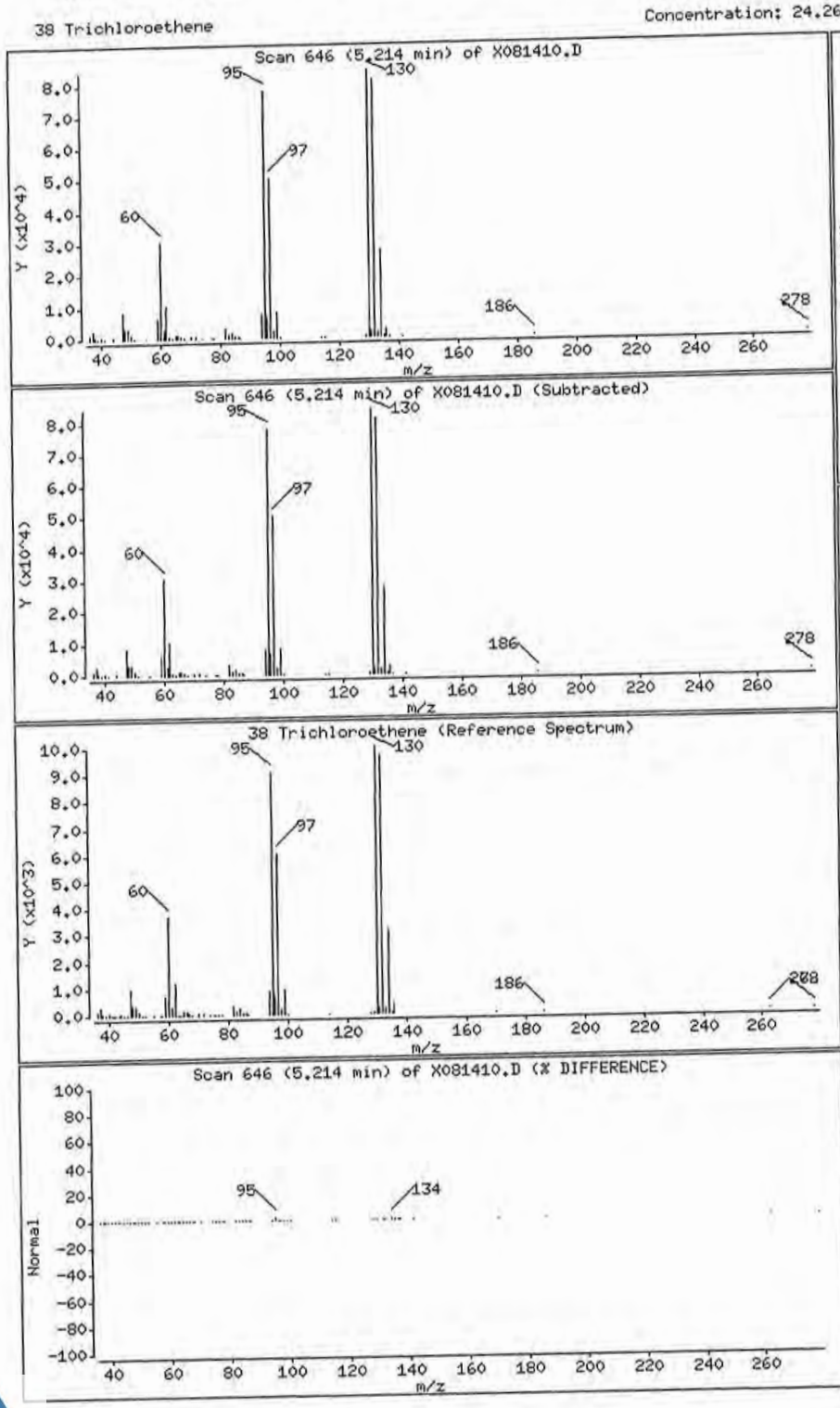
Purge Volume: 5.0

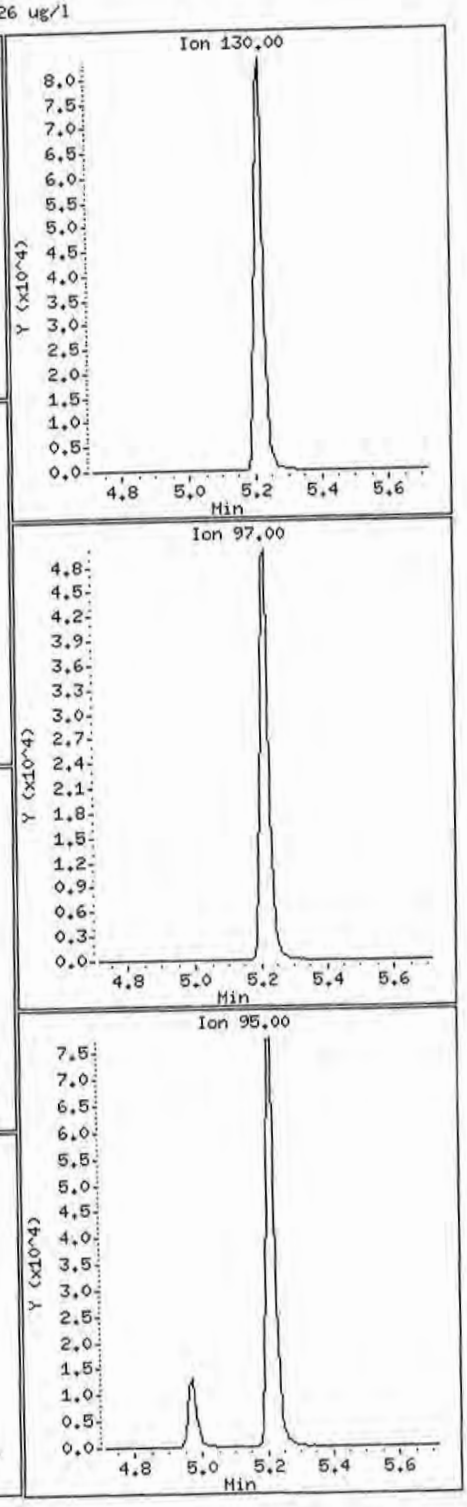
Column diameter: 0.18

Column phase: DB624

Concentration: 24.26 ug/l

38 Trichloroethene



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081411.D
Lab Smp Id: HS19080637-04 Client Smp ID: HS19080637-04
Inj Date : 14-AUG-2019 14:36
Operator : PC Inst ID: voa6.i
Smp Info : HS19080637-04;HS19080637-04;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

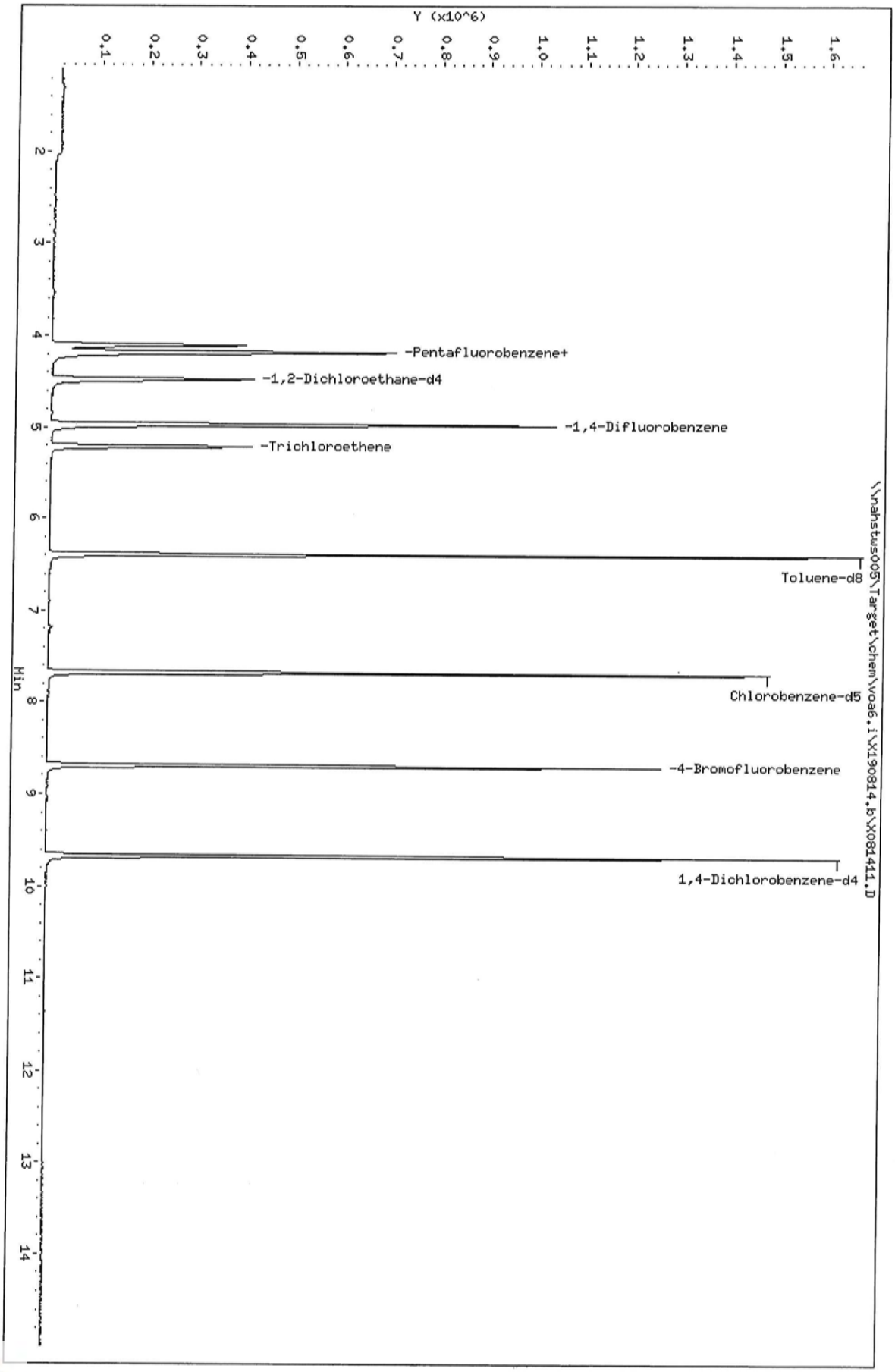
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | CONCENTRATIONS FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 614861 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 869308 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 734391 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 386897 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 309803 | 44.5204 | 44.52 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 352965 | 50.9726 | 50.97 |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 274148 | 46.2494 | 46.24 |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 997410 | 50.6110 | 50.61 |
| | 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 147447 | 23.5135 | 23.51 |

Data File: \\nahstus005\Target\chem\voa6.i\X190814.b\X081411.D
Date : 14-AUG-2019 14:36
Client ID: HS19080637-04
Sample Info: HS19080637-04;HS19080637-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081411.D

Date : 14-AUG-2019 14:36

Client ID: HS19080637-04

Instrument: voa6.i

Sample Info: HS19080637-04;HS19080637-04;;;

Operator: PC

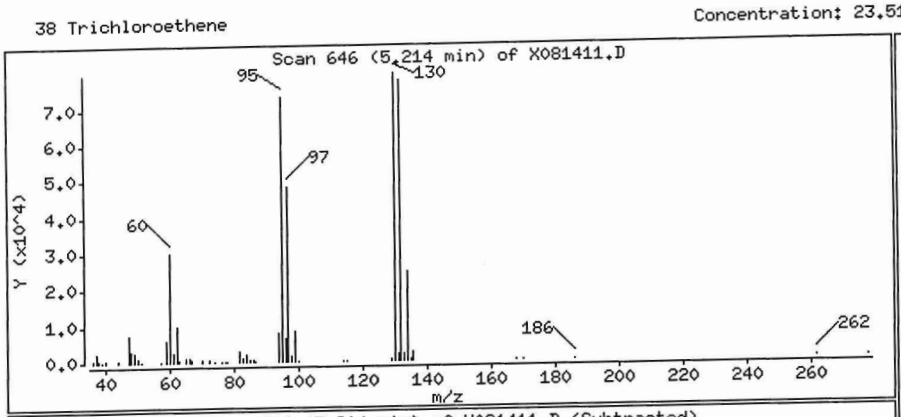
Purge Volume: 5.0

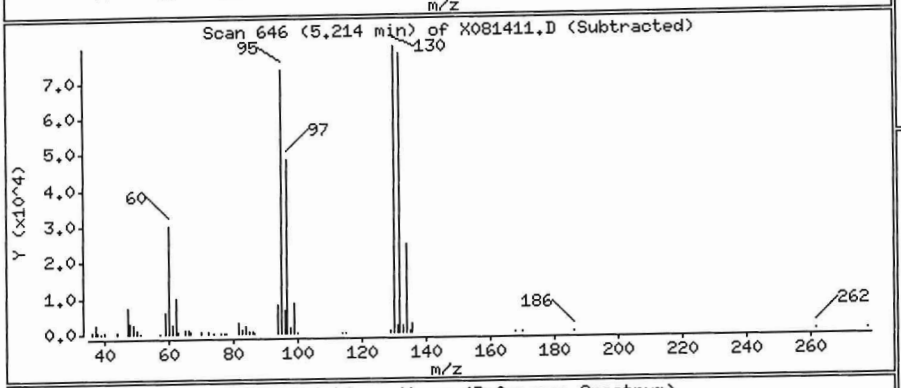
Column diameter: 0.18

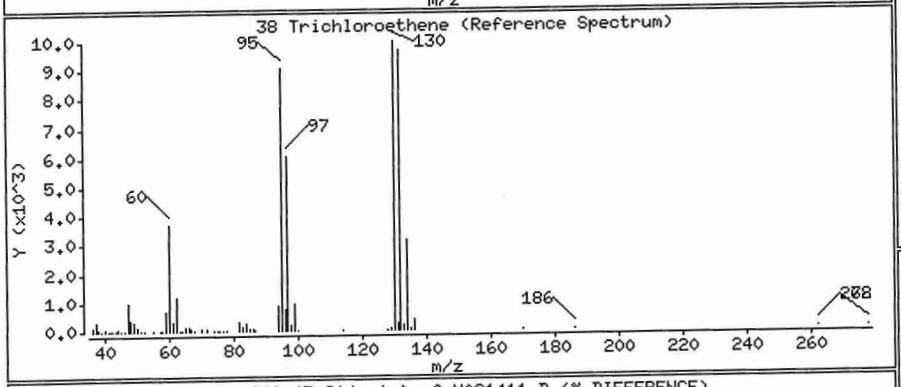
Column phase: DB624

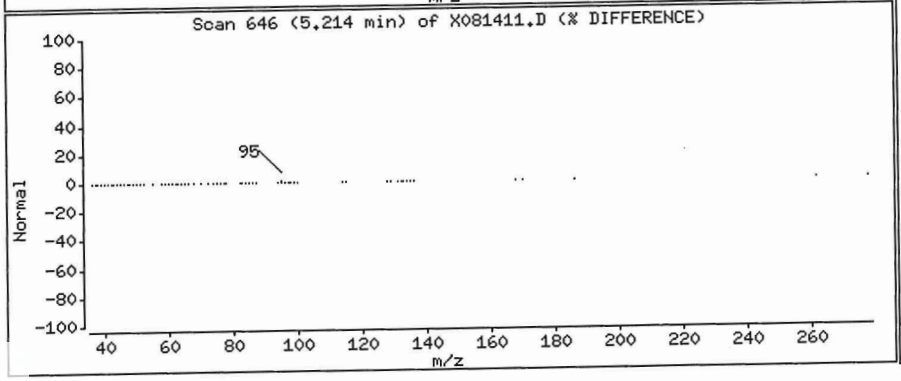
Concentration: 23.51 ug/l

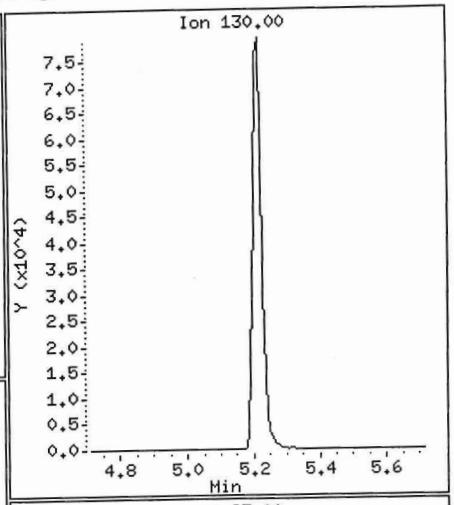
38 Trichloroethene

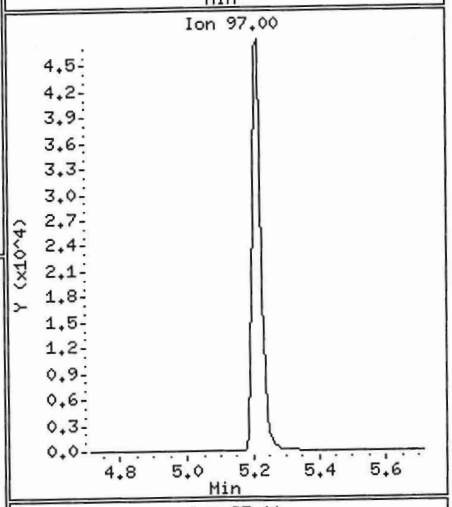


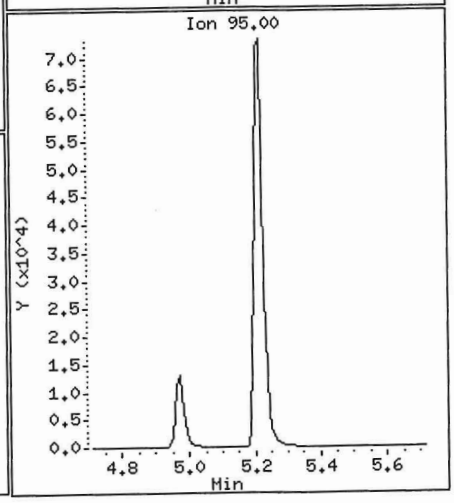



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081415.D
Lab Smp Id: HS19080684-02MS Client Smp ID: HS19080684-02MS
Inj Date : 14-AUG-2019 16:12
Operator : PC Inst ID: voa6.i
Smp Info : HS19080684-02MS;HS19080684-02MS;3;;MS
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:04 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 15 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

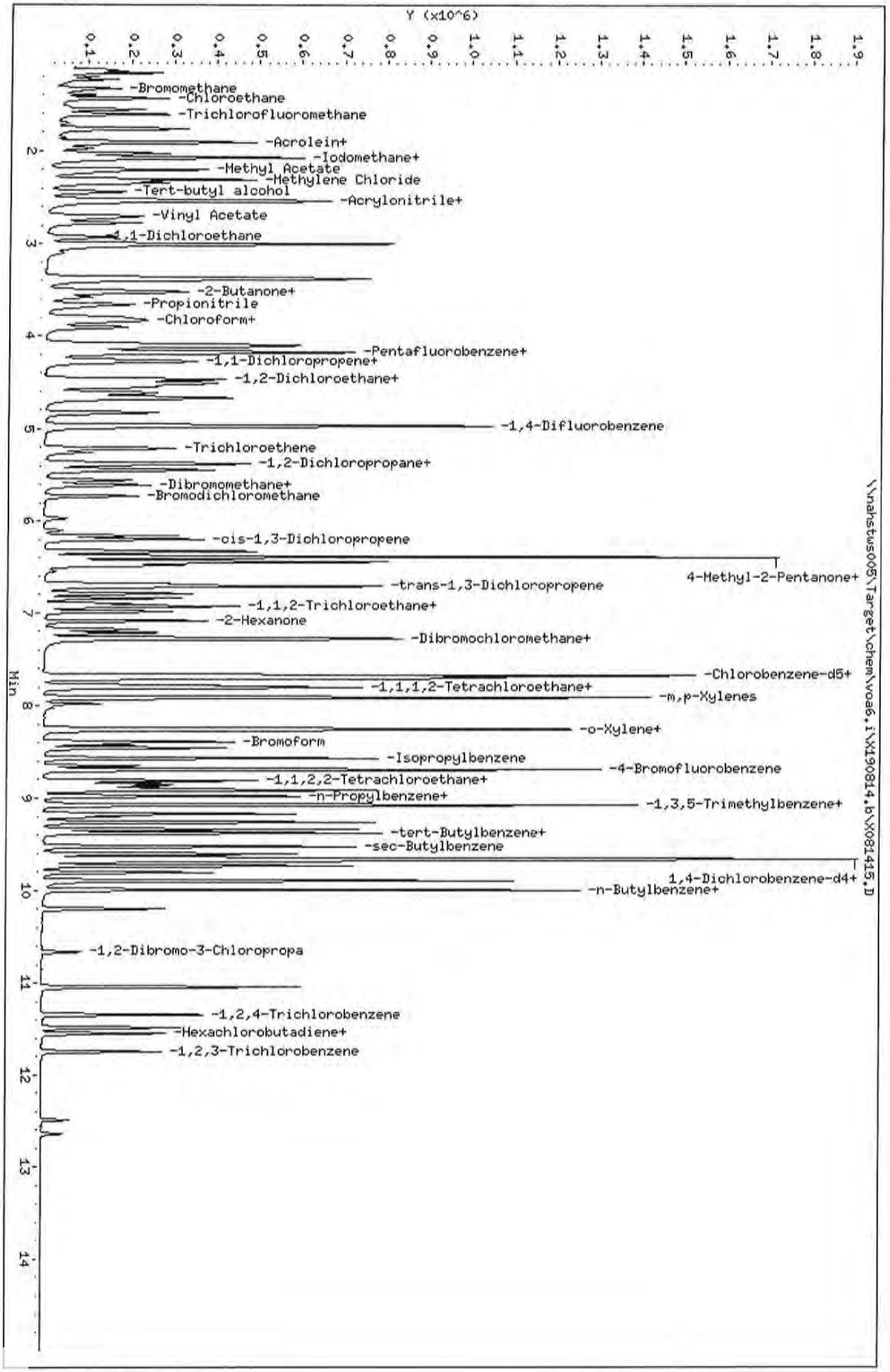
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 618211 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 871306 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 739869 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 379894 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 318898 | 45.5927 | 45.59 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 355144 | 50.9063 | 50.90 |
| $ 30 Dibromofluoromethane | 113 | 4.104 | 4.103 | (0.981) | 279481 | 46.9023 | 46.90 |
| $ 48 Toluene-d8 | 98 | 6.389 | 6.388 | (0.833) | 999944 | 50.3639 | 50.36 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 95933 | 17.4781 | 17.47 |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 151748 | 16.5126 | 16.51 |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 120832 | 18.6642 | 18.66 |
| 138 Freon TF | 101 | 1.912 | 1.919 | (0.457) | 86520 | 18.8759 | 18.87 |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 76669 | 17.6004 | 17.60 |
| 22 1,1-Dichloroethane | 63 | 2.922 | 2.929 | (0.699) | 174214 | 16.0053 | 16.00 |
| 11 1,1-Dichloroethene | 96 | 1.912 | 1.911 | (0.457) | 79071 | 16.5922 | 16.59 |
| 32 1,1-Dichloropropene | 75 | 4.283 | 4.282 | (0.862) | 133358 | 17.3607 | 17.36 |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 76453 | 19.5358 | 19.53 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 98254 | 18.3564 | 18.35(M) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 112759 | 19.2089 | 19.20 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.382 | (0.970) | 362578 | 18.8163 | 18.81 |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.657 | (1.103) | 19027 | 17.9828 | 17.98 |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 99332 | 17.3702 | 17.37 |
| 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.998 | (1.034) | 195386 | 18.5278 | 18.52 |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 129550 | 15.7242 | 15.72 |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 97194 | 17.3904 | 17.39 |
| 75 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.074 | (0.939) | 356487 | 19.2336 | 19.23 |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 209782 | 17.9488 | 17.94 |
| 54 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 153628 | 17.1258 | 17.12 |
| 84 1,4-Dichlorobenzene | 146 | 9.691 | 9.690 | (1.002) | 208683 | 18.7412 | 18.74 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 149195 | 16.5864 | 16.58 |
| 24 2-Butanone | 43 | 3.581 | 3.580 | (0.856) | 119017 | 41.7920 | 41.79 |
| 76 2-Chlorotoluene | 91 | 8.982 | 8.981 | (0.929) | 289459 | 18.5169 | 18.51 |
| 52 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 201400 | 51.6178 | 51.61 |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.074 | (0.939) | 331283 | 18.1464 | 18.14 |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 367373 | 19.1001 | 19.10 |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 289480 | 50.9002 | 50.90 |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.473) | 80962 | 33.1465 | 33.14 |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 380938 | 17.1422 | 17.14 |
| 74 Bromobenzene | 156 | 8.810 | 8.809 | (0.911) | 123912 | 17.6031 | 17.60 |
| 29 Bromochloromethane | 128 | 3.803 | 3.802 | (0.909) | 58187 | 15.5472 | 15.54 |
| 39 Bromodichloromethane | 83 | 5.730 | 5.729 | (1.153) | 128726 | 16.5309 | 16.53 |
| 66 Bromoform | 173 | 8.416 | 8.415 | (1.097) | 75856 | 16.7949 | 16.79 |
| 6 Bromomethane | 94 | 1.331 | 1.338 | (0.318) | 66879 | 13.0580 | 13.05 |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 735331 | 48.2346 | 48.23 |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 135636 | 17.1408 | 17.14 |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 258278 | 17.4320 | 17.43 |
| 7 Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 56718 | 16.4289 | 16.42 (M) |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.935) | 175413 | 15.8479 | 15.84 |
| 3 Chloromethane | 50 | 1.074 | 1.073 | (0.257) | 60996 | 10.9432 | 10.94 |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 111205 | 16.2247 | 16.22 |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 158962 | 16.8768 | 16.87 |
| 55 Dibromochloromethane | 129 | 7.184 | 7.183 | (0.937) | 100684 | 16.9431 | 16.94 |
| 44 Dibromomethane | 93 | 5.558 | 5.557 | (1.118) | 65892 | 16.3151 | 16.31 |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 38703 | 7.66393 | 7.66 |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 141490 | 18.4071 | 18.40 |
| 91 Hexachlorobutadiene | 225 | 11.489 | 11.488 | (1.188) | 59111 | 20.6839 | 20.68 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 419823 | 18.6874 | 18.68 |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 337612 | 36.5148 | 36.51 |
| 17 Methylene Chloride | 84 | 2.306 | 2.305 | (0.551) | 98835 | 16.3553 | 16.35 |
| 87 n-Butylbenzene | 91 | 9.999 | 9.998 | (1.034) | 311427 | 19.4137 | 19.41 |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 491557 | 19.4108 | 19.41 |
| 92 Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 197293 | 18.2280 | 18.22 |
| 63 o-Xylene | 106 | 8.244 | 8.243 | (1.075) | 165133 | 18.1485 | 18.14 |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 411410 | 19.2640 | 19.26 |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.077) | 284186 | 18.0384 | 18.03 |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.339 | (0.966) | 296916 | 19.0818 | 19.08 |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 89396 | 18.3862 | 18.38 |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 400789 | 18.1515 | 18.15 |
| 20 trans-1,2-Dichloroethene | 96 | 2.528 | 2.535 | (0.604) | 92183 | 15.9835 | 15.98 |
| 51 trans-1,3-Dichloropropene | 75 | 6.689 | 6.682 | (1.346) | 140856 | 16.2976 | 16.29 |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 109277 | 17.3865 | 17.38 |
| 8 Trichlorofluoromethane | 101 | 1.561 | 1.560 | (0.373) | 143489 | 15.8976 | 15.89 |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 81563 | 13.7663 | 13.76 |

QC Flag Legend

M - Compound response manually integrated.




Data File: \\nahstws005\Target\chem\voa6,i\X190814,b\X081415.D
Date : 14-AUG-2019 16:12
Client ID: HS190806B4-02HS
Sample Info: HS190806B4-02HS;HS190806B4-02HS;3;;HS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6,i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081416.D Page 1
Report Date: 28-Aug-2019 16:05

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081416.D
Lab Smp Id: HS19080684-02MSD Client Smp ID: HS19080684-02MSD
Inj Date : 14-AUG-2019 16:36
Operator : PC Inst ID: voa6.i
Smp Info : HS19080684-02MSD;HS19080684-02MSD;3;;MSD
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:04 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 15 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

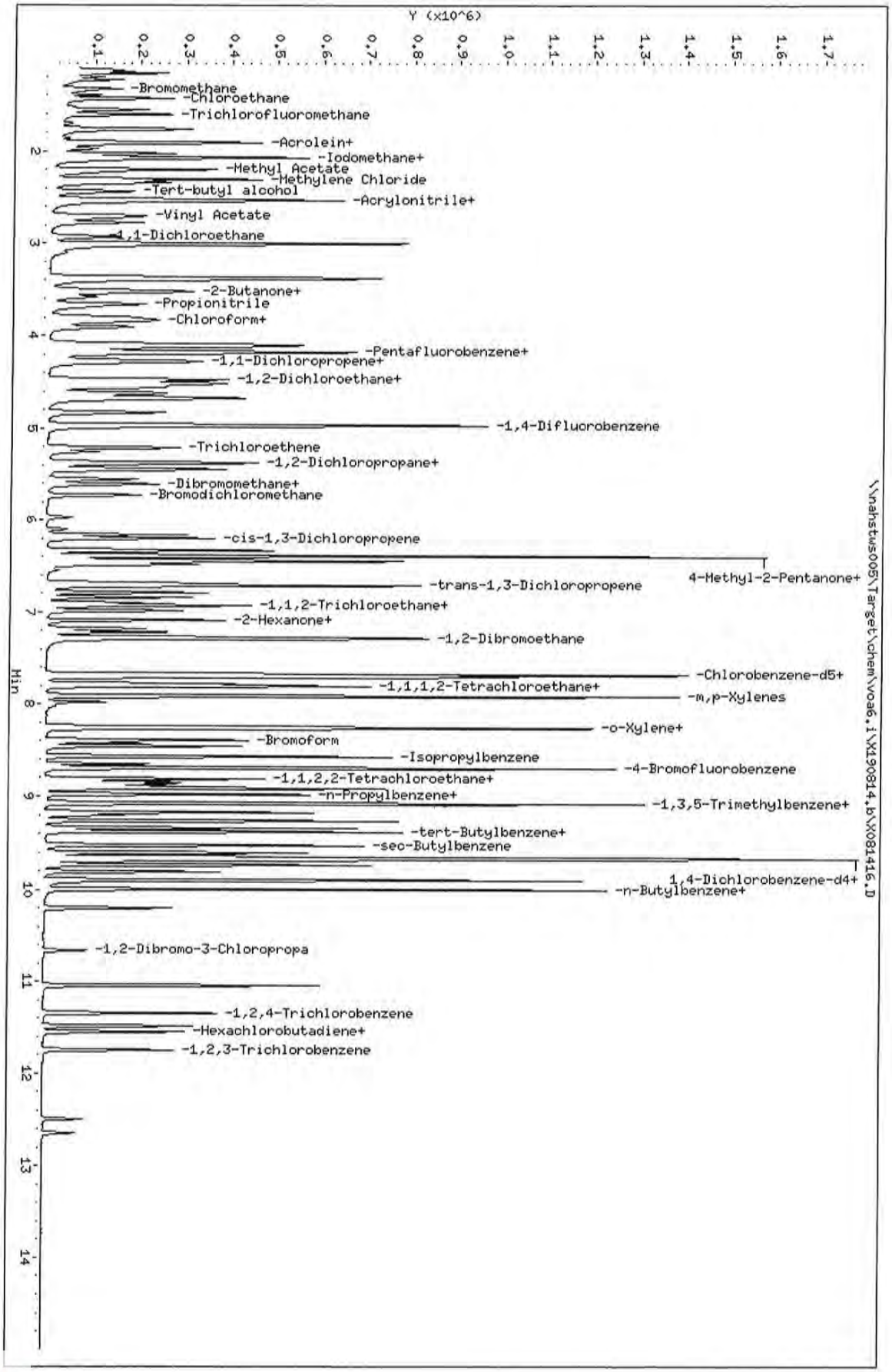
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 576568 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 812761 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 693220 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 359195 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 297451 | 45.5980 | 45.59 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 332540 | 50.8732 | 50.87 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 256439 | 46.1335 | 46.13 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 934221 | 50.2200 | 50.22 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 92740 | 18.0334 | 18.03 |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 144562 | 16.8668 | 16.86 |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 119579 | 19.5183 | 19.51 |
| 138 Freon TF | 101 | 1.912 | 1.919 | (0.457) | 79914 | 18.7087 | 18.70 |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 73452 | 17.9966 | 17.99 |
| 22 1,1-Dichloroethane | 63 | 2.922 | 2.929 | (0.699) | 164649 | 16.2191 | 16.21 |
| 11 1,1-Dichloroethene | 96 | 1.912 | 1.911 | (0.457) | 73844 | 16.6145 | 16.61 |
| 32 1,1-Dichloropropene | 75 | 4.283 | 4.282 | (0.862) | 126696 | 17.6815 | 17.68 |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 79566 | 21.2592 | 21.25 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 97509 | 19.2672 | 19.26(M) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 113906 | 20.3791 | 20.37 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.382 | (0.970) | 353426 | 19.3982 | 19.39 |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.657 | (1.103) | 19394 | 19.2698 | 19.26 |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 98289 | 18.3444 | 18.34 |
| 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.998 | (1.034) | 193471 | 19.4002 | 19.40 |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | CONCENTRATIONS FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 126293 | 16.4330 | 16.43 |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 95011 | 18.2243 | 18.22 |
| 75 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.074 | (0.939) | 341060 | 19.4617 | 19.46 |
| 83 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 203428 | 18.4081 | 18.40 |
| 54 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 153945 | 18.3159 | 18.31 |
| 84 1,4-Dichlorobenzene | 146 | 9.691 | 9.690 | (1.002) | 203333 | 19.2965 | 19.29 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 141756 | 16.8976 | 16.89 |
| 24 2-Butanone | 43 | 3.581 | 3.580 | (0.856) | 119249 | 44.8979 | 44.89 |
| 76 2-Chlorotoluene | 91 | 8.982 | 8.981 | (0.929) | 278953 | 18.8731 | 18.87 |
| 52 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 200775 | 54.8521 | 54.85 |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.074 | (0.939) | 321516 | 18.6263 | 18.62 |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 355757 | 19.5621 | 19.56 |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 292058 | 54.8093 | 54.80 |
| 10 Acetone | 43 | 1.976 | 1.976 | (0.473) | 79020 | 34.8912 | 34.89 |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 363013 | 17.5122 | 17.51 |
| 74 Bromobenzene | 156 | 8.810 | 8.809 | (0.911) | 119163 | 17.9039 | 17.90 |
| 29 Bromochloromethane | 128 | 3.803 | 3.802 | (0.909) | 55531 | 15.9092 | 15.90 |
| 39 Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 124099 | 17.0847 | 17.08 |
| 66 Bromoform | 173 | 8.416 | 8.415 | (1.097) | 76127 | 17.9891 | 17.98 |
| 6 Bromomethane | 94 | 1.331 | 1.338 | (0.318) | 58429 | 12.2098 | 12.20 |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 693002 | 48.7412 | 48.74 |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 128790 | 17.4481 | 17.44 |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 251772 | 18.1364 | 18.13 |
| 7 Chloroethane | 64 | 1.396 | 1.403 | (0.334) | 49347 | 15.3262 | 15.32(M) |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.935) | 168697 | 16.3420 | 16.34 |
| 3 Chloromethane | 50 | 1.074 | 1.073 | (0.257) | 54820 | 10.5455 | 10.54 |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 104912 | 16.4121 | 16.41 |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 155124 | 17.6557 | 17.65 |
| 55 Dibromochloromethane | 129 | 7.176 | 7.183 | (0.936) | 99177 | 17.8126 | 17.81 |
| 44 Dibromomethane | 93 | 5.558 | 5.557 | (1.118) | 64678 | 17.1680 | 17.16 |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 35081 | 7.49980 | 7.49 |
| 61 Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 135624 | 18.8313 | 18.83 |
| 91 Hexachlorobutadiene | 225 | 11.489 | 11.488 | (1.188) | 59961 | 22.0426 | 22.04 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 407180 | 19.3443 | 19.34 |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 326934 | 37.7394 | 37.73 |
| 17 Methylene Chloride | 84 | 2.306 | 2.305 | (0.551) | 93397 | 16.5732 | 16.57 |
| 87 n-Butylbenzene | 91 | 9.999 | 9.998 | (1.034) | 302757 | 19.9608 | 19.96 |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 469530 | 19.6095 | 19.60 |
| 92 Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 204202 | 19.9535 | 19.95 |
| 63 o-Xylene | 106 | 8.244 | 8.243 | (1.075) | 159857 | 18.7509 | 18.75 |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 395963 | 19.6091 | 19.60 |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.078) | 276216 | 18.7123 | 18.71 |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.339 | (0.966) | 285700 | 19.4191 | 19.41 |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 86474 | 18.9821 | 18.98 |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 388657 | 18.7866 | 18.78 |
| 20 trans-1,2-Dichloroethene | 96 | 2.528 | 2.535 | (0.604) | 87852 | 16.3328 | 16.33 |
| 51 trans-1,3-Dichloropropene | 75 | 6.689 | 6.682 | (1.346) | 137231 | 17.0219 | 17.02 |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 104366 | 17.8013 | 17.80 |
| 8 Trichlorofluoromethane | 101 | 1.561 | 1.560 | (0.373) | 133349 | 15.8412 | 15.84 |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 76550 | 13.8534 | 13.85 |

QC Flag Legend

M - Compound response manually integrated.




Data File: \\nahstus005\Target\chem\voa6.i\X190814.b\X081416.D
Date : 14-AUG-2019 16:36
Client ID: HS19080684-02HSD
Sample Info: HS19080684-02HSD;HS19080684-02HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081418.D
Lab Smp Id: HS19080637-05 Client Smp ID: HS19080637-05
Inj Date : 14-AUG-2019 17:24
Operator : PC Inst ID: voa6.i
Smp Info : HS19080637-05;HS19080637-05;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

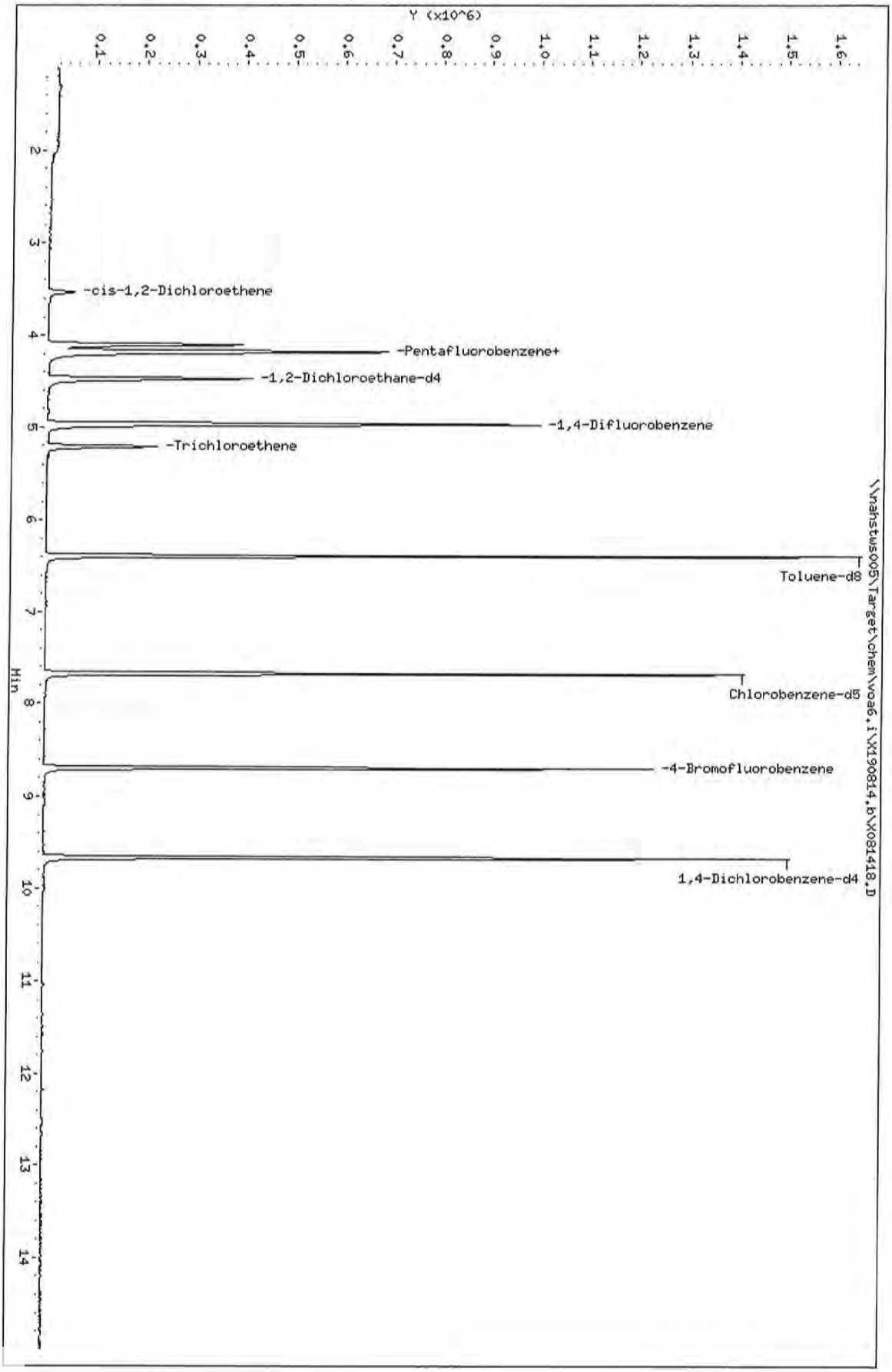
| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 604282 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 857089 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 703896 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 362589 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 310148 | 45.3610 | 45.36 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 337031 | 50.7765 | 50.77 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 273016 | 46.8731 | 46.87 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 975489 | 51.6431 | 51.64 |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 28378 | 4.23576 | 4.23(a) |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 80323 | 12.9918 | 12.99 |

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X084418.D
Date : 14-AUG-2019 17:24
Client ID: HS19080637-05
Sample Info: HS19080637-05;HS19080637-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081419.D
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Inj Date : 14-AUG-2019 17:48
Operator : PC Inst ID: voa6.i
Smp Info : HS19080637-06;HS19080637-06;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | CONCENTRATIONS FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 623819 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 885053 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 750512 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 394887 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 315849 | 44.7402 | 44.74 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 357202 | 50.4670 | 50.46 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 279198 | 46.4273 | 46.42 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 1022258 | 50.7576 | 50.75 |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081419.D

Date : 14-AUG-2019 17:48

Client ID: HS19080637-06

Sample Info: HS19080637-06;HS19080637-06;;;

Purge Volume: 5.0

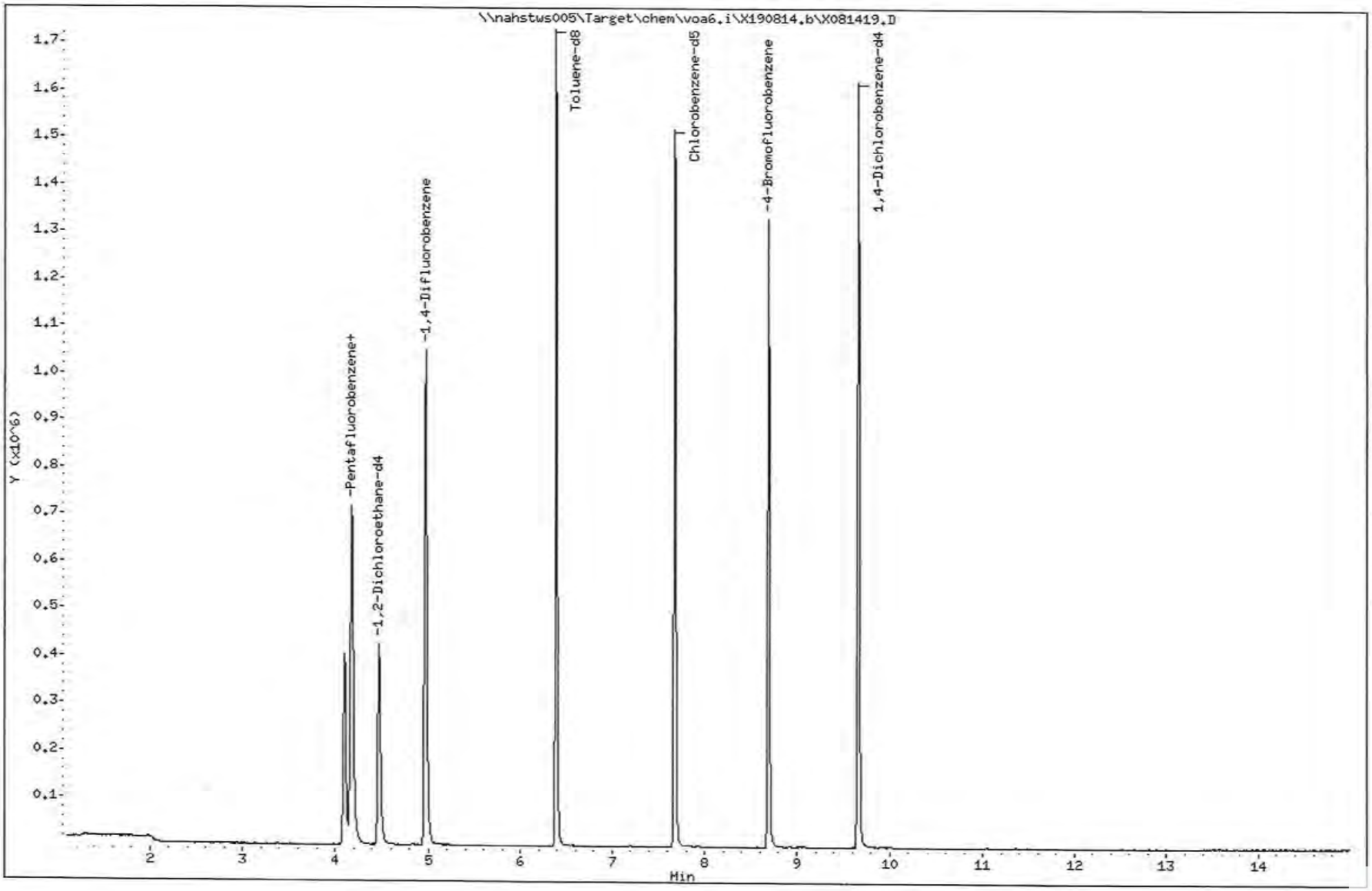
Column phase: DB624

Instrument: voa6.i

Operator: PC

Column diameter: 0.18





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Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081420.D
Lab Smp Id: HS19080637-07 Client Smp ID: HS19080637-07
Inj Date : 14-AUG-2019 18:12
Operator : PC Inst ID: voa6.i
Smp Info : HS19080637-07;HS19080637-07;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

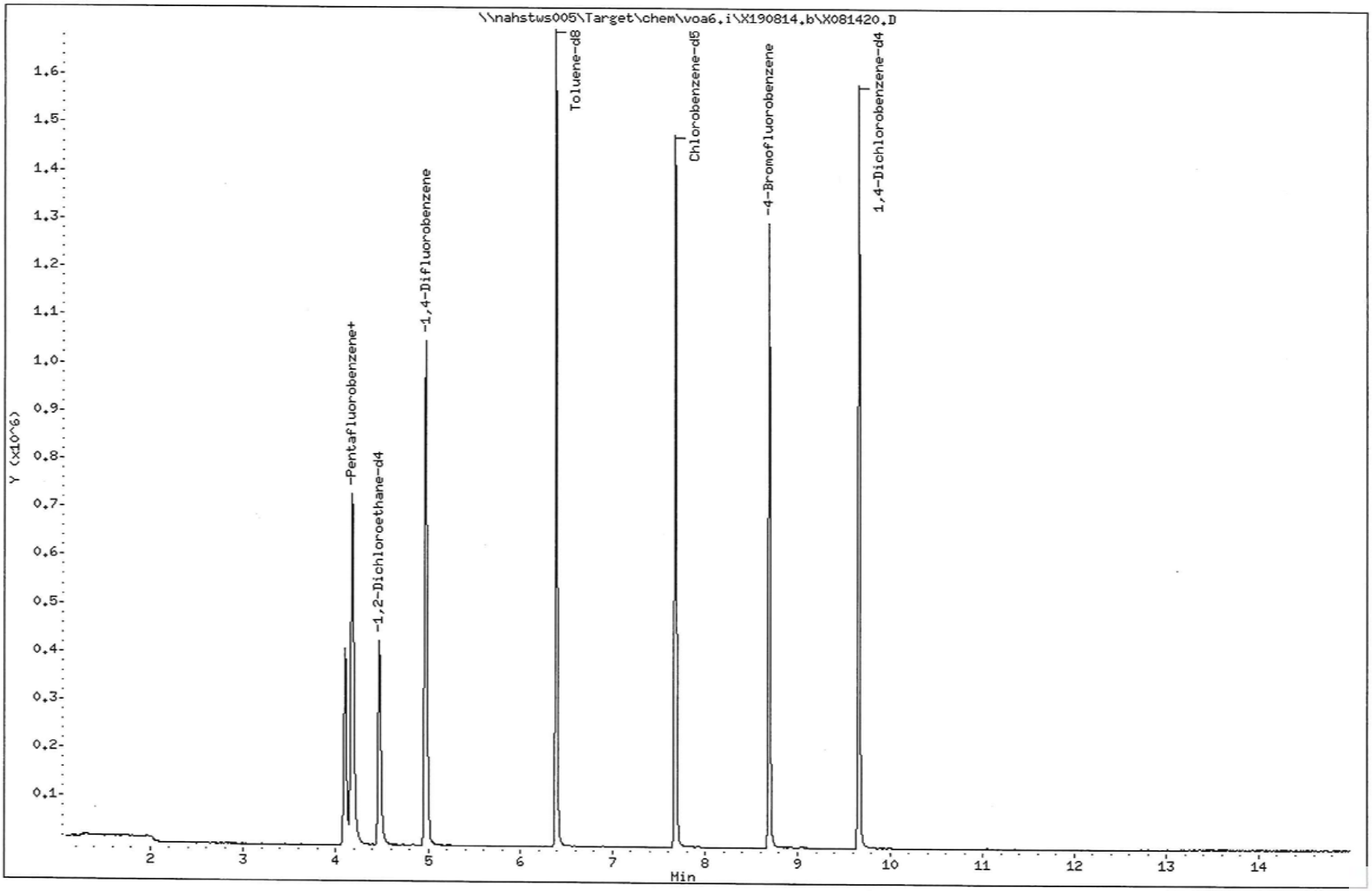
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 637537 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 880803 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.670 | 7.678 | (1.000) | 741063 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 373730 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 316355 | 43.8362 | 43.83 |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 352071 | 50.3745 | 50.37 |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 280395 | 45.6122 | 45.61 |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 1021384 | 51.3609 | 51.36 |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081420.D
Date : 14-AUG-2019 18:12
Client ID: HS19080637-07
Sample Info: HS19080637-07;HS19080637-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081421.D Page 1
Report Date: 28-Aug-2019 16:09

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Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081421.D
Lab Smp Id: HS19080637-08 Client Smp ID: HS19080637-08
Inj Date : 14-AUG-2019 18:37
Operator : PC Inst ID: voa6.i
Smp Info : HS19080637-08;HS19080637-08;;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:07 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

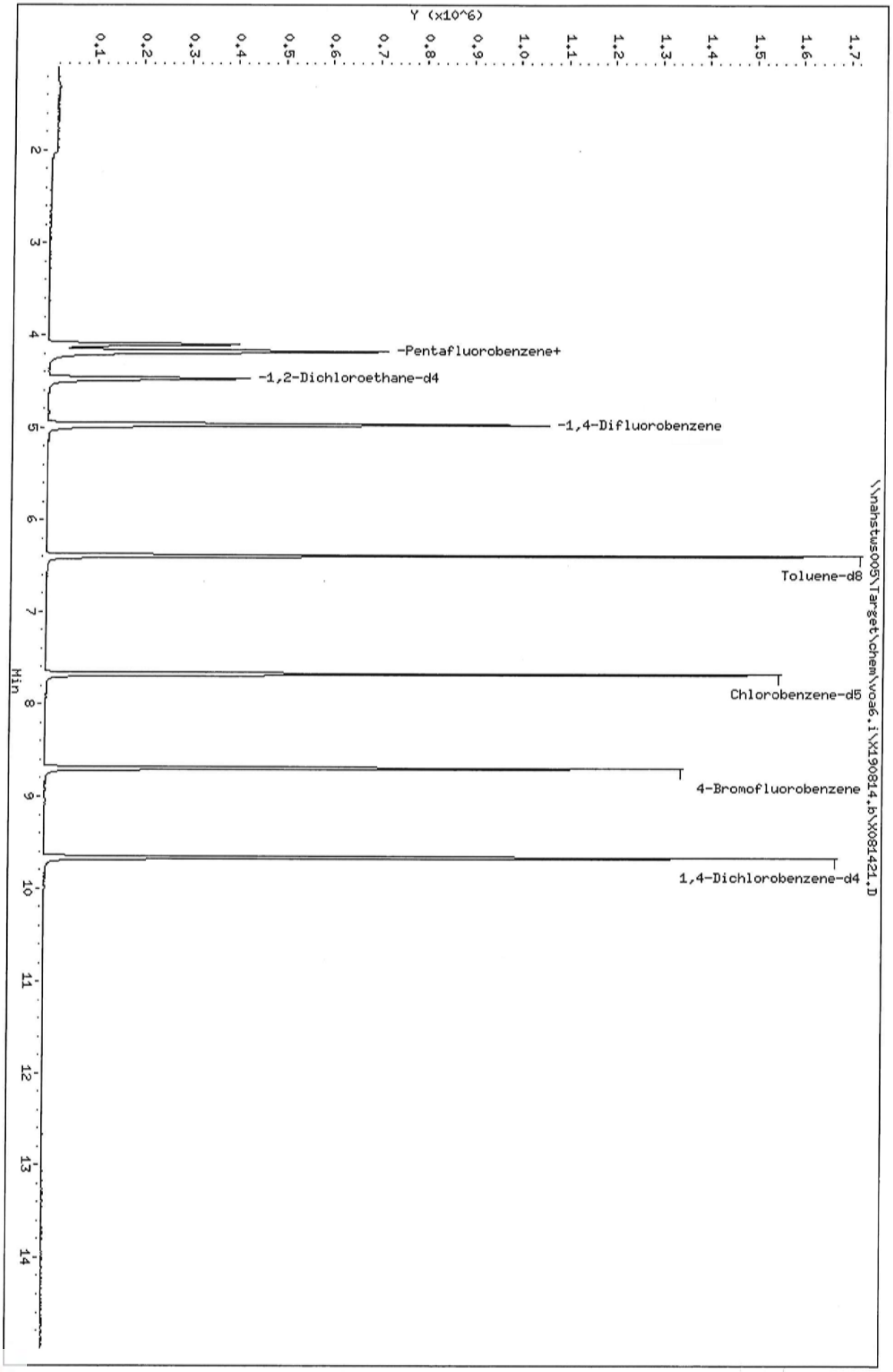
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | CONCENTRATIONS ON-COLUMN ( ug/l) | CONCENTRATIONS FINAL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.189 | (1.000) | 626816 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 887876 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.678 | (1.000) | 763587 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 404574 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 319483 | 45.0425 | 45.04 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 369517 | 51.3292 | 51.32 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 279844 | 46.3107 | 46.31 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 1024888 | 50.0168 | 50.01 |

Data File: \\nahstws005\Target\chem\voa6.i\X190814.b\X081421.D
Date : 14-AUG-2019 18:37
Client ID: HS19080637-08
Sample Info: HS19080637-08;HS19080637-08;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18



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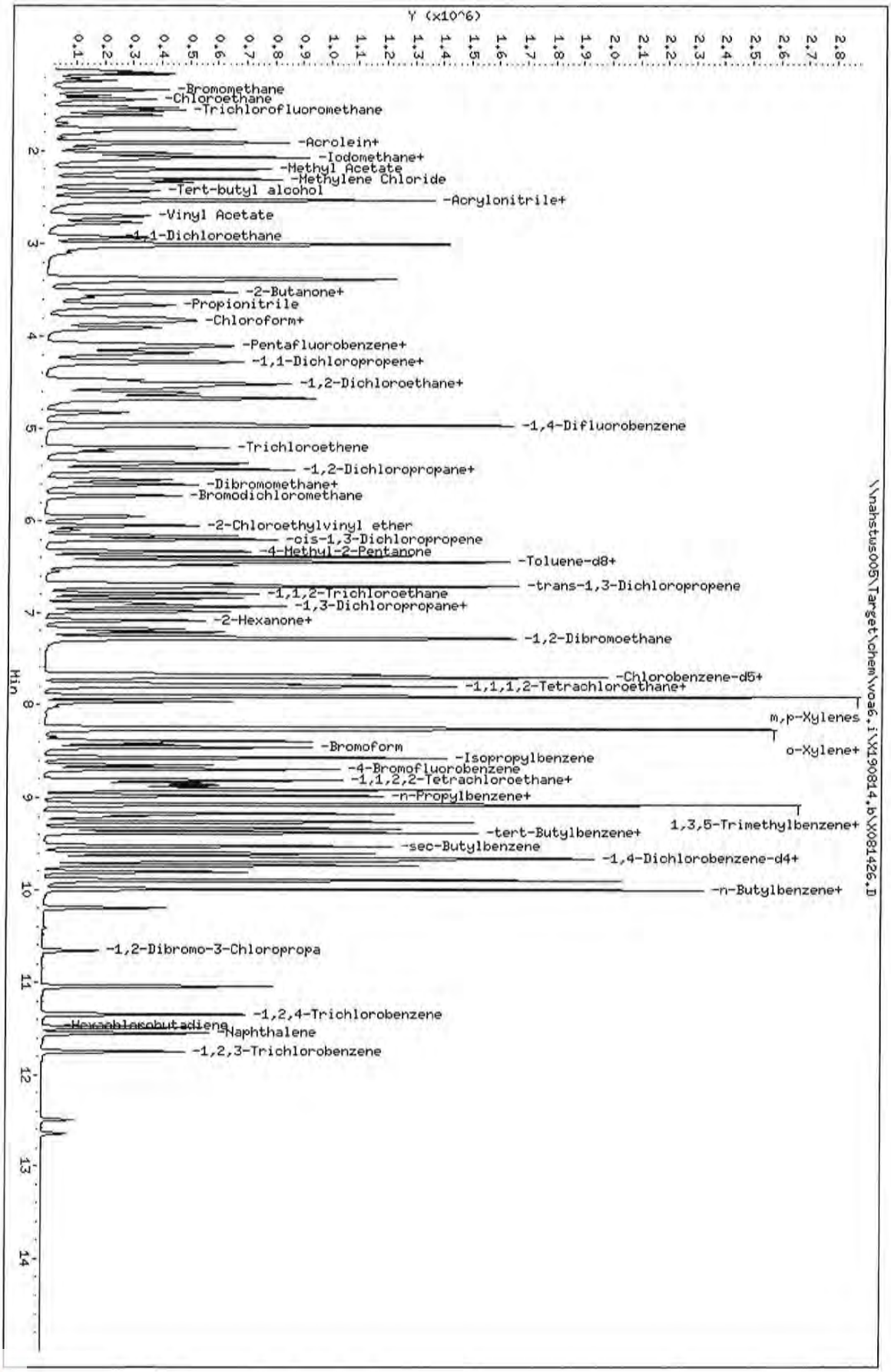
Data file : \\nahstws005\Target\chem\voa6.i\X190814.b\X081426.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 14-AUG-2019 20:37
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X190814.b\8260W.m
Meth Date : 28-Aug-2019 16:04 Devak.Giga Quant Type: ISTD
Cal Date : 06-AUG-2019 13:46 Cal File: X080608.D
Als bottle: 25 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.189 | 4.189 | (1.000) | 437905 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 656429 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.678 | 7.678 | (1.000) | 581764 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 302632 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.068) | 244716 | 50.0000 | 49.44 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.132) | 280434 | 50.0000 | 51.12 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.979) | 213764 | 50.0000 | 50.69 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.832) | 762619 | 50.0000 | 48.84 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.013) | 207784 | 50.0000 | 48.14 |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.976) | 302718 | 50.0000 | 46.50 |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 248004 | 50.0000 | 47.52 |
| 138 Freon TF | 101 | 1.919 | 1.919 | (0.458) | 151059 | 50.0000 | 44.06 |
| 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.892) | 163992 | 50.0000 | 47.87 |
| 22 1,1-Dichloroethane | 63 | 2.929 | 2.929 | (0.699) | 376083 | 50.0000 | 48.77 |
| 11 1,1-Dichloroethene | 96 | 1.911 | 1.911 | (0.456) | 168023 | 50.0000 | 49.77 |
| 32 1,1-Dichloropropene | 75 | 4.282 | 4.282 | (0.862) | 260020 | 50.0000 | 44.93 |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 138361 | 50.0000 | 41.30 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 313943 | 50.0000 | 73.63 |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 214445 | 50.0000 | 42.94 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.382 | 9.382 | (0.970) | 702566 | 50.0000 | 45.76 |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.657 | 10.657 | (1.102) | 40343 | 50.0000 | 45.39 |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.946) | 213264 | 50.0000 | 47.42 |
| 88 1,2-Dichlorobenzene | 146 | 9.998 | 9.998 | (1.034) | 404797 | 50.0000 | 48.07 |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 279340 | 50.0000 | 45.00 |
| 42 | 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 209212 | 50.0000 | 49.68 |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.074 | 9.074 | (0.939) | 674202 | 50.0000 | 45.66 |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 419227 | 50.0000 | 45.02 |
| 54 | 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 335842 | 50.0000 | 47.61 |
| 84 | 1,4-Dichlorobenzene | 146 | 9.690 | 9.690 | (1.002) | 431002 | 50.0000 | 47.72 |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.839) | 272934 | 50.0000 | 42.83 |
| 24 | 2-Butanone | 43 | 3.580 | 3.580 | (0.855) | 183427 | 100.000 | 90.92 |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.981 | (0.929) | 570577 | 50.0000 | 45.81 |
| 52 | 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 291924 | 100.000 | 94.25 |
| 77 | 4-Chlorotoluene | 91 | 9.074 | 9.074 | (0.939) | 665254 | 50.0000 | 45.74 |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 659689 | 50.0000 | 43.05 |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 425431 | 100.000 | 95.13 |
| 10 | Acetone | 43 | 1.976 | 1.976 | (0.472) | 130363 | 100.000 | 80.91 |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 810998 | 50.0000 | 48.44 |
| 74 | Bromobenzene | 156 | 8.809 | 8.809 | (0.911) | 259729 | 50.0000 | 46.31 |
| 29 | Bromochloromethane | 128 | 3.802 | 3.802 | (0.908) | 124390 | 50.0000 | 46.92 |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 280591 | 50.0000 | 47.82 |
| 66 | Bromoform | 173 | 8.415 | 8.415 | (1.096) | 167741 | 50.0000 | 47.23 |
| 6 | Bromomethane | 94 | 1.338 | 1.338 | (0.320) | 183269 | 50.0000 | 51.52 |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.494) | 1083729 | 100.000 | 100.35 |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 258284 | 50.0000 | 43.32 |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.003) | 554218 | 50.0000 | 47.57 |
| 7 | Chloroethane | 64 | 1.403 | 1.403 | (0.335) | 134436 | 50.0000 | 54.97 |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.933) | 372541 | 50.0000 | 47.51 |
| 3 | Chloromethane | 50 | 1.073 | 1.073 | (0.256) | 175822 | 50.0000 | 44.53 |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.843) | 234776 | 50.0000 | 48.35 |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 342613 | 50.0000 | 48.28 |
| 55 | Dibromochloromethane | 129 | 7.183 | 7.183 | (0.936) | 225619 | 50.0000 | 48.28 |
| 44 | Dibromomethane | 93 | 5.557 | 5.557 | (1.118) | 144159 | 50.0000 | 47.37 |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.232) | 186221 | 50.0000 | 41.47 |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.017) | 281749 | 50.0000 | 46.61 |
| 91 | Hexachlorobutadiene | 225 | 11.488 | 11.488 | (1.188) | 101149 | 50.0000 | 41.88 |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.116) | 783188 | 50.0000 | 44.33 |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.030) | 677594 | 100.000 | 93.20 |
| 17 | Methylene Chloride | 84 | 2.305 | 2.305 | (0.550) | 216049 | 50.0000 | 50.71 |
| 87 | n-Butylbenzene | 91 | 9.998 | 9.998 | (1.034) | 538685 | 50.0000 | 42.15 |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 901872 | 50.0000 | 44.70 |
| 92 | Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 384355 | 50.0000 | 44.57 |
| 63 | o-Xylene | 106 | 8.243 | 8.243 | (1.074) | 338956 | 50.0000 | 47.37 |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 715593 | 50.0000 | 42.06 |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.077) | 600723 | 50.0000 | 48.49 |
| 78 | tert-Butylbenzene | 119 | 9.339 | 9.339 | (0.966) | 533561 | 50.0000 | 43.04 |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.903) | 167568 | 50.0000 | 43.83 |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.840) | 838331 | 50.0000 | 48.28 |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.535 | (0.605) | 198790 | 50.0000 | 48.66 |
| 51 | trans-1,3-Dichloropropene | 75 | 6.682 | 6.682 | (1.344) | 307426 | 50.0000 | 47.21 |
| 38 | Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 227081 | 50.0000 | 47.95 |
| 8 | Trichlorofluoromethane | 101 | 1.560 | 1.560 | (0.373) | 305088 | 50.0000 | 47.71 |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 218057 | 50.0000 | 51.95 |




Data File: \\nahstus005\Target\chem\voa6,i\X190814,b\X081426.D
Date : 14-AUG-2019 20:37
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column phase: DB624

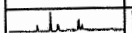
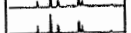
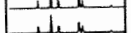
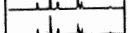
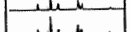
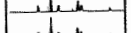
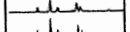
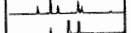
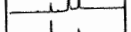
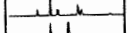
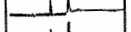
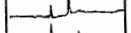
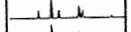
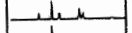
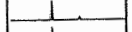
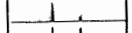
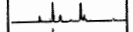
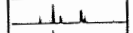
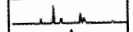
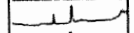
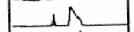
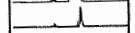
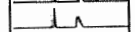
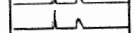
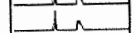
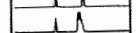
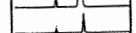
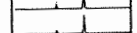
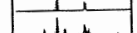
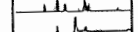
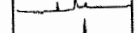
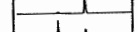
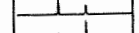
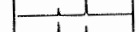
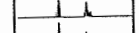
Instrument: voa6,i
Operator: PC
Column diameter: 0.18

# HS19080684 Wet Chem Raw Data

ALS WO# HS19080684

Sequence: 081419
Last Update Operator: alshs.nouser

HS19080684

| CD | Name | Comment | Type | Position | Dilution | Level | Instrument Method | Processing Method | Volume [ul] | Status | Inject Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | STD1 | 2970209205 | Calibration St | GA1 | 1.0000 | 1 | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 2:08:06 PM -05:00 |
|  | STD2 | | Calibration St | GA2 | 1.0000 | 2 | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 2:24:42 PM -05:00 |
|  | STD3 | | Calibration St | GA3 | 1.0000 | 3 | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 2:41:19 PM -05:00 |
|  | STD4 | | Calibration St | GA4 | 1.0000 | 4 | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 2:57:54 PM -05:00 |
|  | STD5 | | Calibration St | GA5 | 1.0000 | 5 | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 3:14:30 PM -05:00 |
|  | STD6 | | Calibration St | GB8 | 1.0000 | 6 | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 6:37:32 PM -05:00 |
|  | ICV | 2970209123 | Unknown | GA7 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 6:54:07 PM -05:00 |
|  | ICB | | Unknown | GB8 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/12/2019 7:29:52 PM -05:00 |
|  | CCV | | Unknown | BA5 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 1:21:01 PM -05:00 |
|  | CCB | | Unknown | BA6 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 1:37:37 PM -05:00 |
|  | WBLKW1-081419 | | Unknown | RA1 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 2:14:22 PM -05:00 |
|  | WLCSW1-081419 | | Unknown | RA2 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 2:30:58 PM -05:00 |
|  | WLCSDW1-081419 | | Unknown | RA3 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 2:47:33 PM -05:00 |
|  | HS19071561-06 | | Unknown | RA4 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 3:04:13 PM -05:00 |
|  | HS19071561-06DF10 | | Unknown | RA5 | 10.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 3:20:49 PM -05:00 |
|  | HS19080113-02 | | Unknown | RA6 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 3:37:24 PM -05:00 |
|  | HS19080114-02 | | Unknown | RA7 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 3:54:00 PM -05:00 |
|  | CCV1 | | Unknown | BA7 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 4:39:14 PM -05:00 |
|  | CCB | | Unknown | BA8 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 4:55:50 PM -05:00 |
|  | HS19080684-01 | 9056_W | Unknown | RA8 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 5:37:42 PM -05:00 |
|  | HS19080684-01DF20 | | Unknown | RB1 | 20.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 5:54:18 PM -05:00 |
|  | HS19080684-02 | | Unknown | RB2 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 6:10:53 PM -05:00 |
|  | HS19080684-02MS | | Unknown | RB3 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 6:27:29 PM -05:00 |
|  | HS19080684-02MSD | | Unknown | RB4 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 6:44:08 PM -05:00 |
|  | HS19080684-02DF20 | | Unknown | RB5 | 20.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 7:00:46 PM -05:00 |
| | HS19080684-03 | | Unknown | RB6 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 7:17:24 PM -05:00 |
|  | HS19080684-03DF20 | | Unknown | RB7 | 20.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 7:34:00 PM -05:00 |
|  | HS19080637-02DF5 | | Unknown | RB8 | 5.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 7:50:35 PM -05:00 |
|  | HS19080637-03DF10 | | Unknown | RC1 | 10.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 8:07:10 PM -05:00 |
| | CCV | | Unknown | BA5 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 8:23:50 PM -05:00 |
|  | CCB | | Unknown | BA6 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 8:40:27 PM -05:00 |
|  | HS19080684-01DF50 | | Unknown | RE7 | 50.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 8:57:03 PM -05:00 |
|  | HS19080637-04DF10 | | Unknown | RC2 | 10.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 9:13:38 PM -05:00 |
|  | HS19080637-06DF100 | | Unknown | RC3 | 100.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 9:30:13 PM -05:00 |
|  | HS19080444-08DF5 | | Unknown | RC4 | 5.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 9:46:49 PM -05:00 |
|  | CCV1 | | Unknown | BA7 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 10:03:24 PM -05:00 |
|  | CCB | | Unknown | BA8 | 1.0000 | | Anions Pro | Anions Processin | 5.0 | Finished | 8/14/2019 10:19:59 PM -05:00 |

Sequence: 081419
Injection #6: STD6

Calibration

| Peak No. | Peak Name | Cal.Type | Eval.Type | Number of Points | Rel.Std.Dev. % | Coeff.of Determination | C0 (Offset) | C1 (Slope) | C2 (Curve) |
|---|---|---|---|---|---|---|---|---|---|
| *1* | *Fluoride* | *Lin, WithOffset, 1/x* | *Area* | *5* | *10.1532* | *0.99927* | *-0.0056* | *0.3716* | *0.0000* |
| 2 | Chloride | Lin, WithOffset, 1/x | Area | 6 | 0.2804 | 1.00000 | -0.0135 | 0.2355 | 0.0000 |
| 3 | Nitrite,N | Lin, WithOffset, 1/x | Area | 5 | 15.1147 | 0.99824 | 0.0003 | 0.5120 | 0.0000 |
| 4 | Bromide | Lin, WithOffset, 1/x | Area | 6 | 14.0217 | 0.99919 | -0.0052 | 0.1009 | 0.0000 |
| 5 | Sulfate | Lin, WithOffset, 1/x | Area | 6 | 1.1258 | 0.99999 | -0.0022 | 0.1717 | 0.0000 |
| 6 | Nitrate | Lin, WithOffset, 1/x | Area | 6 | 2.2249 | 0.99998 | -0.0102 | 0.5876 | 0.0000 |
| 7 | Chlorate | Lin, WithOffset, 1/x | Area | 6 | 10.0265 | 0.99953 | -0.0024 | 0.0944 | 0.0000 |
| 8 | Phosphate | Lin, WithOffset, 1/x | Area | 6 | 6.5991 | 0.99982 | -0.0110 | 0.2321 | 0.0000 |
| **Maximum** | | | | | **15.1147** | 1.00000 | | | |
| **Minimum** | | | | | 0.2804 | **0.99824** | | | |

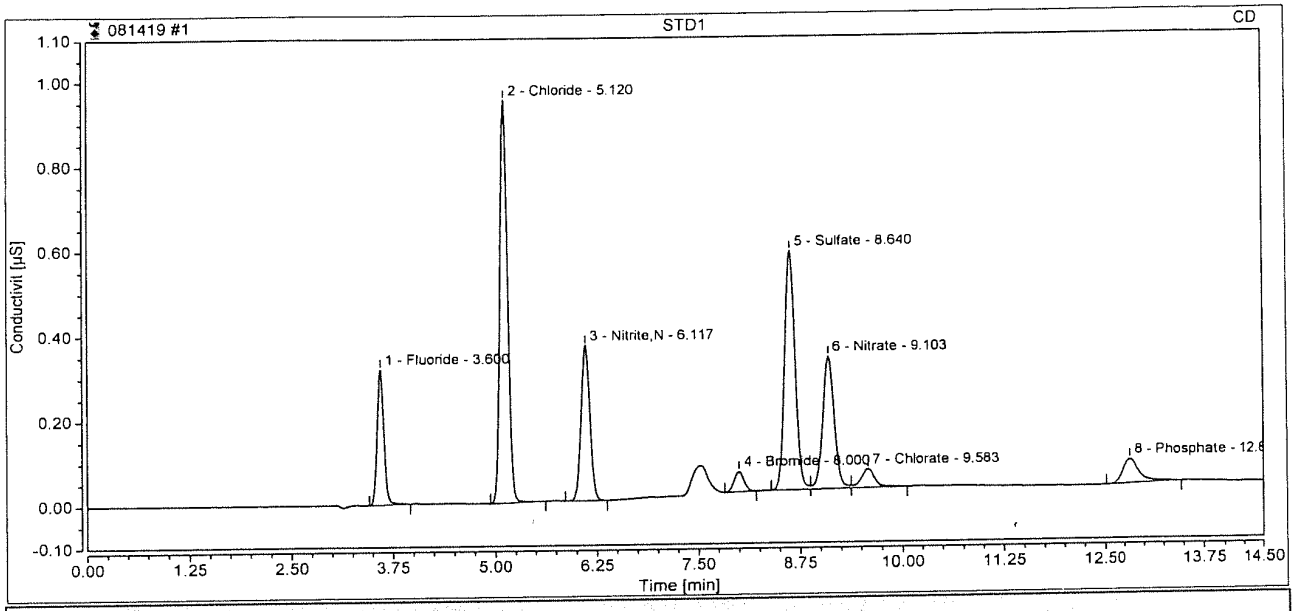
HS1908084



1 STD1

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD1** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA1** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:08** | *Sample Weight:* | **1.0000** |

Run Time:



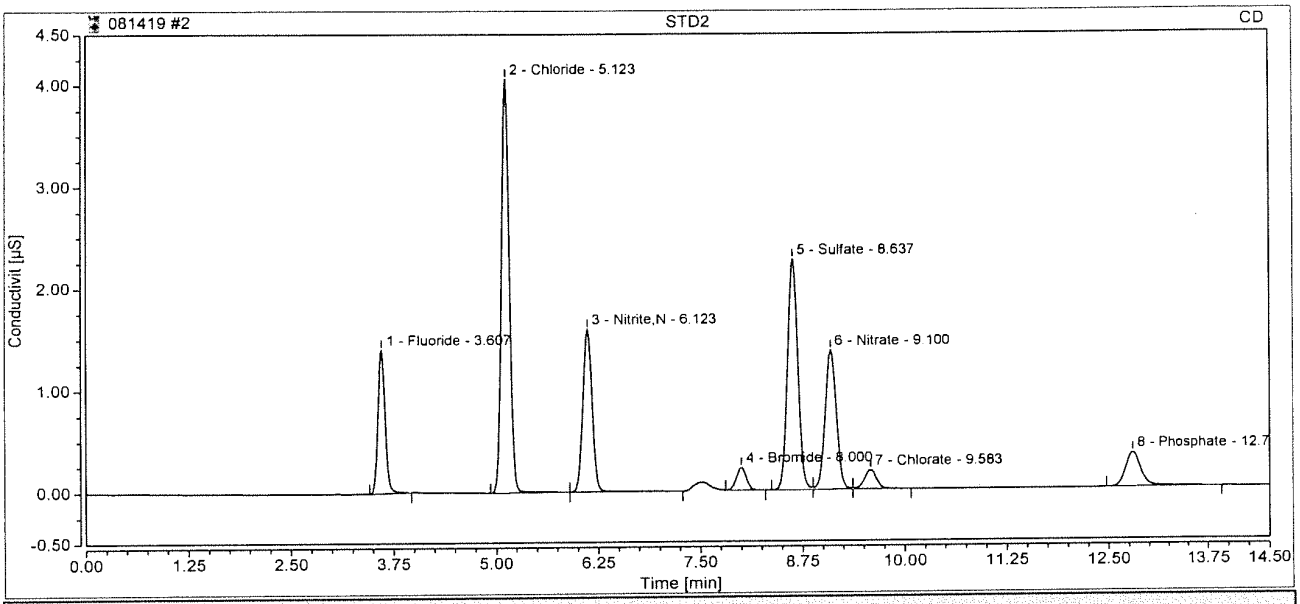

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.031 | 0.0973 | 0.0973 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 0.105 | 0.5026 | 0.5026 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 0.046 | 0.0893 | 0.0893 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.007 | 0.1192 | 0.1192 | 1.0000 |
| 5 | 8.64 | Sulfate | BM | 0.084 | 0.5042 | 0.5042 | 1.0000 |
| 6 | 9.10 | Nitrate | M | 0.051 | 0.1034 | 0.1034 | 1.0000 |
| 7 | 9.58 | Chlorate | MB | 0.008 | 0.1143 | 0.1143 | 1.0000 |
| 8 | 12.83 | Phosphate | BMB | 0.014 | 0.1085 | 0.1085 | 1.0000 |
| **Total:** | | | **0.000** | **0.346** | | **1.64** | |

2 STD2

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD2** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA2** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:24** | *Sample Weight:* | **1.0000** |

Run Time:



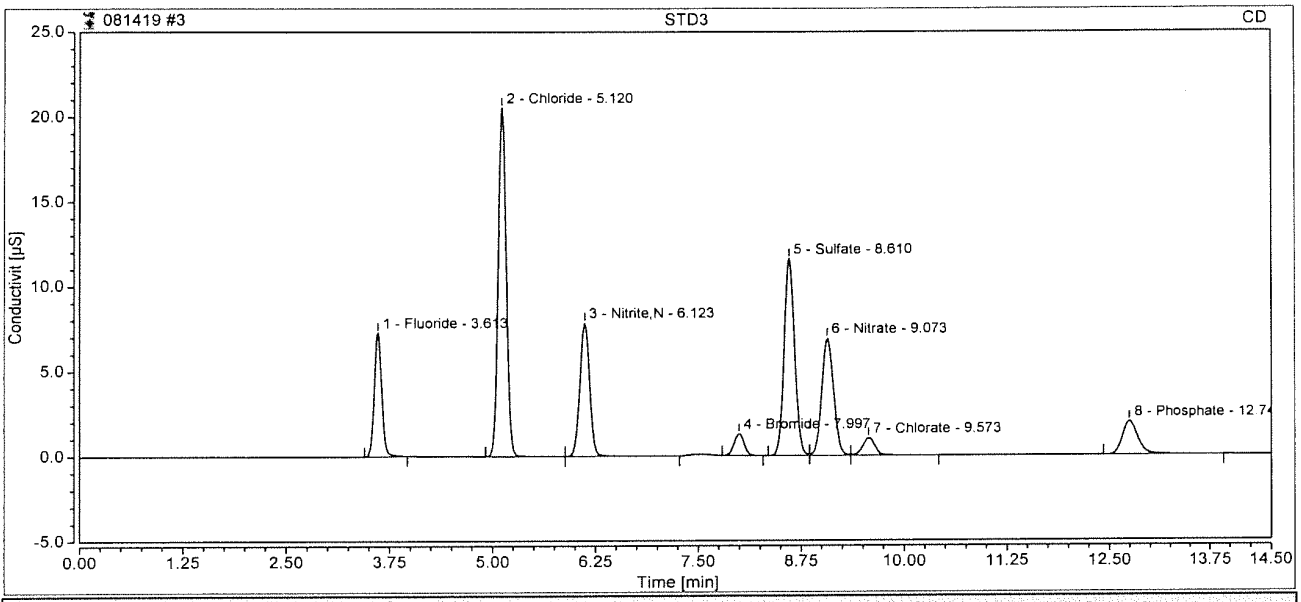

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.140 | 0.3929 | 0.3929 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 0.456 | 1.9918 | 1.9918 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 0.211 | 0.4119 | 0.4119 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.031 | 0.3593 | 0.3593 | 1.0000 |
| 5 | 8.64 | Sulfate | BM | 0.337 | 1.9733 | 1.9733 | 1.0000 |
| 6 | 9.10 | Nitrate | M | 0.220 | 0.3917 | 0.3917 | 1.0000 |
| 7 | 9.58 | Chlorate | MB | 0.033 | 0.3704 | 0.3704 | 1.0000 |
| 8 | 12.80 | Phosphate | BMB | 0.078 | 0.3842 | 0.3842 | 1.0000 |
| **Total:** | | | **0.000** | **1.506** | | **6.28** | |

3 STD3

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD3** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA3** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:41** | *Sample Weight:* | **1.0000** |

Run Time:



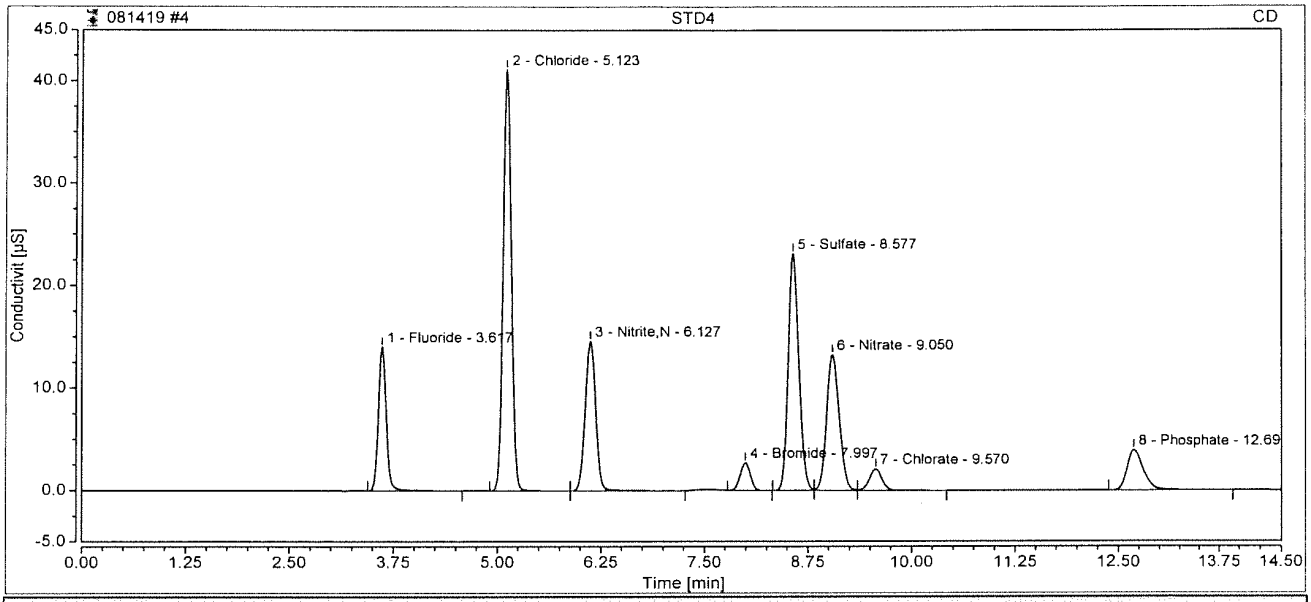

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.758 | 2.0551 | 2.0551 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 2.339 | 9.9888 | 9.9888 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 1.091 | 2.1305 | 2.1305 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.182 | 1.8590 | 1.8590 | 1.0000 |
| 5 | 8.61 | Sulfate | BM | 1.715 | 10.0007 | 10.0007 | 1.0000 |
| 6 | 9.07 | Nitrate | M | 1.153 | 1.9792 | 1.9792 | 1.0000 |
| 7 | 9.57 | Chlorate | MB | 0.176 | 1.8940 | 1.8940 | 1.0000 |
| 8 | 12.75 | Phosphate | BMB | 0.436 | 1.9271 | 1.9271 | 1.0000 |
| **Total:** | | | **0.000** | **7.851** | | **31.83** | |

4 STD4

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD4** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA4** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:57** | *Sample Weight:* | **1.0000** |

Run Time:



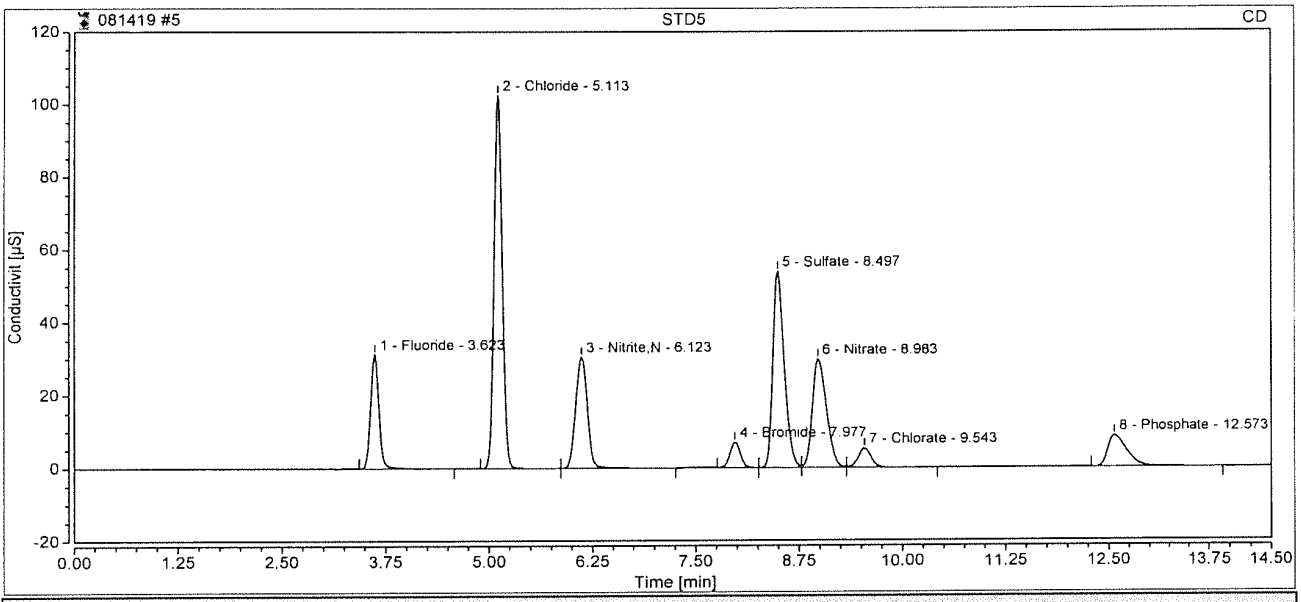

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.535 | 4.1457 | 4.1457 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.695 | 19.9948 | 19.9948 | 1.0000 |
| 3 | 6.13 | Nitrite,N | BMB | 2.133 | 4.1659 | 4.1659 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.385 | 3.8642 | 3.8642 | 1.0000 |
| 5 | 8.58 | Sulfate | BM | 3.451 | 20.1082 | 20.1082 | 1.0000 |
| 6 | 9.05 | Nitrate | M | 2.330 | 3.9823 | 3.9823 | 1.0000 |
| 7 | 9.57 | Chlorate | MB | 0.365 | 3.8956 | 3.8956 | 1.0000 |
| 8 | 12.69 | Phosphate | BMB | 0.903 | 3.9396 | 3.9396 | 1.0000 |
| **Total:** | | | **0.000** | **15.798** | | **64.10** | |

5 STD5

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD5** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA5** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 15:14** | *Sample Weight:* | **1.0000** |

Run Time:



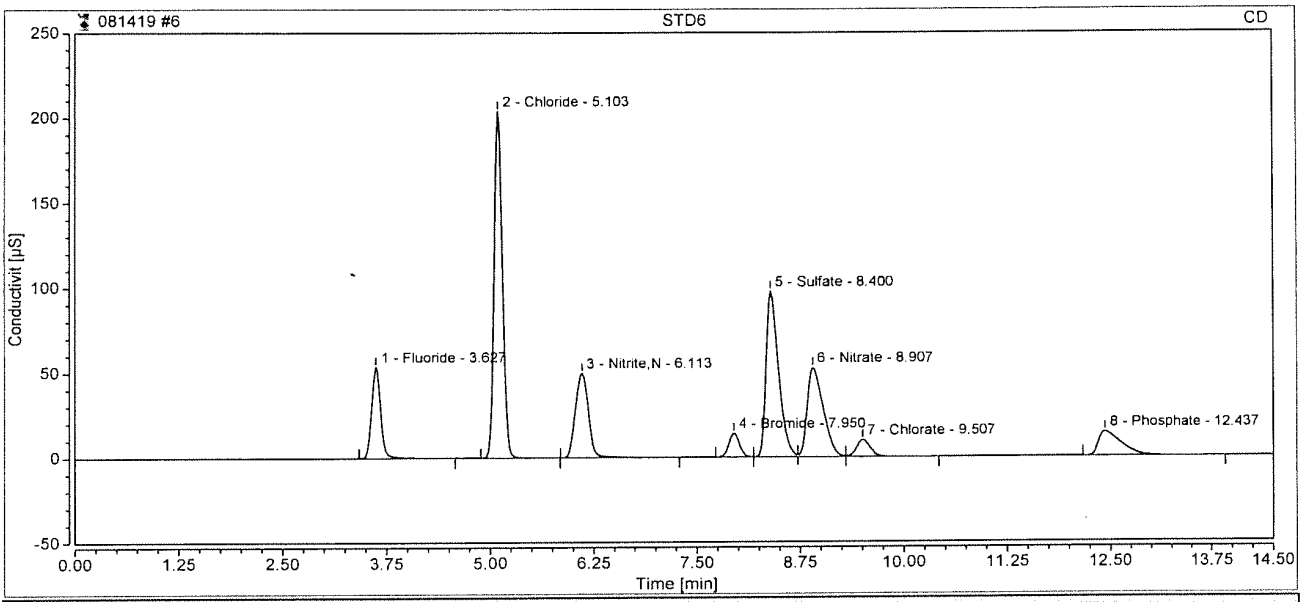

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 3.639 | 9.8090 | 9.8090 | 1.0000 |
| 2 | 5.11 | Chloride | BMB | 11.762 | 49.9996 | 49.9996 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 4.968 | 9.7023 | 9.7023 | 1.0000 |
| 4 | 7.98 | Bromide | BMB | 1.001 | 9.9786 | 9.9786 | 1.0000 |
| 5 | 8.50 | Sulfate | BM | 8.590 | 50.0271 | 50.0271 | 1.0000 |
| 6 | 8.98 | Nitrate | M | 5.854 | 9.9805 | 9.9805 | 1.0000 |
| 7 | 9.54 | Chlorate | MB | 0.939 | 9.9670 | 9.9670 | 1.0000 |
| 8 | 12.57 | Phosphate | BMB | 2.305 | 9.9807 | 9.9807 | 1.0000 |
| **Total:** | | | **0.000** | **39.058** | | **159.44** | |

6 STD6

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD6** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GB8** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 18:37** | *Sample Weight:* | **1.0000** |

Run Time:



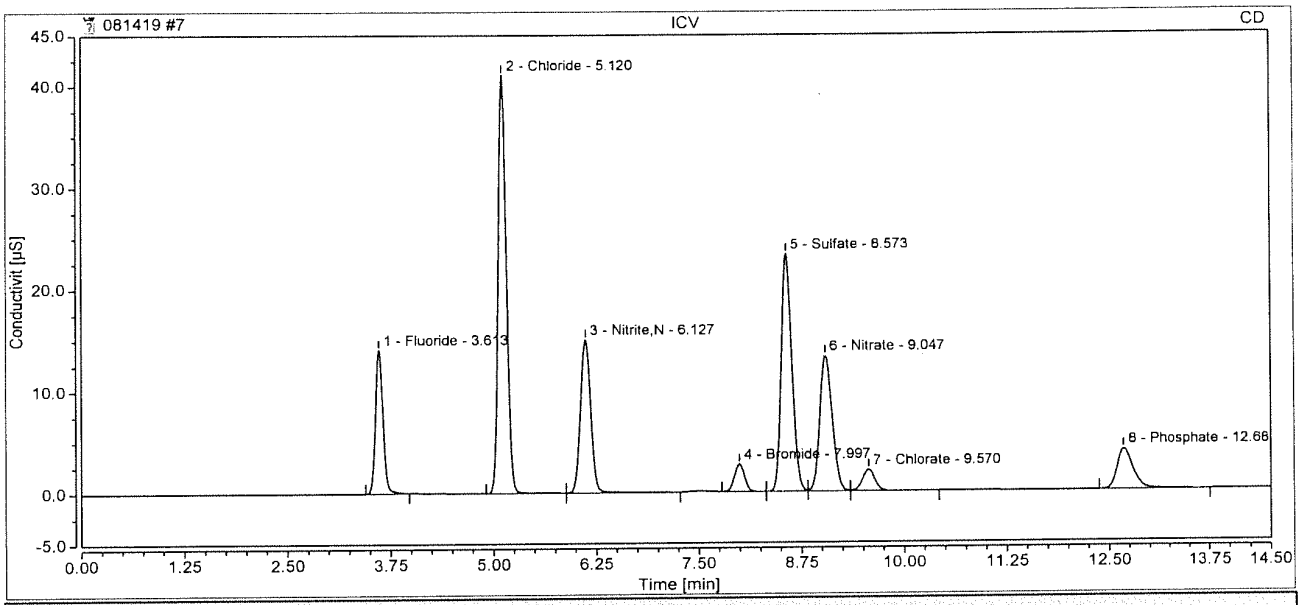

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.63 | Fluoride | BMB | 6.773 | 18.2418 | 18.2418 | 1.0000 |
| 2 | 5.10 | Chloride | BMB | 23.542 | 100.0224 | 100.0224 | 1.0000 |
| 3 | 6.11 | Nitrite,N | BMB | 9.157 | 17.8850 | 17.8850 | 1.0000 |
| 4 | 7.95 | Bromide | BM | 2.045 | 20.3197 | 20.3197 | 1.0000 |
| 5 | 8.40 | Sulfate | M | 17.153 | 99.8863 | 99.8863 | 1.0000 |
| 6 | 8.91 | Nitrate | M | 11.778 | 20.0629 | 20.0629 | 1.0000 |
| 7 | 9.51 | Chlorate | MB | 1.910 | 20.2586 | 20.2586 | 1.0000 |
| 8 | 12.44 | Phosphate | BMB | 4.668 | 20.1599 | 20.1599 | 1.0000 |
| **Total:** | | | **0.000** | **77.026** | | **316.84** | |

7 ICV

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICV** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 18:54** | *Sample Weight:* | **1.0000** |

Run Time:



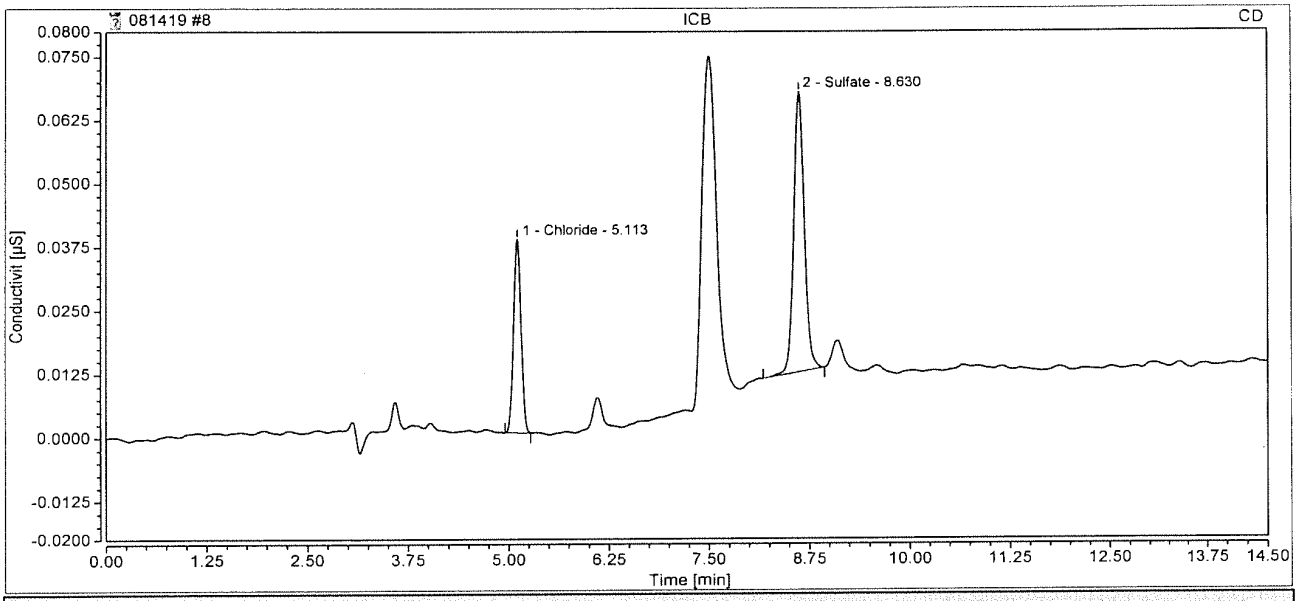

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 1.495 | 4.0374 | 4.0374 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.681 | 19.9333 | 19.9333 | 1.0000 |
| 3 | 6.13 | Nitrite,N | BMB | 2.195 | 4.2858 | 4.2858 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.384 | 3.8585 | 3.8585 | 1.0000 |
| 5 | 8.57 | Sulfate | BM | 3.469 | 20.2132 | 20.2132 | 1.0000 |
| 6 | 9.05 | Nitrate | M | 2.340 | 3.9993 | 3.9993 | 1.0000 |
| 7 | 9.57 | Chlorate | MB | 0.367 | 3.9104 | 3.9104 | 1.0000 |
| 8 | 12.68 | Phosphate | BMB | 0.911 | 3.9729 | 3.9729 | 1.0000 |
| **Total:** | | | **0.000** | **15.841** | | **64.21** | |

8 ICB

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GB8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 19:29** | *Sample Weight:* | **1.0000** |

Run Time:



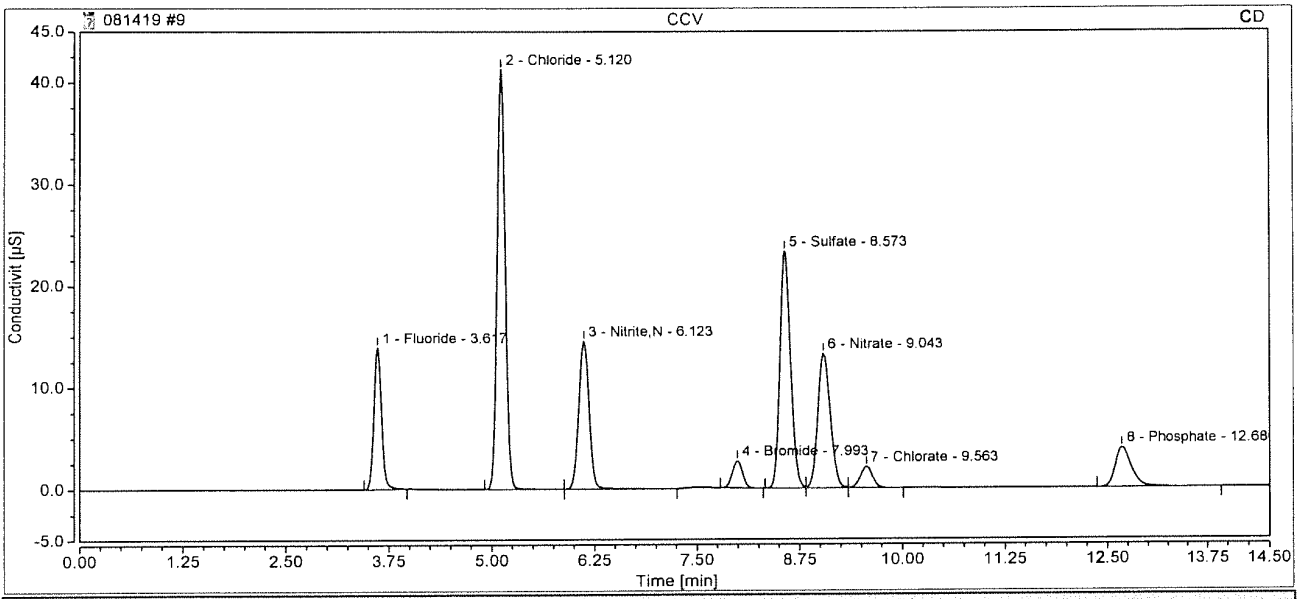

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.004 | 0.0748 | 0.0748 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 8.63 | Sulfate | BMB | 0.008 | 0.0618 | 0.0618 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.013** | | **0.14** | |

9 CCV

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 13:21** | *Sample Weight:* | **1.0000** |

Run Time:



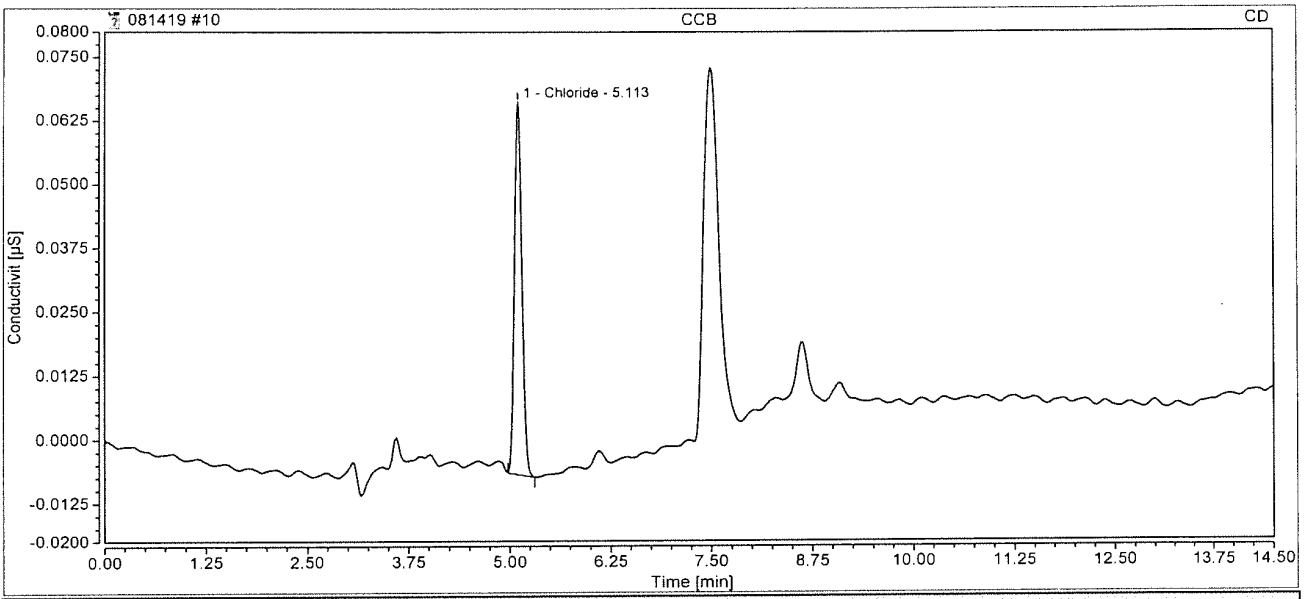

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.499 | 4.0496 | 4.0496 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.713 | 20.0696 | 20.0696 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 2.128 | 4.1559 | 4.1559 | 1.0000 |
| 4 | 7.99 | Bromide | BMB | 0.382 | 3.8420 | 3.8420 | 1.0000 |
| 5 | 8.57 | Sulfate | BM | 3.490 | 20.3357 | 20.3357 | 1.0000 |
| 6 | 9.04 | Nitrate | M | 2.329 | 3.9807 | 3.9807 | 1.0000 |
| 7 | 9.56 | Chlorate | MB | 0.362 | 3.8552 | 3.8552 | 1.0000 |
| 8 | 12.68 | Phosphate | BMB | 0.899 | 3.9195 | 3.9195 | 1.0000 |
| **Total:** | | | **0.000** | **15.802** | | **64.21** | |

*10 CCB*

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 13:37** | *Sample Weight:* | **1.0000** |

Run Time:



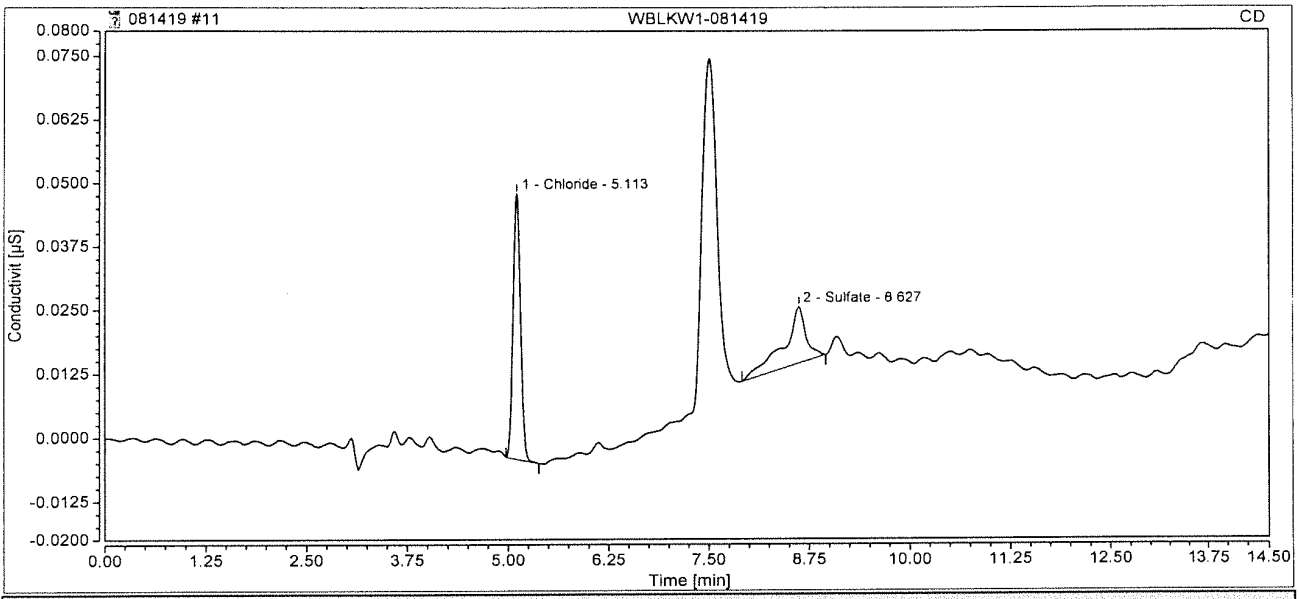

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.008 | 0.0906 | 0.0906 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Sulfate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.008** | | **0.09** | |

*11 WBLKW1-081419*

| | | | |
|---|---|---|---|
| *Sample Name:* | **WBLKW1-081419** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RA1** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 14:14** | *Sample Weight:* | **1.0000** |

Run Time:



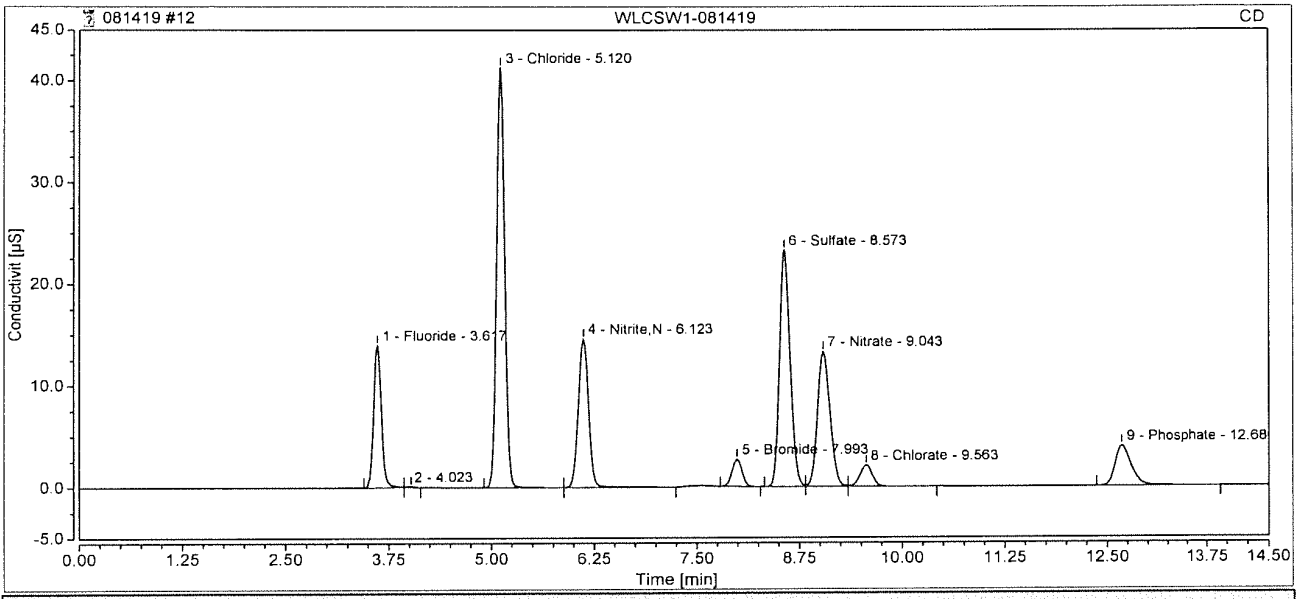

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.006 | 0.0811 | 0.0811 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 8.63 | Sulfate | BMB | 0.004 | 0.0337 | 0.0337 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.009** | | **0.11** | |

12 *WLCSW1-081419*

| | | | |
|---|---|---|---|
| *Sample Name:* | **WLCSW1-081419** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RA2** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 14:30** | *Sample Weight:* | **1.0000** |

Run Time:



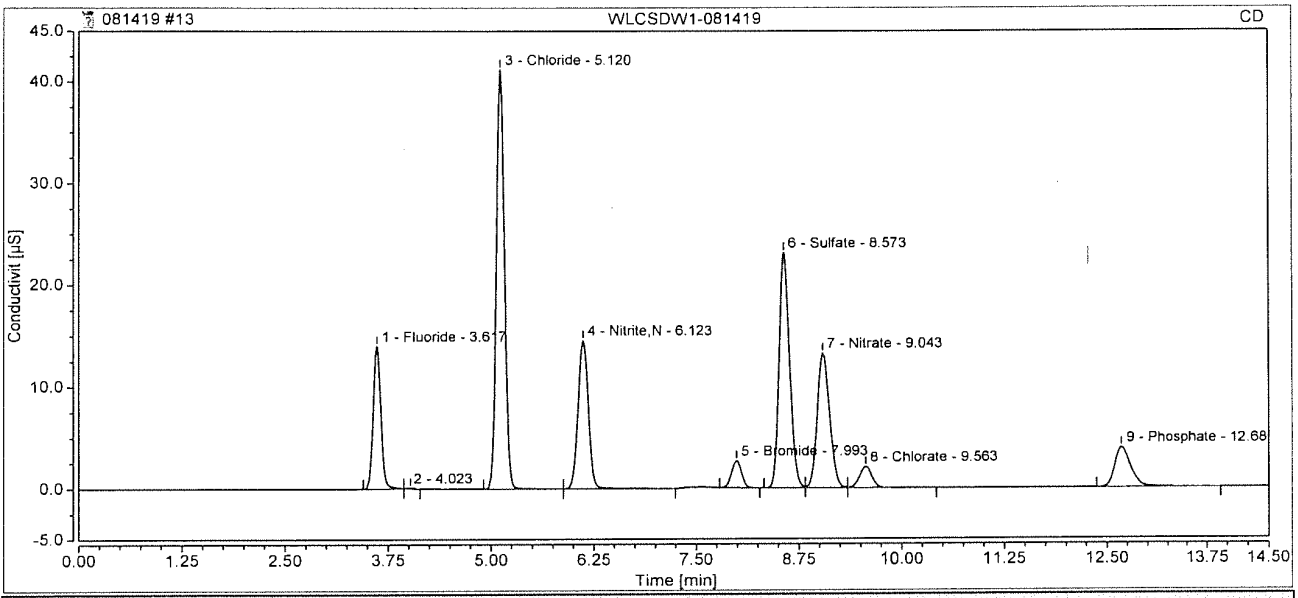

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.501 | 4.0542 | 4.0542 | 1.0000 |
| 3 | 5.12 | Chloride | BMB | 4.707 | 20.0425 | 20.0425 | 1.0000 |
| 4 | 6.12 | Nitrite,N | BMB | 2.133 | 4.1654 | 4.1654 | 1.0000 |
| 5 | 7.99 | Bromide | BMB | 0.381 | 3.8276 | 3.8276 | 1.0000 |
| 6 | 8.57 | Sulfate | BM | 3.475 | 20.2461 | 20.2461 | 1.0000 |
| 7 | 9.04 | Nitrate | M | 2.333 | 3.9886 | 3.9886 | 1.0000 |
| 8 | 9.56 | Chlorate | MB | 0.364 | 3.8851 | 3.8851 | 1.0000 |
| 9 | 12.68 | Phosphate | BMB | 0.908 | 3.9609 | 3.9609 | 1.0000 |
| **Total:** | | | **0.000** | **15.802** | | **64.17** | |

13 WLCSDW1-081419

| | | | |
|---|---|---|---|
| *Sample Name:* | **WLCSDW1-081419** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RA3** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 14:47** | *Sample Weight:* | **1.0000** |

Run Time:



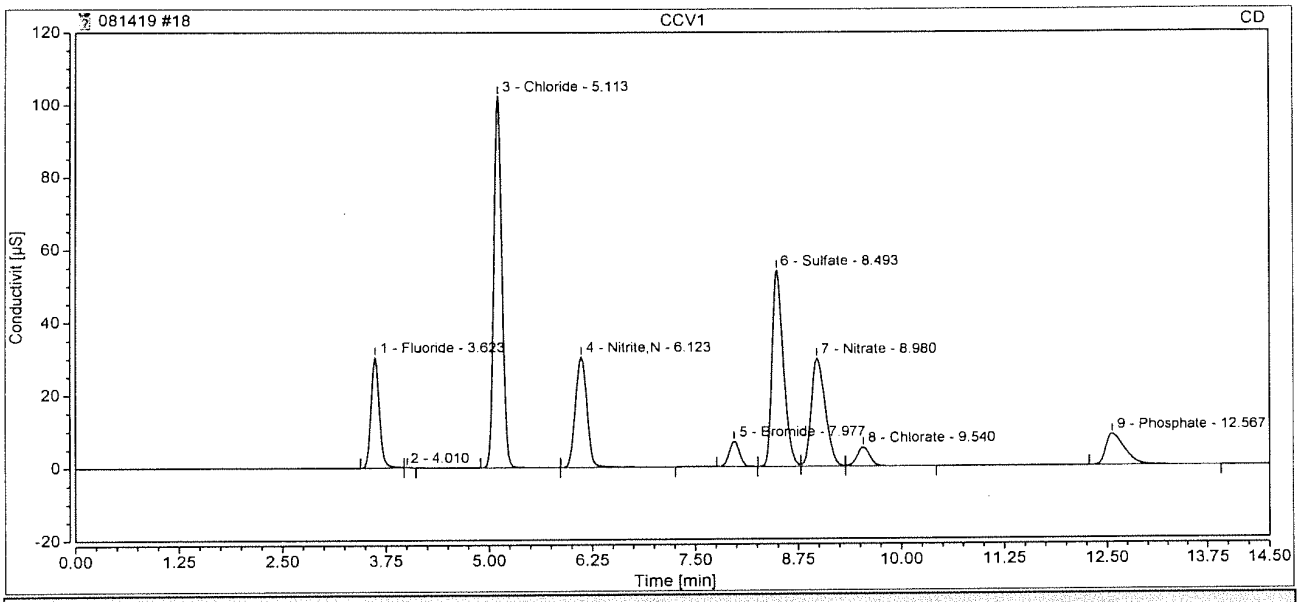

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.497 | 4.0447 | 4.0447 | 1.0000 |
| 3 | 5.12 | Chloride | BMB | 4.701 | 20.0206 | 20.0206 | 1.0000 |
| 4 | 6.12 | Nitrite,N | BMB | 2.129 | 4.1567 | 4.1567 | 1.0000 |
| 5 | 7.99 | Bromide | BMB | 0.380 | 3.8171 | 3.8171 | 1.0000 |
| 6 | 8.57 | Sulfate | BM | 3.448 | 20.0873 | 20.0873 | 1.0000 |
| 7 | 9.04 | Nitrate | M | 2.329 | 3.9812 | 3.9812 | 1.0000 |
| 8 | 9.56 | Chlorate | MB | 0.364 | 3.8760 | 3.8760 | 1.0000 |
| 9 | 12.68 | Phosphate | BMB | 0.904 | 3.9419 | 3.9419 | 1.0000 |
| **Total:** | | | **0.000** | **15.751** | | **63.93** | |

18 CCV1

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV1** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 16:39** | *Sample Weight:* | **1.0000** |

Run Time:



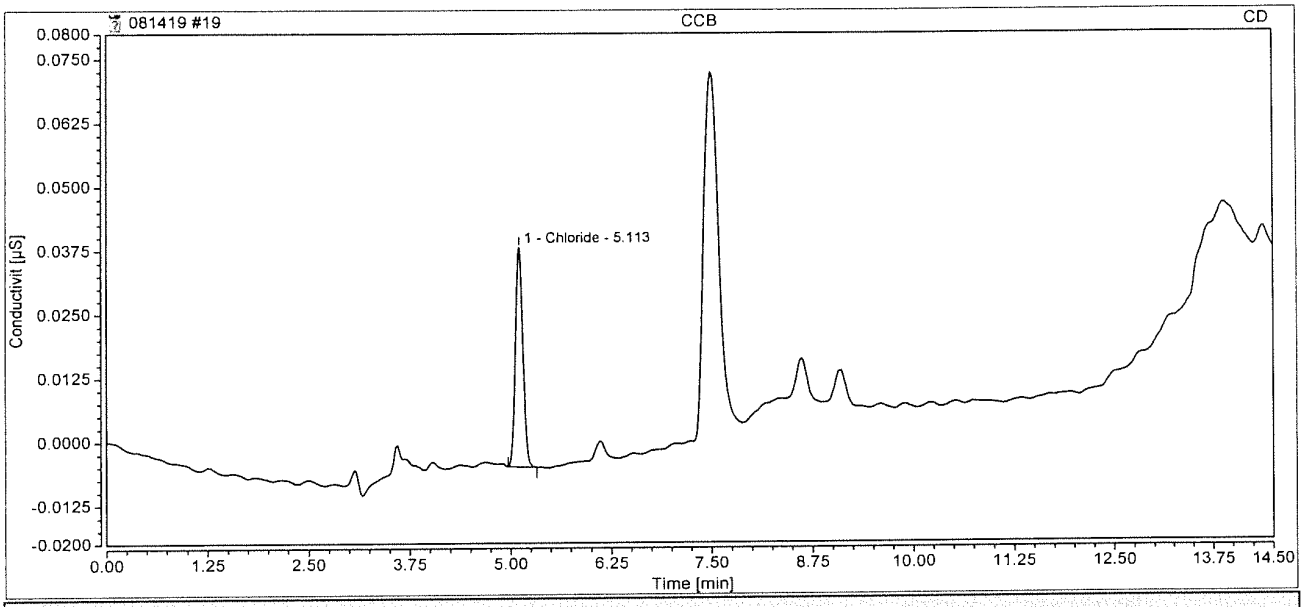

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 3.549 | 9.5648 | 9.5648 | 1.0000 |
| 3 | 5.11 | Chloride | BMB | 11.765 | 50.0145 | 50.0145 | 1.0000 |
| 4 | 6.12 | Nitrite,N | BMB | 4.961 | 9.6883 | 9.6883 | 1.0000 |
| 5 | 7.98 | Bromide | BMB | 0.997 | 9.9343 | 9.9343 | 1.0000 |
| 6 | 8.49 | Sulfate | BM | 8.617 | 50.1883 | 50.1883 | 1.0000 |
| 7 | 8.98 | Nitrate | M | 5.852 | 9.9775 | 9.9775 | 1.0000 |
| 8 | 9.54 | Chlorate | MB | 0.938 | 9.9584 | 9.9584 | 1.0000 |
| 9 | 12.57 | Phosphate | BMB | 2.297 | 9.9448 | 9.9448 | 1.0000 |
| **Total:** | | | **0.000** | **38.976** | | **159.27** | |

19 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 16:55** | *Sample Weight:* | **1.0000** |

Run Time:



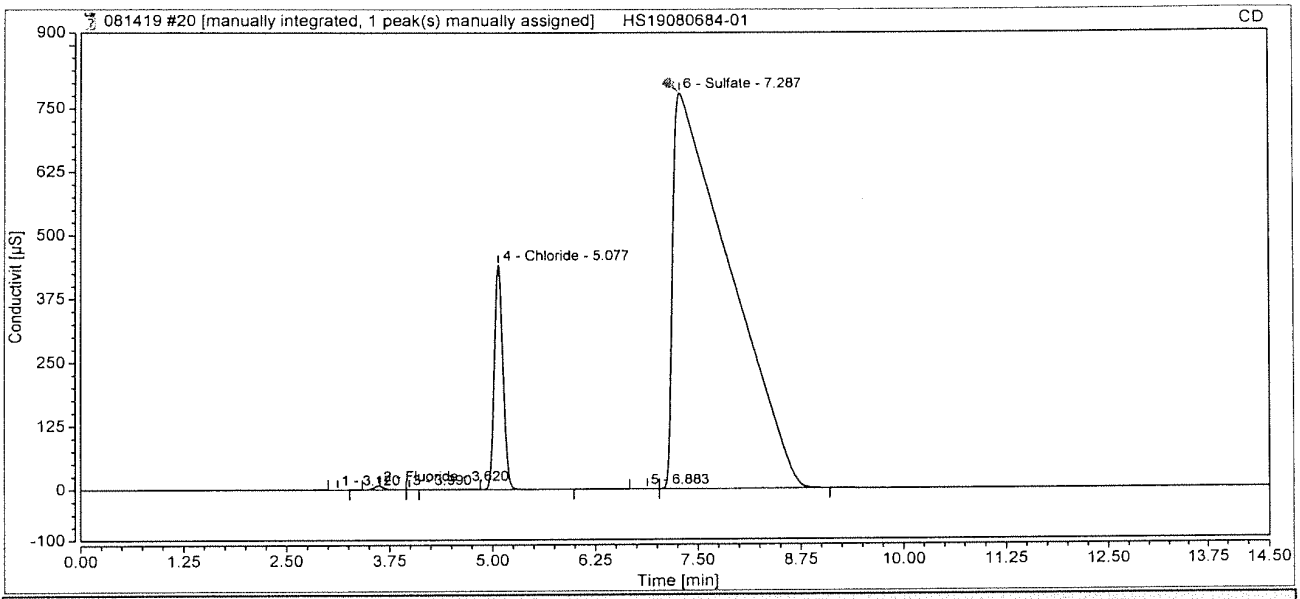

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.005 | 0.0771 | 0.0771 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Sulfate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.005** | | **0.08** | |

*HS19080684-01*

| | | | |
|---|---|---|---|
| *ample Name:* | **HS19080684-01** | *Injection Volume:* | **5.00** |
| *ial Number:* | **RA8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 17:37** | *Sample Weight:* | **1.0000** |

Run Time:



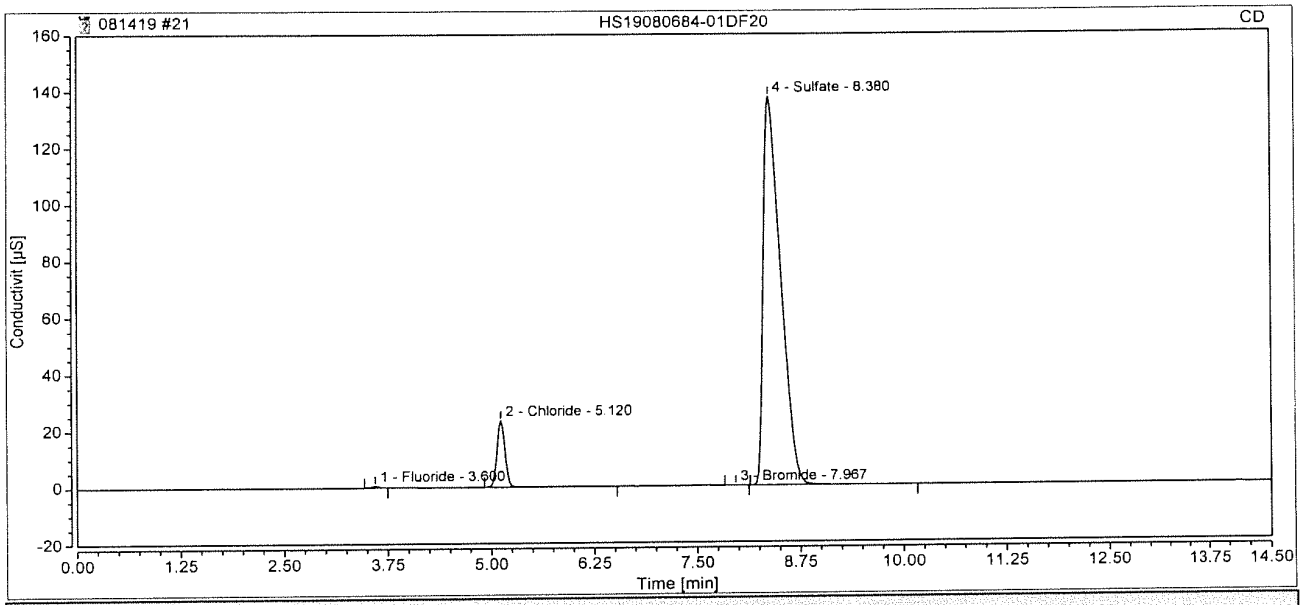

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 2 | 3.62 | Fluoride | BMB | 1.026 | 2.7767 | 2.7767 | 1.0000 |
| 4 | 5.08 | Chloride | BMB | 53.622 | 227.7498 | 227.7498 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 6 | 7.29 | Sulfate | BMB*^ | 623.389 | 3629.7368 | 3629.7368 | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **678.037** | | **3860.26** | |

21 HS19080684-01DF20

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-01DF20** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RB1** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **20.0000** |
| *Recording Time:* | **08/14/2019 17:54** | *Sample Weight:* | **1.0000** |

Run Time:



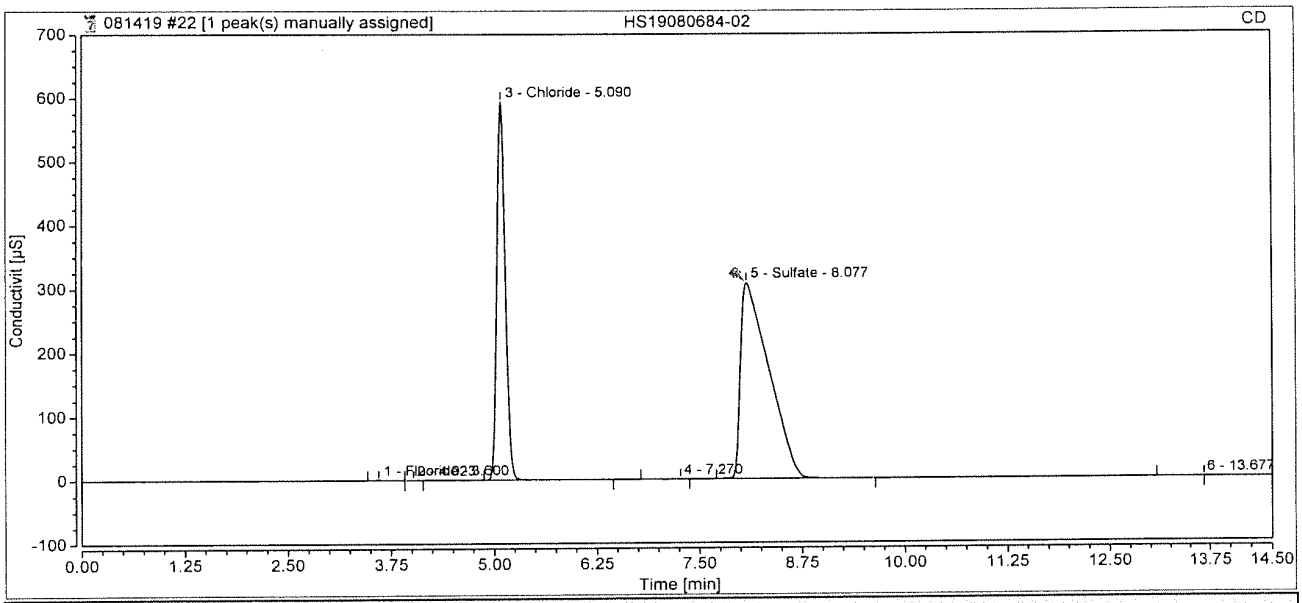

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.053 | 0.1567 | 3.1337 | 20.0000 |
| 2 | 5.12 | Chloride | BMB | 2.673 | 11.4079 | 228.1589 | 20.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| 3 | 7.97 | Bromide | BMB | 0.005 | 0.0970 | 1.9393 | 20.0000 |
| 4 | 8.38 | Sulfate | BMB | 33.510 | 195.1288 | 3902.5769 | 20.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| **Total:** | | | **0.000** | **36.241** | | **4135.81** | |

22 HS19080684-02

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-02** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RB2** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 18:10** | *Sample Weight:* | **1.0000** |

Run Time:



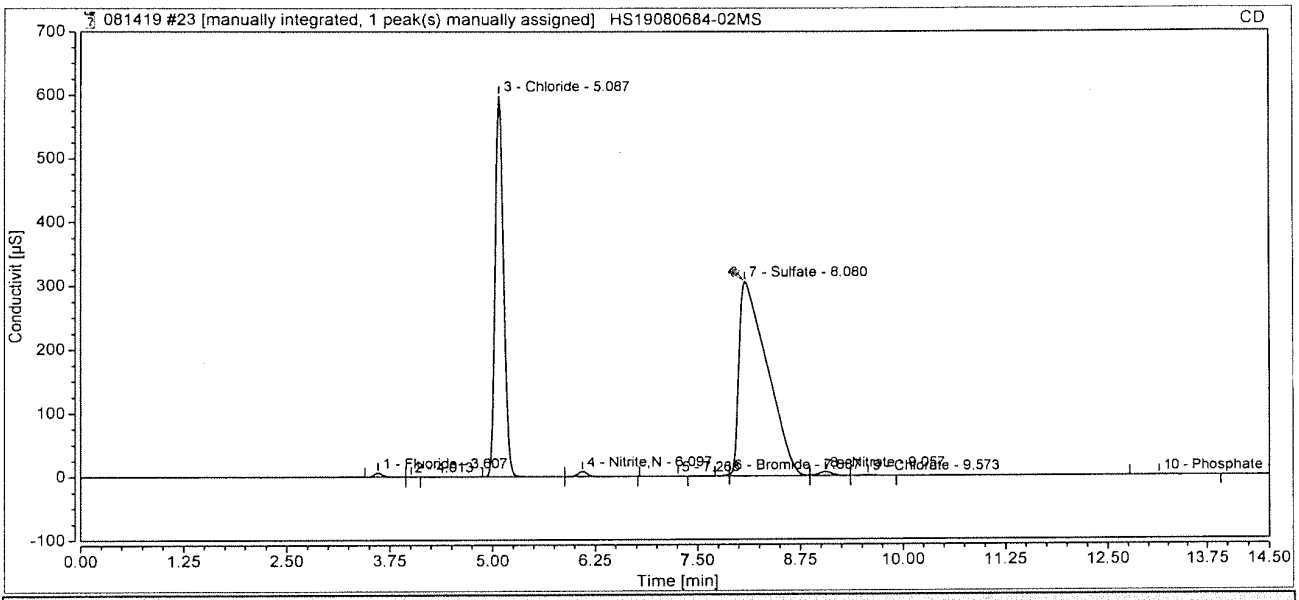

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.052 | 0.1556 | 0.1556 | 1.0000 |
| 3 | 5.09 | Chloride | BMB | 70.503 | 299.4311 | 299.4311 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 5 | 8.08 | Sulfate | BMB^ | 123.271 | 717.7653 | 717.7653 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **193.826** | | **1017.35** | |

23 HS19080684-02MS

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-02MS** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RB3** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 18:27** | *Sample Weight:* | **1.0000** |

Run Time:



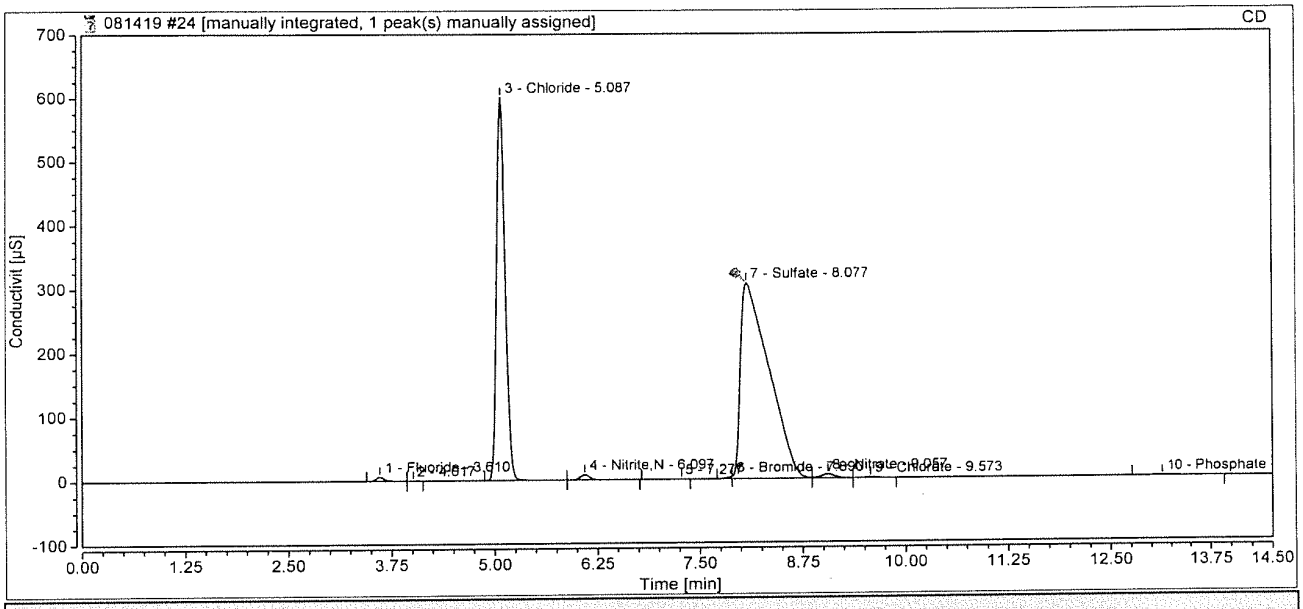

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.746 | 2.0236 | 2.0236 | 1.0000 |
| 3 | 5.09 | Chloride | BMB | 71.117 | 302.0368 | 302.0368 | 1.0000 |
| 4 | 6.10 | Nitrite,N | BMB | 1.082 | 2.1122 | 2.1122 | 1.0000 |
| 6 | 7.89 | Bromide | BM * | 0.152 | 1.5552 | 1.5552 | 1.0000 |
| 7 | 8.08 | Sulfate | M *^ | 121.627 | 708.1923 | 708.1923 | 1.0000 |
| 8 | 9.06 | Nitrate | M | 1.194 | 2.0503 | 2.0503 | 1.0000 |
| 9 | 9.57 | Chlorate | MB | 0.173 | 1.8601 | 1.8601 | 1.0000 |
| 10 | 13.13 | Phosphate | BMB | 0.205 | 0.9294 | 0.9294 | 1.0000 |
| **Total:** | | | **0.000** | **196.295** | | **1020.76** | |

24 HS19080684-02MSD

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-02MSD** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RB4** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 18:44** | *Sample Weight:* | **1.0000** |

Run Time:



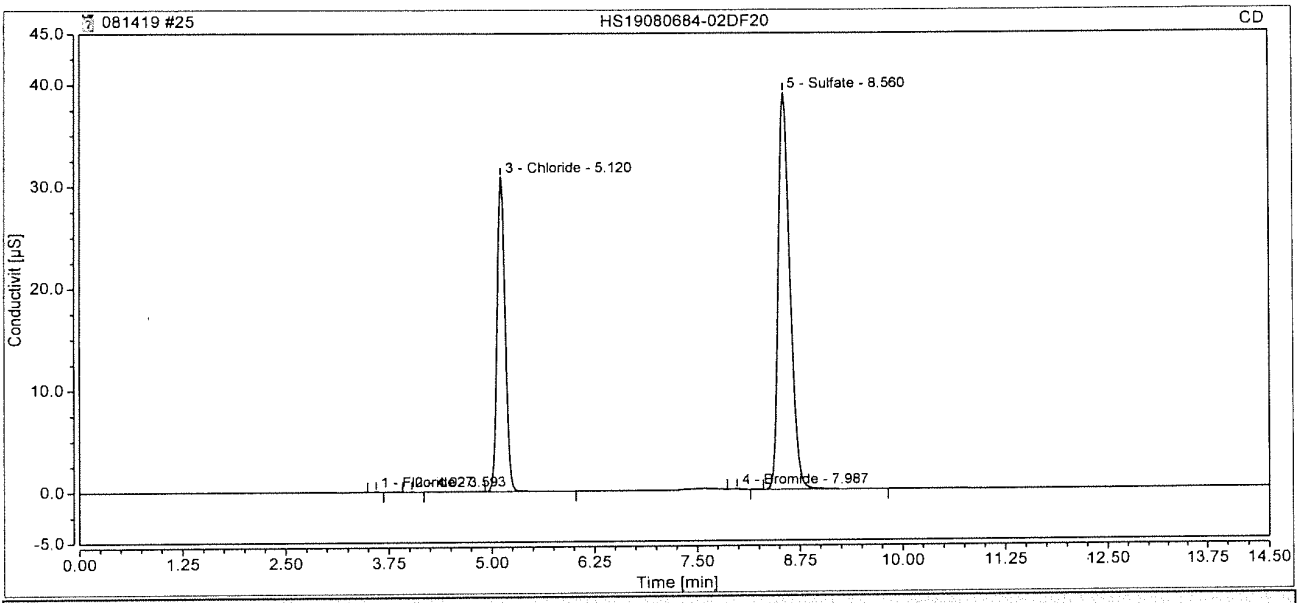

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.755 | 2.0458 | 2.0458 | 1.0000 |
| 3 | 5.09 | Chloride | BMB | 71.456 | 303.4761 | 303.4761 | 1.0000 |
| 4 | 6.10 | Nitrite,N | BMB | 1.090 | 2.1285 | 2.1285 | 1.0000 |
| 6 | 7.89 | Bromide | BM * | 0.169 | 1.7300 | 1.7300 | 1.0000 |
| 7 | 8.08 | Sulfate | M *^ | 122.461 | 713.0491 | 713.0491 | 1.0000 |
| 8 | 9.06 | Nitrate | M | 1.204 | 2.0661 | 2.0661 | 1.0000 |
| 9 | 9.57 | Chlorate | MB | 0.174 | 1.8688 | 1.8688 | 1.0000 |
| 10 | 13.14 | Phosphate | BMB | 0.197 | 0.8957 | 0.8957 | 1.0000 |
| **Total:** | | | **0.000** | **197.505** | | **1027.26** | |

25 HS19080684-02DF20

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-02DF20** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RB5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **20.0000** |
| *Recording Time:* | **08/14/2019 19:00** | *Sample Weight:* | **1.0000** |

Run Time:



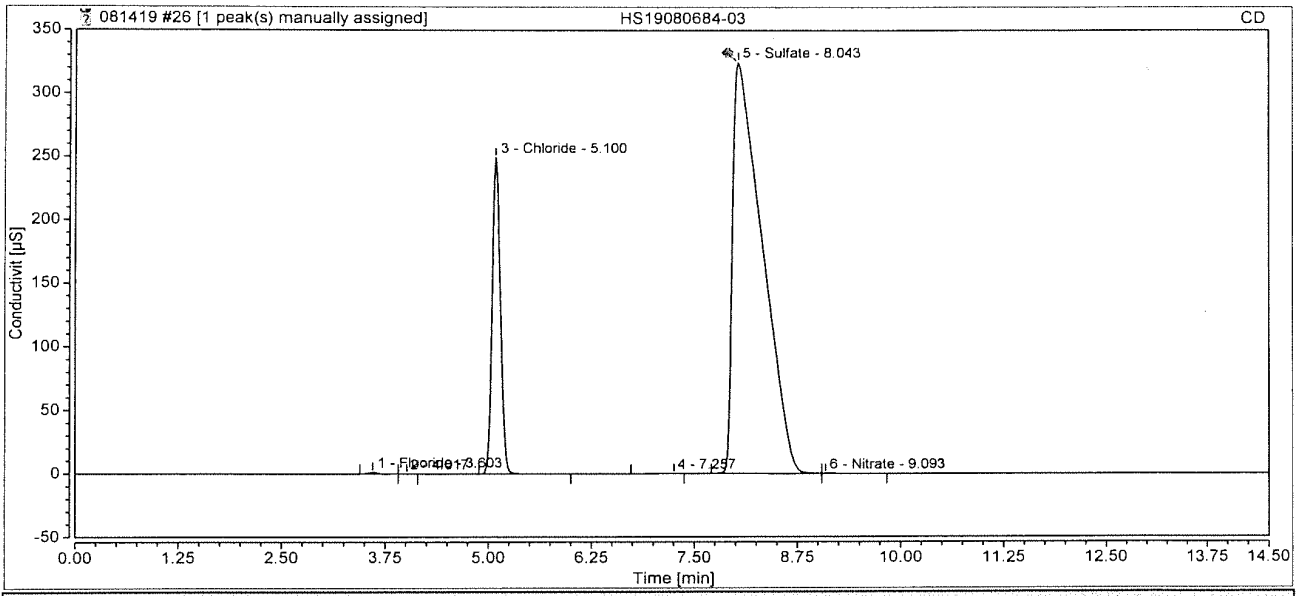

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.59 | Fluoride | BMB | 0.003 | 0.0221 | 0.4425 | 20.0000 |
| 3 | 5.12 | Chloride | BMB | 3.538 | 15.0789 | 301.5779 | 20.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| 4 | 7.99 | Bromide | BMB | 0.004 | 0.0905 | 1.8105 | 20.0000 |
| 5 | 8.56 | Sulfate | BMB | 6.495 | 37.8302 | 756.6042 | 20.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| **Total:** | | | **0.000** | **10.039** | | **1060.44** | |

26 HS19080684-03

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-03** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RB6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 19:17** | *Sample Weight:* | **1.0000** |

Run Time:



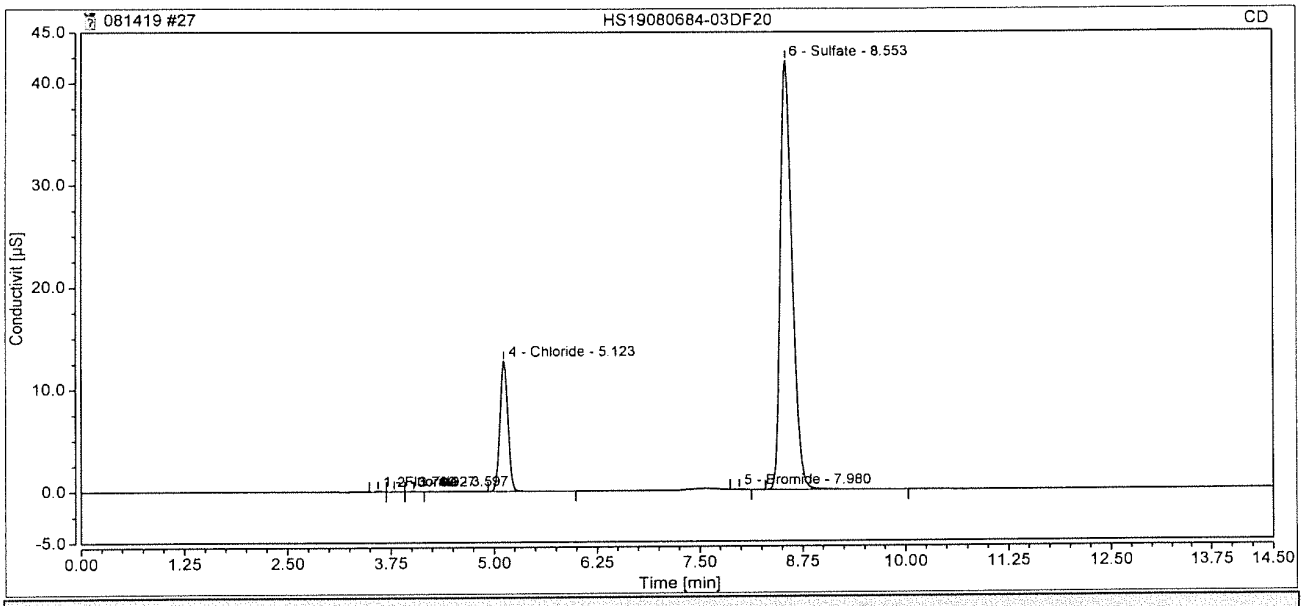

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.162 | 0.4504 | 0.4504 | 1.0000 |
| 3 | 5.10 | Chloride | BMB | 29.080 | 123.5389 | 123.5389 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 5 | 8.04 | Sulfate | BM ^ | 134.885 | 785.3877 | 785.3877 | 1.0000 |
| 6 | 9.09 | Nitrate | MB | 0.025 | 0.0605 | 0.0605 | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **164.152** | | **909.44** | |

27 *HS19080684-03DF20*

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-03DF20** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RB7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **20.0000** |
| *Recording Time:* | **08/14/2019 19:34** | *Sample Weight:* | **1.0000** |

Run Time:



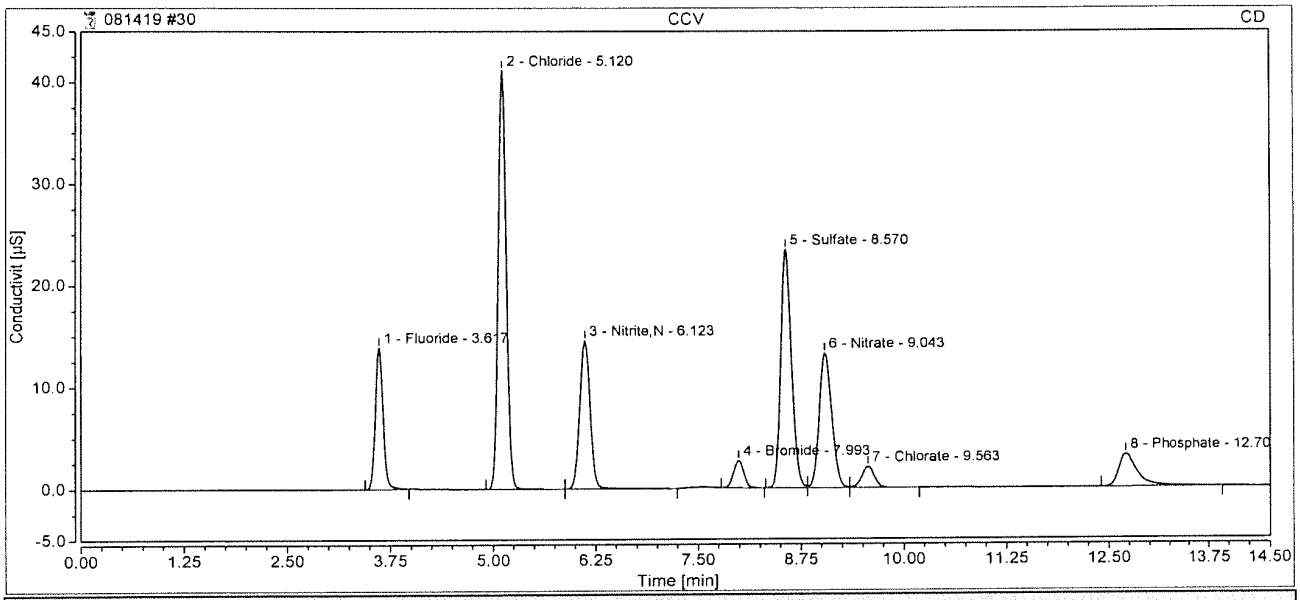

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.006 | 0.0315 | 0.6299 | 20.0000 |
| 4 | 5.12 | Chloride | BMB | 1.445 | 6.1939 | 123.8776 | 20.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| 5 | 7.98 | Bromide | BMB | 0.003 | 0.0779 | 1.5583 | 20.0000 |
| 6 | 8.55 | Sulfate | BMB | 7.063 | 41.1371 | 822.7410 | 20.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| **Total:** | | | **0.000** | **8.517** | | **948.81** | |

30 CCV

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 20:23** | *Sample Weight:* | **1.0000** |

Run Time:



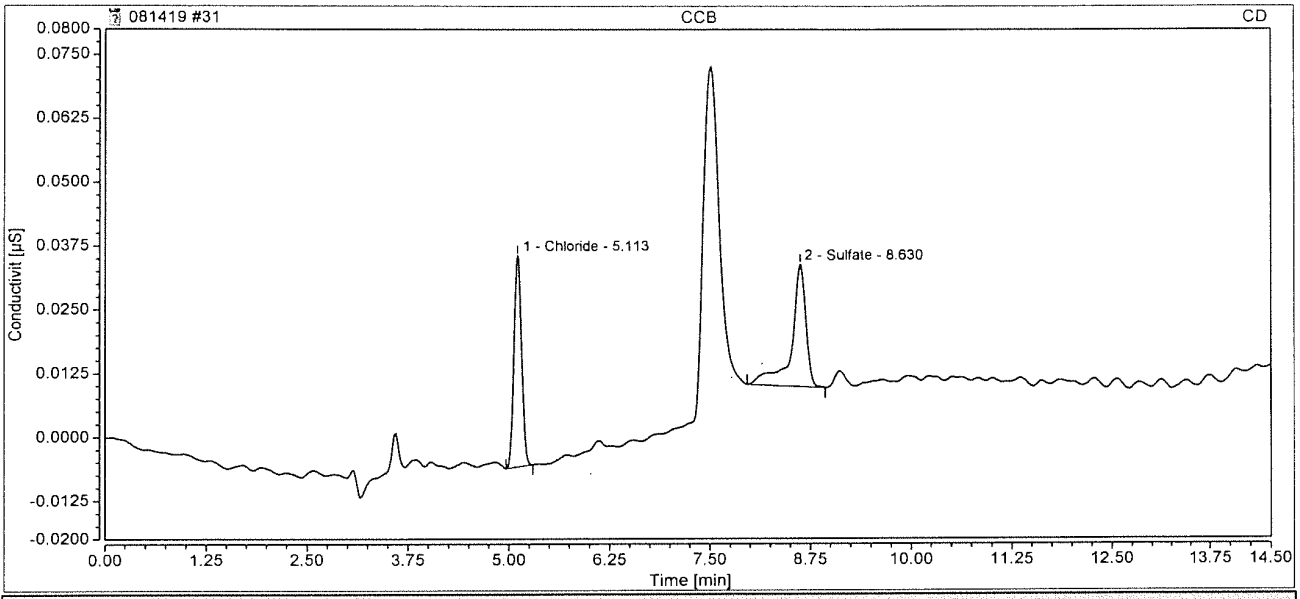

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.507 | 4.0699 | 4.0699 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.711 | 20.0611 | 20.0611 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 2.140 | 4.1791 | 4.1791 | 1.0000 |
| 4 | 7.99 | Bromide | BMB | 0.384 | 3.8608 | 3.8608 | 1.0000 |
| 5 | 8.57 | Sulfate | BM | 3.530 | 20.5651 | 20.5651 | 1.0000 |
| 6 | 9.04 | Nitrate | M | 2.335 | 3.9915 | 3.9915 | 1.0000 |
| 7 | 9.56 | Chlorate | MB | 0.365 | 3.8870 | 3.8870 | 1.0000 |
| 8 | 12.71 | Phosphate | BMB | 0.860 | 3.7545 | 3.7545 | 1.0000 |
| **Total:** | | | **0.000** | **15.832** | | **64.37** | |

31 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 20:40** | *Sample Weight:* | **1.0000** |

Run Time:



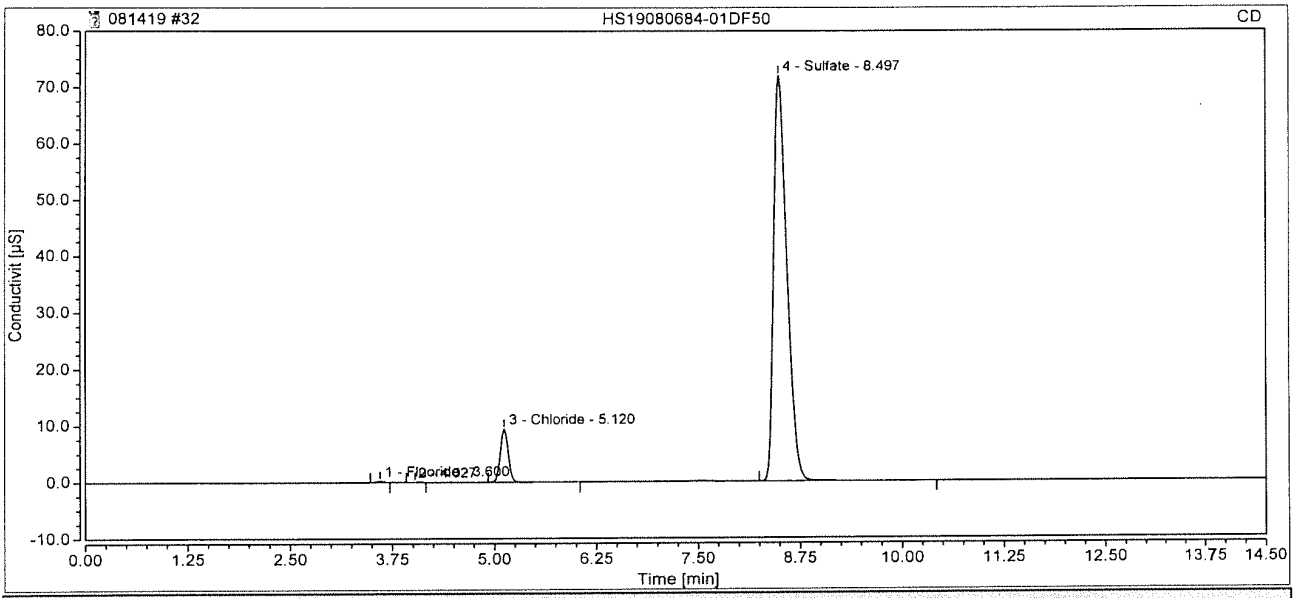

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.005 | 0.0764 | 0.0764 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 8.63 | Sulfate | BMB | 0.005 | 0.0417 | 0.0417 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.009** | | **0.12** | |

32 HS19080684-01DF50

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-01DF50** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RE7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **50.0000** |
| *Recording Time:* | **08/14/2019 20:57** | *Sample Weight:* | **1.0000** |

Run Time:



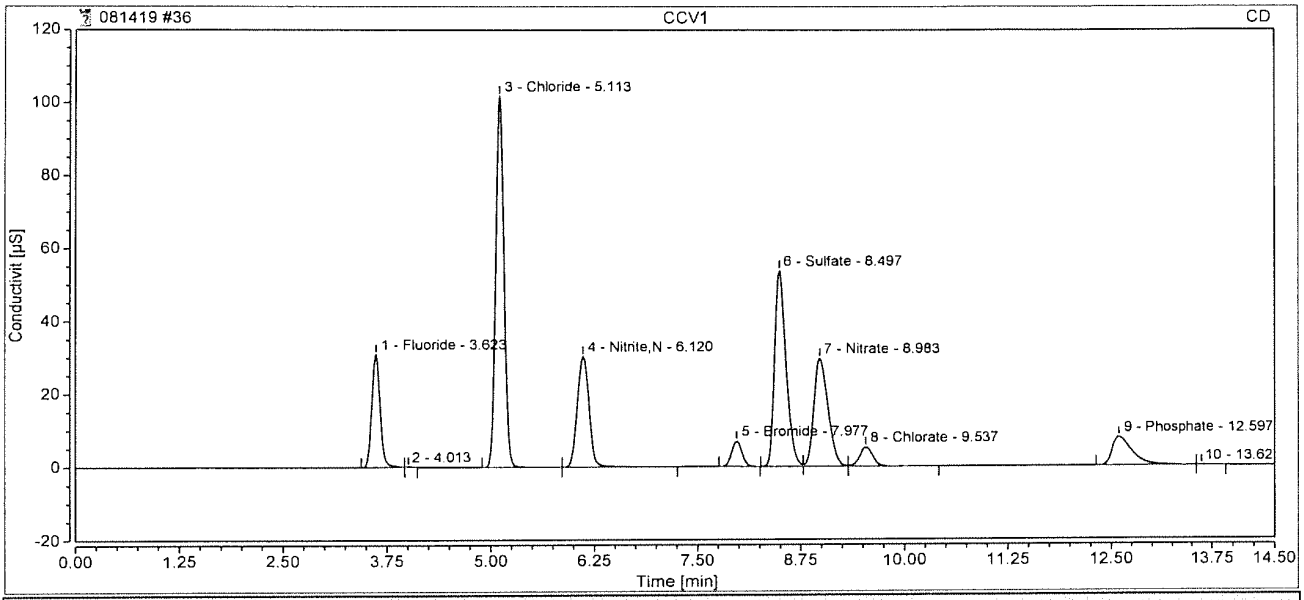

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.019 | 0.0671 | 3.3541 | 50.0000 |
| 3 | 5.12 | Chloride | BMB | 1.064 | 4.5746 | 228.7302 | 50.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 50.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 50.0000 |
| 4 | 8.50 | Sulfate | BMB | 13.541 | 78.8570 | 3942.8484 | 50.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 50.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 50.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 50.0000 |
| **Total:** | | | **0.000** | **14.624** | | **4174.93** | |

*36 CCV1*

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV1** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 22:03** | *Sample Weight:* | **1.0000** |

Run Time:

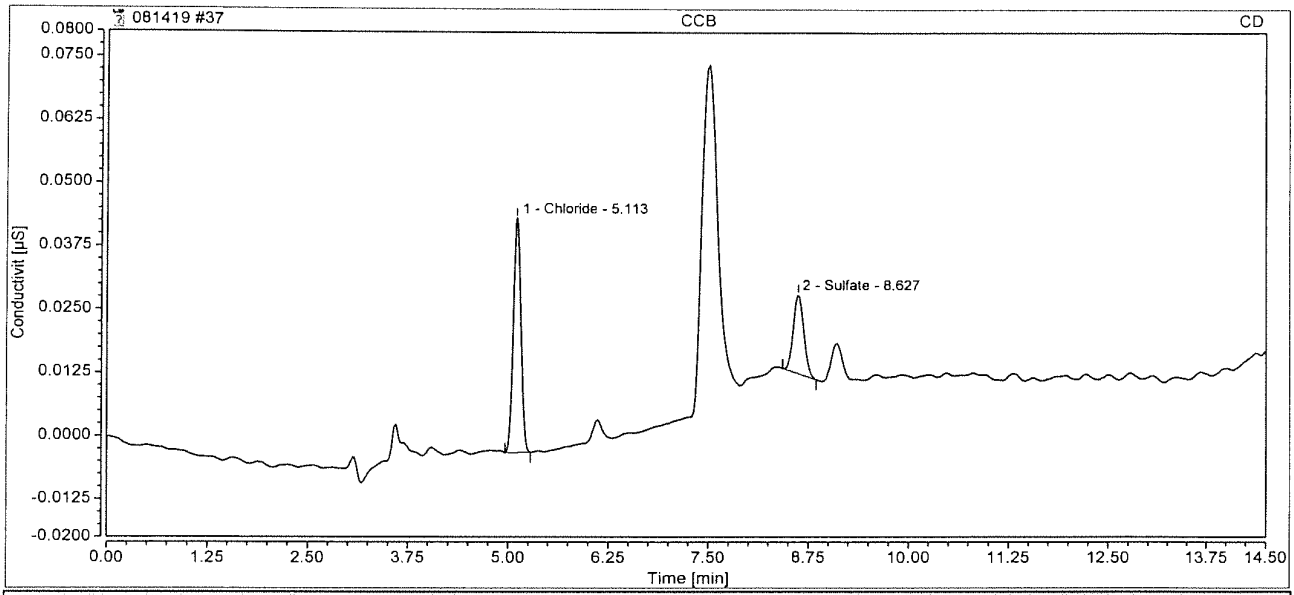



**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 3.571 | 9.6264 | 9.6264 | 1.0000 |
| 3 | 5.11 | Chloride | BMB | 11.766 | 50.0188 | 50.0188 | 1.0000 |
| 4 | 6.12 | Nitrite,N | BMB | 4.969 | 9.7036 | 9.7036 | 1.0000 |
| 5 | 7.98 | Bromide | BMB | 1.000 | 9.9639 | 9.9639 | 1.0000 |
| 6 | 8.50 | Sulfate | BM | 8.632 | 50.2716 | 50.2716 | 1.0000 |
| 7 | 8.98 | Nitrate | M | 5.852 | 9.9768 | 9.9768 | 1.0000 |
| 8 | 9.54 | Chlorate | MB | 0.937 | 9.9518 | 9.9518 | 1.0000 |
| 9 | 12.60 | Phosphate | BMB | 2.213 | 9.5808 | 9.5808 | 1.0000 |
| **Total:** | | | **0.000** | **38.939** | | **159.09** | |

37 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/14/2019 22:19** | *Sample Weight:* | **1.0000** |
| Run Time: | | | |




**Integration Results**

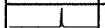
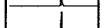
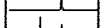
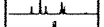
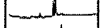
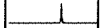
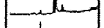
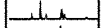
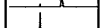
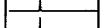
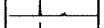
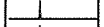
| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.005 | 0.0787 | 0.0787 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 8.63 | Sulfate | BMB | 0.002 | 0.0265 | 0.0265 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.007** | | **0.11** | |

Sequence: 082619
Last Update Operator: alshs.nouser

HS19080684

| CD | Name | Comment | Type | Position | Dilution | Level | Instrument Method | Processing Method | Volume [ul] | Status | Inject Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | STD1 | 2970209205 | Calibration S | GA1 | 1.0000 | 1 | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 2:08:06 PM -05:00 |
| | STD2 | | Calibration S | GA2 | 1.0000 | 2 | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 2:24:42 PM -05:00 |
| | STD3 | | Calibration S | GA3 | 1.0000 | 3 | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 2:41:19 PM -05:00 |
| | STD4 | | Calibration S | GA4 | 1.0000 | 4 | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 2:57:54 PM -05:00 |
| | STD5 | | Calibration S | GA5 | 1.0000 | 5 | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 3:14:30 PM -05:00 |
| | STD6 | NO2,F MAX 10PPM | Calibration S | GB8 | 1.0000 | 6 | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 6:37:32 PM -05:00 |
| | ICV | 2970209123 | Unknown | GA7 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 6:54:07 PM -05:00 |
| | ICB | | Unknown | GB8 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/12/2019 7:29:52 PM -05:00 |
| | CCV1 | | Unknown | BA7 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 12:30:42 AM -05:00 |
| | CCB | | Unknown | BA8 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 12:47:21 AM -05:00 |
| | WBLKW2-082619 | 9056_W | Unknown | RD4 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:03:56 AM -05:00 |
| | WLCSW2-082619 | | Unknown | RD5 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:20:31 AM -05:00 |
| | WLCSDW2-082619 | | Unknown | RD6 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:37:05 AM -05:00 |
| | HS19080684-02DF20 | | Unknown | RD7 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:53:44 AM -05:00 |
| | HS19080684-02MSDF20 | | Unknown | RD8 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 2:10:19 AM -05:00 |
| | HS19080684-02MSDDF20 | | Unknown | RE1 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 2:26:55 AM -05:00 |
| | HS19080753-01 | | Unknown | RE2 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 2:43:29 AM -05:00 |
| | HS19080753-02 | | Unknown | RE3 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:00:08 AM -05:00 |
| | HS19080842-02 | | Unknown | RE4 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:16:43 AM -05:00 |
| | HS19080842-04 | | Unknown | RE8 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:33:19 AM -05:00 |
| | CCV | | Unknown | BA5 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:49:55 AM -05:00 |
| | CCB | | Unknown | BA6 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 4:06:34 AM -05:00 |
| | CCV | | Unknown | BA5 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 11:08:27 AM -05:00 |
| | CCB | | Unknown | BA6 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 11:25:03 AM -05:00 |
| | HS19080652-06DF20 | 082619A | Unknown | GB2 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 11:41:47 AM -05:00 |
| | HS19080652-02DF10 | 082619A | Unknown | GB3 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 11:58:22 AM -05:00 |
| | HS19080652-02MSDF10 | 082619A | Unknown | GB4 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 12:14:57 PM -05:00 |
| | HS19080652-02MSDDF10 | 082619A | Unknown | GB5 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 12:31:33 PM -05:00 |
| | HS19080652-08DF10 | 082619A | Unknown | GB6 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 12:48:12 PM -05:00 |
| | HS19080652-08MSDF10 | 082619A | Unknown | GB7 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:04:48 PM -05:00 |
| | HS19080652-08MSDDF10 | 082619A | Unknown | GB8 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:21:23 PM -05:00 |
| | CCV1 | | Unknown | BA7 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:37:59 PM -05:00 |
| | CCB | | Unknown | BA8 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 1:54:38 PM -05:00 |
| | HS19080842-03DF10 | | Unknown | RE5 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 2:11:18 PM -05:00 |
| | HS19080842-03MSDF10 | | Unknown | RE6 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 2:27:54 PM -05:00 |
| | HS19080842-03MSDDF10 | | Unknown | RE7 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 2:44:32 PM -05:00 |
| | HS19080842-05 | | Unknown | GA1 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:01:16 PM -05:00 |
| | HS19081048-01DF10 | | Unknown | GA2 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:17:51 PM -05:00 |
| | HS19081116-03DF20 | | Unknown | GA3 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:34:28 PM -05:00 |
| | HS19081116-04DF20 | | Unknown | GA4 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 3:51:03 PM -05:00 |
| | HS19081116-05DF20 | | Unknown | GA5 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 4:07:43 PM -05:00 |

Sequence: 082619
Last Update Operator: alshs.nouser

| CD | Name | Comment | Type | Position | Dilution | Level | Instrument Method | Processing Method | Volume [ul] | Status | Inject Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | HS19081116-06DF20 | | Unknown | GA6 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 4:24:19 PM -05:00 |
|  | HS19081116-07DF20 | | Unknown | GA7 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 4:40:55 PM -05:00 |
|  | CCV | | Unknown | BA5 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 4:57:34 PM -05:00 |
|  | CCB | | Unknown | BA6 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 5:14:13 PM -05:00 |
|  | HS19081116-08DF20 | | Unknown | GA8 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 5:30:50 PM -05:00 |
|  | HS19080782-05DF50000 | | Unknown | GB1 | 50000.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 5:47:26 PM -05:00 |
| | HS19081409-03DF50 | | Unknown | GC1 | 50.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 6:57:41 PM -05:00 |
| | DI H2O | | Unknown | BA1 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 7:16:46 PM -05:00 |
| | DI H2O | | Unknown | BA7 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 7:33:24 PM -05:00 |
|  | HS19080702-01DF100 | | Unknown | GC1 | 100.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 7:50:06 PM -05:00 |
|  | HS19080702-01DF1000 | | Unknown | GC2 | 1000.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 8:06:45 PM -05:00 |
| | HS19080741-01DF20 | | Unknown | GC3 | 20.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 8:23:29 PM -05:00 |
| | HS19080741-02DF10 | | Unknown | GC4 | 10.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 8:40:04 PM -05:00 |
|  | HS19080741-03DF50 | | Unknown | GC5 | 50.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 8:56:39 PM -05:00 |
|  | HS19080741-04DF50 | | Unknown | GC6 | 50.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 9:13:15 PM -05:00 |
|  | CCV1 | | Unknown | BA7 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 9:29:58 PM -05:00 |
|  | CCB | | Unknown | BA8 | 1.0000 | | Anions Pro | Anions Proce | 5.0 | Finished | 8/27/2019 9:46:33 PM -05:00 |

Sequence: 082619
Injection #6: STD6

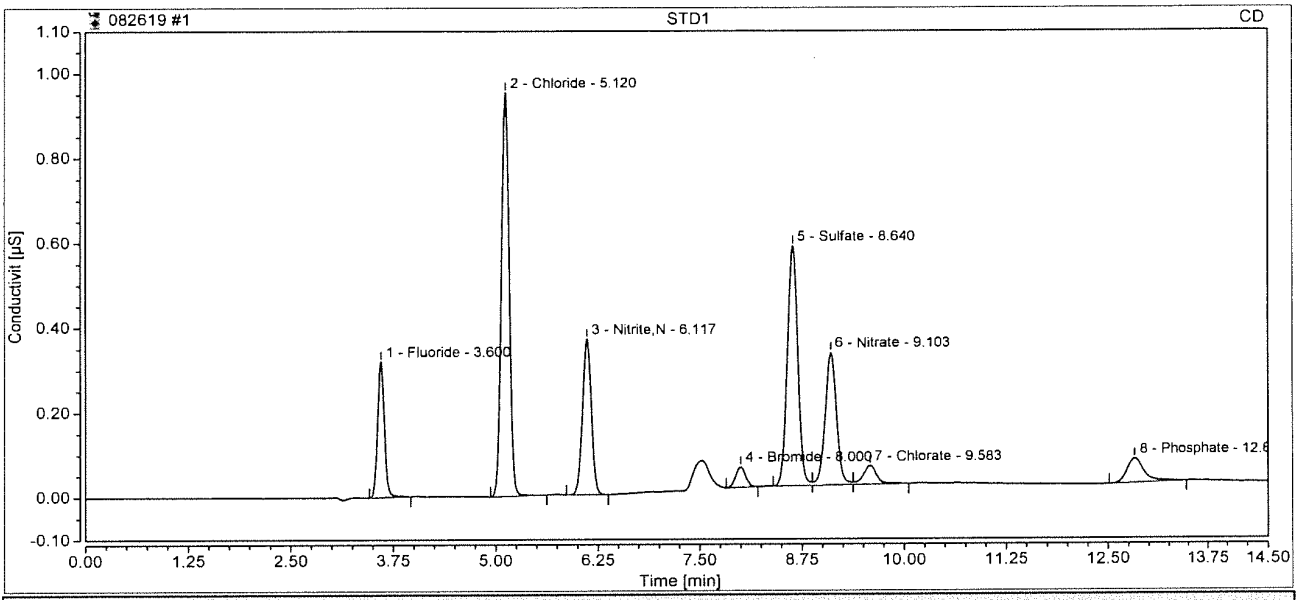
Calibration

| Peak No. | Peak Name | Cal.Type | Eval.Type | Number of Points | Rel.Std.Dev. % | Coeff.of Determination | C0 (Offset) | C1 (Slope) | C2 (Curve) |
|---|---|---|---|---|---|---|---|---|---|
| *1* | *Fluoride* | *Lin, WithOffset, 1/x* | *Area* | *5* | *10.1532* | *0.99927* | *-0.0056* | *0.3716* | *0.0000* |
| 2 | Chloride | Lin, WithOffset, 1/x | Area | 6 | 0.2804 | 1.00000 | -0.0135 | 0.2355 | 0.0000 |
| 3 | Nitrite,N | Lin, WithOffset, 1/x | Area | 5 | 15.1147 | 0.99824 | 0.0003 | 0.5120 | 0.0000 |
| 4 | Bromide | Lin, WithOffset, 1/x | Area | 6 | 14.0217 | 0.99919 | -0.0052 | 0.1009 | 0.0000 |
| 5 | Sulfate | Lin, WithOffset, 1/x | Area | 6 | 1.1258 | 0.99999 | -0.0022 | 0.1717 | 0.0000 |
| 6 | Nitrate | Lin, WithOffset, 1/x | Area | 6 | 2.2249 | 0.99998 | -0.0102 | 0.5876 | 0.0000 |
| 7 | Chlorate | Lin, WithOffset, 1/x | Area | 6 | 10.0265 | 0.99953 | -0.0024 | 0.0944 | 0.0000 |
| 8 | Phosphate | Lin, WithOffset, 1/x | Area | 6 | 6.5991 | 0.99982 | -0.0110 | 0.2321 | 0.0000 |
| **Maximum** | | | | | **15.1147** | 1.00000 | | | |
| **Minimum** | | | | | 0.2804 | **0.99824** | | | |

*1 STD1*

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD1** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA1** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:08** | *Sample Weight:* | **1.0000** |

Run Time:



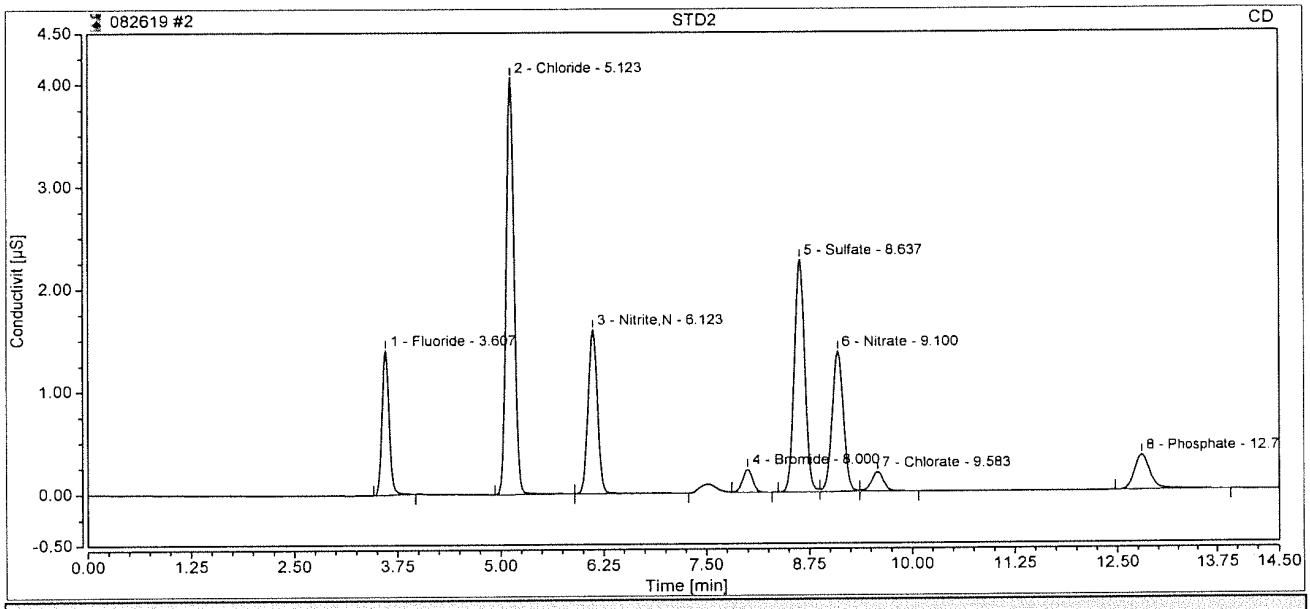

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.031 | 0.0973 | 0.0973 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 0.105 | 0.5026 | 0.5026 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 0.046 | 0.0893 | 0.0893 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.007 | 0.1192 | 0.1192 | 1.0000 |
| 5 | 8.64 | Sulfate | BM | 0.084 | 0.5042 | 0.5042 | 1.0000 |
| 6 | 9.10 | Nitrate | M | 0.051 | 0.1034 | 0.1034 | 1.0000 |
| 7 | 9.58 | Chlorate | MB | 0.008 | 0.1143 | 0.1143 | 1.0000 |
| 8 | 12.83 | Phosphate | BMB | 0.014 | 0.1085 | 0.1085 | 1.0000 |
| **Total:** | | | **0.000** | **0.346** | | **1.64** | |

2 STD2

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD2** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA2** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:24** | *Sample Weight:* | **1.0000** |

Run Time:



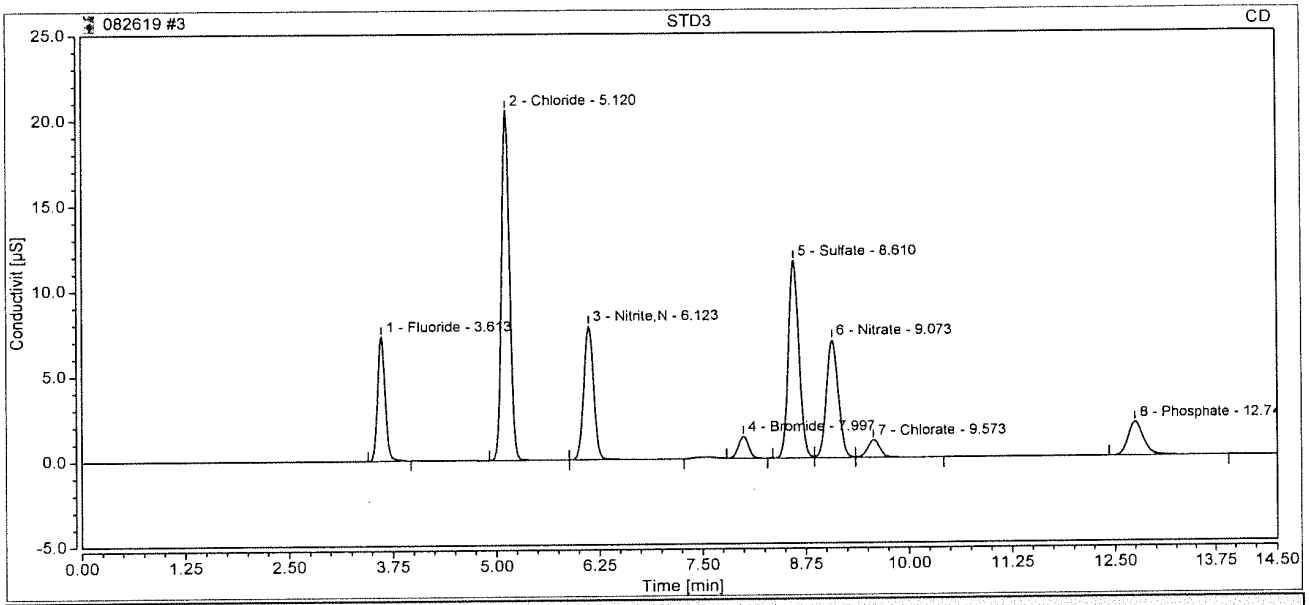

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.140 | 0.3929 | 0.3929 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 0.456 | 1.9918 | 1.9918 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 0.211 | 0.4119 | 0.4119 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.031 | 0.3593 | 0.3593 | 1.0000 |
| 5 | 8.64 | Sulfate | BM | 0.337 | 1.9733 | 1.9733 | 1.0000 |
| 6 | 9.10 | Nitrate | M | 0.220 | 0.3917 | 0.3917 | 1.0000 |
| 7 | 9.58 | Chlorate | MB | 0.033 | 0.3704 | 0.3704 | 1.0000 |
| 8 | 12.80 | Phosphate | BMB | 0.078 | 0.3842 | 0.3842 | 1.0000 |
| **Total:** | | | **0.000** | **1.506** | | **6.28** | |

3 STD3

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD3** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA3** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:41** | *Sample Weight:* | **1.0000** |

Run Time:



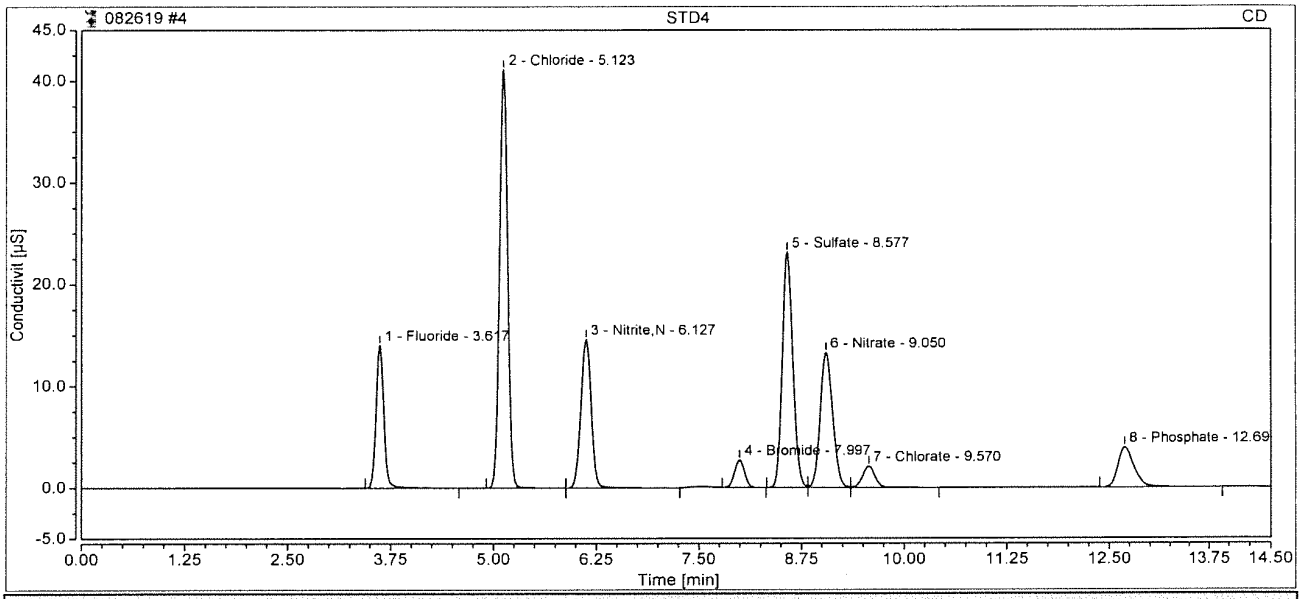

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.758 | 2.0551 | 2.0551 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 2.339 | 9.9888 | 9.9888 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 1.091 | 2.1305 | 2.1305 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.182 | 1.8590 | 1.8590 | 1.0000 |
| 5 | 8.61 | Sulfate | BM | 1.715 | 10.0007 | 10.0007 | 1.0000 |
| 6 | 9.07 | Nitrate | M | 1.153 | 1.9792 | 1.9792 | 1.0000 |
| 7 | 9.57 | Chlorate | MB | 0.176 | 1.8940 | 1.8940 | 1.0000 |
| 8 | 12.75 | Phosphate | BMB | 0.436 | 1.9271 | 1.9271 | 1.0000 |
| **Total:** | | | **0.000** | **7.851** | | **31.83** | |

4 STD4

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD4** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA4** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 14:57** | *Sample Weight:* | **1.0000** |

Run Time:



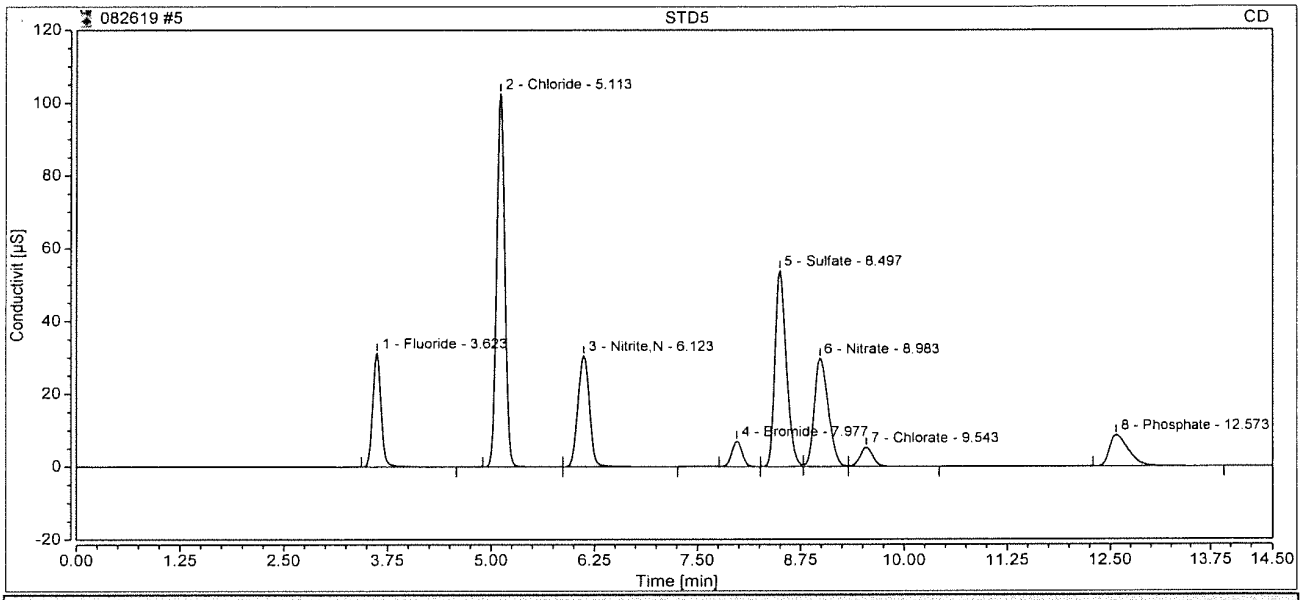

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.535 | 4.1457 | 4.1457 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.695 | 19.9948 | 19.9948 | 1.0000 |
| 3 | 6.13 | Nitrite,N | BMB | 2.133 | 4.1659 | 4.1659 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.385 | 3.8642 | 3.8642 | 1.0000 |
| 5 | 8.58 | Sulfate | BM | 3.451 | 20.1082 | 20.1082 | 1.0000 |
| 6 | 9.05 | Nitrate | M | 2.330 | 3.9823 | 3.9823 | 1.0000 |
| 7 | 9.57 | Chlorate | MB | 0.365 | 3.8956 | 3.8956 | 1.0000 |
| 8 | 12.69 | Phosphate | BMB | 0.903 | 3.9396 | 3.9396 | 1.0000 |
| **Total:** | | | **0.000** | **15.798** | | **64.10** | |

5 STD5

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD5** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA5** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 15:14** | *Sample Weight:* | **1.0000** |

Run Time:



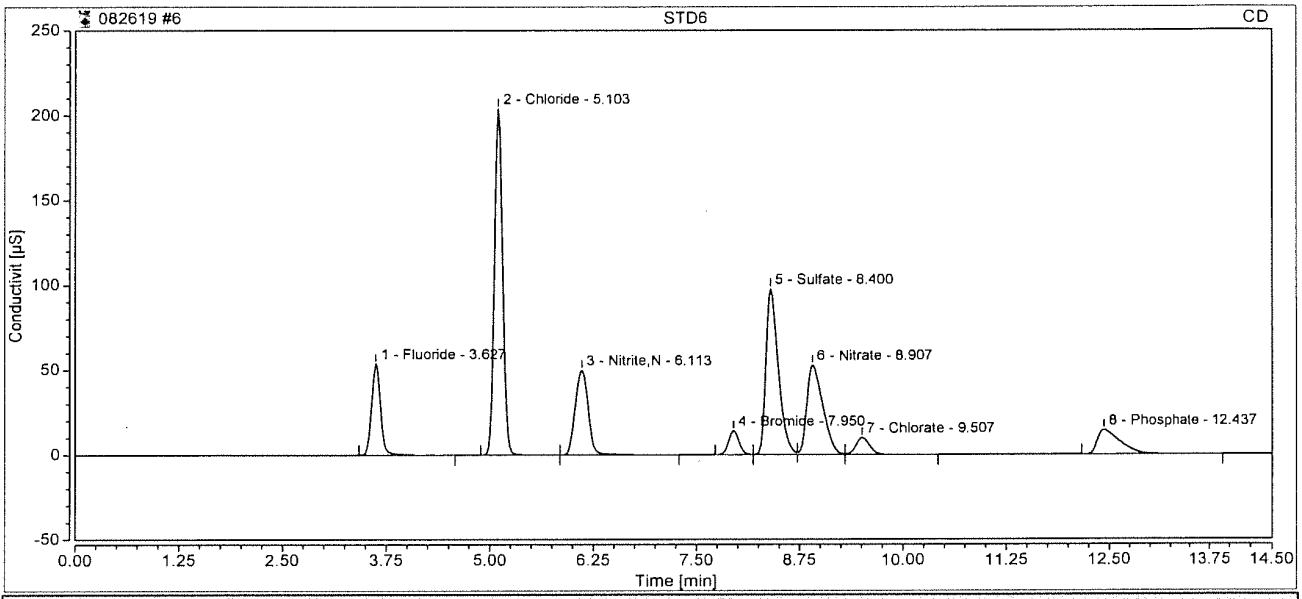

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 3.639 | 9.8090 | 9.8090 | 1.0000 |
| 2 | 5.11 | Chloride | BMB | 11.762 | 49.9996 | 49.9996 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 4.968 | 9.7023 | 9.7023 | 1.0000 |
| 4 | 7.98 | Bromide | BMB | 1.001 | 9.9786 | 9.9786 | 1.0000 |
| 5 | 8.50 | Sulfate | BM | 8.590 | 50.0271 | 50.0271 | 1.0000 |
| 6 | 8.98 | Nitrate | M | 5.854 | 9.9805 | 9.9805 | 1.0000 |
| 7 | 9.54 | Chlorate | MB | 0.939 | 9.9670 | 9.9670 | 1.0000 |
| 8 | 12.57 | Phosphate | BMB | 2.305 | 9.9807 | 9.9807 | 1.0000 |
| **Total:** | | | **0.000** | **39.058** | | **159.44** | |

6 STD6

| | | | |
|---|---|---|---|
| *Sample Name:* | **STD6** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GB8** | *Channel:* | **CD** |
| *Sample Type:* | **Calibration Standard** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 18:37** | *Sample Weight:* | **1.0000** |

Run Time:



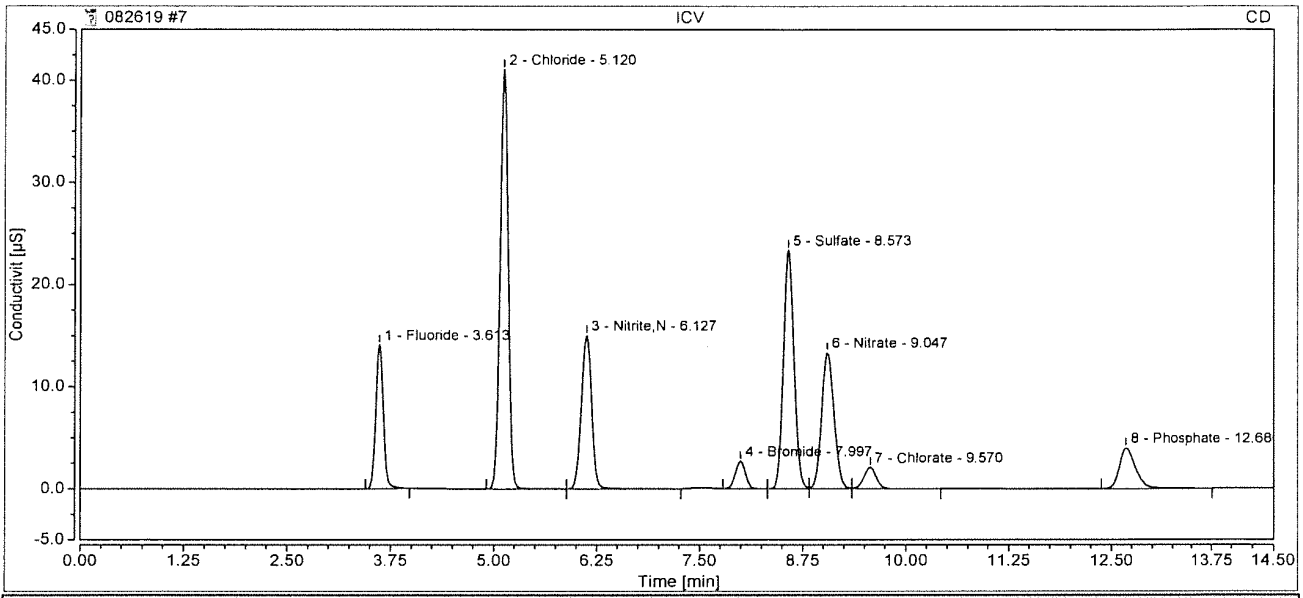

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.63 | Fluoride | BMB | 6.773 | 18.2418 | 18.2418 | 1.0000 |
| 2 | 5.10 | Chloride | BMB | 23.542 | 100.0224 | 100.0224 | 1.0000 |
| 3 | 6.11 | Nitrite,N | BMB | 9.157 | 17.8850 | 17.8850 | 1.0000 |
| 4 | 7.95 | Bromide | BM | 2.045 | 20.3197 | 20.3197 | 1.0000 |
| 5 | 8.40 | Sulfate | M | 17.153 | 99.8863 | 99.8863 | 1.0000 |
| 6 | 8.91 | Nitrate | M | 11.778 | 20.0629 | 20.0629 | 1.0000 |
| 7 | 9.51 | Chlorate | MB | 1.910 | 20.2586 | 20.2586 | 1.0000 |
| 8 | 12.44 | Phosphate | BMB | 4.668 | 20.1599 | 20.1599 | 1.0000 |
| **Total:** | | | **0.000** | **77.026** | | **316.84** | |

7 ICV

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICV** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GA7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 18:54** | *Sample Weight:* | **1.0000** |

Run Time:



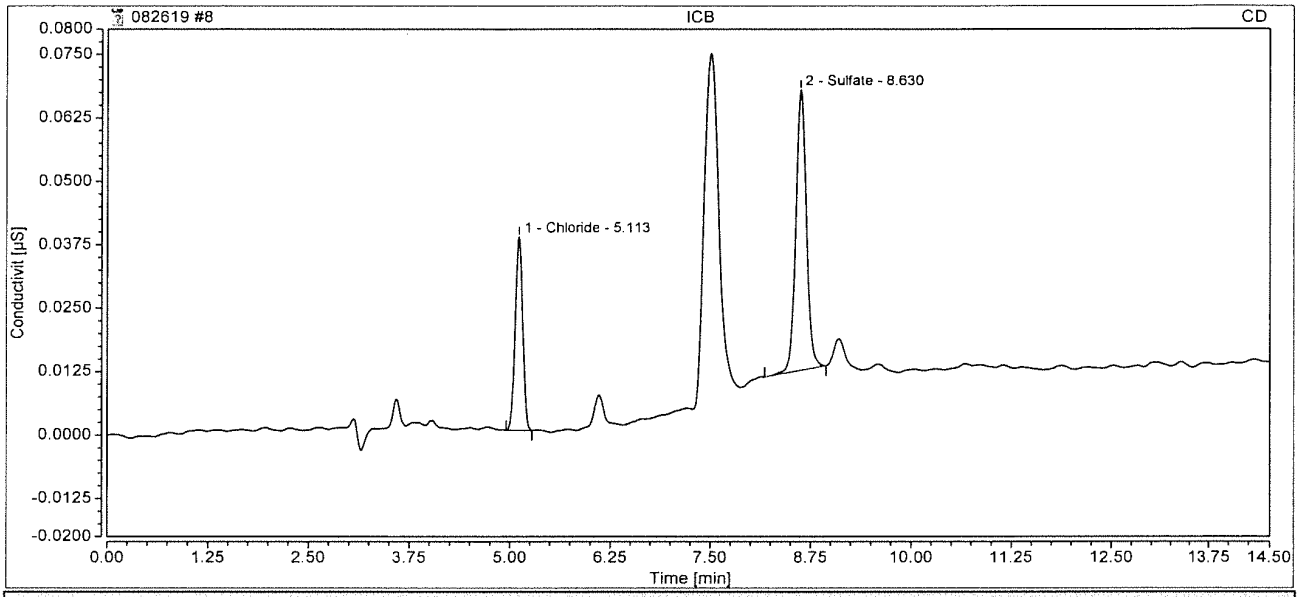

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 1.495 | 4.0374 | 4.0374 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.681 | 19.9333 | 19.9333 | 1.0000 |
| 3 | 6.13 | Nitrite,N | BMB | 2.195 | 4.2858 | 4.2858 | 1.0000 |
| 4 | 8.00 | Bromide | BMB | 0.384 | 3.8585 | 3.8585 | 1.0000 |
| 5 | 8.57 | Sulfate | BM | 3.469 | 20.2132 | 20.2132 | 1.0000 |
| 6 | 9.05 | Nitrate | M | 2.340 | 3.9993 | 3.9993 | 1.0000 |
| 7 | 9.57 | Chlorate | MB | 0.367 | 3.9104 | 3.9104 | 1.0000 |
| 8 | 12.68 | Phosphate | BMB | 0.911 | 3.9729 | 3.9729 | 1.0000 |
| **Total:** | | | **0.000** | **15.841** | | **64.21** | |

8 ICB

| | | | |
|---|---|---|---|
| *Sample Name:* | **ICB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **GB8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/12/2019 19:29** | *Sample Weight:* | **1.0000** |

Run Time:



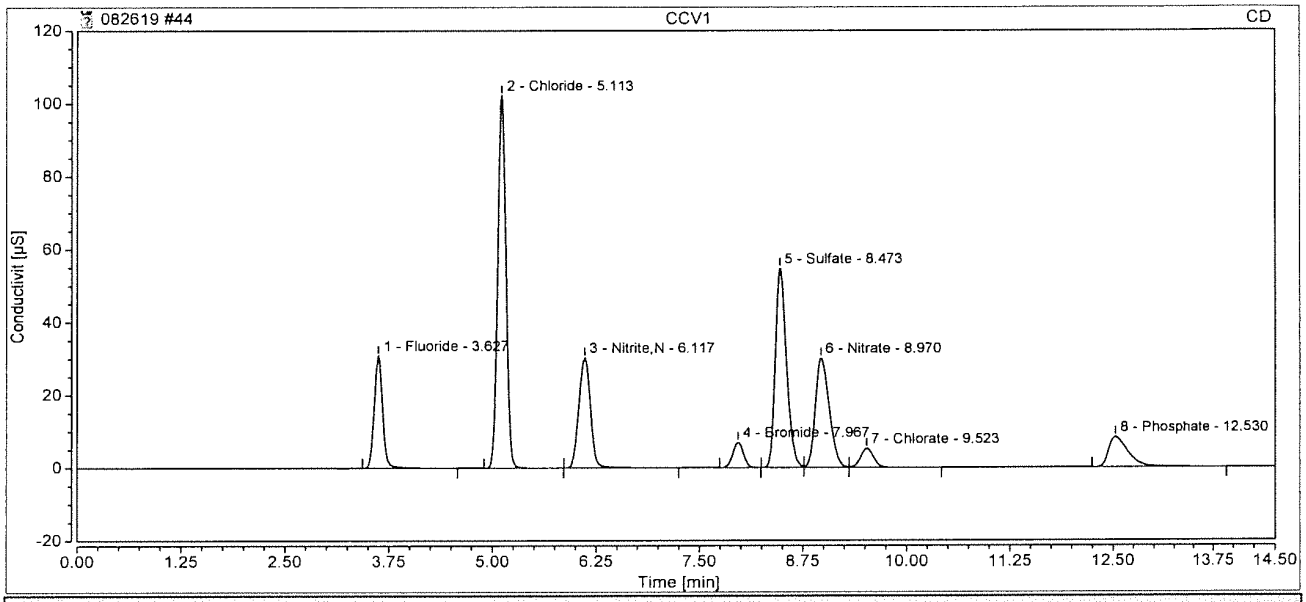

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.004 | 0.0748 | 0.0748 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 8.63 | Sulfate | BMB | 0.008 | 0.0618 | 0.0618 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.013** | | **0.14** | |

*44 CCV1*

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV1** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 00:30** | *Sample Weight:* | **1.0000** |

Run Time:



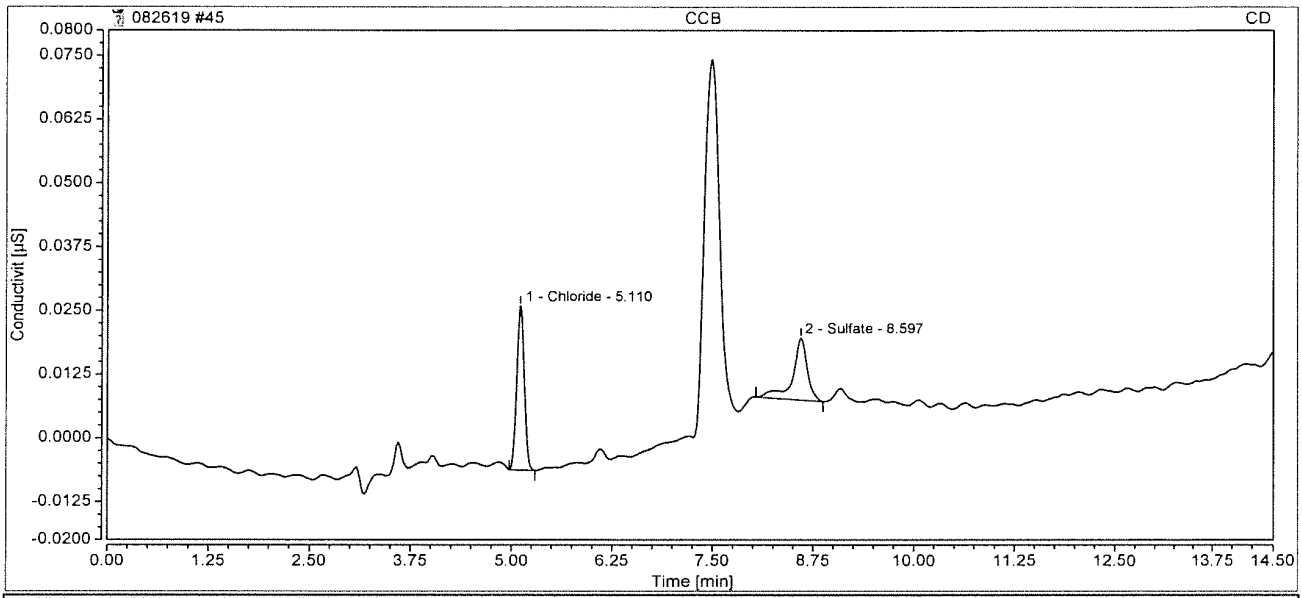

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.63 | Fluoride | BMB | 3.653 | 9.8456 | 9.8456 | 1.0000 |
| 2 | 5.11 | Chloride | BMB | 11.790 | 50.1206 | 50.1206 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 4.964 | 9.6949 | 9.6949 | 1.0000 |
| 4 | 7.97 | Bromide | BMB | 1.008 | 10.0428 | 10.0428 | 1.0000 |
| 5 | 8.47 | Sulfate | BM | 8.627 | 50.2439 | 50.2439 | 1.0000 |
| 6 | 8.97 | Nitrate | M | 5.866 | 10.0009 | 10.0009 | 1.0000 |
| 7 | 9.52 | Chlorate | MB | 0.942 | 10.0085 | 10.0085 | 1.0000 |
| 8 | 12.53 | Phosphate | BMB | 2.293 | 9.9266 | 9.9266 | 1.0000 |
| **Total:** | | | **0.000** | **39.143** | | **159.88** | |

45 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 00:47** | *Sample Weight:* | **1.0000** |

Run Time:



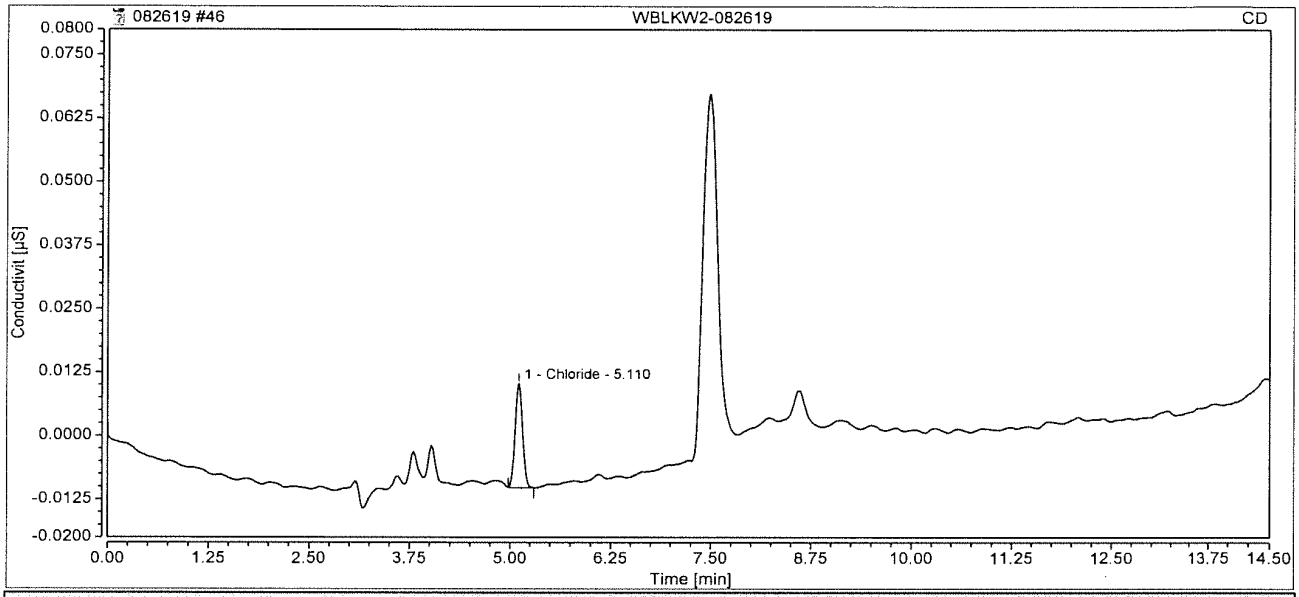

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.004 | 0.0721 | 0.0721 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 8.60 | Sulfate | BMB | 0.003 | 0.0279 | 0.0279 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.006** | | **0.10** | |

*46 WBLKW2-082619*

| | | | |
|---|---|---|---|
| *Sample Name:* | **WBLKW2-082619** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RD4** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 01:03** | *Sample Weight:* | **1.0000** |

Run Time:



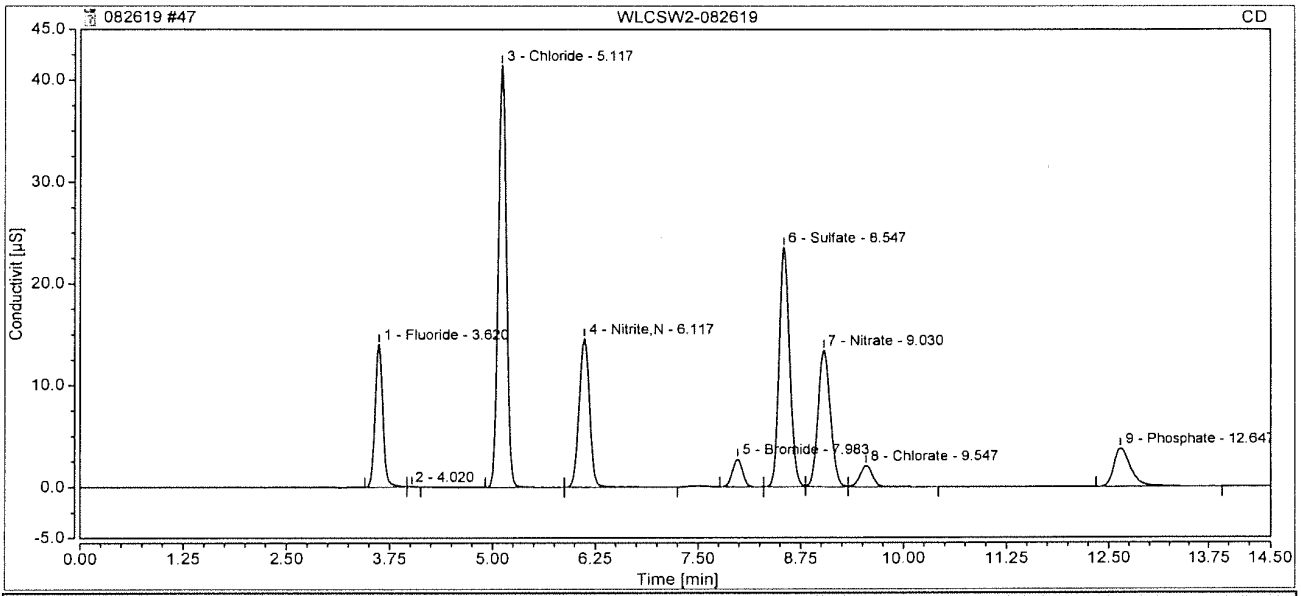

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.002 | 0.0668 | 0.0668 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Sulfate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.002** | | **0.07** | |

*47 WLCSW2-082619*

| | | | |
|---|---|---|---|
| *Sample Name:* | **WLCSW2-082619** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RD5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 01:20** | *Sample Weight:* | **1.0000** |

Run Time:



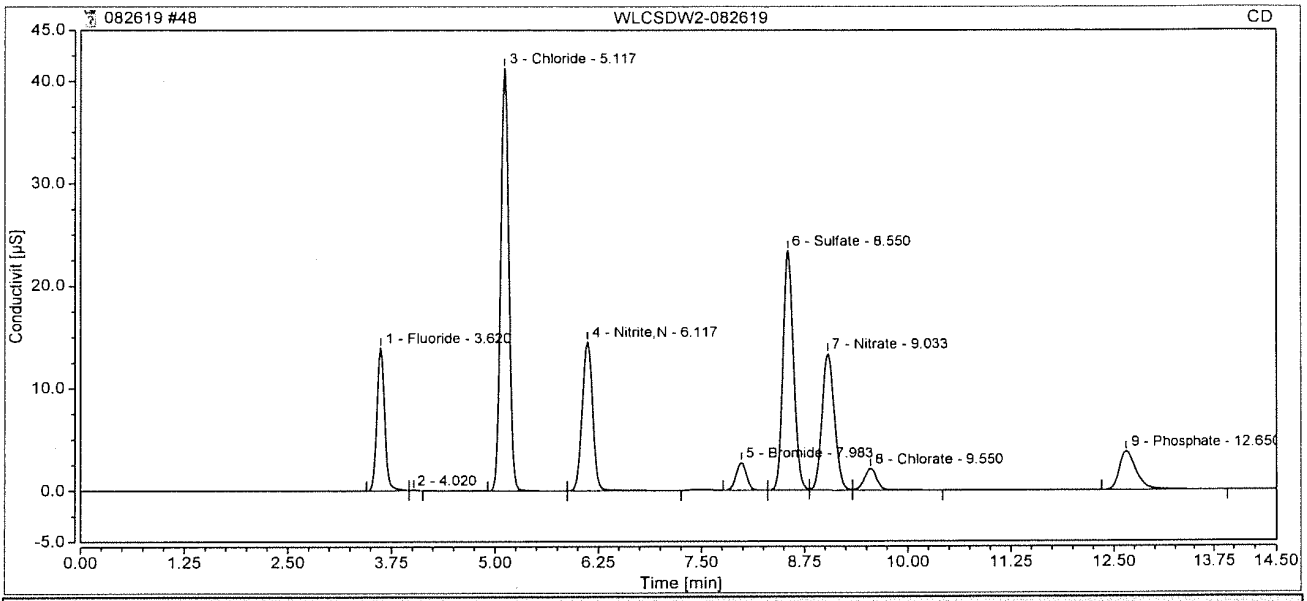

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.523 | 4.1149 | 4.1149 | 1.0000 |
| 3 | 5.12 | Chloride | BMB | 4.738 | 20.1775 | 20.1775 | 1.0000 |
| 4 | 6.12 | Nitrite,N | BMB | 2.149 | 4.1957 | 4.1957 | 1.0000 |
| 5 | 7.98 | Bromide | BMB | 0.392 | 3.9391 | 3.9391 | 1.0000 |
| 6 | 8.55 | Sulfate | BM | 3.497 | 20.3755 | 20.3755 | 1.0000 |
| 7 | 9.03 | Nitrate | M | 2.352 | 4.0208 | 4.0208 | 1.0000 |
| 8 | 9.55 | Chlorate | MB | 0.370 | 3.9498 | 3.9498 | 1.0000 |
| 9 | 12.65 | Phosphate | BMB | 0.908 | 3.9580 | 3.9580 | 1.0000 |
| **Total:** | | | **0.000** | **15.930** | | **64.73** | |

*48 WLCSDW2-082619*

| | | | |
|---|---|---|---|
| *Sample Name:* | **WLCSDW2-082619** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RD6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 01:37** | *Sample Weight:* | **1.0000** |

Run Time:



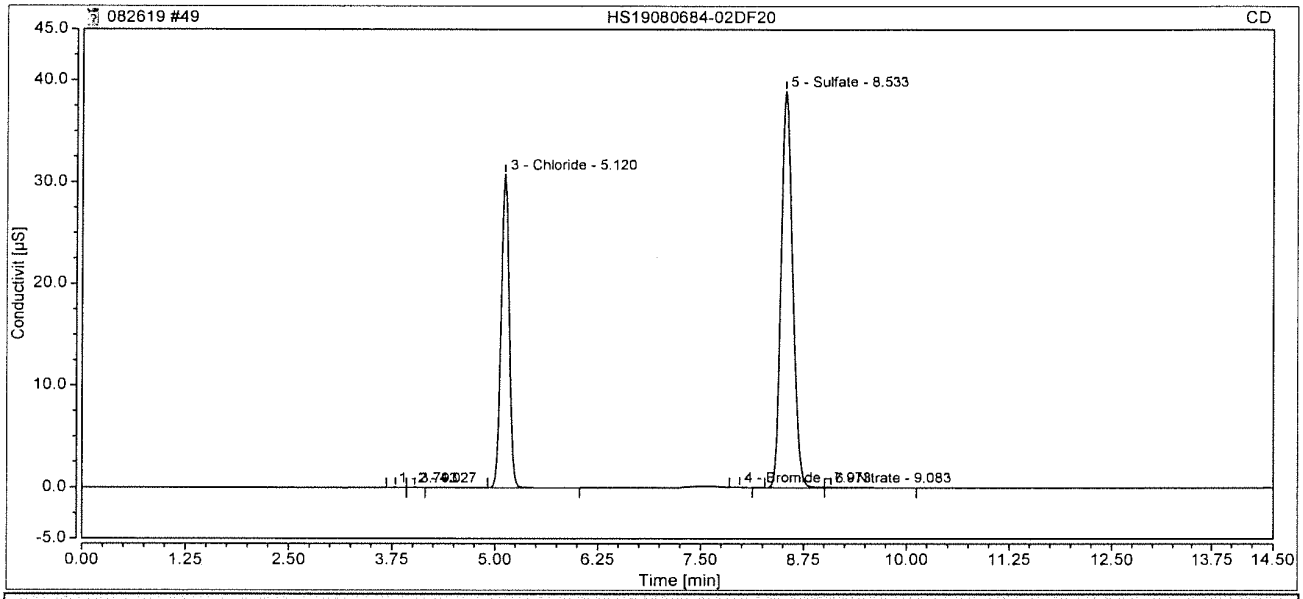

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.510 | 4.0795 | 4.0795 | 1.0000 |
| 3 | 5.12 | Chloride | BMB | 4.718 | 20.0897 | 20.0897 | 1.0000 |
| 4 | 6.12 | Nitrite,N | BMB | 2.141 | 4.1818 | 4.1818 | 1.0000 |
| 5 | 7.98 | Bromide | BM | 0.391 | 3.9311 | 3.9311 | 1.0000 |
| 6 | 8.55 | Sulfate | M | 3.477 | 20.2565 | 20.2565 | 1.0000 |
| 7 | 9.03 | Nitrate | M | 2.343 | 4.0057 | 4.0057 | 1.0000 |
| 8 | 9.55 | Chlorate | MB | 0.369 | 3.9379 | 3.9379 | 1.0000 |
| 9 | 12.65 | Phosphate | BMB | 0.902 | 3.9351 | 3.9351 | 1.0000 |
| **Total:** | | | **0.000** | **15.852** | | **64.42** | |

*49 HS19080684-02DF20*

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-02DF20** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RD7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **20.0000** |
| *Recording Time:* | **08/27/2019 01:53** | *Sample Weight:* | **1.0000** |

Run Time:

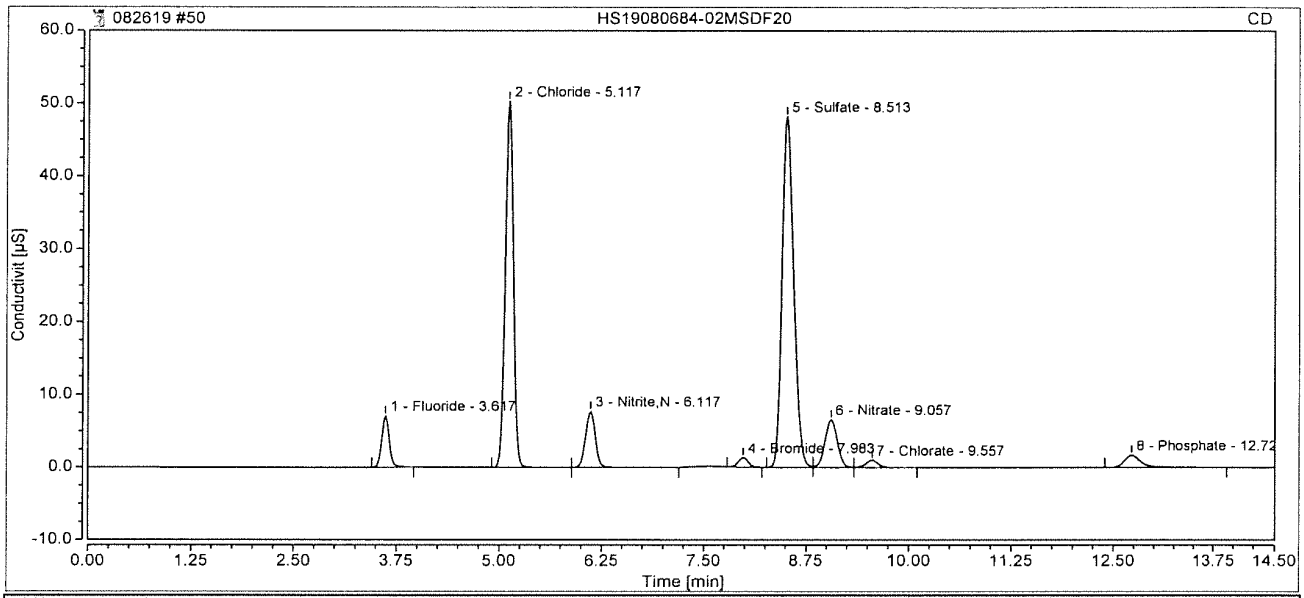



**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| 3 | 5.12 | Chloride | BMB | 3.512 | 14.9681 | 299.3618 | 20.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| 4 | 7.97 | Bromide | BMB | 0.004 | 0.0895 | 1.7893 | 20.0000 |
| 5 | 8.53 | Sulfate | BM | 6.349 | 36.9787 | 739.5742 | 20.0000 |
| 6 | 9.08 | Nitrate | MB | 0.010 | 0.0343 | 0.6856 | 20.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 20.0000 |
| **Total:** | | | **0.000** | **9.874** | | **1041.41** | |

50 HS19080684-02MSDF20

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-02MSDF20** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RD8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **20.0000** |
| *Recording Time:* | **08/27/2019 02:10** | *Sample Weight:* | **1.0000** |
| Run Time: | | | |



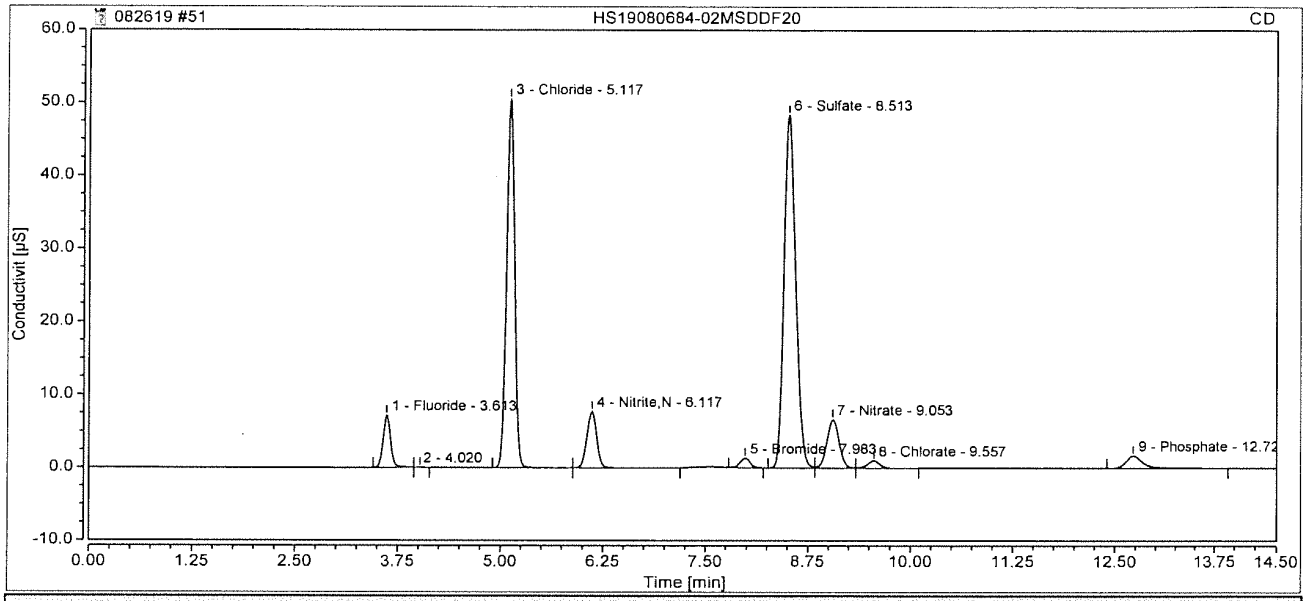

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 0.749 | 2.0312 | 40.6234 | 20.0000 |
| 2 | 5.12 | Chloride | BMB | 5.757 | 24.5009 | 490.0190 | 20.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 1.072 | 2.0938 | 41.8766 | 20.0000 |
| 4 | 7.98 | Bromide | BMB | 0.182 | 1.8512 | 37.0240 | 20.0000 |
| 5 | 8.51 | Sulfate | BM | 7.885 | 45.9262 | 918.5240 | 20.0000 |
| 6 | 9.06 | Nitrate | M | 1.140 | 1.9578 | 39.1555 | 20.0000 |
| 7 | 9.56 | Chlorate | MB | 0.172 | 1.8454 | 36.9089 | 20.0000 |
| 8 | 12.72 | Phosphate | BMB | 0.413 | 1.8258 | 36.5167 | 20.0000 |
| **Total:** | | | **0.000** | **17.370** | | **1640.65** | |

*51 HS19080684-02MSDDF20*

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080684-02MSDDF20** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RE1** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **20.0000** |
| *Recording Time:* | **08/27/2019 02:26** | *Sample Weight:* | **1.0000** |

Run Time:



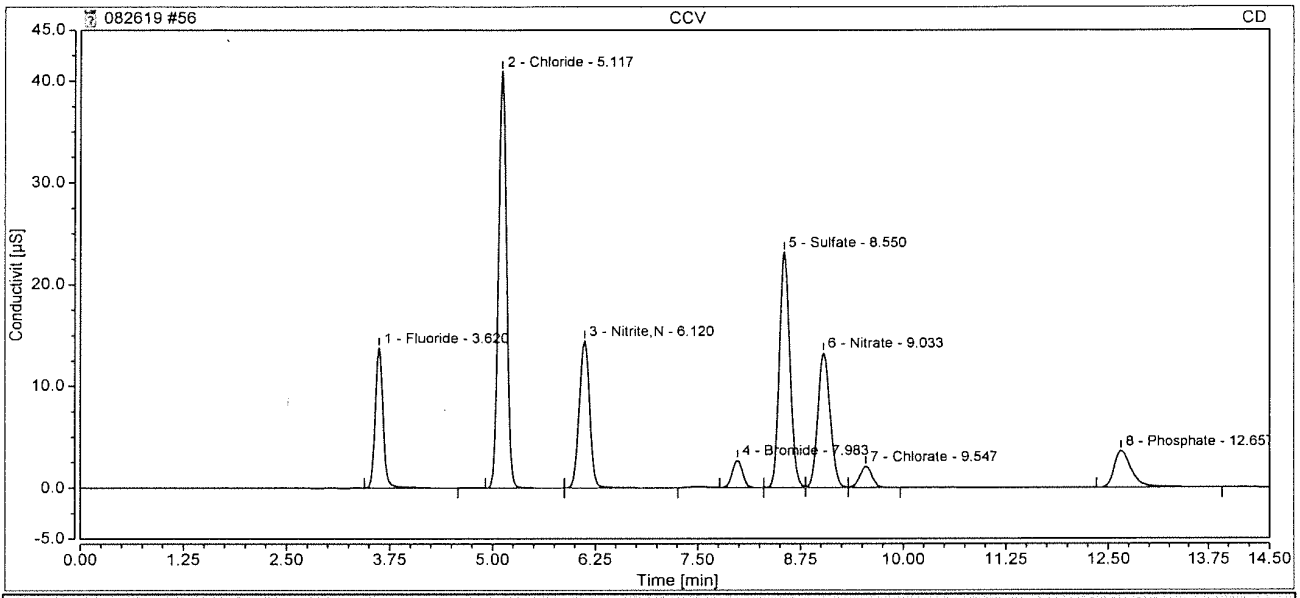

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.755 | 2.0456 | 40.9120 | 20.0000 |
| 3 | 5.12 | Chloride | BMB | 5.786 | 24.6282 | 492.5630 | 20.0000 |
| 4 | 6.12 | Nitrite,N | BMB | 1.078 | 2.1050 | 42.1004 | 20.0000 |
| 5 | 7.98 | Bromide | BMB | 0.182 | 1.8603 | 37.2062 | 20.0000 |
| 6 | 8.51 | Sulfate | BM | 7.931 | 46.1944 | 923.8890 | 20.0000 |
| 7 | 9.05 | Nitrate | M | 1.148 | 1.9706 | 39.4128 | 20.0000 |
| 8 | 9.56 | Chlorate | MB | 0.173 | 1.8549 | 37.0973 | 20.0000 |
| 9 | 12.73 | Phosphate | BMB | 0.419 | 1.8512 | 37.0240 | 20.0000 |
| **Total:** | | | **0.000** | **17.472** | | **1650.20** | |

56 CCV

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 03:49** | *Sample Weight:* | **1.0000** |

Run Time:



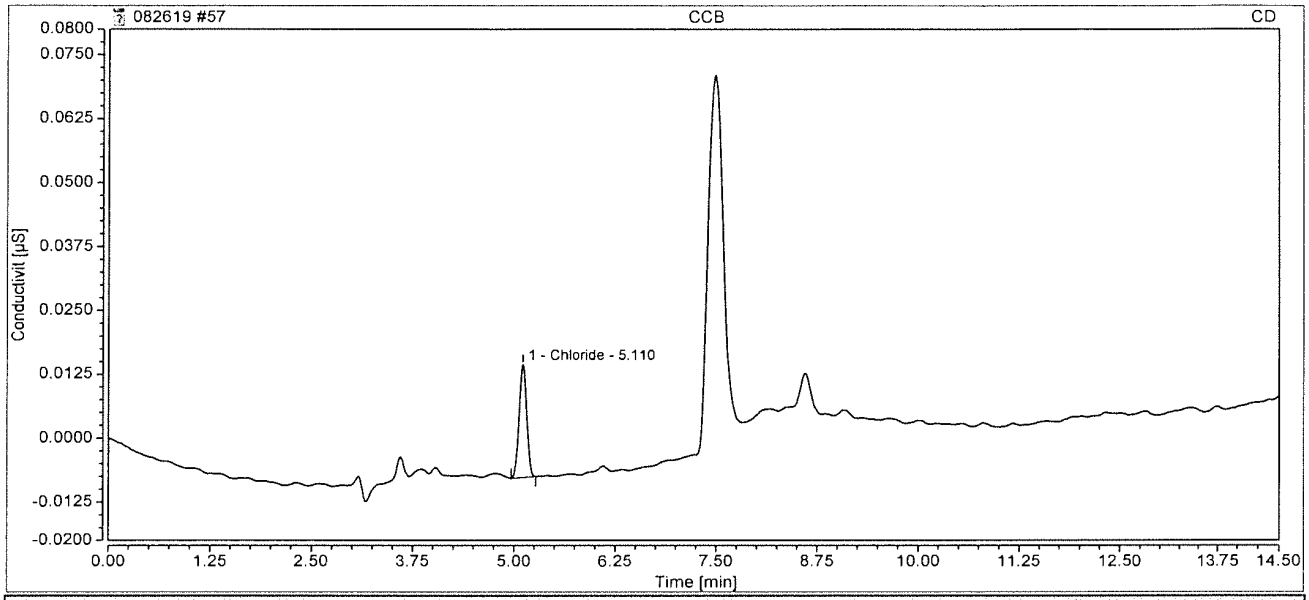

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.531 | 4.1345 | 4.1345 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.684 | 19.9448 | 19.9448 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 2.125 | 4.1506 | 4.1506 | 1.0000 |
| 4 | 7.98 | Bromide | BMB | 0.387 | 3.8840 | 3.8840 | 1.0000 |
| 5 | 8.55 | Sulfate | BM | 3.445 | 20.0704 | 20.0704 | 1.0000 |
| 6 | 9.03 | Nitrate | M | 2.324 | 3.9723 | 3.9723 | 1.0000 |
| 7 | 9.55 | Chlorate | MB | 0.358 | 3.8215 | 3.8215 | 1.0000 |
| 8 | 12.66 | Phosphate | BMB | 0.885 | 3.8605 | 3.8605 | 1.0000 |
| **Total:** | | | **0.000** | **15.738** | | **63.84** | |

57 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 04:06** | *Sample Weight:* | **1.0000** |

Run Time:



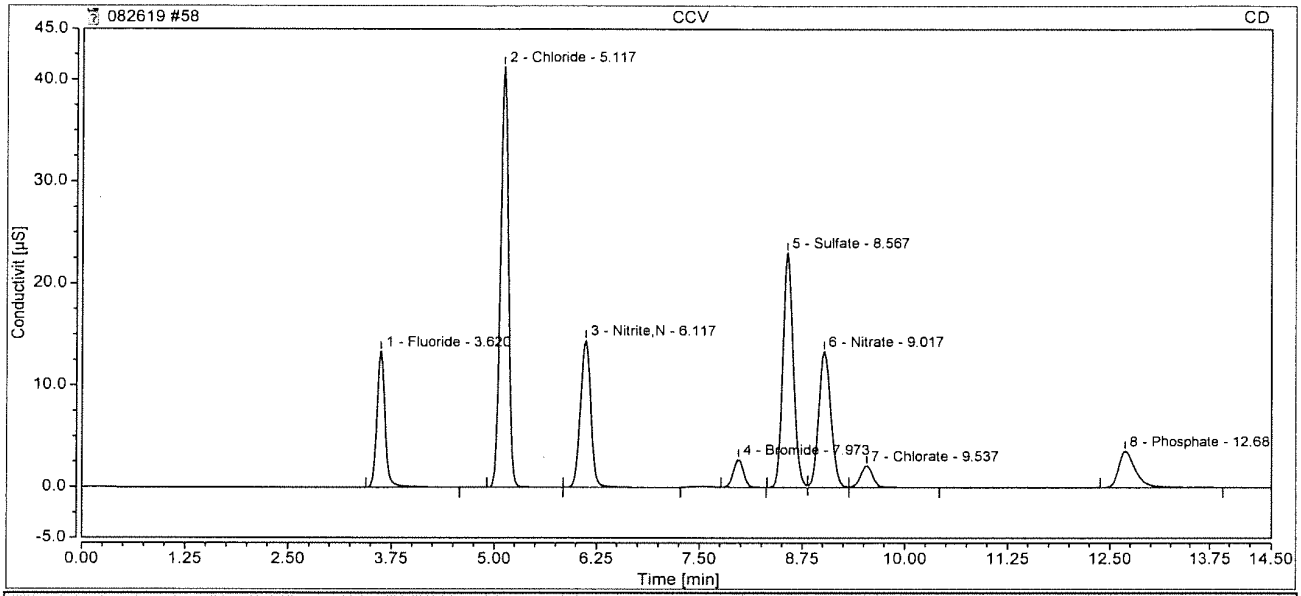

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.002 | 0.0675 | 0.0675 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Sulfate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.002** | | **0.07** | |

58 CCV

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 11:08** | *Sample Weight:* | **1.0000** |

Run Time:



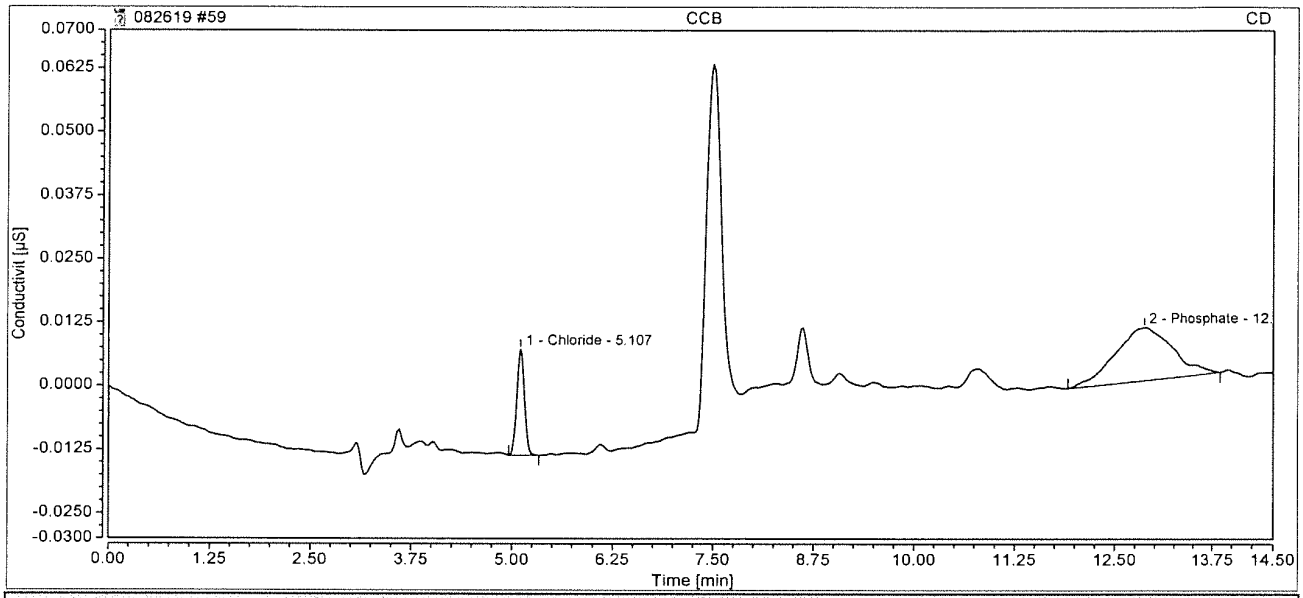

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.520 | 4.1059 | 4.1059 | 1.0000 |
| 2 | 5.12 | Chloride | BMB | 4.678 | 19.9232 | 19.9232 | 1.0000 |
| 3 | 6.12 | Nitrite,N | BMB | 2.122 | 4.1447 | 4.1447 | 1.0000 |
| 4 | 7.97 | Bromide | BMB | 0.386 | 3.8824 | 3.8824 | 1.0000 |
| 5 | 8.57 | Sulfate | BM | 3.438 | 20.0295 | 20.0295 | 1.0000 |
| 6 | 9.02 | Nitrate | M | 2.331 | 3.9843 | 3.9843 | 1.0000 |
| 7 | 9.54 | Chlorate | MB | 0.369 | 3.9309 | 3.9309 | 1.0000 |
| 8 | 12.69 | Phosphate | BMB | 0.873 | 3.8073 | 3.8073 | 1.0000 |
| **Total:** | | | **0.000** | **15.717** | | **63.81** | |

59 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 11:25** | *Sample Weight:* | **1.0000** |

Run Time:



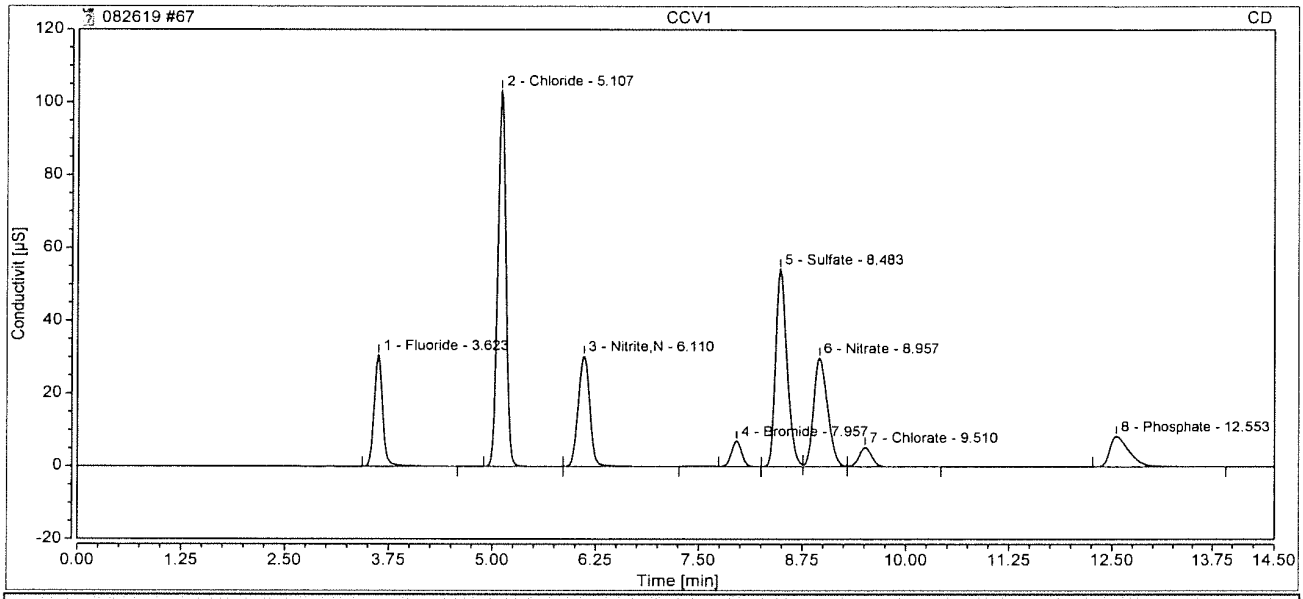

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.002 | 0.0670 | 0.0670 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Sulfate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 12.87 | Phosphate | BMB | 0.009 | 0.0855 | 0.0855 | 1.0000 |
| **Total:** | | | **0.000** | **0.011** | | **0.15** | |

67 CCV1

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV1** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 13:37** | *Sample Weight:* | **1.0000** |

Run Time:



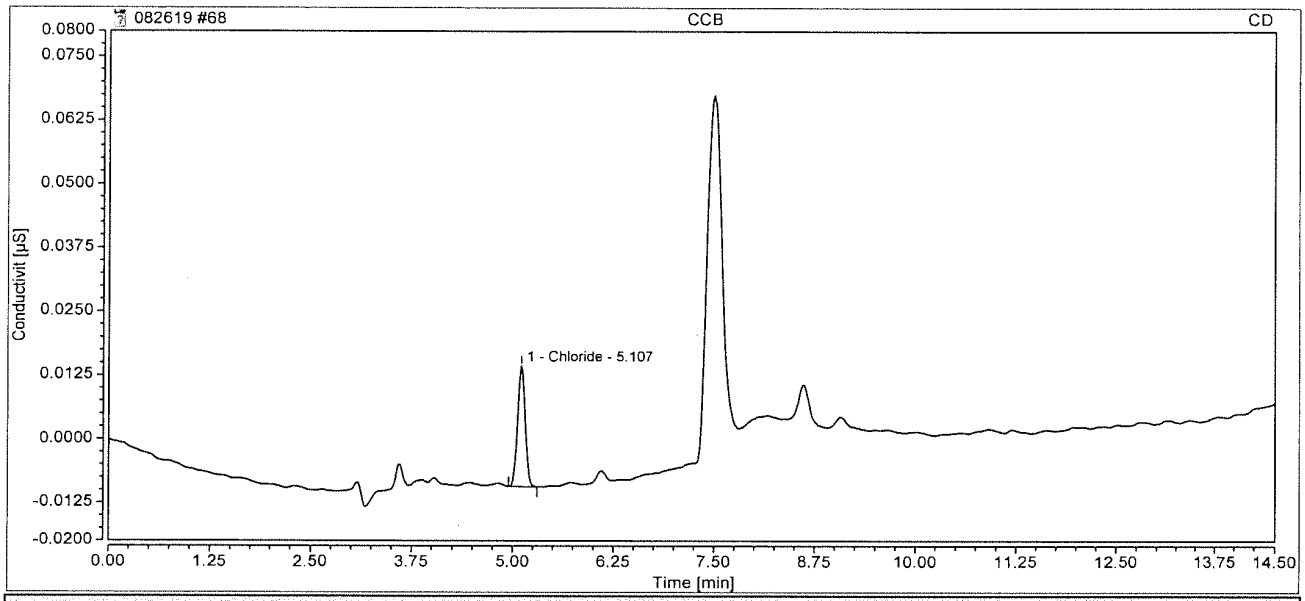

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 3.646 | 9.8265 | 9.8265 | 1.0000 |
| 2 | 5.11 | Chloride | BMB | 11.795 | 50.1438 | 50.1438 | 1.0000 |
| 3 | 6.11 | Nitrite,N | BMB | 4.965 | 9.6969 | 9.6969 | 1.0000 |
| 4 | 7.96 | Bromide | BMB | 1.007 | 10.0387 | 10.0387 | 1.0000 |
| 5 | 8.48 | Sulfate | BM | 8.652 | 50.3918 | 50.3918 | 1.0000 |
| 6 | 8.96 | Nitrate | M | 5.891 | 10.0431 | 10.0431 | 1.0000 |
| 7 | 9.51 | Chlorate | MB | 0.947 | 10.0606 | 10.0606 | 1.0000 |
| 8 | 12.55 | Phosphate | BMB | 2.300 | 9.9587 | 9.9587 | 1.0000 |
| **Total:** | | | **0.000** | **39.205** | | **160.16** | |

68 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 13:54** | *Sample Weight:* | **1.0000** |

Run Time:

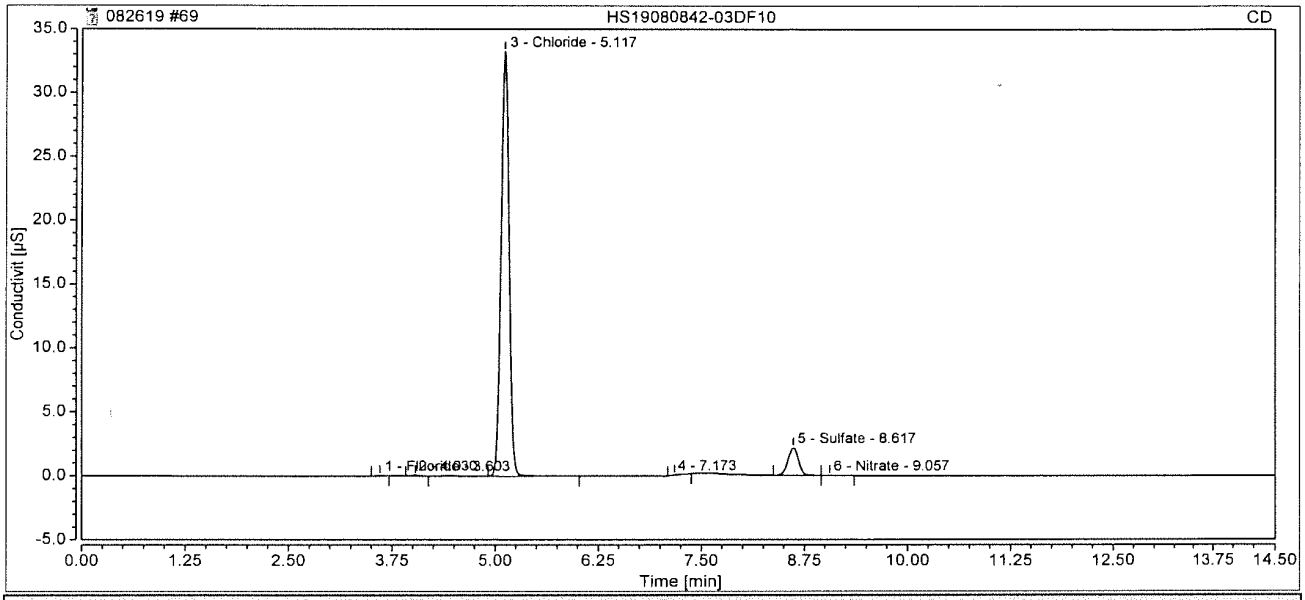



**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.003 | 0.0683 | 0.0683 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Sulfate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.003** | | **0.07** | |

69 HS19080842-03DF10

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080842-03DF10** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RE5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **10.0000** |
| *Recording Time:* | **08/27/2019 14:11** | *Sample Weight:* | **1.0000** |
| Run Time: | | | |



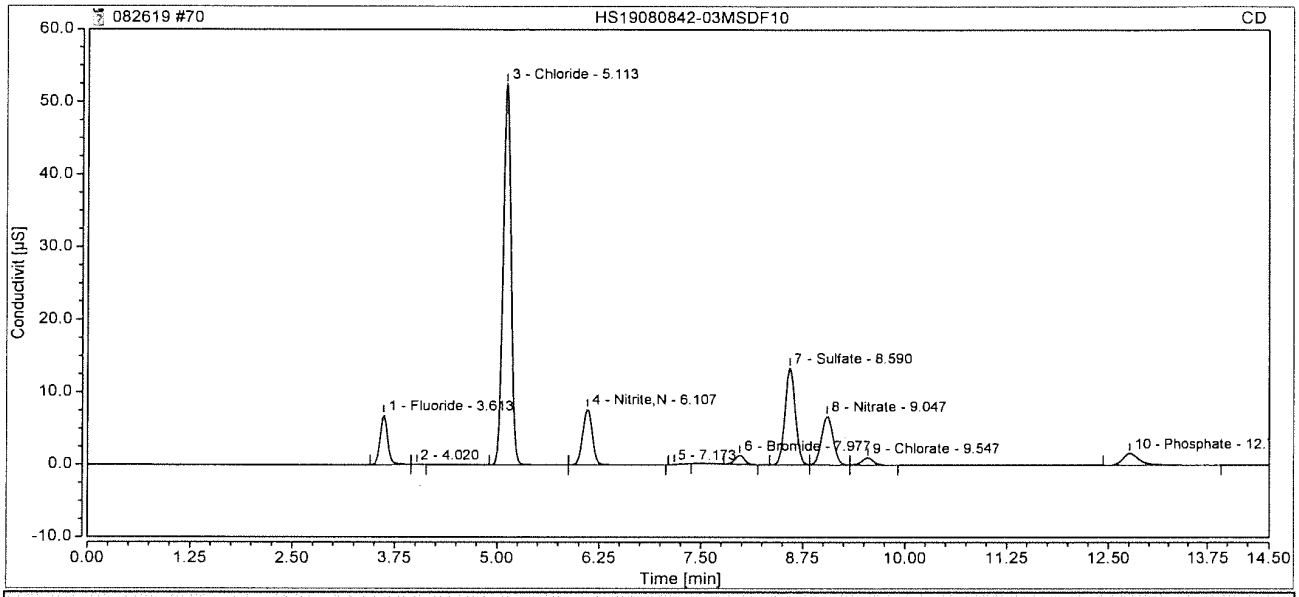

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.60 | Fluoride | BMB | 0.003 | 0.0240 | 0.2401 | 10.0000 |
| 3 | 5.12 | Chloride | BMB | 3.756 | 16.0083 | 160.0829 | 10.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 10.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 10.0000 |
| 5 | 8.62 | Sulfate | BM | 0.322 | 1.8887 | 18.8873 | 10.0000 |
| 6 | 9.06 | Nitrate | MB | 0.003 | 0.0219 | 0.2188 | 10.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 10.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 10.0000 |
| **Total:** | | | **0.000** | **4.085** | | **179.43** | |

*70 HS19080842-03MSDF10*

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080842-03MSDF10** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RE6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **10.0000** |
| *Recording Time:* | **08/27/2019 14:27** | *Sample Weight:* | **1.0000** |

Run Time:



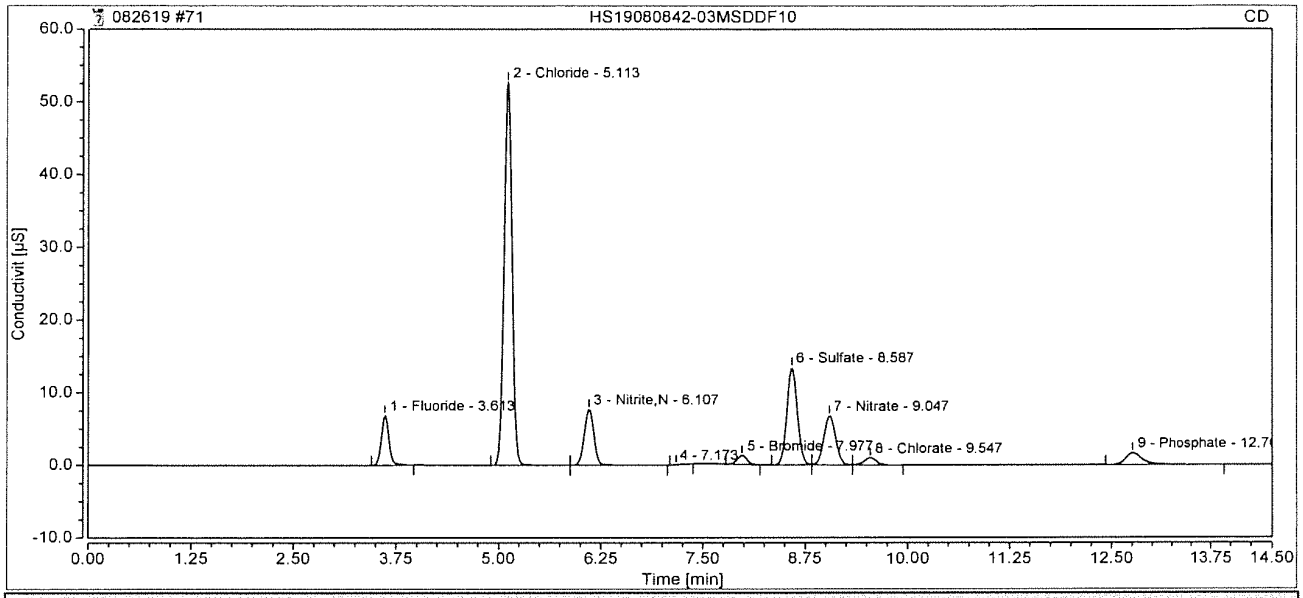

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.735 | 1.9941 | 19.9414 | 10.0000 |
| 3 | 5.11 | Chloride | BMB | 5.970 | 25.4067 | 254.0666 | 10.0000 |
| 4 | 6.11 | Nitrite,N | BMB | 1.061 | 2.0720 | 20.7197 | 10.0000 |
| 6 | 7.98 | Bromide | BMB | 0.169 | 1.7231 | 17.2310 | 10.0000 |
| 7 | 8.59 | Sulfate | BM | 1.978 | 11.5275 | 115.2747 | 10.0000 |
| 8 | 9.05 | Nitrate | M | 1.118 | 1.9194 | 19.1942 | 10.0000 |
| 9 | 9.55 | Chlorate | MB | 0.164 | 1.7611 | 17.6107 | 10.0000 |
| 10 | 12.76 | Phosphate | BMB | 0.400 | 1.7726 | 17.7260 | 10.0000 |
| **Total:** | | | **0.000** | **11.594** | | **481.76** | |

71 HS19080842-03MSDDF10

| | | | |
|---|---|---|---|
| *Sample Name:* | **HS19080842-03MSDDF10** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **RE7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **10.0000** |
| *Recording Time:* | **08/27/2019 14:44** | *Sample Weight:* | **1.0000** |

Run Time:

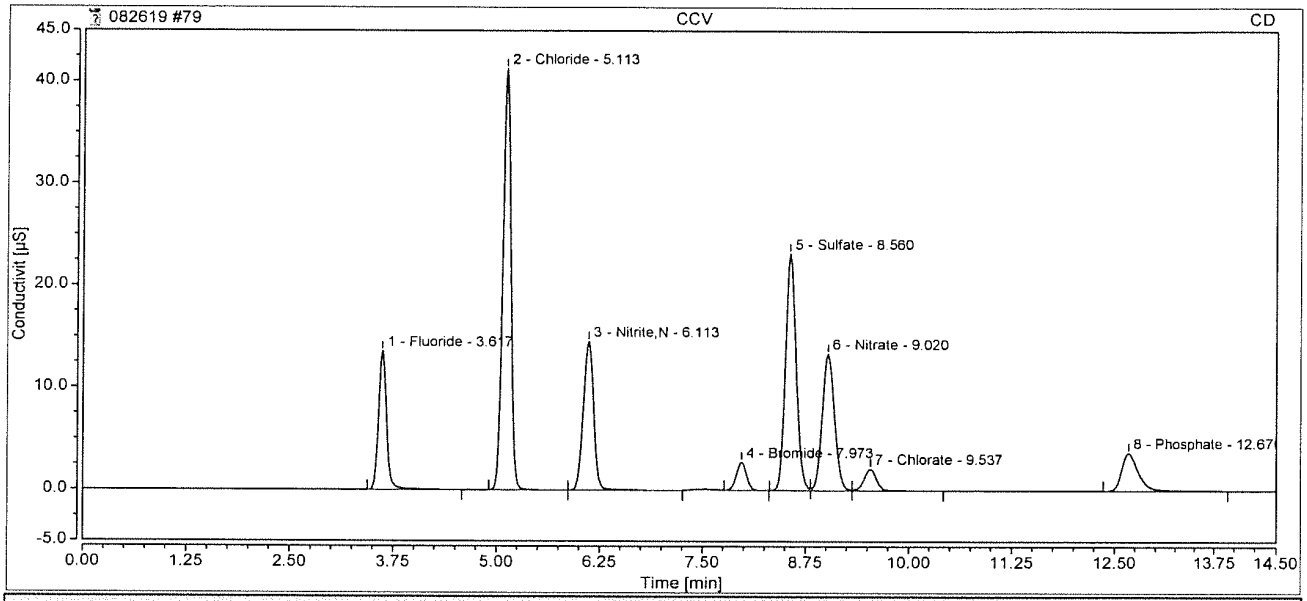



**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.61 | Fluoride | BMB | 0.738 | 2.0008 | 20.0075 | 10.0000 |
| 2 | 5.11 | Chloride | BMB | 5.985 | 25.4719 | 254.7187 | 10.0000 |
| 3 | 6.11 | Nitrite,N | BMB | 1.061 | 2.0724 | 20.7235 | 10.0000 |
| 5 | 7.98 | Bromide | BMB | 0.169 | 1.7262 | 17.2623 | 10.0000 |
| 6 | 8.59 | Sulfate | BM | 1.986 | 11.5742 | 115.7421 | 10.0000 |
| 7 | 9.05 | Nitrate | M | 1.120 | 1.9243 | 19.2435 | 10.0000 |
| 8 | 9.55 | Chlorate | MB | 0.164 | 1.7637 | 17.6371 | 10.0000 |
| 9 | 12.76 | Phosphate | BMB | 0.407 | 1.8002 | 18.0018 | 10.0000 |
| **Total:** | | | **0.000** | **11.630** | | **483.34** | |

79 CCV

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA5** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 16:57** | *Sample Weight:* | **1.0000** |
| Run Time: | | | |



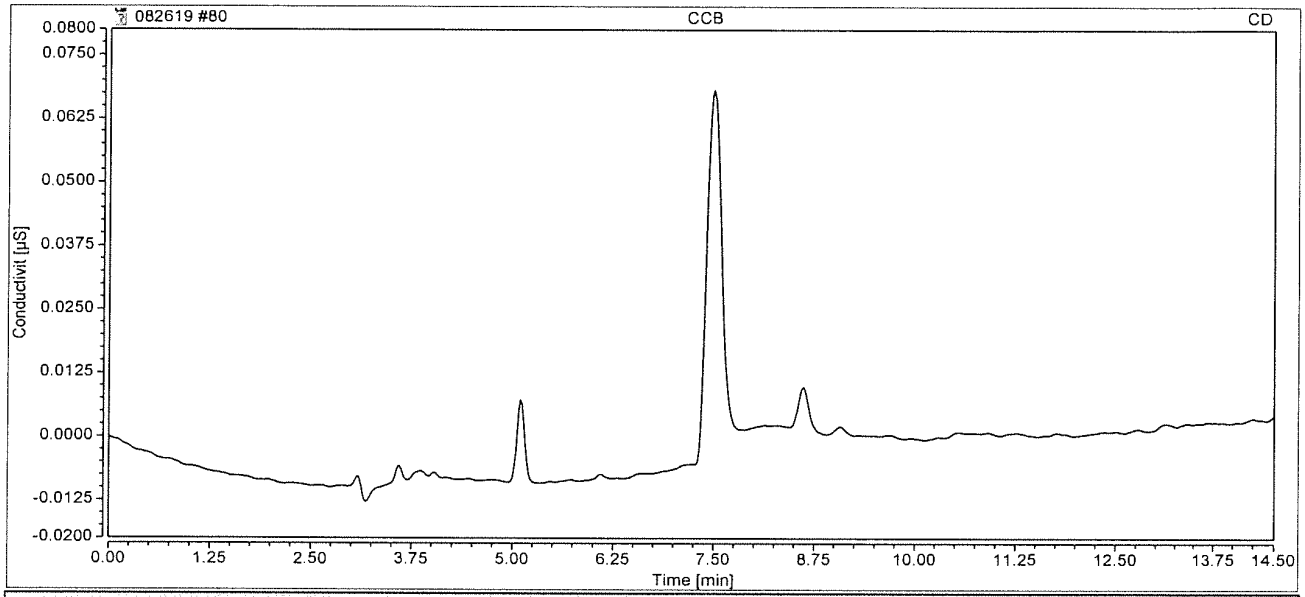

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 1.528 | 4.1270 | 4.1270 | 1.0000 |
| 2 | 5.11 | Chloride | BMB | 4.692 | 19.9796 | 19.9796 | 1.0000 |
| 3 | 6.11 | Nitrite,N | BMB | 2.127 | 4.1529 | 4.1529 | 1.0000 |
| 4 | 7.97 | Bromide | BMB | 0.386 | 3.8778 | 3.8778 | 1.0000 |
| 5 | 8.56 | Sulfate | BM | 3.460 | 20.1573 | 20.1573 | 1.0000 |
| 6 | 9.02 | Nitrate | M | 2.336 | 3.9935 | 3.9935 | 1.0000 |
| 7 | 9.54 | Chlorate | MB | 0.368 | 3.9213 | 3.9213 | 1.0000 |
| 8 | 12.67 | Phosphate | BMB | 0.883 | 3.8511 | 3.8511 | 1.0000 |
| **Total:** | | | **0.000** | **15.779** | | **64.06** | |

*80 CCB*

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA6** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 17:14** | *Sample Weight:* | **1.0000** |

Run Time:



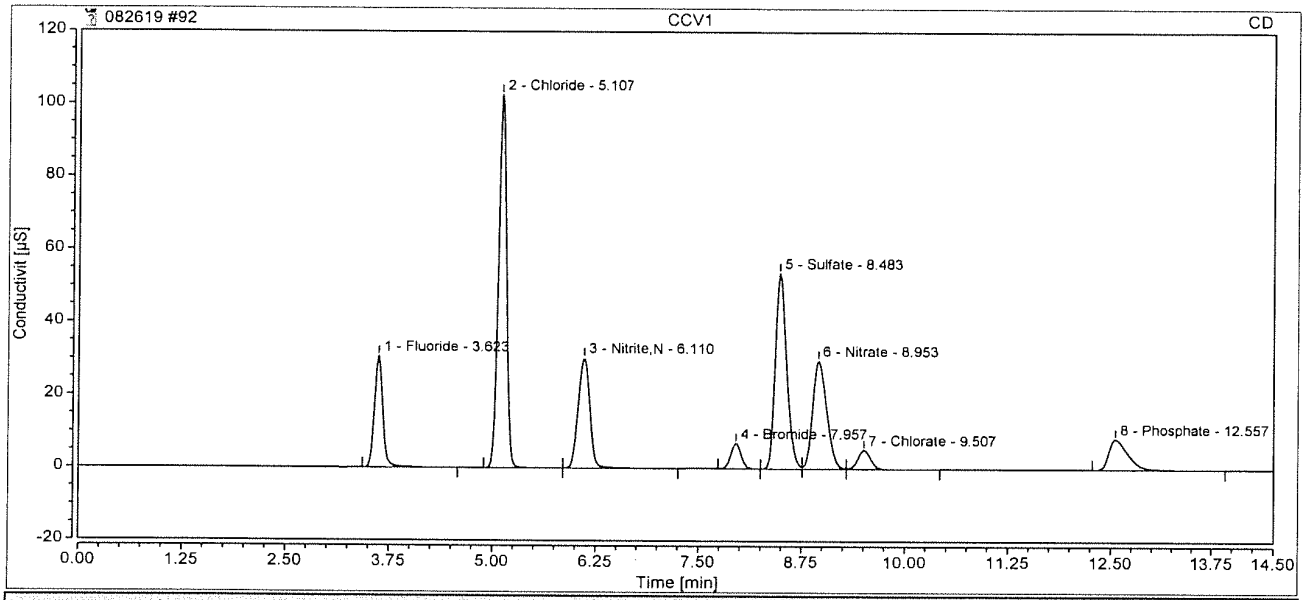

**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chloride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Sulfate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.000** | | **0.00** | |

92 CCV1

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCV1** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA7** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 21:29** | *Sample Weight:* | **1.0000** |

Run Time:

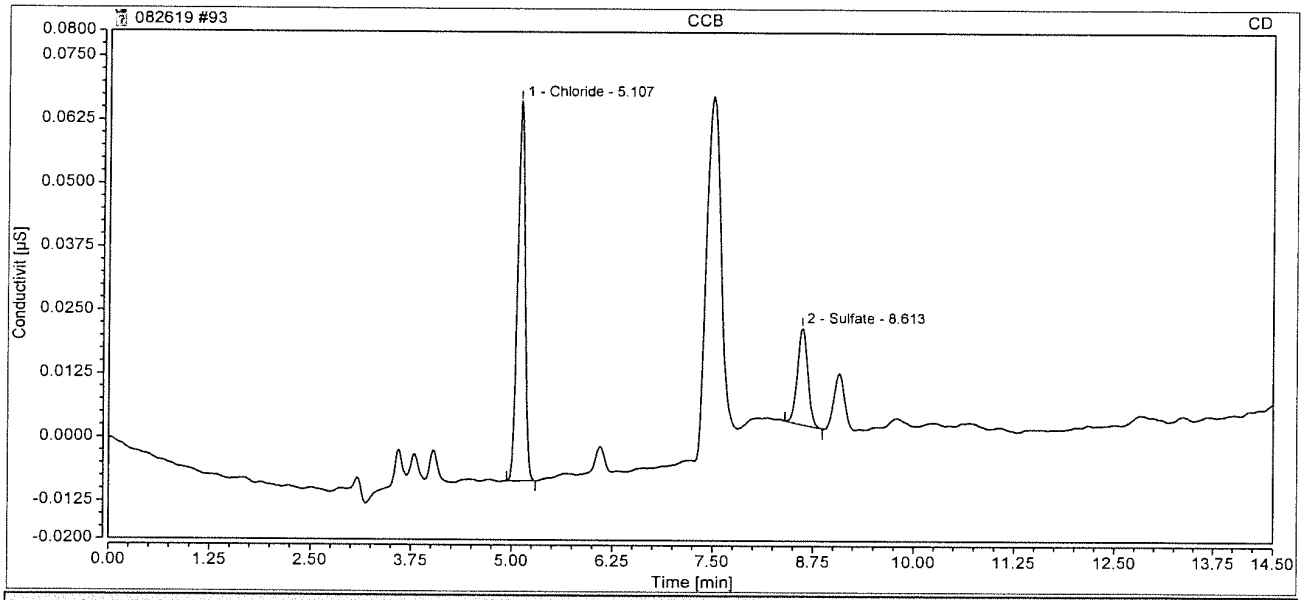



**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| 1 | 3.62 | Fluoride | BMB | 3.642 | 9.8160 | 9.8160 | 1.0000 |
| 2 | 5.11 | Chloride | BMB | 11.741 | 49.9142 | 49.9142 | 1.0000 |
| 3 | 6.11 | Nitrite,N | BMB | 4.950 | 9.6681 | 9.6681 | 1.0000 |
| 4 | 7.96 | Bromide | BMB | 1.004 | 10.0021 | 10.0021 | 1.0000 |
| 5 | 8.48 | Sulfate | BM | 8.603 | 50.1019 | 50.1019 | 1.0000 |
| 6 | 8.95 | Nitrate | M | 5.860 | 9.9913 | 9.9913 | 1.0000 |
| 7 | 9.51 | Chlorate | MB | 0.942 | 10.0070 | 10.0070 | 1.0000 |
| 8 | 12.56 | Phosphate | BMB | 2.285 | 9.8916 | 9.8916 | 1.0000 |
| **Total:** | | | **0.000** | **39.027** | | **159.39** | |

93 CCB

| | | | |
|---|---|---|---|
| *Sample Name:* | **CCB** | *Injection Volume:* | **5.00** |
| *Vial Number:* | **BA8** | *Channel:* | **CD** |
| *Sample Type:* | **Unknown** | *Wavelength:* | **210** |
| *Control Program:* | **Anions Program 08092019** | *Bandwidth:* | **n.a.** |
| *Quantif. Method:* | **Anions Processing Method** | *Dilution Factor:* | **1.0000** |
| *Recording Time:* | **08/27/2019 21:46** | *Sample Weight:* | **1.0000** |
| Run Time: | | | |




**Integration Results**

| No. | Retention min | Peak Name | Peak Type | Area µS*min | Amount ppm | Concentration ppm | Dilution |
|---|---|---|---|---|---|---|---|
| n.a. | n.a. | Fluoride | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 1 | 5.11 | Chloride | BMB | 0.008 | 0.0918 | 0.0918 | 1.0000 |
| n.a. | n.a. | Nitrite,N | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Bromide | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| 2 | 8.61 | Sulfate | BMB | 0.003 | 0.0293 | 0.0293 | 1.0000 |
| n.a. | n.a. | Nitrate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Chlorate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| n.a. | n.a. | Phosphate | n.a. | n.a. | n.a. | n.a. | 1.0000 |
| **Total:** | | | **0.000** | **0.011** | | **0.12** | |

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September 12, 2019

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19090151**

Laboratory Results for: **Longhorn Army Ammunition Plant**

Dear Susan,

ALS Environmental received 2 sample(s) on Sep 04, 2019 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 Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:** HS19090151

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19090151-01 | FIELDQC-190903TB1 | Water | | 03-Sep-2019 14:45 | 04-Sep-2019 08:42 | ☐ |
| HS19090151-02 | LHSMW23R-190903 | GW | | 03-Sep-2019 15:43 | 04-Sep-2019 08:42 | ☐ |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**Work Order:** HS19090151

**CASE NARRATIVE**

## GCMS Volatiles by Method SW8260

### Batch ID: R346125

#### Sample ID: LHSMW23R-190903 (HS19090151-02MSD)

- MSD recoveries marginally outside control limits for 1,1-Dichloroethane and Bromochloromethane.

**ALS Houston, US** Date: 12-Sep-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: FIELDQC-190903TB1
Collection Date: 03-Sep-2019 14:45

**ANALYTICAL REPORT**
WorkOrder:HS19090151
Lab ID:HS19090151-01
Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 12-Sep-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: FIELDQC-190903TB1
Collection Date: 03-Sep-2019 14:45

**ANALYTICAL REPORT**
WorkOrder:HS19090151
Lab ID:HS19090151-01
Matrix:Water

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 19:07 |
| *Surr: 1,2-Dichloroethane-d4* | *91.6* | | | **0** | *81-118* | *%REC* | *1* | *11-Sep-2019 19:07* |
| *Surr: 4-Bromofluorobenzene* | *103* | | | **0** | *85-114* | *%REC* | *1* | *11-Sep-2019 19:07* |
| *Surr: Dibromofluoromethane* | *94.1* | | | **0** | *80-119* | *%REC* | *1* | *11-Sep-2019 19:07* |
| *Surr: Toluene-d8* | *96.1* | | | **0** | *89-112* | *%REC* | *1* | *11-Sep-2019 19:07* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 12-Sep-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: LHSMW23R-190903
Collection Date: 03-Sep-2019 15:43

**ANALYTICAL REPORT**
WorkOrder:HS19090151
Lab ID:HS19090151-02
Matrix:GW

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 12-Sep-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
Sample ID: LHSMW23R-190903
Collection Date: 03-Sep-2019 15:43

**ANALYTICAL REPORT**
WorkOrder:HS19090151
Lab ID:HS19090151-02
Matrix:GW

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Hexachlorobutadiene | 1.0 | U | 1.0 | 1.0 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 11-Sep-2019 20:19 |
| *Surr: 1,2-Dichloroethane-d4* | *90.3* | | | **0** | *81-118* | *%REC* | *1* | *11-Sep-2019 20:19* |
| *Surr: 4-Bromofluorobenzene* | *102* | | | **0** | *85-114* | *%REC* | *1* | *11-Sep-2019 20:19* |
| *Surr: Dibromofluoromethane* | *94.2* | | | **0** | *80-119* | *%REC* | *1* | *11-Sep-2019 20:19* |
| *Surr: Toluene-d8* | *97.3* | | | **0** | *89-112* | *%REC* | *1* | *11-Sep-2019 20:19* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**DATES REPORT**

| Sample ID | Client Samp ID | Collection Date | TCLP Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID:** R346125 ( 0 ) | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** GW | |
| HS19090151-02 | LHSMW23R-190903 | 03 Sep 2019 15:43 | | | 11 Sep 2019 20:19 | 1 |
| **Batch ID:** R346125 ( 0 ) | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Water | |
| HS19090151-01 | FIELDQC-190903TB1 | 03 Sep 2019 14:45 | | | 11 Sep 2019 19:07 | 1 |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID: R346125 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**MBLK** Sample ID: **VBLKW-190911** Units: **UG/L** Analysis Date: **11-Sep-2019 18:43**
Client ID: Run ID: **VOA6_346125** SeqNo: **5249737** 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 |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID: R346125 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**MBLK** Sample ID: **VBLKW-190911** Units: **UG/L** Analysis Date: **11-Sep-2019 18:43**
Client ID: Run ID: **VOA6_346125** SeqNo: **5249737** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %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 | 1.0 | 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* | *44.71* | *1.0* | *50* | *0* | *89.4* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *50.16* | *1.0* | *50* | *0* | *100* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *46.37* | *1.0* | *50* | *0* | *92.7* | *80 - 119* | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-190911** Units: **UG/L** Analysis Date: **11-Sep-2019 18:43**
Client ID: Run ID: **VOA6_346125** SeqNo: **5249737** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *48.08* | *1.0* | *50* | *0* | *96.2* | *89 - 112* | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID: R346125 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**LCS** Sample ID: **VLCSW-190911** Units: **UG/L** Analysis Date: **11-Sep-2019 17:55**
Client ID: Run ID: **VOA6_346125** SeqNo: **5249736** 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 | 18.61 | 1.0 | 20 | 0 | 93.1 | 78 - 124 | | | | |
| 1,1,1-Trichloroethane | 17.96 | 1.0 | 20 | 0 | 89.8 | 74 - 131 | | | | |
| 1,1,2,2-Tetrachloroethane | 19.65 | 1.0 | 20 | 0 | 98.3 | 71 - 121 | | | | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 17.05 | 1.0 | 20 | 0 | 85.3 | 70 - 136 | | | | |
| 1,1,2-Trichloroethane | 18.71 | 1.0 | 20 | 0 | 93.5 | 80 - 119 | | | | |
| 1,1-Dichloroethane | 17.61 | 1.0 | 20 | 0 | 88.0 | 77 - 125 | | | | |
| 1,1-Dichloroethene | 17.42 | 1.0 | 20 | 0 | 87.1 | 71 - 131 | | | | |
| 1,1-Dichloropropene | 17.37 | 1.0 | 20 | 0 | 86.9 | 78 - 125 | | | | |
| 1,2,3-Trichlorobenzene | 17.77 | 1.0 | 20 | 0 | 88.8 | 69 - 129 | | | | |
| 1,2,3-Trichloropropane | 18.79 | 1.0 | 20 | 0 | 93.9 | 73 - 122 | | | | |
| 1,2,4-Trichlorobenzene | 18 | 1.0 | 20 | 0 | 90.0 | 69 - 130 | | | | |
| 1,2,4-Trimethylbenzene | 17.17 | 1.0 | 20 | 0 | 85.9 | 76 - 124 | | | | |
| 1,2-Dibromo-3-chloropropane | 20.2 | 1.0 | 20 | 0 | 101 | 62 - 128 | | | | |
| 1,2-Dibromoethane | 19.26 | 1.0 | 20 | 0 | 96.3 | 77 - 121 | | | | |
| 1,2-Dichlorobenzene | 17.45 | 1.0 | 20 | 0 | 87.3 | 80 - 119 | | | | |
| 1,2-Dichloroethane | 18.66 | 1.0 | 20 | 0 | 93.3 | 73 - 128 | | | | |
| 1,2-Dichloropropane | 17.98 | 1.0 | 20 | 0 | 89.9 | 78 - 122 | | | | |
| 1,3,5-Trimethylbenzene | 16.92 | 1.0 | 20 | 0 | 84.6 | 75 - 124 | | | | |
| 1,3-Dichlorobenzene | 17.82 | 1.0 | 20 | 0 | 89.1 | 80 - 119 | | | | |
| 1,3-Dichloropropane | 18.15 | 1.0 | 20 | 0 | 90.7 | 80 - 119 | | | | |
| 1,4-Dichlorobenzene | 17.52 | 1.0 | 20 | 0 | 87.6 | 79 - 118 | | | | |
| 2,2-Dichloropropane | 17.99 | 1.0 | 20 | 0 | 89.9 | 60 - 139 | | | | |
| 2-Butanone | 40.56 | 2.0 | 40 | 0 | 101 | 56 - 143 | | | | |
| 2-Chlorotoluene | 18.35 | 1.0 | 20 | 0 | 91.7 | 79 - 122 | | | | |
| 2-Hexanone | 39.38 | 2.0 | 40 | 0 | 98.4 | 57 - 139 | | | | |
| 4-Chlorotoluene | 16.66 | 1.0 | 20 | 0 | 83.3 | 78 - 122 | | | | |
| 4-Isopropyltoluene | 16.65 | 1.0 | 20 | 0 | 83.3 | 77 - 127 | | | | |
| 4-Methyl-2-pentanone | 37.81 | 2.0 | 40 | 0 | 94.5 | 67 - 130 | | | | |
| Acetone | 42.22 | 2.0 | 40 | 0 | 106 | 39 - 160 | | | | |
| Benzene | 17.88 | 1.0 | 20 | 0 | 89.4 | 79 - 120 | | | | |
| Bromobenzene | 17.86 | 1.0 | 20 | 0 | 89.3 | 80 - 120 | | | | |
| Bromochloromethane | 18.51 | 1.0 | 20 | 0 | 92.6 | 78 - 123 | | | | |
| Bromodichloromethane | 18.18 | 1.0 | 20 | 0 | 90.9 | 79 - 125 | | | | |
| Bromoform | 19.52 | 1.0 | 20 | 0 | 97.6 | 66 - 130 | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID: R346125 ( 0 )** **Instrument: VOA6** **Method: VOLATILES ORGANICS BY METHOD 8260C**

**LCS** Sample ID: **VLCSW-190911** Units: **UG/L** Analysis Date: **11-Sep-2019 17:55**
Client ID: Run ID: **VOA6_346125** SeqNo: **5249736** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 20.71 | 1.0 | 20 | 0 | 104 | 53 - 141 | | | | |
| Carbon disulfide | 35.01 | 2.0 | 40 | 0 | 87.5 | 64 - 133 | | | | |
| Carbon tetrachloride | 17.27 | 1.0 | 20 | 0 | 86.4 | 72 - 136 | | | | |
| Chlorobenzene | 17.55 | 1.0 | 20 | 0 | 87.8 | 82 - 118 | | | | |
| Chloroethane | 18.52 | 1.0 | 20 | 0 | 92.6 | 60 - 138 | | | | |
| Chloroform | 18.49 | 1.0 | 20 | 0 | 92.5 | 79 - 124 | | | | |
| Chloromethane | 18.64 | 1.0 | 20 | 0 | 93.2 | 50 - 139 | | | | |
| cis-1,2-Dichloroethene | 18.67 | 1.0 | 20 | 0 | 93.3 | 78 - 123 | | | | |
| cis-1,3-Dichloropropene | 18.89 | 1.0 | 20 | 0 | 94.5 | 75 - 124 | | | | |
| Dibromochloromethane | 18.74 | 1.0 | 20 | 0 | 93.7 | 74 - 126 | | | | |
| Dibromomethane | 18.52 | 1.0 | 20 | 0 | 92.6 | 79 - 123 | | | | |
| Dichlorodifluoromethane | 16.62 | 1.0 | 20 | 0 | 83.1 | 32 - 152 | | | | |
| Ethylbenzene | 17.52 | 1.0 | 20 | 0 | 87.6 | 79 - 121 | | | | |
| Hexachlorobutadiene | 16.3 | 1.0 | 20 | 0 | 81.5 | 66 - 134 | | | | |
| Isopropylbenzene | 17.22 | 1.0 | 20 | 0 | 86.1 | 72 - 131 | | | | |
| m,p-Xylene | 34.98 | 2.0 | 40 | 0 | 87.4 | 80 - 121 | | | | |
| Methylene chloride | 19.52 | 2.0 | 20 | 0 | 97.6 | 74 - 124 | | | | |
| Naphthalene | 18.75 | 1.0 | 20 | 0 | 93.7 | 61 - 128 | | | | |
| n-Butylbenzene | 16.52 | 1.0 | 20 | 0 | 82.6 | 75 - 128 | | | | |
| n-Propylbenzene | 16.56 | 1.0 | 20 | 0 | 82.8 | 76 - 126 | | | | |
| o-Xylene | 17.88 | 1.0 | 20 | 0 | 89.4 | 78 - 122 | | | | |
| sec-Butylbenzene | 15.79 | 1.0 | 20 | 0 | 78.9 | 77 - 126 | | | | |
| Styrene | 18.33 | 1.0 | 20 | 0 | 91.6 | 78 - 123 | | | | |
| tert-Butylbenzene | 16.47 | 1.0 | 20 | 0 | 82.4 | 78 - 124 | | | | |
| Tetrachloroethene | 17.57 | 1.0 | 20 | 0 | 87.8 | 74 - 129 | | | | |
| Toluene | 17.42 | 1.0 | 20 | 0 | 87.1 | 80 - 121 | | | | |
| trans-1,2-Dichloroethene | 17.97 | 1.0 | 20 | 0 | 89.9 | 75 - 124 | | | | |
| trans-1,3-Dichloropropene | 19.14 | 1.0 | 20 | 0 | 95.7 | 73 - 127 | | | | |
| Trichloroethene | 18 | 1.0 | 20 | 0 | 90.0 | 79 - 123 | | | | |
| Trichlorofluoromethane | 17.22 | 1.0 | 20 | 0 | 86.1 | 65 - 141 | | | | |
| Vinyl chloride | 16.36 | 1.0 | 20 | 0 | 81.8 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *53.96* | *1.0* | *50* | *0* | *108* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *52.2* | *1.0* | *50* | *0* | *104* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *53.62* | *1.0* | *50* | *0* | *107* | *80 - 119* | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-190911** Units: **UG/L** Analysis Date: **11-Sep-2019 17:55**
Client ID: Run ID: **VOA6_346125** SeqNo: **5249736** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *46.45* | *1.0* | *50* | *0* | *92.9* | *89 - 112* | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19090151-02MS** Units: **UG/L** Analysis Date: **11-Sep-2019 21:31**
Client ID: **LHSMW23R-190903** Run ID: **VOA6_346125** SeqNo: **5249744** 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 | 18.7 | 1.0 | 20 | 0 | 93.5 | 78 - 124 | | | | |
| 1,1,1-Trichloroethane | 16.89 | 1.0 | 20 | 0 | 84.4 | 74 - 131 | | | | |
| 1,1,2,2-Tetrachloroethane | 18.69 | 1.0 | 20 | 0 | 93.5 | 71 - 121 | | | | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 18.21 | 1.0 | 20 | 0 | 91.1 | 70 - 136 | | | | |
| 1,1,2-Trichloroethane | 18.15 | 1.0 | 20 | 0 | 90.7 | 80 - 119 | | | | |
| 1,1-Dichloroethane | 15.96 | 1.0 | 20 | 0 | 79.8 | 77 - 125 | | | | |
| 1,1-Dichloroethene | 18.29 | 1.0 | 20 | 0 | 91.4 | 71 - 131 | | | | |
| 1,1-Dichloropropene | 17.7 | 1.0 | 20 | 0 | 88.5 | 78 - 125 | | | | |
| 1,2,3-Trichlorobenzene | 15.21 | 1.0 | 20 | 0 | 76.1 | 69 - 129 | | | | |
| 1,2,3-Trichloropropane | 17.66 | 1.0 | 20 | 0 | 88.3 | 73 - 122 | | | | |
| 1,2,4-Trichlorobenzene | 16.44 | 1.0 | 20 | 0 | 82.2 | 69 - 130 | | | | |
| 1,2,4-Trimethylbenzene | 18.63 | 1.0 | 20 | 0 | 93.1 | 76 - 124 | | | | |
| 1,2-Dibromo-3-chloropropane | 16.89 | 1.0 | 20 | 0 | 84.5 | 62 - 128 | | | | |
| 1,2-Dibromoethane | 17.89 | 1.0 | 20 | 0 | 89.5 | 77 - 121 | | | | |
| 1,2-Dichlorobenzene | 17.82 | 1.0 | 20 | 0 | 89.1 | 80 - 119 | | | | |
| 1,2-Dichloroethane | 16.6 | 1.0 | 20 | 0 | 83.0 | 73 - 128 | | | | |
| 1,2-Dichloropropane | 16.98 | 1.0 | 20 | 0 | 84.9 | 78 - 122 | | | | |
| 1,3,5-Trimethylbenzene | 18.77 | 1.0 | 20 | 0 | 93.9 | 75 - 124 | | | | |
| 1,3-Dichlorobenzene | 18.82 | 1.0 | 20 | 0 | 94.1 | 80 - 119 | | | | |
| 1,3-Dichloropropane | 17.65 | 1.0 | 20 | 0 | 88.2 | 80 - 119 | | | | |
| 1,4-Dichlorobenzene | 18.12 | 1.0 | 20 | 0 | 90.6 | 79 - 118 | | | | |
| 2,2-Dichloropropane | 15.9 | 1.0 | 20 | 0 | 79.5 | 60 - 139 | | | | |
| 2-Butanone | 28.82 | 2.0 | 40 | 0 | 72.1 | 56 - 143 | | | | |
| 2-Chlorotoluene | 19.79 | 1.0 | 20 | 0 | 98.9 | 79 - 122 | | | | |
| 2-Hexanone | 36.77 | 2.0 | 40 | 0 | 91.9 | 57 - 139 | | | | |
| 4-Chlorotoluene | 18.26 | 1.0 | 20 | 0 | 91.3 | 78 - 122 | | | | |
| 4-Isopropyltoluene | 19.09 | 1.0 | 20 | 0 | 95.4 | 77 - 127 | | | | |
| 4-Methyl-2-pentanone | 35.97 | 2.0 | 40 | 0 | 89.9 | 67 - 130 | | | | |
| Acetone | 28.75 | 2.0 | 40 | 0 | 71.9 | 39 - 160 | | | | |
| Benzene | 17.15 | 1.0 | 20 | 0 | 85.8 | 79 - 120 | | | | |
| Bromobenzene | 18.75 | 1.0 | 20 | 0 | 93.8 | 80 - 120 | | | | |
| Bromochloromethane | 15.85 | 1.0 | 20 | 0 | 79.2 | 78 - 123 | | | | |
| Bromodichloromethane | 16.69 | 1.0 | 20 | 0 | 83.4 | 79 - 125 | | | | |
| Bromoform | 18 | 1.0 | 20 | 0 | 90.0 | 66 - 130 | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19090151-02MS** Units: **UG/L** Analysis Date: **11-Sep-2019 21:31**
Client ID: **LHSMW23R-190903** Run ID: **VOA6_346125** SeqNo: **5249744** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 21.5 | 1.0 | 20 | 0 | 107 | 53 - 141 | | | | |
| Carbon disulfide | 30.64 | 2.0 | 40 | 0 | 76.6 | 64 - 133 | | | | |
| Carbon tetrachloride | 17.82 | 1.0 | 20 | 0 | 89.1 | 72 - 136 | | | | |
| Chlorobenzene | 17.82 | 1.0 | 20 | 0 | 89.1 | 82 - 118 | | | | |
| Chloroethane | 19.4 | 1.0 | 20 | 0 | 97.0 | 60 - 138 | | | | |
| Chloroform | 16.47 | 1.0 | 20 | 0 | 82.4 | 79 - 124 | | | | |
| Chloromethane | 14.85 | 1.0 | 20 | 0 | 74.2 | 50 - 139 | | | | |
| cis-1,2-Dichloroethene | 17 | 1.0 | 20 | 0 | 85.0 | 78 - 123 | | | | |
| cis-1,3-Dichloropropene | 16.93 | 1.0 | 20 | 0 | 84.7 | 75 - 124 | | | | |
| Dibromochloromethane | 18.26 | 1.0 | 20 | 0 | 91.3 | 74 - 126 | | | | |
| Dibromomethane | 16.55 | 1.0 | 20 | 0 | 82.7 | 79 - 123 | | | | |
| Dichlorodifluoromethane | 9.542 | 1.0 | 20 | 0 | 47.7 | 32 - 152 | | | | |
| Ethylbenzene | 18.53 | 1.0 | 20 | 0 | 92.7 | 79 - 121 | | | | |
| Hexachlorobutadiene | 17.86 | 1.0 | 20 | 0 | 89.3 | 66 - 134 | | | | |
| Isopropylbenzene | 18.54 | 1.0 | 20 | 0 | 92.7 | 72 - 131 | | | | |
| m,p-Xylene | 36.79 | 2.0 | 40 | 0 | 92.0 | 80 - 121 | | | | |
| Methylene chloride | 15.9 | 2.0 | 20 | 0 | 79.5 | 74 - 124 | | | | |
| Naphthalene | 15.91 | 1.0 | 20 | 0 | 79.6 | 61 - 128 | | | | |
| n-Butylbenzene | 19.4 | 1.0 | 20 | 0 | 97.0 | 75 - 128 | | | | |
| n-Propylbenzene | 19.06 | 1.0 | 20 | 0 | 95.3 | 76 - 126 | | | | |
| o-Xylene | 18.32 | 1.0 | 20 | 0 | 91.6 | 78 - 122 | | | | |
| sec-Butylbenzene | 19.02 | 1.0 | 20 | 0 | 95.1 | 77 - 126 | | | | |
| Styrene | 18.46 | 1.0 | 20 | 0 | 92.3 | 78 - 123 | | | | |
| tert-Butylbenzene | 19.06 | 1.0 | 20 | 0 | 95.3 | 78 - 124 | | | | |
| Tetrachloroethene | 18.93 | 1.0 | 20 | 0 | 94.7 | 74 - 129 | | | | |
| Toluene | 18.39 | 1.0 | 20 | 0 | 91.9 | 80 - 121 | | | | |
| trans-1,2-Dichloroethene | 16.62 | 1.0 | 20 | 0 | 83.1 | 75 - 124 | | | | |
| trans-1,3-Dichloropropene | 16.51 | 1.0 | 20 | 0 | 82.5 | 73 - 127 | | | | |
| Trichloroethene | 17.9 | 1.0 | 20 | 0 | 89.5 | 79 - 123 | | | | |
| Trichlorofluoromethane | 18.55 | 1.0 | 20 | 0 | 92.7 | 65 - 141 | | | | |
| Vinyl chloride | 16.83 | 1.0 | 20 | 0 | 84.2 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *45.76* | *1.0* | *50* | *0* | *91.5* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *49.61* | *1.0* | *50* | *0* | *99.2* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *46.87* | *1.0* | *50* | *0* | *93.7* | *80 - 119* | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19090151-02MS** Units: **UG/L** Analysis Date: **11-Sep-2019 21:31**
Client ID: **LHSMW23R-190903** Run ID: **VOA6_346125** SeqNo: **5249744** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *49.24* | *1.0* | *50* | *0* | *98.5* | *89 - 112* | | | | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19090151-02MSD** Units: **UG/L** Analysis Date: **11-Sep-2019 21:55**
Client ID: **LHSMW23R-190903** Run ID: **VOA6_346125** SeqNo: **5249745** 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 | 17.83 | 1.0 | 20 | 0 | 89.1 | 78 - 124 | 18.7 | 4.78 | 20 | |
| 1,1,1-Trichloroethane | 16.2 | 1.0 | 20 | 0 | 81.0 | 74 - 131 | 16.89 | 4.14 | 20 | |
| 1,1,2,2-Tetrachloroethane | 18.64 | 1.0 | 20 | 0 | 93.2 | 71 - 121 | 18.69 | 0.28 | 20 | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 16.87 | 1.0 | 20 | 0 | 84.3 | 70 - 136 | 18.21 | 7.66 | 20 | |
| 1,1,2-Trichloroethane | 18.05 | 1.0 | 20 | 0 | 90.3 | 80 - 119 | 18.15 | 0.535 | 20 | |
| 1,1-Dichloroethane | 15.22 | 1.0 | 20 | 0 | 76.1 | 77 - 125 | 15.96 | 4.75 | 20 | S |
| 1,1-Dichloroethene | 17.37 | 1.0 | 20 | 0 | 86.8 | 71 - 131 | 18.29 | 5.17 | 20 | |
| 1,1-Dichloropropene | 16.68 | 1.0 | 20 | 0 | 83.4 | 78 - 125 | 17.7 | 5.96 | 20 | |
| 1,2,3-Trichlorobenzene | 15.8 | 1.0 | 20 | 0 | 79.0 | 69 - 129 | 15.21 | 3.8 | 20 | |
| 1,2,3-Trichloropropane | 17.28 | 1.0 | 20 | 0 | 86.4 | 73 - 122 | 17.66 | 2.14 | 20 | |
| 1,2,4-Trichlorobenzene | 16.61 | 1.0 | 20 | 0 | 83.0 | 69 - 130 | 16.44 | 0.992 | 20 | |
| 1,2,4-Trimethylbenzene | 17.97 | 1.0 | 20 | 0 | 89.9 | 76 - 124 | 18.63 | 3.59 | 20 | |
| 1,2-Dibromo-3-chloropropane | 16.84 | 1.0 | 20 | 0 | 84.2 | 62 - 128 | 16.89 | 0.309 | 20 | |
| 1,2-Dibromoethane | 17.91 | 1.0 | 20 | 0 | 89.5 | 77 - 121 | 17.89 | 0.098 | 20 | |
| 1,2-Dichlorobenzene | 17.56 | 1.0 | 20 | 0 | 87.8 | 80 - 119 | 17.82 | 1.44 | 20 | |
| 1,2-Dichloroethane | 16.73 | 1.0 | 20 | 0 | 83.7 | 73 - 128 | 16.6 | 0.815 | 20 | |
| 1,2-Dichloropropane | 16.38 | 1.0 | 20 | 0 | 81.9 | 78 - 122 | 16.98 | 3.63 | 20 | |
| 1,3,5-Trimethylbenzene | 17.88 | 1.0 | 20 | 0 | 89.4 | 75 - 124 | 18.77 | 4.87 | 20 | |
| 1,3-Dichlorobenzene | 18.23 | 1.0 | 20 | 0 | 91.2 | 80 - 119 | 18.82 | 3.17 | 20 | |
| 1,3-Dichloropropane | 17.27 | 1.0 | 20 | 0 | 86.3 | 80 - 119 | 17.65 | 2.17 | 20 | |
| 1,4-Dichlorobenzene | 17.54 | 1.0 | 20 | 0 | 87.7 | 79 - 118 | 18.12 | 3.27 | 20 | |
| 2,2-Dichloropropane | 14.69 | 1.0 | 20 | 0 | 73.5 | 60 - 139 | 15.9 | 7.9 | 20 | |
| 2-Butanone | 29.18 | 2.0 | 40 | 0 | 73.0 | 56 - 143 | 28.82 | 1.24 | 20 | |
| 2-Chlorotoluene | 19.19 | 1.0 | 20 | 0 | 95.9 | 79 - 122 | 19.79 | 3.07 | 20 | |
| 2-Hexanone | 36.52 | 2.0 | 40 | 0 | 91.3 | 57 - 139 | 36.77 | 0.699 | 20 | |
| 4-Chlorotoluene | 17.71 | 1.0 | 20 | 0 | 88.5 | 78 - 122 | 18.26 | 3.08 | 20 | |
| 4-Isopropyltoluene | 18.23 | 1.0 | 20 | 0 | 91.1 | 77 - 127 | 19.09 | 4.6 | 20 | |
| 4-Methyl-2-pentanone | 36.19 | 2.0 | 40 | 0 | 90.5 | 67 - 130 | 35.97 | 0.611 | 20 | |
| Acetone | 30.06 | 2.0 | 40 | 0 | 75.1 | 39 - 160 | 28.75 | 4.45 | 20 | |
| Benzene | 16.39 | 1.0 | 20 | 0 | 81.9 | 79 - 120 | 17.15 | 4.56 | 20 | |
| Bromobenzene | 18.49 | 1.0 | 20 | 0 | 92.4 | 80 - 120 | 18.75 | 1.42 | 20 | |
| Bromochloromethane | 15.42 | 1.0 | 20 | 0 | 77.1 | 78 - 123 | 15.85 | 2.77 | 20 | S |
| Bromodichloromethane | 16.49 | 1.0 | 20 | 0 | 82.5 | 79 - 125 | 16.69 | 1.19 | 20 | |
| Bromoform | 18.14 | 1.0 | 20 | 0 | 90.7 | 66 - 130 | 18 | 0.788 | 20 | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19090151-02MSD** Units: **UG/L** Analysis Date: **11-Sep-2019 21:55**
Client ID: **LHSMW23R-190903** Run ID: **VOA6_346125** SeqNo: **5249745** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 19.12 | 1.0 | 20 | 0 | 95.6 | 53 - 141 | 21.5 | 11.7 | 20 | |
| Carbon disulfide | 28.33 | 2.0 | 40 | 0 | 70.8 | 64 - 133 | 30.64 | 7.83 | 20 | |
| Carbon tetrachloride | 17.07 | 1.0 | 20 | 0 | 85.4 | 72 - 136 | 17.82 | 4.3 | 20 | |
| Chlorobenzene | 17.52 | 1.0 | 20 | 0 | 87.6 | 82 - 118 | 17.82 | 1.69 | 20 | |
| Chloroethane | 19.75 | 1.0 | 20 | 0 | 98.7 | 60 - 138 | 19.4 | 1.76 | 20 | |
| Chloroform | 15.85 | 1.0 | 20 | 0 | 79.2 | 79 - 124 | 16.47 | 3.89 | 20 | |
| Chloromethane | 13.28 | 1.0 | 20 | 0 | 66.4 | 50 - 139 | 14.85 | 11.2 | 20 | |
| cis-1,2-Dichloroethene | 16.15 | 1.0 | 20 | 0 | 80.7 | 78 - 123 | 17 | 5.13 | 20 | |
| cis-1,3-Dichloropropene | 16.56 | 1.0 | 20 | 0 | 82.8 | 75 - 124 | 16.93 | 2.25 | 20 | |
| Dibromochloromethane | 17.74 | 1.0 | 20 | 0 | 88.7 | 74 - 126 | 18.26 | 2.87 | 20 | |
| Dibromomethane | 16.61 | 1.0 | 20 | 0 | 83.1 | 79 - 123 | 16.55 | 0.38 | 20 | |
| Dichlorodifluoromethane | 8.387 | 1.0 | 20 | 0 | 41.9 | 32 - 152 | 9.542 | 12.9 | 20 | |
| Ethylbenzene | 17.8 | 1.0 | 20 | 0 | 89.0 | 79 - 121 | 18.53 | 4.03 | 20 | |
| Hexachlorobutadiene | 18.05 | 1.0 | 20 | 0 | 90.3 | 66 - 134 | 17.86 | 1.08 | 20 | |
| Isopropylbenzene | 18.06 | 1.0 | 20 | 0 | 90.3 | 72 - 131 | 18.54 | 2.63 | 20 | |
| m,p-Xylene | 35.84 | 2.0 | 40 | 0 | 89.6 | 80 - 121 | 36.79 | 2.62 | 20 | |
| Methylene chloride | 15.33 | 2.0 | 20 | 0 | 76.7 | 74 - 124 | 15.9 | 3.64 | 20 | |
| Naphthalene | 16.08 | 1.0 | 20 | 0 | 80.4 | 61 - 128 | 15.91 | 1.05 | 20 | |
| n-Butylbenzene | 18.58 | 1.0 | 20 | 0 | 92.9 | 75 - 128 | 19.4 | 4.32 | 20 | |
| n-Propylbenzene | 18.02 | 1.0 | 20 | 0 | 90.1 | 76 - 126 | 19.06 | 5.63 | 20 | |
| o-Xylene | 18 | 1.0 | 20 | 0 | 90.0 | 78 - 122 | 18.32 | 1.8 | 20 | |
| sec-Butylbenzene | 17.96 | 1.0 | 20 | 0 | 89.8 | 77 - 126 | 19.02 | 5.73 | 20 | |
| Styrene | 18.05 | 1.0 | 20 | 0 | 90.2 | 78 - 123 | 18.46 | 2.24 | 20 | |
| tert-Butylbenzene | 18.25 | 1.0 | 20 | 0 | 91.3 | 78 - 124 | 19.06 | 4.32 | 20 | |
| Tetrachloroethene | 18.22 | 1.0 | 20 | 0 | 91.1 | 74 - 129 | 18.93 | 3.83 | 20 | |
| Toluene | 17.59 | 1.0 | 20 | 0 | 87.9 | 80 - 121 | 18.39 | 4.45 | 20 | |
| trans-1,2-Dichloroethene | 15.36 | 1.0 | 20 | 0 | 76.8 | 75 - 124 | 16.62 | 7.91 | 20 | |
| trans-1,3-Dichloropropene | 16.68 | 1.0 | 20 | 0 | 83.4 | 73 - 127 | 16.51 | 1.04 | 20 | |
| Trichloroethene | 16.99 | 1.0 | 20 | 0 | 85.0 | 79 - 123 | 17.9 | 5.2 | 20 | |
| Trichlorofluoromethane | 17.12 | 1.0 | 20 | 0 | 85.6 | 65 - 141 | 18.55 | 8.04 | 20 | |
| Vinyl chloride | 14.2 | 1.0 | 20 | 0 | 71.0 | 58 - 137 | 16.83 | 16.9 | 20 | |
| *Surr: 1,2-Dichloroethane-d4* | *45.36* | *1.0* | *50* | *0* | *90.7* | *81 - 118* | *45.76* | *0.884* | *20* | |
| *Surr: 4-Bromofluorobenzene* | *50.28* | *1.0* | *50* | *0* | *101* | *85 - 114* | *49.61* | *1.34* | *20* | |
| *Surr: Dibromofluoromethane* | *46.52* | *1.0* | *50* | *0* | *93.0* | *80 - 119* | *46.87* | *0.735* | *20* | |

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** HS19090151

**QC BATCH REPORT**

**Batch ID:** R346125 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19090151-02MSD** Units: **UG/L** Analysis Date: **11-Sep-2019 21:55**
Client ID: **LHSMW23R-190903** Run ID: **VOA6_346125** SeqNo: **5249745** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *48.97* | *1.0* | *50* | *0* | *97.9* | *89 - 112* | *49.24* | *0.542* | *20* | |

**The following samples were analyzed in this batch:** HS19090151-01 HS19090151-02

**ALS Houston, US** Date: 12-Sep-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant
**WorkOrder:** **HS19090151**

**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 Houston, US** Date: 12-Sep-19

## CERTIFICATIONS,ACCREDITATIONS & LICENSES

| Agency | Number | Expire Date |
|---|---|---|
| Arkansas | 19-028-0 | 27-Mar-2020 |
| California | 2919, 2019-2020 | 30-Apr-2020 |
| Dept of Defense | ANAB L2231 | 20-Dec-2021 |
| Florida | E87611-28 | 30-Jun-2020 |
| Illinois | 2000322019-2 | 09-May-2020 |
| Kansas | E-10352 2019-2020 | 31-Jul-2020 |
| Kentucky | 123043, 2019-2020 | 30-Apr-2020 |
| Louisiana | 03087, 2019-2020 | 30-Jun-2020 |
| Maryland | 343, 2019-2020 | 30-Jun-2020 |
| North Carolina | 624-2019 | 31-Dec-2019 |
| North Dakota | R-193 2019-2020 | 30-Apr-2020 |
| Oklahoma | 2019-141 | 31-Aug-2020 |
| Texas | TX104704231-19-23 | 30-Apr-2020 |

00972412

**ALS Houston, US** Date: 12-Sep-19

## Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19090151
Date/Time Received: **04-Sep-2019 08:42**
Received by: **AC**

Checklist completed by: *Bernadette A. Fini* 5-Sep-2019
eSignature | Date

Reviewed by: *Corey Grandits* 5-Sep-2019
eSignature | 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 ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:LHAAP46-SEPT2019-ALS-190903 |
| Samplers name present on COC? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| 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): | 2.3,2.3 UC/C | IR 25 |
| Cooler(s)/Kit(s): | 44246 | |
| Date/Time sample(s) sent to storage: | 9-4-19 15:10 | |

| | | | |
|---|---|---|---|
| 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

Page 1 of 1

COC ID: LHAAP46-SEPT2019-ALS-190903 TURNAROUND TIME: Standard RUSH:

| PROJECT/CLIENT INFO | | | | LABORATORY | | | | OTHER INFO | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Name | Longhorn AAP | | | Lab Name | ALS Laboratories | | | Email Invoice To | FedInvoices@aptim.com | | |
| Project Number | 501032 | | | Lab Contact | RJ Modashia | | | | | | |
| | LHAAP-46 | | | Email | RJ.Modashia@alsglobal.com | | | Email Report To | Susan.Huang@aptim.com | | |
| Address | 1203-B East Grand Avenue | | | Address | 10450 Stancliff Rd., Suite 210 | | | Mail Reports To | Susan Huang | | |
| | PMB 202 | | | | | | | Address | 4005 Port Chicago Highway, Suite 200 | | |
| City | Marshall | State | TX | City | Houston | State | TX | City | Concord | State | CA |
| Postal Code | 75670 | Country | USA | Postal Code | 77099 | Country | USA | Postal Code | 94520 | Country | USA |
| Phone Number | 713.243.7264 | | | Phone Number | 281.575.2279 or 281.530.5656 | | | | | | |
| Project Manager | Praveen Srivastav | | | | | | | Shipping Company | FedEx | | |

SAMPLE DETAILS / ANALYSIS REQUESTED

| Sample ID | Location | Start Depth | End Depth | Depth Unit | Field Matrix | Date | Time (24hr) | # Of Cont. | ANALYSIS | Sample Container and Preservatives: Vocs by 8260B (3-40 ml VOA/HCL) | MEE by RSK175 (3-40 ml VOA/HCL) | CO2 by RSK175 (3-40 ml VOA/Cool to 6 deg C) | TOC by Sm5310C (2-40ml Amber/H2SO4) | Anions (chloride/sulfate/nitrate) by 9056 (1-250ml /Cool to 6 deg C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FIELDQC-190903TB1 | FIELDQC | | | | LIQ | 9/3/2019 | 1445 | 2 | | 2 | | | | |
| LHSMW23R-190903 | LHSMW23R | 35.8 | 36 | FT | GW | 9/3/2019 | 1543 | 3 | | 3 | | | | |

HS19090151

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant

| ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME |
|---|---|---|---|---|
| 44246 w/c<br>Temp w/c - 2.3<br>IR# 25 C1F0.0 | [illegible] | 09-03-19 / 1650 | AC ALS | 9/4/19 0840 |

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44246

**CUSTODY SEAL**

Date: 07-03-19 Time: 1700
Name: [illegible]
Company: ALS

Seal Broken By: [illegible]
Date: 31/07/19

44246 SEP 04 2019

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

**CUSTODY SEAL**

Date: 07-03-19 Time: 1700
Name: [illegible]
Company: ALS

Seal Broken By:
Date:

**Must Deliver Next Business Day**
**Time and Tempature Sensitive!**

44246

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM ENVIROMENTAL & INFRASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 24JUL19
ACTWGT: 1.00 LB MAN
CAD: 300130/CAFE3211
DIMS: 19x16x13 IN

TO **CLIENT SERVICES**
**ALS LABORATORY GROUP**
**10450 STANCLIFF ROAD**
**SUITE 210**
**HOUSTON TX 77099**
(281) 530-5866
REF: LHAAP 37 - RJ

RMA:

FedEx Express

FedEx
TRK# 0221 4809 7836 1813

WED - 04 SEP 10:30A
PRIORITY OVERNIGHT

**AB SGRA**

77099
TX-US IAH

# Appendix E

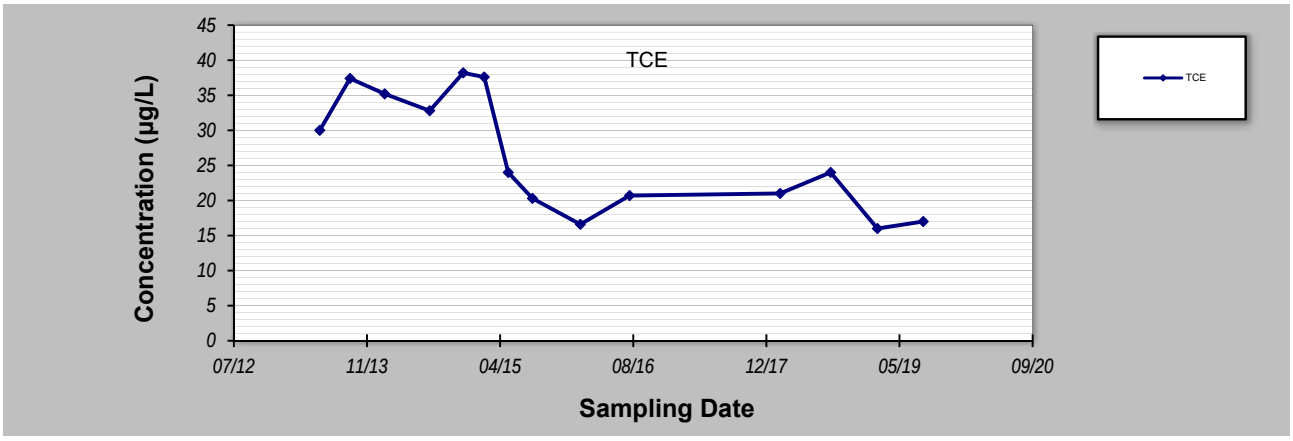
# Mann-Kendall Trend Analysis

# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 23-Jan-20 | Job ID: | 501032 |
| Facility Name: | LHAAP-46 | Constituent: | 46WW02 |
| Conducted By: | Scott Wilson | Concentration Units: | µg/L |

Sampling Point ID: TCE

| Sampling Event | Sampling Date | 46WW02 CONCENTRATION (µg/L) |
|---|---|---|
| 1 | 5/28/2013 | 30 |
| 2 | 9/19/2013 | 37.4 |
| 3 | 1/27/2014 | 35.2 |
| 4 | 7/15/2014 | 32.8 |
| 5 | 11/18/2014 | 38.2 |
| 6 | 2/5/2015 | 37.6 |
| 7 | 5/6/2015 | 24 |
| 8 | 8/5/2015 | 20.3 |
| 9 | 2/1/2016 | 16.6 |
| 10 | 8/4/2016 | 20.7 |
| 11 | 2/20/2018 | 21 |
| 12 | 8/29/2018 | 24 |
| 13 | 2/21/2019 | 16 |
| 14 | 8/12/2019 | 17 |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| Coefficient of Variation: | | 0.32 |
| Mann-Kendall Statistic (S): | | -46 |
| Confidence Factor: | | 99.4% |
| Concentration Trend: | | Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

*DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of the information contained herein, and no such party shall be liable for any direct, indirect, consequential, incidental or other damages resulting from the use of this product or the information contained herein. Information in this publication is subject to change without notice. GSI Environmental Inc., disclaims any responsibility or obligation to update the information contained herein.*

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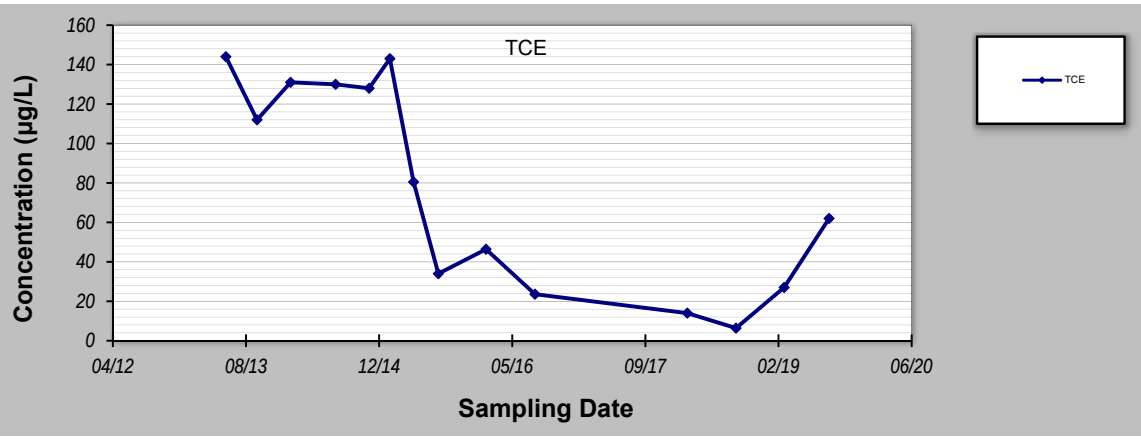
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 23-Jan-20 | Job ID: | 501032 |
| Facility Name: | LHAAP-46 | Constituent: | 46WW05 |
| Conducted By: | Scott Wilson | Concentration Units: | µg/L |

Sampling Point ID: TCE

| Sampling Event | Sampling Date | 46WW05 CONCENTRATION (µg/L) |
|---|---|---|
| 1 | 5/30/2013 | 144 |
| 2 | 9/24/2013 | 112 |
| 3 | 1/28/2014 | 131 |
| 4 | 7/16/2014 | 130 |
| 5 | 11/19/2014 | 128 |
| 6 | 2/5/2015 | 143 |
| 7 | 5/5/2015 | 80.5 |
| 8 | 8/6/2015 | 34 |
| 9 | 2/1/2016 | 46.4 |
| 10 | 8/3/2016 | 23.6 |
| 11 | 2/26/2018 | 14 |
| 12 | 8/28/2018 | 6.4 |
| 13 | 2/25/2019 | 27 |
| 14 | 8/13/2019 | 62 |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| Coefficient of Variation: | | 0.68 |
| Mann-Kendall Statistic (S): | | -57 |
| Confidence Factor: | | 99.9% |
| Concentration Trend: | | Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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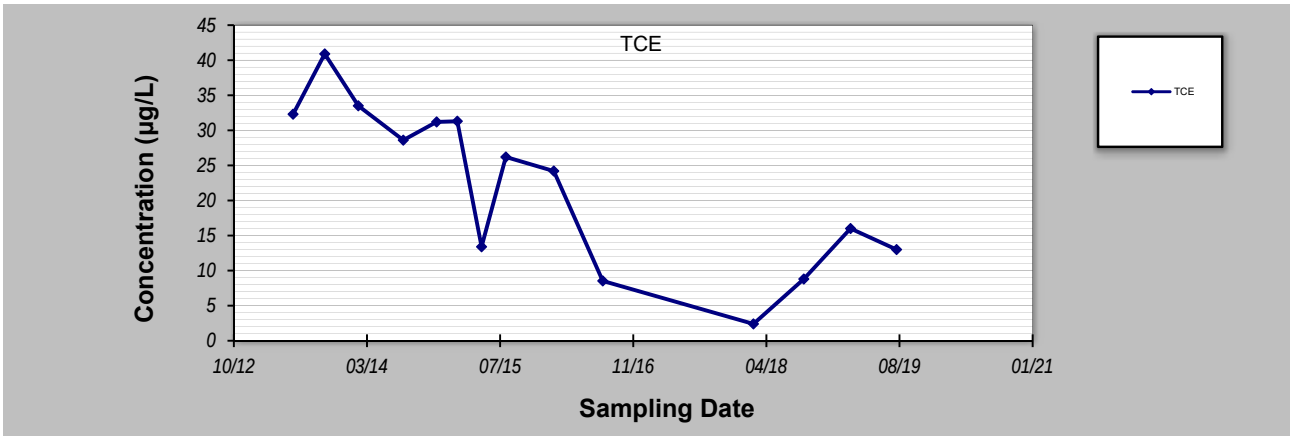
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 23-Jan-20 | Job ID: | 501032 |
| Facility Name: | LHAAP-46 | Constituent: | LHSMW19 |
| Conducted By: | Scott Wilson | Concentration Units: | µg/L |

Sampling Point ID: TCE

| Sampling Event | Sampling Date | LHSMW19 CONCENTRATION (µg/L) |
|---|---|---|
| 1 | 5/28/2013 | 32.3 |
| 2 | 9/24/2013 | 40.9 |
| 3 | 1/28/2014 | 33.5 |
| 4 | 7/16/2014 | 28.6 |
| 5 | 11/18/2014 | 31.2 |
| 6 | 2/4/2015 | 31.3 |
| 7 | 5/6/2015 | 13.4 |
| 8 | 8/5/2015 | 26.2 |
| 9 | 2/1/2016 | 24.2 |
| 10 | 8/3/2016 | 8.53 |
| 11 | 2/20/2018 | 2.4 |
| 12 | 8/28/2018 | 8.8 |
| 13 | 2/20/2019 | 16 |
| 14 | 8/12/2019 | 13 |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| Coefficient of Variation: | | 0.53 |
| Mann-Kendall Statistic (S): | | -59 |
| Confidence Factor: | | 100.0% |
| Concentration Trend: | | Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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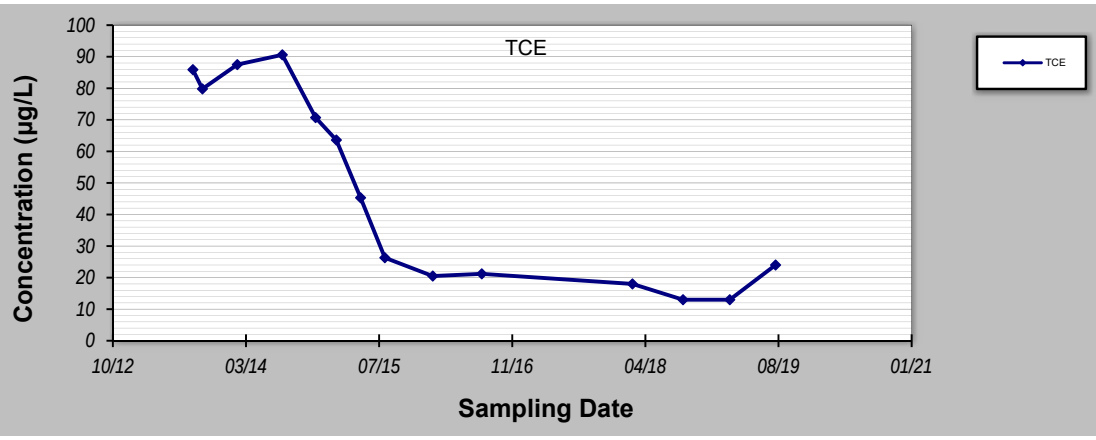
# GSI MANN-KENDALL TOOLKIT
## for Constituent Trend Analysis

| | | | |
|---|---|---|---|
| Evaluation Date: | 23-Jan-20 | Job ID: | 501032 |
| Facility Name: | LHAAP-46 | Constituent: | 46WW11 |
| Conducted By: | Scott Wilson | Concentration Units: | µg/L |

Sampling Point ID: TCE

| Sampling Event | Sampling Date | 46WW11 CONCENTRATION (µg/L) |
|---|---|---|
| 1 | 8/14/2013 | 85.9 |
| 2 | 9/19/2013 | 79.8 |
| 3 | 1/28/2014 | 87.5 |
| 4 | 7/16/2014 | 90.6 |
| 5 | 11/18/2014 | 70.7 |
| 6 | 2/4/2015 | 63.6 |
| 7 | 5/6/2015 | 45.3 |
| 8 | 8/5/2015 | 26.3 |
| 9 | 2/1/2016 | 20.5 |
| 10 | 8/3/2016 | 21.2 |
| 11 | 2/20/2018 | 18 |
| 12 | 8/29/2018 | 13 |
| 13 | 2/21/2019 | 13 |
| 14 | 8/12/2019 | 24 |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| Coefficient of Variation: | | 0.66 |
| Mann-Kendall Statistic (S): | | -68 |
| Confidence Factor: | | >99.9% |
| Concentration Trend: | | Decreasing |




**Notes:**

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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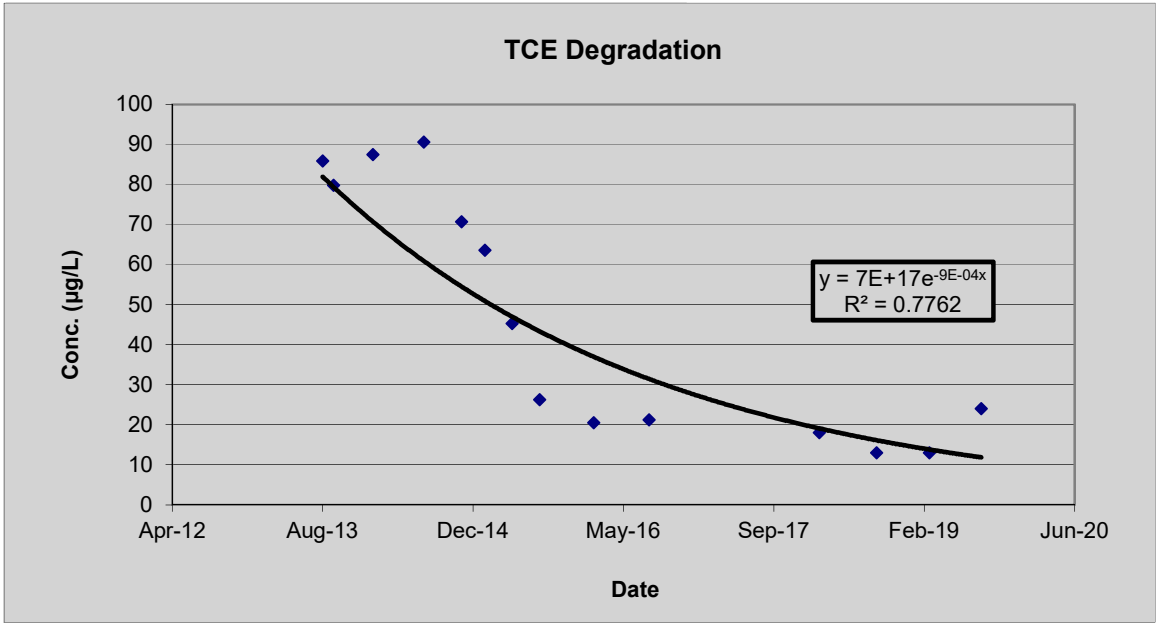
# Appendix F

# Predictive Modeling

# Figure F-1
## Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
## 46WW11

| Date | TCE (µg/L) |
|---|---|
| 8/14/2013 | 85.9 |
| 9/19/2013 | 79.8 |
| 1/28/2014 | 87.5 |
| 7/16/2014 | 90.6 |
| 11/18/2014 | 70.7 |
| 2/4/2015 | 63.6 |
| 5/6/2015 | 45.3 |
| 8/5/2015 | 26.3 |
| 2/1/2016 | 20.5 |
| 8/3/2016 | 21.2 |
| 2/20/2018 | 18 |
| 8/29/2018 | 13 |
| 2/21/2019 | 13 |
| 8/12/2019 | 24 |




| Chemical: TCE<br>Well ID | Attenuation Rate Constant ($day^{-1}$) | Attenuation Half-life (days) | Attenuation Half-life (years) | Current Conc. (µg/L) | Target Concentration for TCE (µg/L) | Estimated Cleanup Time (years) |
|---|---|---|---|---|---|---|
| 46WW11 | 0.0009 | 770.2 | 2.1 | 24 | 5 | 4.8 |

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

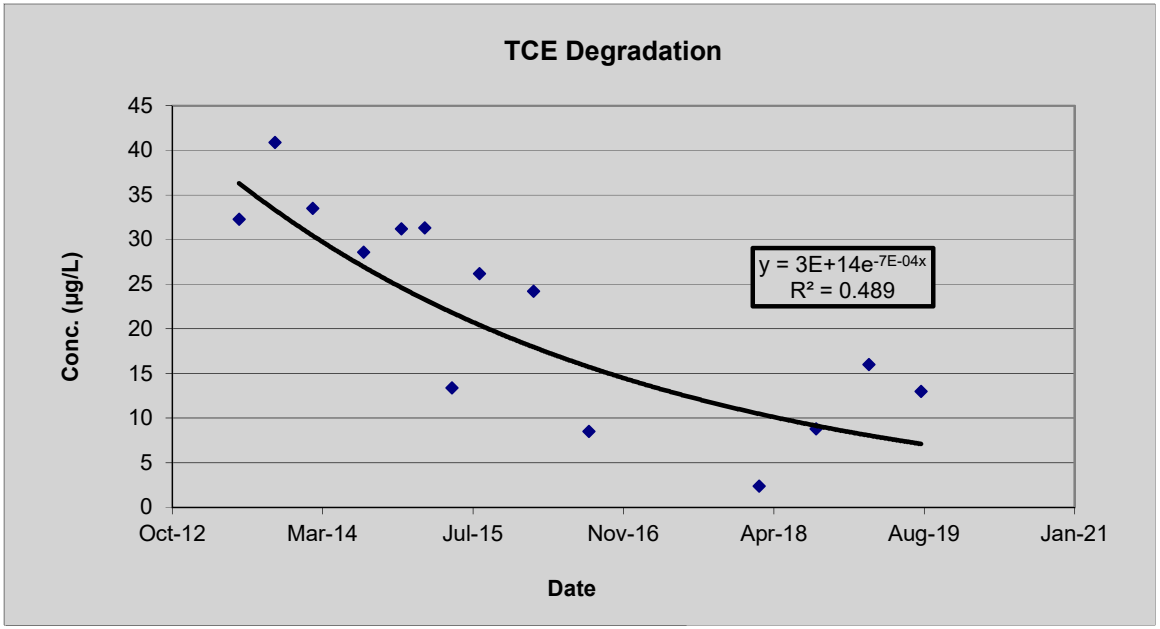
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

# Figure F-2
## Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
## LHSMW19

| Date | TCE (µg/L) |
|---|---|
| 5/28/2013 | 32.3 |
| 9/24/2013 | 40.9 |
| 1/28/2014 | 33.5 |
| 7/16/2014 | 28.6 |
| 11/18/2014 | 31.2 |
| 2/4/2015 | 31.3 |
| 5/6/2015 | 13.4 |
| 8/5/2015 | 26.2 |
| 2/1/2016 | 24.2 |
| 8/3/2016 | 8.53 |
| 2/20/2018 | 2.4 |
| 8/28/2018 | 8.8 |
| 2/20/2019 | 16 |
| 8/12/2019 | 13 |




| Chemical: TCE<br>Well ID | Attenuation Rate Constant ($day^{-1}$) | Attenuation Half-life (days) | Attenuation Half-life (years) | Current Conc. (µg/L) | Target Concentration for TCE (µg/L) | Estimated Cleanup Time (years) |
|---|---|---|---|---|---|---|
| LHSMW19 | 0.0007 | 990.2 | 2.7 | 13 | 5 | 3.7 |

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

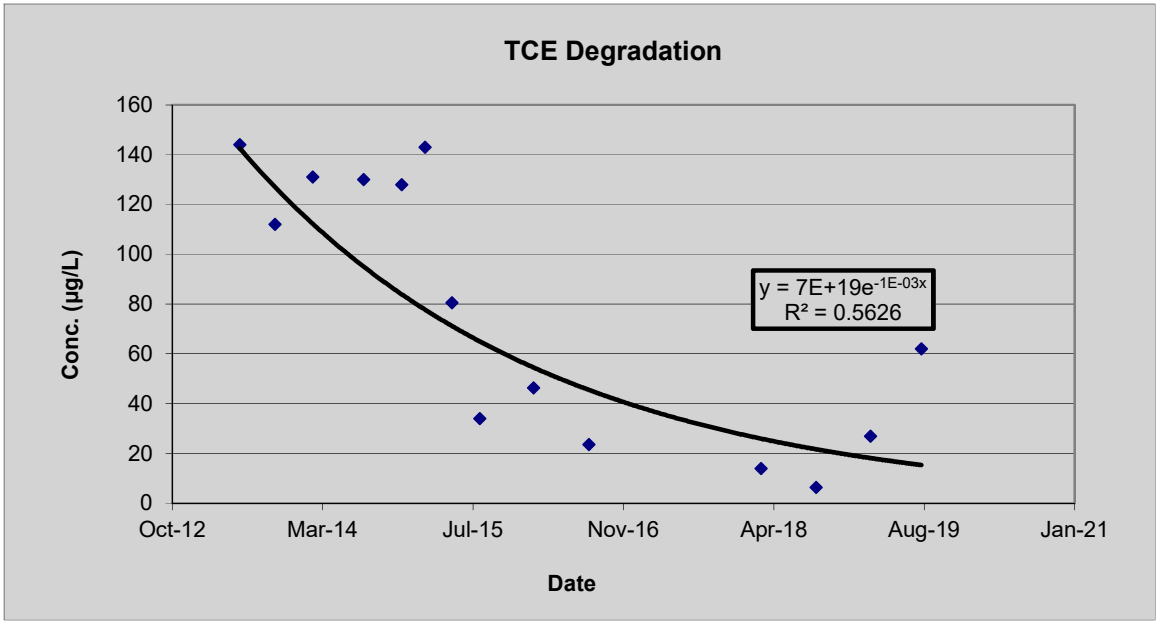
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

# Figure F-3
## Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
## 46WW05

| Date | TCE (µg/L) |
|---|---|
| 5/30/2013 | 144 |
| 9/24/2013 | 112 |
| 1/28/2014 | 131 |
| 7/16/2014 | 130 |
| 11/19/2014 | 128 |
| 2/5/2015 | 143 |
| 5/5/2015 | 80.5 |
| 8/6/2015 | 34 |
| 2/1/2016 | 46.4 |
| 8/3/2016 | 23.6 |
| 2/26/2018 | 14 |
| 8/28/2018 | 6.4 |
| 2/25/2019 | 27 |
| 8/13/2019 | 62 |




| Chemical: TCE<br>Well ID | Attenuation Rate Constant ($day^{-1}$) | Attenuation Half-life (days) | Attenuation Half-life (years) | Current Conc. (µg/L) | Target Concentration for TCE (µg/L) | Estimated Cleanup Time (years) |
|---|---|---|---|---|---|---|
| 46WW05 | 0.001 | 693.1 | 1.9 | 62 | 5 | 6.9 |

Notes:

The estimated cleanup time was calculated as the time it would take the most recent detected TCE concentration to reach the MCL using the site-specific attenuation rate, and assuming first order degradation kinetics.

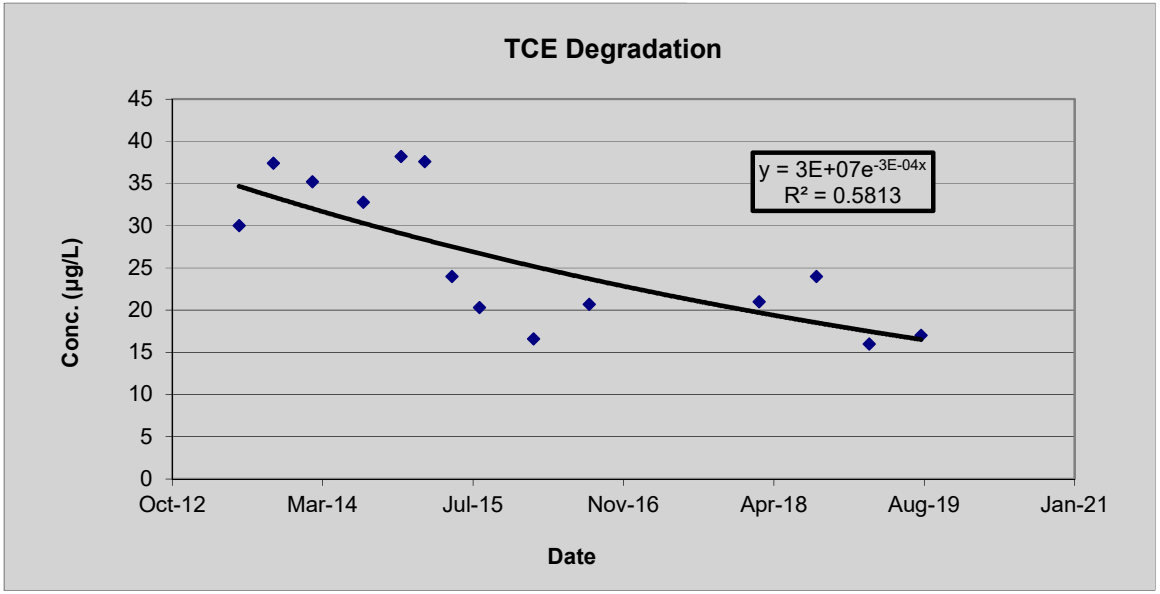
µg/L - micrograms per liter

MCL - maximum contaminant level

TCE - trichloroethene

# Figure F-4
## Time-Dependent Attenuation Rate Constant and Estimated Cleanup Time
## 46WW02

| Date | TCE (µg/L) |
|---|---|
| 5/28/2013 | 30 |
| 9/19/2013 | 37.4 |
| 1/27/2014 | 35.2 |
| 7/15/2014 | 32.8 |
| 11/18/2014 | 38.2 |
| 2/5/2015 | 37.6 |
| 5/6/2015 | 24 |
| 8/5/2015 | 20.3 |
| 2/1/2016 | 16.6 |
| 8/4/2016 | 20.7 |
| 2/20/2018 | 21 |
| 8/29/2018 | 24 |
| 2/21/2019 | 16 |
| 8/12/2019 | 17 |




| Chemical: TCE<br>Well ID | Attenuation Rate Constant ($day^{-1}$) | Attenuation Half-life (days) | Attenuation Half-life (years) | Current Conc. (µg/L) | Concentration for TCE (µg/L) | Cleanup Time (years) |
|---|---|---|---|---|---|---|
| 46WW02 | 0.0003 | 2310.5 | 6.3 | 17 | 5 | 11.2 |

Notes:

the site-specific attenuation rate, and assuming first order degradation kinetics.

µg/L - micrograms per liter

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

July 24, 2020

DAIN-ODB-LO

Mr. William Rhotenberry
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

**Re: Final 2019 Remedial Action Operation Report, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas, July 2020**

Dear Mr. Rhotenberry,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. Due to workplace access limitations, compact disc (CD) copies of the document cannot be prepared at this time. As soon as the restrictions are lifted, a copy of the transmittal letter and one CD of the above referenced document will be transmitted to you. The USEPA's comment from July 13, 2020 regarding definition of the sample collection log (SCL) acronym and inclusion in the acronym list was accepted and incorporated into the Final document.

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 (electronic/online)
P. Bruckwicki, Caddo Lake NWR, TX (electronic/online)

R. Smith USACE, Tulsa District, OK (electronic/online)
A. Williams, USACE, Tulsa District, OK (electronic/online)
A. Maly USAEC, San Antonio, TX (electronic/online)
K. Nemmers, Bhate, Lakewood, CO (electronic/online)
P. Srivastav, APTIM, Houston, TX (electronic/online)

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

July 24, 2020

DAIN-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 2019 Remedial Action Operation Report, Landfill 12 (LHAAP-12), Longhorn Army Ammunition Plant, Karnack, Texas, July 2020**

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your records: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The USEPA's comment from July 13, 2020 regarding definition of the sample collection log (SCL) acronym and inclusion in the acronym list was accepted and incorporated into the Final document.

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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

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# *Final*
# 2019 Remedial Action Operation Report, Landfill 12 (LHAAP-12)
## Longhorn Army Ammunition Plant
## Karnack, Texas

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# Acronyms and Abbreviations

| | |
|---|---|
| µg/L | micrograms per liter |
| AECOM | AECOM Technical Services, Inc. |
| APTIM | Aptim Federal Services, LLC |
| Bhate | Bhate Environmental Associates, Inc. |
| COC | contaminant of concern |
| DCE | dichloroethene |
| LHAAP | Longhorn Army Ammunition Plant |
| LUC | land use control |
| MCL | maximum contaminant level |
| MNA | monitored natural attenuation |
| No. | number |
| RA-O | Remedial Action Operation |
| RD | remedial design |
| ROD | Record of Decision |
| SCLs | sample collection logs |
| Shaw | Shaw Environmental, Inc. |
| TCE | trichloroethene |
| U.S. | United States |
| USACE | U.S. Army Corps of Engineers |
| VC | vinyl chloride |
| VOC | volatile organic compound |

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# 1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Tulsa District, on behalf of the U.S. Army Base Realignment and Closure Division contracted Bhate Environmental Associates, Inc. (Bhate) under the Omaha Multiple Environmental Government Acquisition National Small Business Multiple Award Task Order Contract, Environmental Remediation Services with Military Munitions Response Program, 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). APTIM is conducting the groundwater monitoring and site inspection activities as described in the *Final Remedial Design Addendum Landfill 12 (LHAAP-12)* (Shaw 2007). LHAAP-12 was transferred to the U.S. Fish and Wildlife Service as part of the Caddo Lake National Wildlife Refuge in 2014. This Remedial Action Operation (RA-O) Report represents the 12$^{th}$ year of RA-O implementation and summarizes the results of the sampling activities, well installation, and site inspections completed from February 2019 through December 2019. Groundwater gauging activities were conducted in January 2019 to support the December 2018 RA-O event and discussion of those measurements was included in the 2018 Annual RA-O Report (Bhate 2019).

LHAAP is located in east-central Texas in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake (**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 the former LHAAP installation to the north and east. The eastern fence is 3.5 miles from the Texas-Louisiana state border.

## 1.1 Remedial Action Objectives

Work completed in 2019 as part of the remedial action objectives at LHAAP-12 consisted of the following components: physical inspections and repairs, installation of one new monitoring well (12WW10R), groundwater monitoring, and concentration trend analysis. Physical inspections are conducted annually, at a minimum, to confirm compliance with land use control (LUC) objectives, which consist of ensuring the integrity of the existing landfill cover and ensuring no exposure to trichloroethene (TCE)-contaminated groundwater.

The objectives for groundwater monitoring at LHAAP-12 are to:

- Determine the effectiveness of natural attenuation in reducing contaminant concentrations over time.

- Evaluate plume migration to ensure that TCE-contaminated groundwater does not impact nearby surface water.
- Perform trend analysis of groundwater contaminants of concern: TCE, cis-1,2-dichloroethene (DCE), and vinyl chloride (VC).
- Perform a comparison of the contaminants of concern concentration trends relative to the maximum contaminant levels (MCLs).

The remedy at LHAAP-12 is functioning as intended and all human risks are currently under control. This report summarizes the results of monitoring well installation, groundwater sampling, and the landfill integrity inspections and repairs.

## 1.2 Site Description

LHAAP-12, established in 1963, covers approximately seven acres and is 500 feet southeast of Central Creek, which eventually drains into Caddo Lake. LHAAP-12 was used for the disposal of industrial solid wastes, possibly containing small quantities of hazardous constituents generated at LHAAP (**Figure 1-2**). From 1978 until its closure in April 1994, the landfill was used continuously for the disposal of non-hazardous industrial solid waste, including cafeteria waste, chemical waste, petroleum-contaminated soil, and asbestos. The construction of a landfill cap over the site was completed in 1998 as part of an interim remedial action. The interim remedial action is consistent with U.S. Environmental Protection Agency presumptive remedy guidance. The final remedy for LHAAP-12 is protective of human health and the environment and consists of LUCs in conjunction with monitored natural attenuation (MNA) as described in the *Final Record of Decision, Landfill 12 (LHAAP-12)* (Shaw 2006). LUCs implemented in accordance with the Remedial Design (RD) (Shaw 2007) include:

- Maintenance of the integrity of the landfill cap, including at a minimum, repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of a vegetative cover on the landfill cap including regular mowing.
- Maintenance of fence line and signage around landfill cap.
- Prohibition of any activities that would affect the integrity of cap.
- Prohibition of any activities that would cause exposure to the contaminated groundwater.

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# 2.0 OPERATIONS AND MAINTENANCE ACTIVITIES AT LHAAP-12

Operation, maintenance, and physical inspection activities at LHAAP-12 consist of:

- Maintenance of the integrity of the landfill cap and repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of the vegetative cover on the landfill cap, including periodic mowing.
- Maintenance of the signage around the landfill cap.
- Prohibition of any activities that would affect the integrity of the cap.
- Prohibition of any activities that would cause exposure to contaminated groundwater.

Inspections of the well field are conducted annually, and the information is recorded on well inspection forms (**Appendix A**). Maintenance or repairs are then conducted, as needed, based on observed conditions.

Mowing the sampling area for brush and weeds is conducted on a routine basis, and as needed, to access the well field. Mowing was conducted on July 15, 2019.

The RD Addendum (Shaw 2007) stipulated physical inspections to be conducted annually and annual groundwater sampling to monitor the effectiveness of natural attenuation in reducing contaminant concentrations over time. The annual inspection for LHAAP-12 was conducted on July 15, 2019. Inspections are actually conducted more frequently, with periodic drive-by oversight to ensure compliance with the above requirements. The effectiveness of MNA was initially evaluated quarterly in the *Draft Annual Remedial Action Operation Report, Years 1 and 2, Landfill 12 (LHAAP-12)* (Shaw 2011) and has been evaluated annually beginning in the third year of RA-O. Groundwater monitoring was included as a component of the remedy for LHAAP-12 identified in the Record of Decision (ROD) (Shaw 2006).

## 2.1 Physical Inspection Summary

The official 2019 physical inspection of the LHAAP-12 cap was completed on July 15, 2019, following mowing of the landfill, and the LUC Inspection and Maintenance Log is included in **Appendix B**. The inspection was conducted following the mowing when the condition of the cover was visible, and any deficiencies could be noted. During the July 2019 inspection, the landfill appeared to be in good condition. The vegetative cover was observed to be in good

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condition and well maintained during routine mowing with no excessive cracking or desiccation cracks. No change in land or groundwater use was observed at the site, and the use of the site is consistent with the LUCs mandated by the ROD (Shaw 2006). Signs were all visible around the landfill. No damage to bollards, pads, or protective casings was observed, and minimal encroachment of weeds or brush on the well pads was observed. Well head locks continue to be in good condition. The December 2019 well inspection forms are provided in **Appendix A**.

## 2.2 Well Installation

The *Final Five Year Review Report* (U.S. Army 2019) concluded that an additional well was needed to the east, downgradient of monitoring well 12WW24 to define the plume. On August 9, 2019, monitoring well 12WW10R was installed for additional downgradient monitoring. The well was installed at the location shown on **Figure 2-1** and sampled following development. This well was installed in accordance with the Installation Wide Work Plan (Bhate 2018). The boring log and well diagram for newly installed well 12WW10R are provided in provided in **Appendix C**. Drill cuttings were placed in drums onsite while awaiting analytical testing. The cuttings did not contain any COCs above cleanup values and the U.S. Army approved spreading of drill cuttings onsite adjacent to the well on December 10, 2019 (Bhate 2018). The cuttings were spread adjacent to the well the following week. The groundwater sampling results at 12WW10R are discussed in **Section 2.3.2** below.

## 2.3 Groundwater Monitoring

The purpose of sampling was to provide data to support evaluating whether the RAOs are being met. The RAOs include:

- Determine the effectiveness of natural attenuation in reducing contaminant concentrations over time.
- Evaluate plume migration to ensure that TCE-contaminated groundwater does not impact nearby surface water.
- Perform trend analysis of groundwater contaminants of concern: TCE, cis-1,2-dichloroethene (DCE), and vinyl chloride (VC).
- Perform a comparison of the contaminants of concern concentration trends relative to the maximum contaminant levels (MCLs).

As described by the Groundwater Sampling Plan included in the RD Addendum (Shaw 2007), annual groundwater sampling of three on-site monitoring wells (12WW20, 12WW21, and 12WW24) and two downgradient compliance monitoring wells (12WW22 and 12WW23) was to be conducted annually beginning in the third year of the RA-O (i.e., 2010). As recommended

in the *Draft Final 2014 Remedial Action Operation Report* (AECOM 2015), the sampling frequency of monitoring well 12WW22 was changed to once every five years, and sampled as part of the RA-O event in December 2019. Sampling was discontinued at well 12WW23. The locations of these groundwater monitoring wells are shown in **Figure 2-1**.

Three wells (12WW20, 12WW21, and 12WW24) will continue to be sampled annually for volatile organic compounds (VOCs). The newly installed downgradient well (12WW10R) will be sampled annually for VOCs. 12WW22 will be sampled every five years to support the five year reviews. Any change in this frequency will be evaluated in the next five year review.

The sampling event in December 2019 included the three on-site wells (12WW20, 12WW21, and 12WW24) and two downgradient wells (12WW22 and newly installed monitoring well 12WW10R).

### 2.3.1 Groundwater Elevation Measurements

All monitoring wells were in good condition, and no evidence of turbidity or silt accumulation was identified during the sampling and gauging event. The groundwater elevations from nine wells 12WW01, 12WW02, 12WW05, 12WW10R, 12WW20, 12WW21, 12WW22, 12WW23, and 12WW24 were gauged and recorded in December 2019 and are included in **Table 2-1**. The groundwater elevation measurements collected in December 2019 indicate that groundwater flows to the north and east as shown on **Figure 2-2**. The groundwater elevation in five of the eight measured wells was approximately 0.4 to 0.9 feet higher in December 2019 than in the previous gauging event which occurred in January 2019. The January 2019 gauging event was conducted to support the December 2018 sampling event and was discussed in the 2018 RA-O Report, LHAAP-12 (Bhate 2019). Monitoring well 12WW10R was installed in August 2019; and therefore, does not have any groundwater elevation measurements in January 2019. Groundwater elevations were lower in wells 12WW05, 12WW20, and 12WW22. The groundwater elevations in December 2019 are generally within the range of historical values, except for 12WW24, which was approximately one foot higher than the previous highest elevation measured from 2007 to 2018. The hydraulic gradient as measured near monitoring well 12WW24, in December 2019 was 0.001 feet vertical per foot horizontal. The well siltation measurements from the December 2019 gauging event have been included in **Appendix A**. Based on these observations, 12WW20, 12WW21, 12WW22, and 12WW23 show screen siltation of 16 to 20% based on the revisions to the sample collection logs (SCLs) to correct the screened interval. The inspection forms in **Appendix A** were completed prior to the recognition that some of the well depths and screened intervals being used in the field for comparison were incorrect. Therefore, the measured depths in the field did not indicate siltation >10 percent was present, and the inspection forms were completed based on that information. The total depth measurements collected prior to the December 2020 sampling

event will be evaluated against the correct screened interval to confirm whether siltation greater than 10 percent is present and wells with greater than 10 percent siltation of the well screen will be redeveloped prior to sampling.

### 2.3.2 Groundwater Sampling and Analytical Results

Groundwater samples were collected in December 2019 using the low-flow method in accordance with Bhate's *Standard Operating Procedures, Groundwater Sampling Procedures* (Bhate 2018). The objective of using low-flow sampling methods is to collect representative samples of the groundwater in the formation adjacent to the well screen, eliminating the mixing of stagnant water above and below the well screen. After the water quality parameters stabilized and were within acceptable ranges, samples were collected at the same low flow rate. Groundwater monitoring well sampling forms were completed for each monitoring well sampled and are included in **Appendix C**. Laboratory analytical results are included in **Appendix D**.

Groundwater samples were collected on December 3, 2019, from 12WW10R, 12WW20, 12WW21, 12WW22, and 12WW24 and were analyzed for VOCs according to SW-846 Method 8260. No VOCs were detected in monitoring wells 12WW20, 12WW21, 12WW22, or newly installed monitoring well 12WW10R. In monitoring well 12WW24, TCE detected at a concentration of 19 micrograms per liter (µg/L) was the only VOC that exceeded its respective MCL of 5 µg/L.

The TCE concentration at monitoring well 12WW24 reduced from 48 µg/L in December 2018 to 19 µg/L in December 2019. Cis-1,2-DCE decreased from 22 µg/L in December 2018 to 12 µg/L in December 2019, which is below its respective MCL of 70 µg/L. Historical contaminant of concern (COC) trends are discussed further in the MNA Evaluation in **Section 2.3**. Analytical results for the December 2019 samples are shown in **Table 2-2**. Historical TCE concentrations for LHAAP-12 wells are shown in **Table 2-3**. Historical COC concentrations for monitoring well 12WW24 are shown on **Table 2-4**. Historical COC trends and groundwater elevations for 12WW24 are shown on **Figure 2-3**. The 2019 COC concentrations are shown on **Figure 2-4**.

## 2.4 Monitored Natural Attenuation Evaluation

The MNA evaluation, completed as part of the *Final 2013 Five-Year Review Report* (AECOM 2014), concluded that TCE degradation was occurring via anaerobic reductive dechlorination. Although an increasing trend in TCE concentration was observed in well 12WW24 in December 2013 and January 2015, concentrations have decreased over the past five sampling events from December 2015 to December 2019 (**Figure 2-3**). Historically, TCE concentrations appear to inversely correlate with fluctuating water levels, as shown on

**Figure 2-3**, and the groundwater elevations have increased over two feet in 12WW24 between 2015 and 2019. The presence of cis-1,2-DCE indicates that degradation by anaerobic reductive dechlorination is occurring (see **Table 2-4** and **Figure 2-3**). However, the concentration trends for these degradation products mimic those of TCE, suggesting that dilution and dispersion remains the dominant natural attenuation pathway. Groundwater TCE concentrations for all wells can be found in **Table 2-3**. The December 2019 concentrations are shown on **Figure 2-4**.

Statistical analysis of the concentration profile for TCE in 12WW24 using Mann-Kendall trend analysis was completed for the data collected from 2006 to 2019. The results are shown in **Appendix E**. The Mann-Kendall trend test indicates a statistically significant decreasing trend at the 99% confidence level for TCE concentrations in monitoring well 12WW24. A drought persisted between 2011 and 2012. This resulted in decreased groundwater levels and well 12WW24 being dry and not sampled in 2012. After the groundwater level in 12WW24 recovered, TCE concentrations increased during the December 2013 and January 2015 sampling events, before declining during the December sampling events in 2015, 2016, 2017, 2018, and 2019. Additional annual sampling is necessary for the next five year review when the trends will continue to be evaluated for statistical significance and a decrease of sampling frequency. The decreasing contaminant trend provides evidence that the plume is stable and natural attenuation is occurring, resulting in an overall decrease in TCE concentration in groundwater over time. The presence of cis-1,2-DCE and VC in 12WW24 since 2013 also indicates that biodegradation has been occurring.

The TCE trend in 12WW24 as shown in **Figure 2-3** was used to calculate a first order decay rate (**Appendix F**). Two calculations have been made: 1) the first for the dataset through June 2011, and 2) the second for the dataset that includes all results through December 2019. The reason for the two calculations is because drought conditions evidenced by the dry well in December 2012 later manifested in an increase in TCE concentration in this well in the December 2013 and January 2015 sampling events. However, the water levels have been increasing since the well was dry in December 2012 and an overall decrease in TCE concentration has also been observed. The first order rate constant for the period through June 2011 was 6.0 E-04 per day while the first order rate constant for the entire dataset was 3.0 E-04 per day, half of the first order rate constant for the period through 2011. Based on these rate constants, the estimated duration to achieve the MCL for TCE in 12WW24 is 15 years using the rate constant for the dataset through June 2011 and approximately 12 years using the rate constant for the entire dataset. The drought conditions along with changes in seasonal sampling have constrained the trends observed.

These determinations assume that the decrease in concentrations will continue at the same rate as calculated from recent data. The predictive analysis estimates that TCE may reduce to below the MCL at LHAAP-12 in 12 years using the rate constant for the entire dataset; however,

given the lithologic variability at the site, the potential for plume migration, and other factors affecting the concentration trends, the time to MCL may vary by an order of magnitude or more. Additionally, the rate of reduction could diminish over time as the residual concentrations decrease, and the time frames to achieve the MCL might be longer than estimated.



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# 3.0 CONCLUSIONS AND RECOMMENDATIONS

Physical inspections and groundwater monitoring continue at LHAAP-12 in compliance with the ROD for LHAAP-12 (Shaw 2006). Measurements collected during the December 2020 sampling event will be evaluated to confirm whether siltation greater than 10% is present and wells with greater than 10 percent siltation of the well screen will be redeveloped prior to sampling. No damage to bollards, pads, or protective casings was observed, and limited encroachment of weeds or brush on the well pads was observed. No change in land or groundwater use has occurred at the site. LUCs were verified, and the use of the site is still consistent with that mandated by the ROD. Annual LUC inspections will continue to be conducted.

In accordance with the Groundwater Sampling Plan, found in Appendix A of the RD Addendum for LHAAP-12 (Shaw 2007), annual sampling of wells will continue until the next Five-Year Review.

The groundwater gauging event from December 2019 indicates a northerly to easterly gradient. Based on historical gradient maps, the direction of groundwater flow varies. The monitoring wells will continue to be gauged and inspected as part of future sampling events.

Monitoring wells 12WW10R, 12WW20, 12WW21, 12WW22, and 12WW24 were sampled on December 3, 2019, for VOCs. No VOCs were detected in 12WW10R, 12WW20, 12WW21, and 12WW22. At 12WW24, TCE was detected above its MCL of 5 µg/L at a concentration of 19 µg/L. This was a decrease from the December 2018 TCE concentration of 48 µg/L. None of the other detected compounds exceeded their respective MCLs. TCE concentrations in 12WW24 show a statistically significant decreasing trend since 2006 based on Mann-Kendall analysis (**Appendix E**). Monitoring well 12WW10R, installed to more tightly delineate the plume in the downgradient direction, did not contain detectable COC concentrations. This indicates that the plume is bound and has not expanded very far beyond 12WW24. 12WW10R will be added to the RA-O monitoring network and sampled annually.

As evidenced by **Figure 2-3**, the groundwater elevation data exhibit an inverse correlation with VOC concentrations in 12WW24. The increase in TCE in the December 2013 and January 2015 sampling events in 12WW24 is thought to be associated with low water levels and sampling during drought conditions, as these were the first samples collected since the well was dry due to drought conditions in 2012. Water levels have continued to increase since 2012, and TCE concentrations have been decreasing since January 2015 with the December 2019 sampling result being the lowest value measured during the 2006–2019 period.

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# Tables

## Table 2-1
## Groundwater Elevation Data, LHAAP-12

| Well ID | Sampling Date | Top of Casing Elevation (ft) | Depth to Water from TOC (ft) | Groundwater Elevation (ft amsl) | Total Depth (ft bgs) | Screen Interval (ft bgs) |
|---|---|---|---|---|---|---|
| 12WW01 | 12/1/2016 | 204.19 | 23.60 | 180.59 | 26.5 | 14.50 - 26.50 |
| | 3/27/2018 | 204.19 | 23.55 | 180.64 | | |
| | 1/29/2019 | 204.19 | 22.99 | 181.20 | | |
| | 12/3/2019 | 204.19 | 22.10 | 182.09 | | |
| 12WW02 | 12/1/2016 | 202.45 | 22.07 | 180.38 | 28.50 | 13.50 - 28.50 |
| | 3/27/2018 | 202.45 | 21.82 | 180.63 | | |
| | 1/29/2019 | 202.45 | 20.93 | 181.52 | | |
| | 12/3/2019 | 202.45 | 20.5 | 181.95 | | |
| 12WW05 | 12/1/2016 | 190.52 | 9.88 | 180.64 | 38.00 | 15.50 - 35.50 |
| | 3/27/2018 | 190.52 | 8.05 | 182.47 | | |
| | 1/29/2019 | 190.52 | 6.95 | 183.57 | | |
| | 12/3/2019 | 190.52 | 8.52 | 182 | | |
| 12WW10R | 12/3/2019 | 203.65 | 22 | 181.65 | 28 | 18-28 |
| 12WW20 | 6/15/2010 | 199.15 | 17.98 | 181.17 | 38.85 | 28.85 - 38.85 |
| | 6/7/2011 | 199.15 | 19.78 | 179.37 | | |
| | 12/3/2012 | 199.15 | 22.03 | 177.12 | | |
| | 1/8/2014 | 199.15 | 20.71 | 178.44 | | |
| | 1/9/2015 | 199.15 | 19.34 | 179.81 | | |
| | 12/19/2015 | 199.15 | 19.00 | 180.15 | | |
| | 12/1/2016 | 199.15 | 18.69 | 180.46 | | |
| | 12/4/2017 | 199.15 | 18.8 | 180.35 | | |
| | 3/27/2018 | 199.15 | 17.6 | 181.55 | | |
| | 12/4/2018 | 199.15 | 18.35 | 180.8 | | |
| | 1/29/2019 | 199.15 | 16.81 | 182.34 | | |
| | 12/3/2019 | 199.15 | 17.23 | 181.92 | | |
| 12WW21 | 6/15/2010 | 202.07 | 21.85 | 180.22 | 41.70 | 31.70 - 41.70 |
| | 6/7/2011 | 202.07 | 23.35 | 178.72 | | |
| | 12/3/2012 | 202.07 | 24.21 | 177.86 | | |
| | 1/8/2014 | 202.07 | 24.56 | 177.51 | | |
| | 1/9/2015 | 202.07 | 24.35 | 177.72 | | |
| | 12/19/2015 | 202.07 | 22.95 | 179.12 | | |
| | 12/1/2016 | 202.07 | 21.97 | 180.10 | | |
| | 12/4/2017 | 202.07 | 21.92 | 180.15 | | |
| | 3/27/2018 | 202.07 | 21.42 | 180.65 | | |
| | 12/4/2018 | 202.07 | 22.2 | 179.87 | | |
| | 1/29/2019 | 202.07 | 21.00 | 181.07 | | |
| | 12/3/2019 | 202.07 | 20.45 | 181.62 | | |
| 12WW22 | 6/15/2010 | 190.20 | 7.93 | 182.27 | 38.36 | 28.36 - 38.36 |
| | 6/7/2011 | 190.20 | 9.72 | 180.48 | | |
| | 12/3/2012 | 190.20 | 13.46 | 176.74 | | |
| | 1/8/2014 | 190.20 | 10.57 | 179.63 | | |
| | 1/9/2015 | 190.20 | 9.60 | 180.60 | | |
| | 12/1/2016 | 190.20 | 10.32 | 179.88 | | |
| | 3/27/2018 | 190.20 | 7.81 | 182.39 | | |
| | 1/29/2019 | 190.20 | 6.93 | 183.27 | | |
| | 12/3/2019 | 190.2 | 9.3 | 180.90 | | |

**Table 2-1**
**Groundwater Elevation Data, LHAAP-12**

| Well ID | Sampling Date | Top of Casing Elevation (ft) | Depth to Water from TOC (ft) | Groundwater Elevation (ft amsl) | Total Depth (ft bgs) | Screen Interval (ft bgs) |
|---|---|---|---|---|---|---|
| 12WW23 | 6/16/2010 | 196.97 | 18.28 | 178.69 | 25.14 | 15.14 - 25.14 |
| | 6/7/2011 | 196.97 | 19.40 | 177.57 | | |
| | 12/3/2012 | 196.97 | 20.38 | 176.59 | | |
| | 1/8/2014 | 196.97 | 20.80 | 176.17 | | |
| | 1/9/2015 | 196.97 | 19.34 | 177.63 | | |
| | 12/1/2016 | 196.97 | 17.23 | 179.74 | | |
| | 3/27/2018 | 196.97 | 16.88 | 180.09 | | |
| | 1/29/2019 | 196.97 | 16.02 | 180.95 | | |
| | 12/3/2019 | 196.97 | 15.48 | 181.49 | | |
| 12WW24 | 6/16/2010 | 203.17 | 22.50 | 180.67 | 26.00 | 15.50 - 25.50 |
| | 6/7/2011 | 203.17 | 24.15 | 179.02 | | |
| | 12/3/2012 | 203.17 | Dry | Dry | | |
| | 12/9/2013 | 203.17 | 26.00 | 177.17 | | |
| | 1/9/2015 | 203.17 | 24.22 | 178.95 | | |
| | 12/18/2015 | 203.17 | 23.50 | 179.67 | | |
| | 11/30/2016 | 203.17 | 22.53 | 180.64 | | |
| | 12/4/2017 | 203.17 | 22.61 | 180.56 | | |
| | 3/27/2018 | 203.17 | 22.35 | 180.82 | | |
| | 12/4/2018 | 203.17 | 22.87 | 180.30 | | |
| | 1/29/2019 | 203.17 | 21.61 | 181.56 | | |
| | 12/3/2019 | 203.17 | 21.1 | 182.07 | | |

Notes:
amsl - above mean sea level
bgs - below ground surface
ft - feet
ID - identification
TOC - top of casing

## Table 2-2
## 2019 Sample Results, LHAAP-12

| | | | Location Code | 12WW10R | | 12WW20 | | 12WW21 | | 12WW21 | | 12WW22 | | 12WW24 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample ID | 12WW10R-191203 | | 12WW20-191203 | | 12WW21-191203 | | 12WW21-191203-FD | | 12WW22-191203 | | 12WW24-191203 | |
| | | | Sample Date | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | |
| | | | Sample Purpose | REG | | REG | | REG | | FD | | 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 |
| **FIELD TESTS** | | | | | | | | | | | | | | | |
| | Conductivity | µmhos/cm | NV | 2.7 | | 1.45 | | 5.35 | | | | 1.33 | | 1.73 | |
| | Dissolved oxygen | mg/L | NV | 0.04 | | 0.07 | | 0.02 | | | | 0.06 | | 0.05 | |
| | Flow Rate | mL/Min | NV | 100 | | 100 | | 100 | | | | 100 | | 100 | |
| | Oxidation-Reduction Potential | mV | NV | -18 | | 78 | | 67 | | | | -173 | | -31 | |
| | pH | pH units | NV | 6.04 | | 5.56 | | 6.01 | | | | 7.02 | | 5.63 | |
| | Temperature | deg. C | NV | 15.87 | | 19.45 | | 15.13 | | | | 17.6 | | 16.17 | |
| | Total Purge | Gal | NV | 3 | | 3 | | 3 | | | | 3 | | 3 | |
| | Turbidity | NTU | NV | 37.1 | | 1.1 | | 18.8 | | | | 7 | | 1.9 | |
| | Water Level at Reading Time | Ft btoc | NV | 22.23 | | 17.45 | | 20.68 | | | | 9.49 | | 21.33 | |
| **VOCs** | | | | | | | | | | | | | | | |
| | 1,1,1,2-Tetrachloroethane | µg/L | 110 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,1,1-Trichloroethane | µg/L | 200 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 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 | UJ | < 0.5 | U |
| | 1,1,2-Trichloro-1,2,2-Trifluoroethane | µg/L | 3,100,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,1,2-Trichloroethane | µg/L | 5 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,1-Dichloroethane | µg/L | 10,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,1-Dichloroethene | µg/L | 7 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,1-Dichloropropene | µg/L | 2.9 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,2,3-Trichlorobenzene | µg/L | 310 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 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 | UJ | < 0.5 | U |
| | 1,2,4-Trichlorobenzene | µg/L | 70 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 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 | UJ | < 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 | UJ | < 0.5 | U |
| | 1,2-Dibromoethane | µg/L | 0.05 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,2-Dichlorobenzene | µg/L | 600 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,2-Dichloroethane | µg/L | 5 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,2-Dichloropropane | µg/L | 5 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 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 | UJ | < 0.5 | U |
| | 1,3-Dichlorobenzene | µg/L | 3,100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,3-Dichloropropane | µg/L | 29 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 1,4-Dichlorobenzene | µg/L | 75 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 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 |
| | 2-Butanone | µg/L | 61,000 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U |
| | 2-Chlorotoluene | µg/L | 2,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | 2-Hexanone | µg/L | 6,100 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U |
| | 4-Chlorotoluene | µg/L | 2,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |

## Table 2-2
## 2019 Sample Results, LHAAP-12

| | | Location Code | | 12WW10R | | 12WW20 | | 12WW21 | | 12WW21 | | 12WW22 | | 12WW24 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | | 12WW10R-191203 | | 12WW20-191203 | | 12WW21-191203 | | 12WW21-191203-FD | | 12WW22-191203 | | 12WW24-191203 | |
| | | Sample Date | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | |
| | | Sample Purpose | | REG | | REG | | REG | | FD | | 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 |
| | Acetone | µg/L | 92,000 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U |
| | Benzene | µg/L | 5 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Bromobenzene | µg/L | 2,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Bromochloromethane | µg/L | 4,100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Bromodichloromethane | µg/L | 4.6 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Bromoform | µg/L | 36 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Bromomethane | µg/L | 140 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Carbon disulfide | µg/L | 10,000 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | U |
| | Carbon tetrachloride | µg/L | 5 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Chlorobenzene | µg/L | 100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Chloroethane | µg/L | 41,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | | < 0.5 | U |
| | Chloroform | µg/L | 1,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Chloromethane | µg/L | 220 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | cis-1,2-Dichloroethene | µg/L | 70 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | 12 | |
| | cis-1,3-Dichloropropene | µg/L | 5.3 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Dibromochloromethane | µg/L | 34 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Dibromomethane | µg/L | 380 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 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 |
| | Ethylbenzene | µg/L | 700 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Hexachlorobutadiene | µg/L | 20 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Isopropylbenzene | µg/L | 10,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | m,p-Xylenes | µg/L | 10,000 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | UJ | < 1 | U |
| | Methyl isobutyl ketone | µg/L | 8,200 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | UJ | < 1 | U |
| | Methylene chloride | µg/L | 5 | < 1 | U | < 1 | U | < 1 | U | < 1 | U | < 1 | UJ | < 1 | U |
| | Naphthalene | µg/L | 2,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | n-Butylbenzene | µg/L | 4,100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | n-Propylbenzene | µg/L | 4,100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | o-Xylene | µg/L | 10,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | p-Isopropyltoluene | µg/L | 10,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | sec-Butylbenzene | µg/L | 4,100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Styrene | µg/L | 100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | tert-Butylbenzene | µg/L | 4,100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Tetrachloroethene | µg/L | 5 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Toluene | µg/L | 1,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | trans-1,2-Dichloroethene | µg/L | 100 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | trans-1,3-Dichloropropene | µg/L | 29 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Trichloroethene | µg/L | 5 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | 19 | |

## Table 2-2
## 2019 Sample Results, LHAAP-12

| | | Location Code | | 12WW10R | | 12WW20 | | 12WW21 | | 12WW21 | | 12WW22 | | 12WW24 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample ID | | 12WW10R-191203 | | 12WW20-191203 | | 12WW21-191203 | | 12WW21-191203-FD | | 12WW22-191203 | | 12WW24-191203 | |
| | | Sample Date | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | | 12/3/2019 | |
| | | Sample Purpose | | REG | | REG | | REG | | FD | | 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 |
| | Trichlorofluoromethane | µg/L | 31,000 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |
| | Vinyl chloride | µg/L | 2 | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | U | < 0.5 | UJ | < 0.5 | U |

Notes:

Highlighted **bold** result indicates concentration above the MCL.
µg/L - micrograms per liter
< - less than
°C - degrees Celsius
FD - field duplicate
ft btoc - feet below top of casing
GW-Ind - groundwater medium-specific concentration for industrial use
ID - identification
J - estimated value; analyte concentration was less than the limit of quantification
L - liter
MCL - maximum contaminant level
mg/L - milligrams per liter
mL/min - milliliters per minute
mS/cm - millisiemens per centimeter
mV - millivolts
NTU - nephelometric turbidity unit
NV - not established
REG - regular sample
STD UNIT - standard unit
U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection.
Val Qual - validation qualifier
VOCs - volatile organic compounds

## Table 2-3
## Historical TCE Concentrations at LHAAP-12 Monitoring Wells

| | Monitoring Wells | | | | | | |
|---|---|---|---|---|---|---|---|
| Sampling Date | 12WW10R[c] (µg/L) | 12WW20 (µg/L) | 12WW21 (µg/L) | 12WW22 (µg/L) | 12WW23 (µg/L) | 12WW24 (µg/L) | 12WW25(30) [a] (µg/L) |
| 19 Apr 1995 | 5 U | NA | NA | NA | NA | NA | NA |
| 15 Jul 1998 | 1 | NA | NA | NA | NA | NA | NA |
| 27 Feb 2003 | 14.5 | NA | NA | NA | NA | NA | NA |
| 19 Feb 2004 | 1.84 | NA | NA | NA | NA | NA | NA |
| 8 Dec 2004 | 6.96 | NA | NA | NA | NA | NA | NA |
| 19 Dec 2006 | NA | 0.713 | 1 U | 1 U | 1 U | 396 | NA |
| 5 Sep 2007 | NA | 1.34 | 1 U | 1 U | 1 U | 272 | NA |
| 19 Dec 2007 | NA | 1.19 | 1 U | 1 U | 1 U | 313 | NA |
| 5 Mar 2008 | NA | 0.999 J | 0.25 U | 0.25 U | 0.25 U | 301 | NA |
| 4 Jun 2008 | NA | 1.04 | 0.25 U | 0.25 U | 0.25 U | 237 | NA |
| 11 Sep 2008 | NA | 0.985 | 0.25 U | 0.25 U | 0.25 U | 185 | NA |
| 4 Mar 2009 | NA | 1.18 | 0.25 U | 0.25 U | 0.25 U | 334 | NA |
| 29 Apr 2009 | NA | 0.997 | 0.25 U | 0.25 U | 0.25 U | 197 | NA |
| 14 Jul 2009 | NA | 0.931 | 0.25 U | 0.25 U | 0.25 U | 204 | NA |
| 16 Jun 2010 | NA | 0.353 J | 0.25 U | 0.25 U | 0.25 U | 145 | NA |
| 7 Jun 2011 | NA | 0.263 J | 0.25 U | 0.25 U | 0.25 U | 147 | NA |
| 3 Dec 2012 | NA | 0.5 J | 0.582 J | 0.5 U | 0.5 U | Dry Well | NA |
| 11 Dec 2013 | NA | 5 | 0.721 J | 0.5 U | 0.5 U | 259 [b] | NA |
| 1 Aug 2014 | NA | NS | NS | NS | NS | NS | 0.317 J |
| 1 Jan 2015 | NA | 0.293 J | 0.25 U | 0.25 U | 0.25 U | 353 | NA |
| 15 Dec 2015 | NA | 0.5 U | 0.5 U | NS | NS | 278 | NA |
| 16 Dec 2016 | NA | 0.5 U | 0.5 U | 0.5 U | 0.5 U | 151 | NA |
| 4 Dec 2017 | NA | 1 U | 1 U | NS | NS | 83 | NA |
| 4 Dec 2018 | NA | 0.5 U | 0.5 U | NS | NS | 48 | NA |
| 3 Dec 2019 | 0.5 U | 0.5 U | 0.5 U | 0.5 U | NS | 19 | NA |

Notes:

[a] This was a 2014 DPT boring grab groundwater sample; no well was subsequently installed.

[b] Analyte diluted 5X

[c] 12WW10 was abandoned in January 2006. A new well 12WW10R was installed as a replacement for 12WW10 in 2019

µg/L - micrograms per liter

J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection.

DPT - direct-push technology

NA - not available; well was not present on the date samples were collected

NS - not sampled; well was not sampled as part of this sampling event

TCE - trichloroethene

## Table 2-4
## Historical COC Concentrations at Monitoring Well 12WW24

| Sampling Date | Monitoring Wells | | |
|---|---|---|---|
| | Trichloroethene (µg/L) | cis-1,2-DCE (µg/L) | Vinyl Chloride (µg/L) |
| 19 Dec 2006 | 396 | 1 U | 1 U |
| 5 Sep 2007 | 272 | 1 U | 1 U |
| 19 Dec 2007 | 313 | 1 U | 1 U |
| 5 Mar 2008 | 301 | 0.25 U | 0.25 U |
| 4 Jun 2008 | 237 | 0.25 U | 0.25 U |
| 11 Sep 2008 | 185 | 0.25 U | 0.25 U |
| 4 Mar 2009 | 334 | 0.25 U | 0.25 U |
| 29 Apr 2009 | 197 | 0.25 U | 0.25 U |
| 14 Jul 2009 | 204 | 0.25 U | 0.25 U |
| 16 Jun 2010 | 145 | 0.25 U | 0.25 U |
| 7 Jun 2011 | 147 | 0.25 U | 0.25 U |
| 11 Dec 2013 | 259 [a] | 66.1 | 0.873 J |
| 1 Jan 2015 | 353 | 70.8 | 1.25 |
| 15 Dec 2015 | 278 | 58.5 | 0.786 |
| 16 Dec 2016 | 151 | 36.7 | 0.51 |
| 4 Dec 2017 | 83 | 26 | 1 U |
| 4 Dec 2018 | 48 | 22 | 0.5 U |
| 3 Dec 2019 | 19 | 12 | 0.5 U |

Notes:

[a] Analyte diluted 5X

µg/L - micrograms per liter

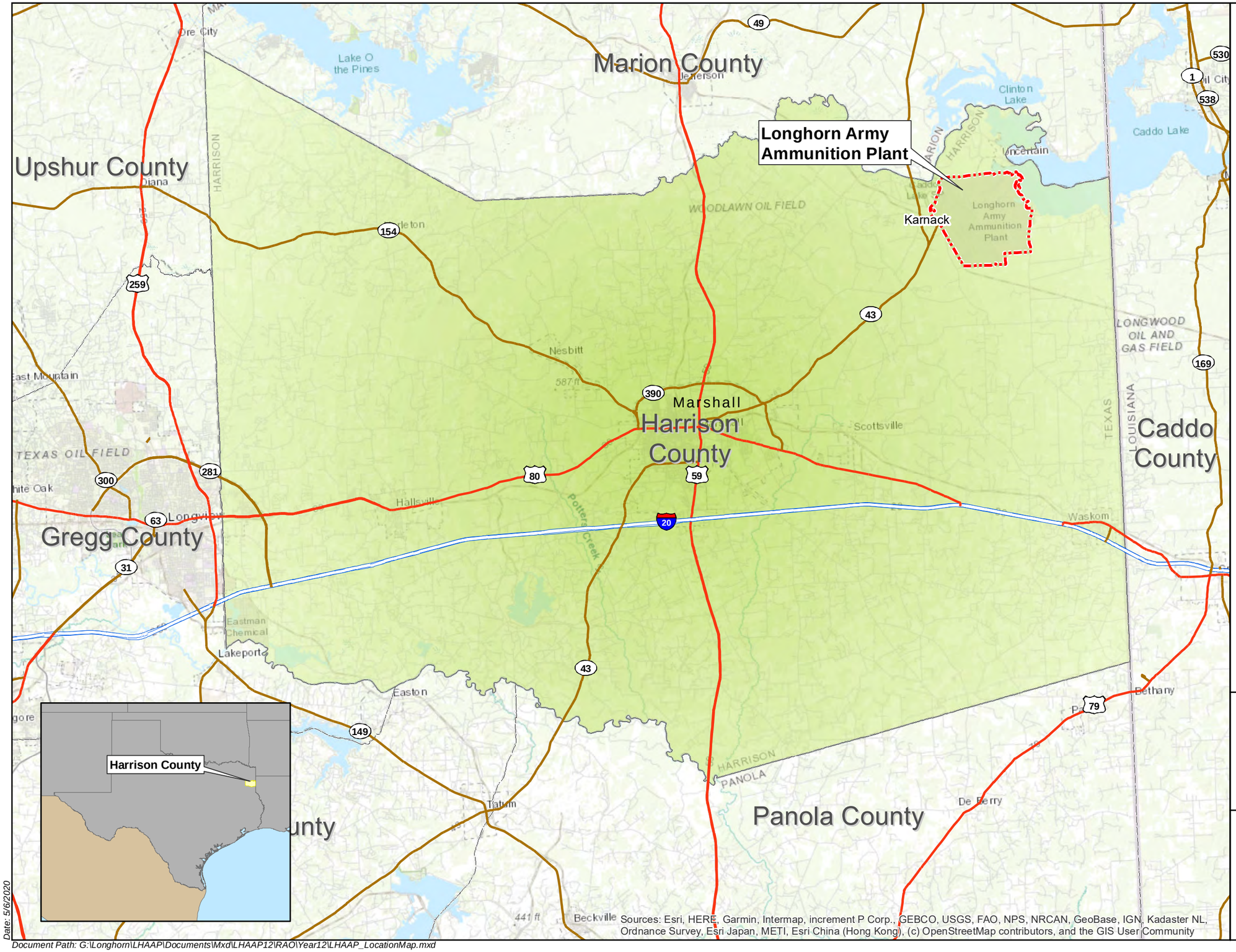
J - estimated value; analyte concentration was less than the limit of quantification.

U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection.

COC - contaminant of concern

DCE - dichloroethene

# Figures




Note:
1. RA-O = Remedial Action Operations
2. LHAAP = Longhorn Army Ammunition Plant

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

bhate APTIM

Figure 1-1

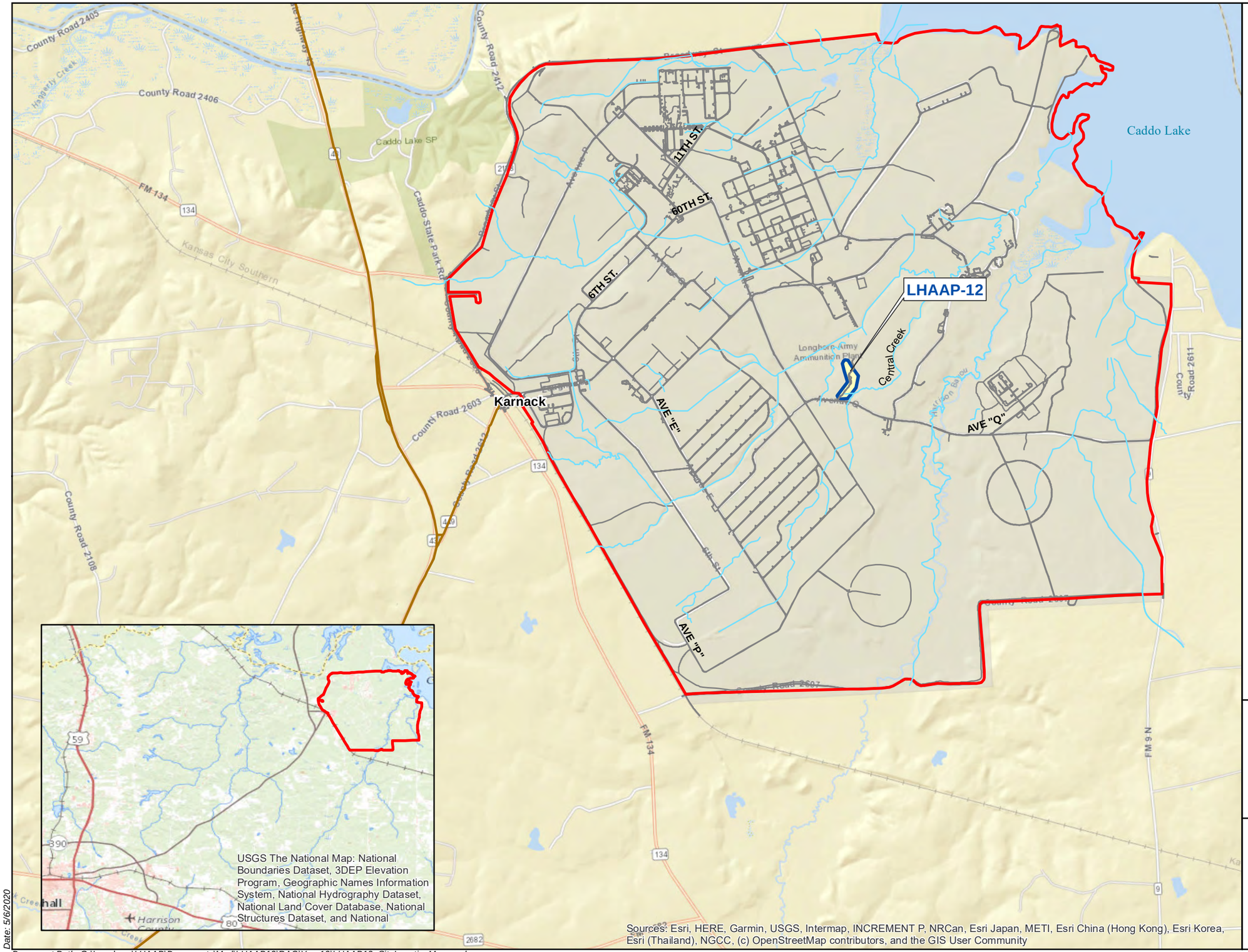
LHAAP Location Map
LHAAP-12
2019 Annual RA-O Report

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), (c) OpenStreetMap contributors, and the GIS User Community

Date: 5/6/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\Year12\LHAAP_LocationMap.mxd

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TULSA, OKLAHOMA

bhate APTIM

Figure 1-2
LHAAP Site Vicinity Map
LHAAP-12
2019 Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/6/2020

*Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\Year12\LHAAP12_SiteLocationMap.mxd*

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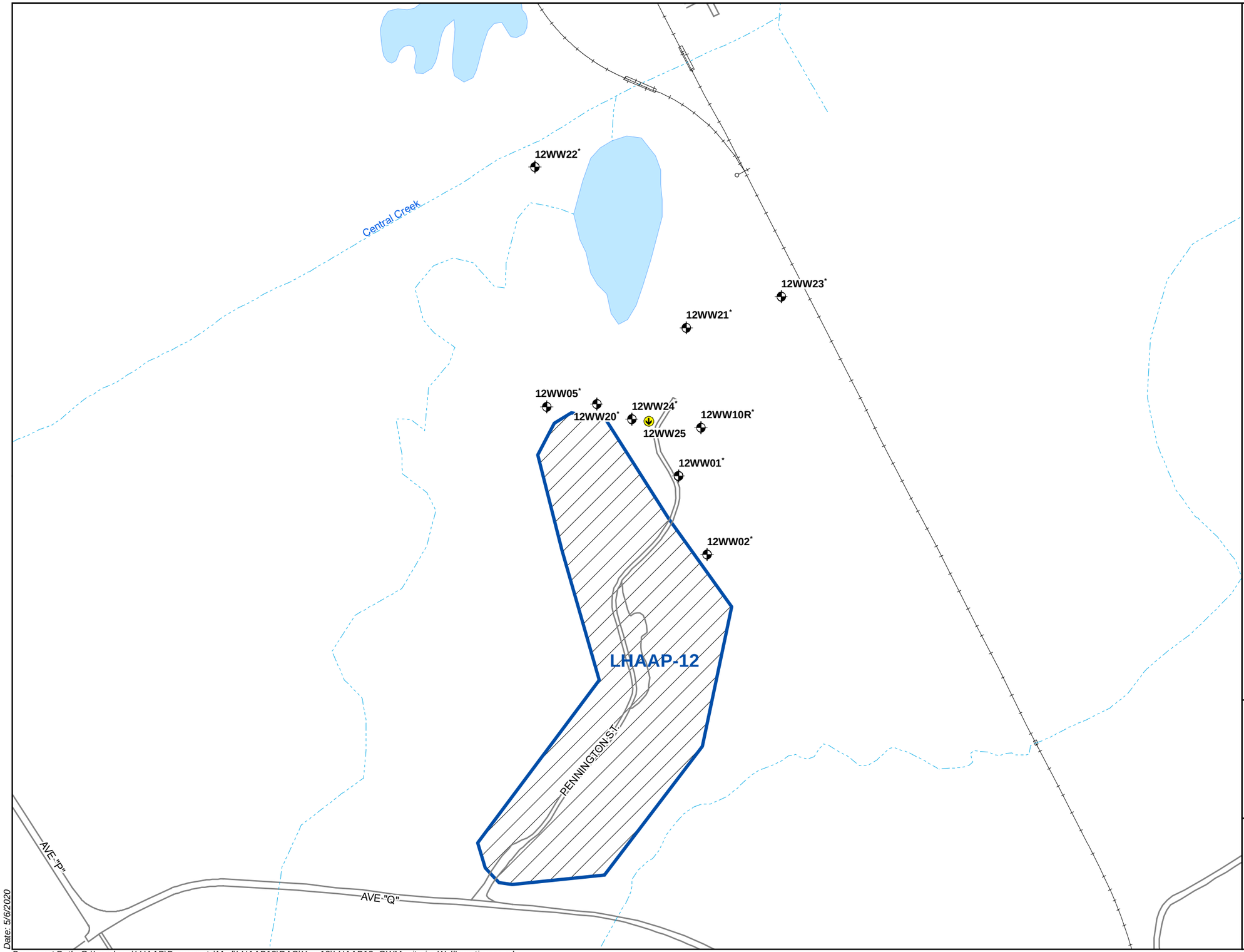


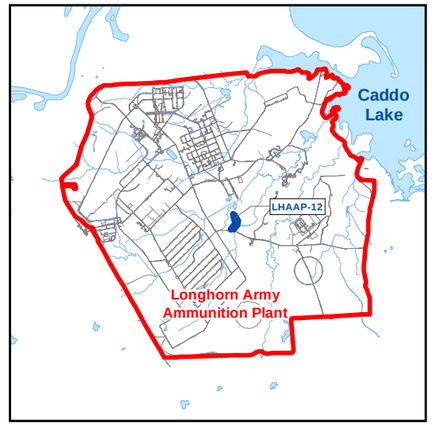


Monitoring Well

2014 DPT Location (This was a DPT boring grab groundwater sample, no well was subsequently installed)

Stream

Road

Site Boundary

Landfill Cap Area

Railroad

Note:
1. Each well has 5'x5' concrete surface monument surrounded bollards. Each well has a PVC riser. Appopriate equipment and care used around these features.
2. * Gauged for water levels.

N

0 125 250 Feet

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TULSA, OKLAHOMA

bhate APTIM

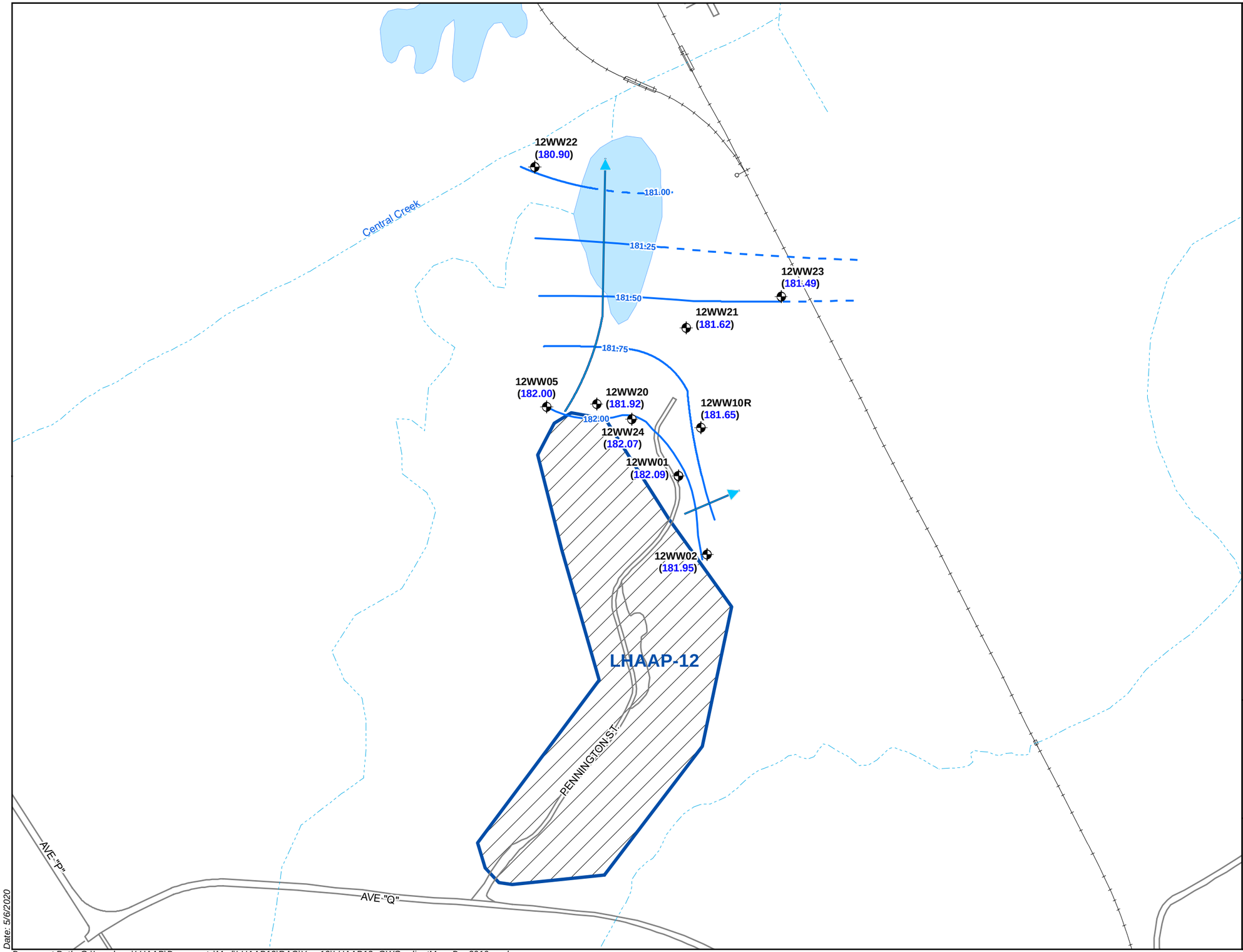
Figure 2-1

Groundwater Monitoring Well Locations
LHAAP-12
2019 Annual RA-O Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/6/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\Year12\LHAAP12_GWMonitoringWellLocations.mxd




## Legend

- Shallow Monitoring Well
- Stream
- Fence_Line
- Groundwater Flow Direction
- Groundwater Contour (*Dashed where inferred*)
- Road
- Site Boundary
- Landfill Cap Area
- Railroad
- Lakes

N

0 125 250 Feet

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

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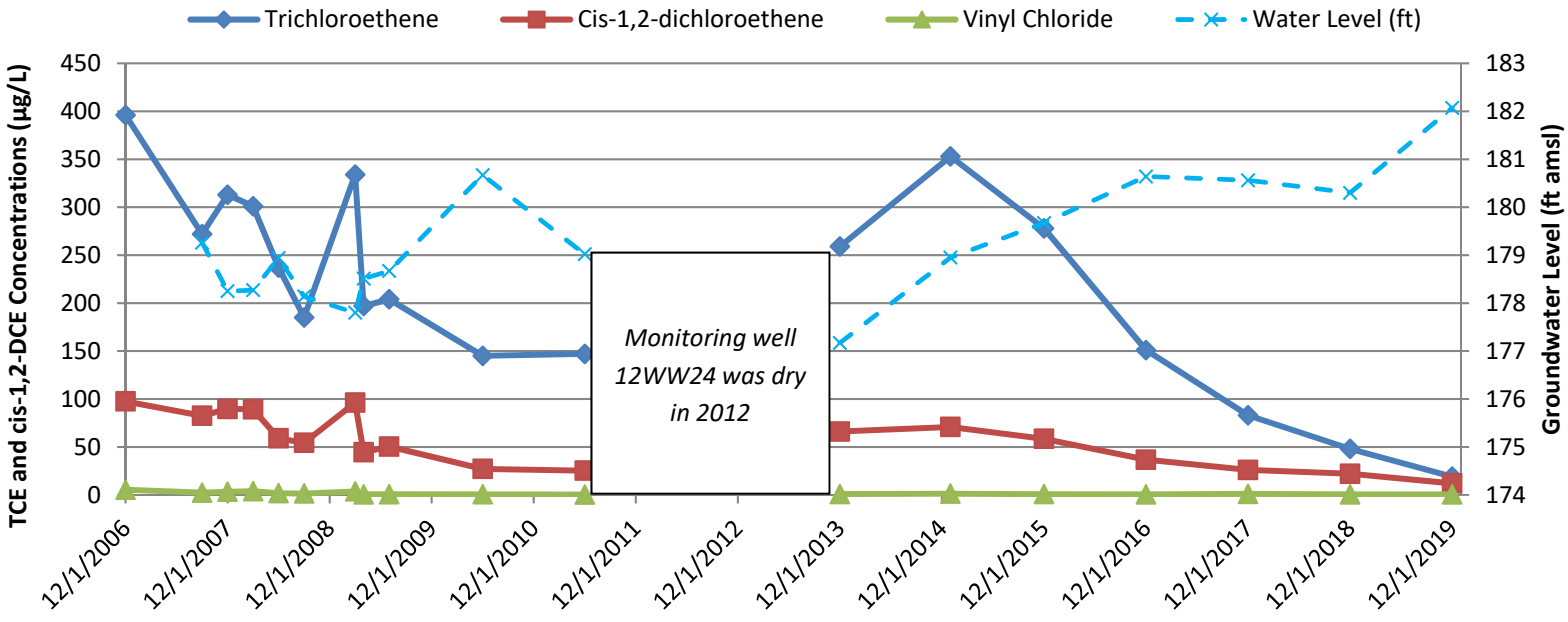
Figure 2-2
Shallow Groundwater Gradient Map
December 2019
LHAAP-12
2019 Annual RA-O Report
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

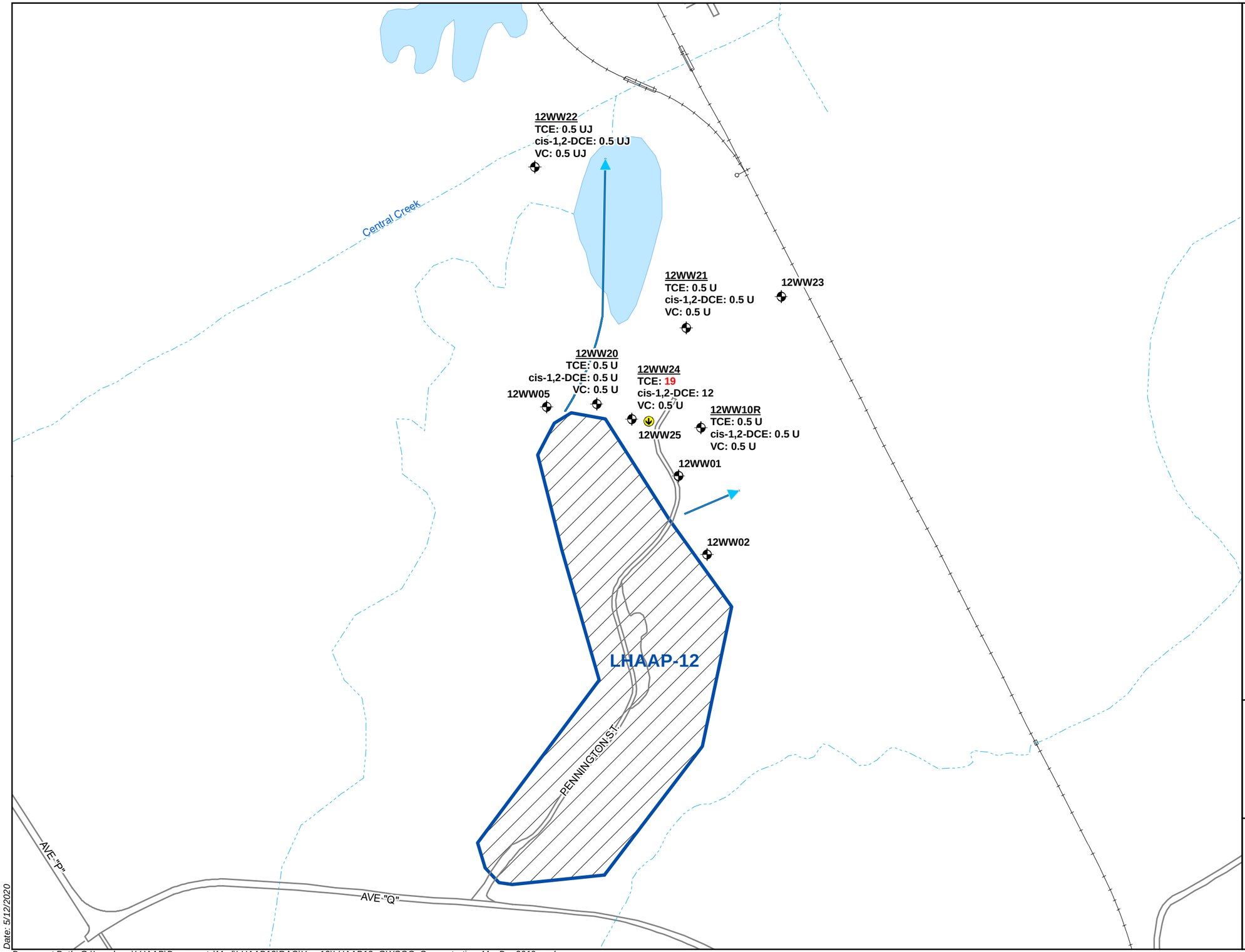
Date: 5/6/2020

*Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\Year12\LHAAP12_GWGradientMap_Dec2019.mxd*

# Figure 2-3
# TCE, cis-1,2-DCE, and VC Concentrations in 12WW24
# LHAAP-12




Notes:
Maximum Contaminant Levels: TCE = 5 µg/L; cis-1,2-DCE = 70 µg/L; VC = 2 µg/L
µg/L - micrograms per liter
DCE - dichloroethene
ft amsl - feet above mean sea level
TCE - trichloroethene
VC - vinyl chloride




Monitoring Well

2014 DPT Location (This was a DPT boring grab groundwater sample, no well was subsequently installed)

Stream

Groundwater Flow Direction

Road

Site Boundary

Landfill Cap Area

Railroad

Note:
1. Results are in micrograms per liter (µg/L)
J - estimated value; analyte concentration was less than the limit of quantification
U - Not detected. The analyte was analyzed for, but not detected above the associated limit of detection
TCE - trichloroethene
DCE - dichloroethene
VC - Vinyl Chloride
2. Concentrations in red are above the Maximum Contaminant Limit (MCL)

N

0 125 250 Feet

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TULSA, OKLAHOMA

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Figure 2-4
Groundwater COC Concentrations
December 2019
LHAAP-12
2019 Annual RA-O Report
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 5/12/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP12\RAO\Year12\LHAAP12_GWCOC_ConcentrationsMapDec2019.mxd

# Appendix A

# Photo Log and Well Inspection Forms

# APPENDIX A

## Photo Log

| Photo No. | Date | Task and Description |
|---|---|---|
| 1 | 12/3/2019 | View of Monitoring Well 12WW01 |
| 2 | 12/3/2019 | View of Monitoring Well 12WW02 |
| 3 | 12/3/2019 | View of Monitoring Well 12WW05 |
| 4 | 12/3/2019 | View of Newly Installed 12WW10R |
| 5 | 12/3/2019 | View of Monitoring Well 12WW20 |
| 6 | 12/3/2019 | View of Monitoring Well 12WW21 |
| 7 | 12/3/2019 | View of Monitoring Well 12WW22 |
| 8 | 12/3/2019 | View of Monitoring Well 12WW23 |
| 9 | 12/3/2019 | View of Monitoring Well 12WW24 |

**PHOTO 1: View of Monitoring Well 12WW01**
**DATE: December 3, 2019**

**PHOTO 2: View of Monitoring Well 12WW02**
**DATE: December 3, 2019**

**PHOTO 3: View of Monitoring Well 12WW05**
**DATE: December 3, 2019**

**PHOTO 4: View of Newly Installed 12WW10R**
**DATE: December 3, 2019**

**PHOTO 5: View of Monitoring Well 12WW20**
**DATE: December 3, 2019**

**PHOTO 6: View of Monitoring Well 12WW21**
**DATE: December 3, 2019**

**PHOTO 7: View of Monitoring Well 12WW22**
**DATE: December 3, 2019**

**PHOTO 8: View of Monitoring Well 12WW23**
**DATE: December 3, 2019**

**PHOTO 9: View of Monitoring Well 12WW24**
**DATE: December 3, 2019**

00972468

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12
Well ID: 12WW10R
Inspection Date: 12/3/19
Well Completion Depth/ Measured Depth: 32.63
Inspector: Scott Baesinger

**ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: Metal
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED**

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972469

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARmy
Site Name: 12
Well ID: 12WW21
Inspection Date: 12/3/19
Well Completion Depth/ Measured Depth: 41.68
Inspector: Scott Baesinger

**☒ ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED** NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972470

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 12
Well ID: 12WW24
Inspection Date: 12/3/19
Well Completion Depth/ Measured Depth: 28.30
Inspector: Scott Beesinger

**☑ ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☑ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☑ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED** NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972471

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12
Well ID: 12MW20
Inspection Date: 12/3/19
Well Completion Depth/ Measured Depth: 39.30
Inspector: Scott Beesinger

**ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**FLUSH MOUNTED** NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972472

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12

Well ID: 12WW22
Inspection Date: 12/3/19
Well Completion Depth/ Measured Depth: 38.75
Inspector: Scott Beesinger

**☒ ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED** NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972473

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 12

Well ID: 12WMW01
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 29.90
Inspector: Scott Beesinger

**☒ ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED** NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972474

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 12
Well ID: 12MW02
Inspection Date: 12/3/19
Well Completion Depth/ Measured Depth: 31.64
Inspector: Scott Baesinger

**☒ ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED** NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches) 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972475

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: ARMY
Site Name: 12
Well ID: 12MW05
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 38.57
Inspector: Scott Baggenger

**☒ ABOVE GROUND**

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED**

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

00972476

# WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 501032
Client: Army
Site Name: 12
Well ID: 12MW23
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 25.60
Inspector: Scott Beesinger

**ABOVE GROUND**
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

**☐ FLUSH MOUNTED** NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

**CONCRETE PAD:**
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

**WELL CONDITION:**
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

**WELL INTEGRITY:**
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

**COMMENTS:**

## 2019 Summary of Monitoring Well Inspection and Repair

| Well Information | | Visual Inspections of Well | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well Identification | Date | ID Plate | Lock | Gasket | Cap | Bolts | Bollards | Pad | Vegetation | Tampering/ Obstructions | Limited Access | New Wells | Subsurface Activities | Comments |
| 12WW01 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |
| 12WW02 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |
| 12WW05 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |
| 12WW20 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |
| 12WW21 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |
| 12WW22 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |
| 12WW23 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |
| 12WW24 | 12/3/2019 | X | X | X | X | X | Present/Functioning | Good | None - Well is Clear | N | N | N | N | |

Notes:
ID - identification
N - none

## Well Construction Information

| Well Identification | Log Date | Depth to Water (ft btoc) | Total Measured Well Depth (ft btoc) | Total Measured Well Depth (ft bgs) | Dry? | Water Column (ft) | Survey Data | | Well Construction Data | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Top of Casing Elevation (ft amsl) | Ground Surface Elevation (ft amsl) | Constructed Well Depth (ft bgs) | Well Screen Beginning Depth (ft bgs) | Well Screen Ending Depth (ft bgs) | Screen Length (ft) | Percent Siltation |
| 12WW01 | 12/3/2019 | 22.10 | 29.90 | 27.28 | No | 4.40 | 204.19 | 201.57 | 26.5 | 14.50 | 26.50 | 12.00 | 0.0% |
| 12WW02 | 12/3/2019 | 20.50 | 31.64 | 29.45 | No | 8.00 | 202.45 | 200.26 | 28.5 | 13.50 | 28.50 | 15.00 | 0.0% |
| 12WW05 | 12/3/2019 | 8.52 | 38.57 | 36.42 | No | 29.48 | 190.52 | 188.37 | 38 | 15.50 | 35.50 | 20.00 | 0.0% |
| 12WW10R | 12/3/2019 | 22.00 | 32.63 | 29.14 | No | 6.00 | 203.65 | 200.16 | 28 | 18.00 | 28.00 | 10.00 | 0.0% |
| 12WW20 | 12/3/2019 | 17.23 | 39.30 | 37.23 | No | 21.62 | 199.15 | 197.08 | 38.85 | 28.85 | 38.85 | 10.00 | 16.2% |
| 12WW21 | 12/3/2019 | 20.45 | 41.68 | 39.71 | No | 21.25 | 202.07 | 200.10 | 41.7 | 31.70 | 41.70 | 10.00 | 19.9% |
| 12WW22 | 12/3/2019 | 9.30 | 38.75 | 36.33 | No | 29.06 | 190.20 | 187.78 | 38.36 | 28.36 | 38.36 | 10.00 | 20.3% |
| 12WW23 | 12/3/2019 | 15.48 | 25.60 | 23.50 | No | 9.66 | 196.97 | 194.87 | 25.14 | 15.14 | 25.14 | 10.00 | 16.4% |
| 12WW24 | 12/3/2019 | 21.10 | 28.30 | 26.00 | No | 4.90 | 203.17 | 200.87 | 26 | 15.50 | 25.50 | 10.00 | 0.0% |

Notes:

ft - feet

ft amsl - feet above mean sea level

ft bgs - feet below ground surface

ft btoc - feet below top of casing

# Appendix B

# Land Use Controls and Maintenance Log

## LUC Inspection and Maintenance Log - LHAAP 12

| Date | Inspected By | Inspection / Maintenance Activities (yearly, at a minimum) | | | | | Corrective Action or Repairs Required? | Repairs / Action Taken |
|---|---|---|---|---|---|---|---|---|
| | | Protect Landfill Integrity | | | | Prevent Human Exposure to Groundwater | | |
| | | Vegetative Cover Maintained (i.e., grass mowed at least annually) | Fence and Signage Maintained | Observance of Landfill Cover Degradation (e.g., desiccation cracks, erosion, or gullying) | Continued Compliance Verified for No Digging or Disturbance of Landfill Cover or Contents | Verified No Withdrawal of Use of Groundwater (other than environmental testing) | | |
| 7/15/2019 | Beesinger, S. | Maintained. Vegetative cover is in good condition. | Fence and signage in good repair. | Cover subsidence observed and found to be in good condition. No erosion, cracks, or gullying was found. | No evidence of animal burrowing in the cap. | Completed and verified. | None | None |

Notes:
e.g. - for example
i.e. - that is
LUC - land use control

# Appendix C

# Groundwater Sampling Forms and 12WW10R Boring Log

(Note: The sample collection logs (SCLs) for the December 2019 sampling event had incorrect screen intervals recorded on the forms in the field, and have now been revised to include the correct information.)

# Sample Collection Log



APTIM

Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: ~~12WW26~~ 12WW10R

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** CLEAR / COLD

**SAMPLING INFORMATION**

Sample No: ~~12WW26~~-191203 (12WW10R)

DATE/TIME: 12/03/19 0745

Pump Inlet Depth: 27.50

**Sampling Method:**

**Sample Purpose: REG**

**Sample Matrix: GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 0800

Depth to Water - Initial (DTWi) (ft) 22.00

Purge End Date/Time: 12/3/19 0830

Depth to Well Bottom (ft) ~~32~~ 32.63

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 22.50 - 32.50 21.49-31.49 ft BTOC

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

L George 04/16/2020

Approximate depth of pump inlet*(ft): 27.50

Pump Start Time: 0800

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - 22.00

APTIM

# Sample Collection Log



Location ID: ~~12WW26~~ 12WW10R Sample No: ~~12WW26~~ 12WW10R-191203

| 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 52.3 | | ± 10% or 0.2 mg/L |
| 12/3/19 | 0805 | 100 | .5 | 22.08 | 2.73 | 13.82 | 7.60 | [illegible] | -16 | 0.73 |
| | 0810 | 100 | 1.0 | 22.14 | 2.72 | 15.49 | 6.21 | 46.0 | -20 | 0.22 |
| | 0815 | 100 | 1.5 | 22.17 | 2.71 | 15.62 | 6.06 | 38.9 | -19 | 0.05 |
| | 0820 | 100 | 2.0 | 22.20 | 2.70 | 15.71 | 6.05 | 38.3 | -19 | 0.05 |
| | 0825 | 100 | 2.5 | 22.22 | 2.70 | 15.80 | 6.04 | 37.7 | -18 | 0.04 |
| | 0830 | 100 | 3.0 | 22.23 | 2.70 | 15.87 | 6.04 | 37.1 | -18 | 0.04 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW20**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / cool

**SAMPLING INFORMATION**

**Sample No:** 12WW20-191203 **DATE/TIME:** 12/3/19 1018 **Pump Inlet Depth:** 34.30

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

**Appearance of Sample** **Assoc. QC Samples** **Decontamination Procedures**

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 1025

Depth to Water - Initial (DTWi) (ft) 17.23

Purge End Date/Time: 12/3/19 1055

Depth to Well Bottom (ft) 39.30

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 29.30 - 39.30 30.07-40.07 ft BTOC

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

L George 04/16/2020

Approximate depth of pump inlet*(ft): 34.30

Pump Start Time: 1025

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND Depth to water- 17.23

APTIM

# Sample Collection Log



Location ID: 12WW20 Sample No: 12WW20-191203

| 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 |
| 12/3/19 | 1030 | 100 | .5 | 17.30 | 1.46 | 17.87 | 5.71 | 16.4 | 80 | 0.81 |
| | 1035 | 100 | 1.0 | 17.36 | 1.46 | 18.89 | 5.57 | 7.4 | 83 | 0.27 |
| | 1040 | 100 | 1.5 | 17.40 | 1.46 | 19.18 | 5.57 | 4.3 | 80 | 0.08 |
| | 1045 | 100 | 2.0 | 17.42 | 1.45 | 19.29 | 5.56 | 2.9 | 80 | 0.08 |
| | 1050 | 100 | 2.5 | 17.44 | 1.45 | 19.37 | 5.56 | 2.0 | 79 | 0.07 |
| | 1055 | 100 | 3.0 | 17.45 | 1.45 | 19.45 | 5.56 | 1.1 | 78 | 0.07 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW21**

Sampler(s): Scott Bassinger

## FIELD CONDITIONS

CLEAR / COLD

## SAMPLING INFORMATION

**Sample No:** 12WW21-191203 **DATE/TIME:** 12/3/19 0838 **Pump Inlet Depth:** 36.80

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

## WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low Flow / Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 0850

Depth to Water - Initial (DTWi) (ft) 20.45

Purge End Date/Time: 12/3/19 0920

Depth to Well Bottom (ft) 41.68

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 31.80 - 41.80 32.97-42.97 ft BTOC

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

L George 04/16/2020

Approximate depth of pump inlet*(ft): 36.80

Pump Start Time: 0850

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 20.45

APTIM

# Sample Collection Log



| Location ID: 12WW21 | | Sample No: 12WW21-191203 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 12/3/19 | 0855 | 100 | .5 | 20.52 | 5.24 | 13.03 | 6.41 | 29.3 | 52 | 0.80 |
| | 0900 | 100 | 1.0 | 20.58 | 5.30 | 14.50 | 6.05 | 24.5 | 69 | 0.25 |
| | 0905 | 100 | 1.5 | 20.62 | 5.34 | 14.86 | 6.02 | 20.1 | 68 | 0.03 |
| | 0910 | 100 | 2.0 | 20.65 | 5.34 | 14.95 | 6.01 | 19.7 | 68 | 0.03 |
| | 0915 | 100 | 2.5 | 20.67 | 5.35 | 15.06 | 6.01 | 19.1 | 67 | 0.03 |
| | 0920 | 100 | 3.0 | 20.68 | 5.35 | 15.13 | 6.01 | 18.8 | 67 | 0.02 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW21**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** CLEAR / COLD

**SAMPLING INFORMATION**

**Sample No:** 12WW21-191203-FD **DATE/TIME:** 12/3/19 0838 **Pump Inlet Depth:** 36.80

**Sampling Method:** **Sample Purpose: FD** **Sample Matrix: GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 0850

Depth to Water - Initial (DTWi) (ft) 20.45

Purge End Date/Time: 12/3/19 0920

Depth to Well Bottom (ft) 41.68

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 31.80 - 41.80 32.97-42.97 ft BTOC

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

L George 04/16/2020

Approximate depth of pump inlet*(ft): 36.80

Pump Start Time: 0850

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 20.45

APTIM

# Sample Collection Log



| Location ID: 12WW21 | | | | Sample No: 12WW21-191203-FD | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 12/3/19 | 0855 | 100 | .5 | 20.52 | 5.24 | 13.03 | 6.41 | 29.3 | 52 | 0.80 |
| | 0900 | 100 | 1.0 | 20.58 | 5.30 | 14.50 | 6.05 | 24.5 | 69 | 0.25 |
| | 0905 | 100 | 1.5 | 20.62 | 5.34 | 14.86 | 6.02 | 20.1 | 68 | 0.03 |
| | 0910 | 100 | 2.0 | 20.65 | 5.34 | 14.95 | 6.01 | 19.7 | 68 | 0.03 |
| | 0915 | 100 | 2.5 | 20.67 | 5.35 | 15.06 | 6.01 | 19.1 | 67 | 0.03 |
| ↓ | 0920 | 100 | 3.0 | 20.68 | 5.35 | 15.13 | 6.01 | 18.8 | 67 | 0.02 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **12WW22**

Project No: **501032**

Sampler(s): Scott Beesinger

## FIELD CONDITIONS

CLEAR/ COOL

## SAMPLING INFORMATION

**Sample No:** 12WW22-1912_03 **DATE/TIME:** 12/3/19 1104 **Pump Inlet Depth:** 33.75

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

## WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Lowflow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 1115

Depth to Water - Initial (DTWi) (ft) 9.30

Purge End Date/Time: 12/3/19 1145

Depth to Well Bottom (ft) 38.75

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): ~~28.75~~-38.75 30.42-40.42 ft BTOC

Discharge Tube Diameter: 1/4" ~~3/8"~~

Immersible Layer: Y / (N)

L George 04/16/2020

Approximate depth of pump inlet*(ft): 33.75

Pump Start Time: 1115

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND Depth TO WATER - 9.30

APTIM

# Sample Collection Log



Location ID: 12WW22 Sample No: 12WW22-191203

| 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 |
| 12/3/19 | 1120 | 100 | .5 | 9.38 | 1.34 | 17.73 | 6.49 | 14.9 | -153 | 0.76 |
| | 1125 | 100 | 1.0 | 9.43 | 1.34 | 17.63 | 6.95 | 8.3 | -168 | 0.23 |
| | 1130 | 100 | 1.5 | 9.46 | 1.34 | 17.63 | 7.00 | 8.0 | -170 | 0.07 |
| | 1135 | 100 | 2.0 | 9.48 | 1.33 | 17.62 | 7.01 | 7.7 | -171 | 0.07 |
| | 1140 | 100 | 2.5 | 9.49 | 1.33 | 17.61 | 7.02 | 7.3 | -172 | 0.06 |
| | 1145 | 100 | 3.0 | 9.49 | 1.33 | 17.60 | 7.02 | 7.0 | -173 | 0.06 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **12WW22**

Project No: **501032**

Sampler(s): Scott Beesinger

## FIELD CONDITIONS

CLEAR/COOL

## SAMPLING INFORMATION

**Sample No:** 12WW22-191203-MS **DATE/TIME:** 12/3/19 1104 **Pump Inlet Depth:** 33.75

**Sampling Method:** **Sample Purpose:** MS **Sample Matrix:** GW

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

## WELL AND PURGING INFORMATION

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow/BLADDER Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 1115

Depth to Water - Initial (DTWi) (ft) 9.30

Purge End Date/Time: 12/3/19 1145

Depth to Well Bottom (ft) 38.75

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 28.75-38.75 30.42-40.42 ft BTOC

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / (N)

L George 04/16/2020

Approximate depth of pump inlet*(ft): 33.75

Pump Start Time: 1115

Ferrous Iron (Required Y or (N)) _____ mg/L

2ND DEPTH TO WATER - 9.30

APTIM

# Sample Collection Log



Location ID: 12WW22 Sample No: 12WW22-191203-MS

| 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 |
| 12/3/19 | 1120 | 100 | .5 | 9.38 | 1.34 | 17.73 | 6.49 | 14.9 | -153 | 0.76 |
| | 1125 | 100 | 1.0 | 9.43 | 1.34 | 17.63 | 6.95 | 8.3 | -168 | 0.23 |
| | 1130 | 100 | 1.5 | 9.46 | 1.34 | 17.63 | 7.00 | 8.0 | -170 | 0.07 |
| | 1135 | 100 | 2.0 | 9.48 | 1.33 | 17.62 | 7.01 | 7.7 | -171 | 0.07 |
| | 1140 | 100 | 2.5 | 9.49 | 1.33 | 17.61 | 7.02 | 7.3 | -172 | 0.06 |
| ↓ | 1145 | 100 | 3.0 | 9.49 | 1.33 | 17.60 | 7.02 | 7.0 | -173 | 0.06 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Project No: **501032**

Location ID: **12WW22**

Sampler(s): Scott Beesinger

**FIELD CONDITIONS** Clear / cool

**SAMPLING INFORMATION**

**Sample No:** 12WW22-191203-MSD **DATE/TIME:** 12/3/19 1104 **Pump Inlet Depth:** 33.75

**Sampling Method:** **Sample Purpose: MSD** **Sample Matrix: GW**

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Low flow / Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 1115

Depth to Water - Initial (DTWi) (ft) 9.30

Purge End Date/Time: 12/3/19 1145

Depth to Well Bottom (ft) 38.75

Discharge Tube Length: NA

PID Reading: NA

Screen ~~Interval (ft)~~: ~~28.75-38.75~~ 30.42-40.42 ft BTOC

Discharge Tube Diameter: 1/4"

Immersible Layer: Y (N)

L George 04/16/2020

Approximate depth of pump inlet*(ft): 33.75

Pump Start Time: 1115

Ferrous Iron (Required Y or (N) _____ mg/L

2ND DEPTH TO WATER - 9.30

APTIM

# Sample Collection Log



Location ID: 12WW22 Sample No: 12WW22-191203-MSD

| 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 |
| 12/3/19 | 1120 | 100 | .5 | 9.38 | 1.34 | 17.73 | 6.49 | 14.9 | -153 | 0.76 |
| | 1125 | 100 | 1.0 | 9.43 | 1.34 | 17.63 | 6.95 | 8.3 | -168 | 0.23 |
| | 1130 | 100 | 1.5 | 9.46 | 1.34 | 17.63 | 7.00 | 8.0 | -170 | 0.07 |
| | 1135 | 100 | 2.0 | 9.48 | 1.33 | 17.62 | 7.01 | 7.7 | -171 | 0.07 |
| | 1140 | 100 | 2.5 | 9.49 | 1.33 | 17.61 | 7.02 | 7.3 | -172 | 0.06 |
| ↓ | 1145 | 100 | 3.0 | 9.49 | 1.33 | 17.60 | 7.02 | 7.0 | -173 | 0.06 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

APTIM

# Sample Collection Log



Project Name: **Longhorn AAP**

Location ID: **12WW24**

Project No: **501032**

Sampler(s): Scott Baggenger

**FIELD CONDITIONS** Clear/ cold

**SAMPLING INFORMATION**

**Sample No:** 12WW24-191203 **DATE/TIME:** 12/3/19 0928 **Pump Inlet Depth:** 23.30

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

| Appearance of Sample | Assoc. QC Samples | Decontamination Procedures |
|---|---|---|
| | | |

| Chain of Custody | COC Notes | Lab | Analyses | Container | Preserv |
|---|---|---|---|---|---|
| | | ALSHT | VOCs in Water by 8260B | 3 x 40 mL Glass | HCL<pH2 |

**WELL AND PURGING INFORMATION**

Measuring Point : Top of Casing

Purging Method/Equipment: Lowflow Bladder Pump

Casing ID (in.): 4"

Purge Start Date/Time: 12/3/19 0940

Depth to Water - Initial (DTWi) (ft) 21.10

Purge End Date/Time: 12/3/19 1010

Depth to Well Bottom (ft) 28.30

Discharge Tube Length: NA

PID Reading: NA

Screen Interval (ft): 18.30 - 28.30

17.8-27.8 FT BTOC

Discharge Tube Diameter: 1/4"

Immersible Layer: Y / N

L George 05/06/2020

Approximate depth of pump inlet*(ft): 23.30

Pump Start Time: 0940

Ferrous Iron (Required Y or N) _____ mg/L

2ND DEPTH TO WATER - 21.10

APTIM

# Sample Collection Log



Location ID: 12WW24 Sample No: 12WW24-191203

| 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 |
| 12/3/19 | 0945 | 100 | .5 | 21.18 | 2.07 | 14.79 [redacted] | 6.20 | 16.3 | 0 | 0.75 |
| | 0950 | 100 | 1.0 | 21.24 | 1.79 | 15.80 | 5.66 | 10.8 | -25 | 0.21 |
| | 0955 | 100 | 1.5 | 21.28 | 1.75 | 15.92 | 5.64 | 6.3 | -29 | 0.06 |
| | 1000 | 100 | 2.0 | 21.30 | 1.74 | 16.01 | 5.63 | 3.9 | -30 | 0.06 |
| | 1005 | 100 | 2.5 | 21.32 | 1.73 | 16.12 | 5.63 | 2.7 | -30 | 0.05 |
| ↓ | 1010 | 100 | 3.0 | 21.33 | 1.73 | 16.17 | 5.63 | 1.9 | -31 | 0.05 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Logged by: _____ Date: _____

QC'd by: _____ Date: _____

00972498

APTIM

# Drilling Log

Monitoring Well **12WW10R**



Project *Longhorn Army Ammunition Plant* Owner *U.S. Army*

Location *LHAAP-12* Proj. No. *501032*

Surface Elev. *NA* Total Hole Depth *30.0 ft.* North _____ East _____

Top of Casing *NA* Water Level Initial *NA* Static *NA* Diameter *10 in.*

Screen: Dia *4 in.* Length *10 ft.* Type/Size *SCH. 40 PVC/0.010 in.*

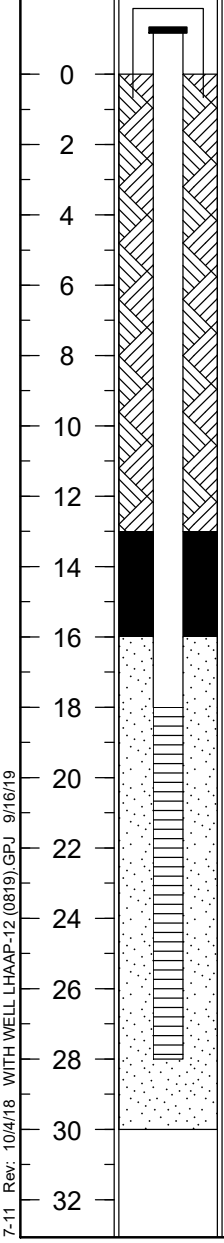
Casing: Dia *4 in.* Length *20 ft.* Type *SCH. 40 PVC*

Fill Material *Filter Sand, Bentonite Chips, Cement Grout* Rig/Core *Dietrich B-50 Tracked Rig*

Drill Co. *ETTL* Method *Hollow Stem Auger*

Driller *Pedro Gonzales* Log By *W. Foss* Date *8/9/19* Driller # *59385*

*COMMENTS*



| Depth (ft.) | Sample ID % Recovery | USCS Class. | Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS. |
|---|---|---|---|
| 0 | 0% | ML | **SANDY SILT** TOPSOIL |
| 2 | 100% | | **SANDY SILT**; yellowish red (5YR 5/8), loose to firm, damp, trace roots. |
| 4 | 100% | ML | Color change @ 3' to light gray (10YR 7/2), with red (2.5YR 3/8), mottles, no roots. |
| 6 | | | |
| 8 | 35% | | **SANDY CLAY**; light gray (10YR 7/2) with yellow (10YR 7/8) mottles, firm, moist, trace silt. |
| 10 | | CL | |
| 12 | | | |
| 14 | 40% | | **SILTY SAND**; white (10YR 8/1), loose moist, fine grain. |
| 16 | | | Color change @ 16' to light gray (10YR 7/1) with yellowish red (5YR 5/8) staining/mottles. |
| 18 | 40% | | |
| 20 | | SM | Saturated at 19.5'. Clay content increasing beyond 20', sandy clay lenses 3" thick at 23-25'. |
| 22 | 40% | | |
| 24 | | | |
| 26 | | | |
| 28 | 85% | | |
| 30 | | CL | **SANDY CLAY**; light gray (10YR 7/1), soft, wet, trace silt, some iron (Fe) staining. |
| 32 | | | **END OF BORING AT 30 FEET.** |

7-11 Rev: 10/4/18 WITH WELL LHAAP-12 (0819).GPJ 9/16/19

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • July 2020

# Appendix D

# Laboratory Analytical Data Package

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

# WorkOrder: HS19120153

## Longhorn Army Ammunition Plant LHAAP - 12

## Aptim Environmental & Infrastucture, Inc.

Susan Huang
2500 City West Blvd., Suite 1700
Houston TX 77042

**16-Dec-2019**

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
**T :** +1 360 577 7222
**F :** +1 360 636 1068
**www.alsglobal.com**

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  - Certifications
  - SampleReceiptCheckList
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# HS19120153 Longhorn Army Ammunition Plant LHAAP 12 Final

ALS WO# HS19120153

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 09, 2019

Susan Huang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS19120153**

Laboratory Results for: **Longhorn Army Ammunition Plant LHAAP - 12**

Dear Susan,

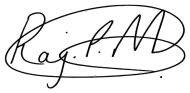
ALS Environmental received 7 sample(s) on Dec 04, 2019 for the analysis presented in the following report.

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 Houston, US** Date: 09-Dec-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**Work Order:** HS19120153

## SAMPLE SUMMARY

| Lab Samp ID | Client Sample ID | Matrix | TagNo | Collection Date | Date Received | Hold |
|---|---|---|---|---|---|---|
| HS19120153-01 | 12WW10R-191203 | Groundwater | | 03-Dec-2019 08:30 | 04-Dec-2019 09:13 | ☐ |
| HS19120153-02 | 12WW21-191203 | Groundwater | | 03-Dec-2019 09:20 | 04-Dec-2019 09:13 | ☐ |
| HS19120153-03 | 12WW21-191203-FD | Groundwater | | 03-Dec-2019 09:20 | 04-Dec-2019 09:13 | ☐ |
| HS19120153-04 | 12WW24-191203 | Groundwater | | 03-Dec-2019 10:10 | 04-Dec-2019 09:13 | ☐ |
| HS19120153-05 | 12WW20-191203 | Groundwater | | 03-Dec-2019 10:55 | 04-Dec-2019 09:13 | ☐ |
| HS19120153-06 | 12WW22-191203 | Groundwater | | 03-Dec-2019 11:45 | 04-Dec-2019 09:13 | ☐ |
| HS19120153-07 | Trip Blank | Groundwater | CG 111519 -16 | 03-Dec-2019 00:00 | 04-Dec-2019 09:13 | ☐ |

**ALS Houston, US** Date: 09-Dec-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**Work Order:** HS19120153

**CASE NARRATIVE**

## GCMS Volatiles by Method SW8260

### Batch ID: R352004

**Sample ID: 12WW22-191203 (HS19120153-06MS)**

- MS/MSD failed QC limits for several compounds. The RPD between the MS and MSD was outside of the control limit for 1,2,3-Trichlorobenzene

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW10R-191203 Lab ID:HS19120153-01
Collection Date: 03-Dec-2019 08:30 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW10R-191203 Lab ID:HS19120153-01
Collection Date: 03-Dec-2019 08:30 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Hexachlorobutadiene | 0.50 | U | 1.0 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:12 |
| *Surr: 1,2-Dichloroethane-d4* | *99.3* | | | **0** | *81-118* | *%REC* | *1* | *06-Dec-2019 14:12* |
| *Surr: 4-Bromofluorobenzene* | *99.8* | | | **0** | *85-114* | *%REC* | *1* | *06-Dec-2019 14:12* |
| *Surr: Dibromofluoromethane* | *100.0* | | | **0** | *80-119* | *%REC* | *1* | *06-Dec-2019 14:12* |
| *Surr: Toluene-d8* | *96.6* | | | **0** | *89-112* | *%REC* | *1* | *06-Dec-2019 14:12* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW21-191203 Lab ID:HS19120153-02
Collection Date: 03-Dec-2019 09:20 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant LHAAP - 12
Sample ID: 12WW21-191203
Collection Date: 03-Dec-2019 09:20

**ANALYTICAL REPORT**
WorkOrder:HS19120153
Lab ID:HS19120153-02
Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Hexachlorobutadiene | 0.50 | U | 1.0 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 14:36 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | | | **0** | *81-118* | *%REC* | *1* | *06-Dec-2019 14:36* |
| *Surr: 4-Bromofluorobenzene* | *99.6* | | | **0** | *85-114* | *%REC* | *1* | *06-Dec-2019 14:36* |
| *Surr: Dibromofluoromethane* | *100* | | | **0** | *80-119* | *%REC* | *1* | *06-Dec-2019 14:36* |
| *Surr: Toluene-d8* | *95.6* | | | **0** | *89-112* | *%REC* | *1* | *06-Dec-2019 14:36* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW21-191203-FD Lab ID:HS19120153-03
Collection Date: 03-Dec-2019 09:20 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW21-191203-FD Lab ID:HS19120153-03
Collection Date: 03-Dec-2019 09:20 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Hexachlorobutadiene | 0.50 | U | 1.0 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:00 |
| *Surr: 1,2-Dichloroethane-d4* | *100* | | | **0** | *81-118* | *%REC* | *1* | *06-Dec-2019 15:00* |
| *Surr: 4-Bromofluorobenzene* | *99.0* | | | **0** | *85-114* | *%REC* | *1* | *06-Dec-2019 15:00* |
| *Surr: Dibromofluoromethane* | *100* | | | **0** | *80-119* | *%REC* | *1* | *06-Dec-2019 15:00* |
| *Surr: Toluene-d8* | *95.8* | | | **0** | *89-112* | *%REC* | *1* | *06-Dec-2019 15:00* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW24-191203 Lab ID:HS19120153-04
Collection Date: 03-Dec-2019 10:10 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW24-191203 Lab ID:HS19120153-04
Collection Date: 03-Dec-2019 10:10 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| **cis-1,2-Dichloroethene** | **12** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 06-Dec-2019 15:24 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Hexachlorobutadiene | 0.50 | U | 1.0 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| **Trichloroethene** | **19** | | **0.20** | **0.50** | **1.0** | **UG/L** | 1 | 06-Dec-2019 15:24 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:24 |
| *Surr: 1,2-Dichloroethane-d4* | *102* | | | **0** | *81-118* | *%REC* | *1* | *06-Dec-2019 15:24* |
| *Surr: 4-Bromofluorobenzene* | *101* | | | **0** | *85-114* | *%REC* | *1* | *06-Dec-2019 15:24* |
| *Surr: Dibromofluoromethane* | *101* | | | **0** | *80-119* | *%REC* | *1* | *06-Dec-2019 15:24* |
| *Surr: Toluene-d8* | *94.7* | | | **0** | *89-112* | *%REC* | *1* | *06-Dec-2019 15:24* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW20-191203 Lab ID:HS19120153-05
Collection Date: 03-Dec-2019 10:55 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW20-191203 Lab ID:HS19120153-05
Collection Date: 03-Dec-2019 10:55 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Hexachlorobutadiene | 0.50 | U | 1.0 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 15:48 |
| *Surr: 1,2-Dichloroethane-d4* | *101* | | | **0** | *81-118* | *%REC* | *1* | *06-Dec-2019 15:48* |
| *Surr: 4-Bromofluorobenzene* | *102* | | | **0** | *85-114* | *%REC* | *1* | *06-Dec-2019 15:48* |
| *Surr: Dibromofluoromethane* | *100* | | | **0** | *80-119* | *%REC* | *1* | *06-Dec-2019 15:48* |
| *Surr: Toluene-d8* | *96.0* | | | **0** | *89-112* | *%REC* | *1* | *06-Dec-2019 15:48* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW22-191203 Lab ID:HS19120153-06
Collection Date: 03-Dec-2019 11:45 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: 12WW22-191203 Lab ID:HS19120153-06
Collection Date: 03-Dec-2019 11:45 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Hexachlorobutadiene | 0.50 | U | 1.0 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:48 |
| *Surr: 1,2-Dichloroethane-d4* | *100* | | | **0** | *81-118* | *%REC* | *1* | *06-Dec-2019 13:48* |
| *Surr: 4-Bromofluorobenzene* | *98.9* | | | **0** | *85-114* | *%REC* | *1* | *06-Dec-2019 13:48* |
| *Surr: Dibromofluoromethane* | *101* | | | **0** | *80-119* | *%REC* | *1* | *06-Dec-2019 13:48* |
| *Surr: Toluene-d8* | *96.7* | | | **0** | *89-112* | *%REC* | *1* | *06-Dec-2019 13:48* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: Trip Blank Lab ID:HS19120153-07
Collection Date: 03-Dec-2019 00:00 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | **Method:SW8260** | | | | | | | Analyst: PC |
| 1,1,1,2-Tetrachloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,1,1-Trichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,1,2,2-Tetrachloroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,1,2-Trichloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,1-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,1-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,1-Dichloropropene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2,3-Trichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2,3-Trichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2,4-Trichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2,4-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2-Dibromo-3-chloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2-Dibromoethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2-Dichlorobenzene | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2-Dichloroethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,2-Dichloropropane | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,3,5-Trimethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,3-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,3-Dichloropropane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 1,4-Dichlorobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 2,2-Dichloropropane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 2-Butanone | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 2-Chlorotoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 2-Hexanone | 1.0 | U | 1.0 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 4-Chlorotoluene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 4-Isopropyltoluene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| 4-Methyl-2-pentanone | 1.0 | U | 0.70 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Acetone | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Benzene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Bromobenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Bromochloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Bromodichloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Bromoform | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Bromomethane | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Carbon disulfide | 1.0 | U | 0.60 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Carbon tetrachloride | 0.50 | U | 0.50 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Chlorobenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Chloroethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US** Date: 09-Dec-19

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant LHAAP - 12 WorkOrder:HS19120153
Sample ID: Trip Blank Lab ID:HS19120153-07
Collection Date: 03-Dec-2019 00:00 Matrix:Groundwater

| ANALYSES | RESULT | QUAL | DL | LOD | LOQ | UNITS | DILUTION FACTOR | DATE ANALYZED |
|---|---|---|---|---|---|---|---|---|
| **VOLATILES ORGANICS BY METHOD 8260C** | | **Method:SW8260** | | | | | | Analyst: PC |
| Chloroform | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Chloromethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| cis-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| cis-1,3-Dichloropropene | 0.50 | U | 0.10 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Dibromochloromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Dibromomethane | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Dichlorodifluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Ethylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Hexachlorobutadiene | 0.50 | U | 1.0 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Isopropylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| m,p-Xylene | 1.0 | U | 0.50 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Methylene chloride | 1.0 | U | 0.40 | 1.0 | 2.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| n-Butylbenzene | 0.50 | U | 0.40 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| n-Propylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Naphthalene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| o-Xylene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| sec-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Styrene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| tert-Butylbenzene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Tetrachloroethene | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Toluene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| trans-1,2-Dichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| trans-1,3-Dichloropropene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Trichloroethene | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Trichlorofluoromethane | 0.50 | U | 0.30 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| Vinyl chloride | 0.50 | U | 0.20 | 0.50 | 1.0 | UG/L | 1 | 06-Dec-2019 13:20 |
| *Surr: 1,2-Dichloroethane-d4* | *99.3* | | | **0** | *81-118* | *%REC* | *1* | *06-Dec-2019 13:20* |
| *Surr: 4-Bromofluorobenzene* | *99.9* | | | **0** | *85-114* | *%REC* | *1* | *06-Dec-2019 13:20* |
| *Surr: Dibromofluoromethane* | *99.5* | | | **0** | *80-119* | *%REC* | *1* | *06-Dec-2019 13:20* |
| *Surr: Toluene-d8* | *95.9* | | | **0** | *89-112* | *%REC* | *1* | *06-Dec-2019 13:20* |

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**DATES REPORT**

| Sample ID | Client Samp ID | Collection Date | Leachate Date | Prep Date | Analysis Date | DF |
|---|---|---|---|---|---|---|
| **Batch ID:** R352004 ( 0 ) | **Test Name :** VOLATILES ORGANICS BY METHOD 8260C | | | | **Matrix:** Groundwater | |
| HS19120153-01 | 12WW10R-191203 | 03 Dec 2019 08:30 | | | 06 Dec 2019 14:12 | 1 |
| HS19120153-02 | 12WW21-191203 | 03 Dec 2019 09:20 | | | 06 Dec 2019 14:36 | 1 |
| HS19120153-03 | 12WW21-191203-FD | 03 Dec 2019 09:20 | | | 06 Dec 2019 15:00 | 1 |
| HS19120153-04 | 12WW24-191203 | 03 Dec 2019 10:10 | | | 06 Dec 2019 15:24 | 1 |
| HS19120153-05 | 12WW20-191203 | 03 Dec 2019 10:55 | | | 06 Dec 2019 15:48 | 1 |
| HS19120153-06 | 12WW22-191203 | 03 Dec 2019 11:45 | | | 06 Dec 2019 13:48 | 1 |
| HS19120153-07 | Trip Blank | 03 Dec 2019 00:00 | | | 06 Dec 2019 13:20 | 1 |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-191206** Units: **UG/L** Analysis Date: **06-Dec-2019 12:56**
Client ID: Run ID: **VOA6_352004** SeqNo: **5378431** 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 |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-191206** Units: **UG/L** Analysis Date: **06-Dec-2019 12:56**
Client ID: Run ID: **VOA6_352004** SeqNo: **5378431** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %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* | *50.03* | *1.0* | *50* | *0* | *100* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *48.91* | *1.0* | *50* | *0* | *97.8* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *50.3* | *1.0* | *50* | *0* | *101* | *80 - 119* | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MBLK** Sample ID: **VBLKW-191206** Units: **UG/L** Analysis Date: **06-Dec-2019 12:56**
Client ID: Run ID: **VOA6_352004** SeqNo: **5378431** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *48.27* | *1.0* | *50* | *0* | *96.5* | *89 - 112* | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-191206** Units: **UG/L** Analysis Date: **06-Dec-2019 12:08**
Client ID: Run ID: **VOA6_352004** SeqNo: **5378430** 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 | 20.5 | 1.0 | 20 | 0 | 103 | 78 - 124 | | | | |
| 1,1,1-Trichloroethane | 20.16 | 1.0 | 20 | 0 | 101 | 74 - 131 | | | | |
| 1,1,2,2-Tetrachloroethane | 21.74 | 1.0 | 20 | 0 | 109 | 71 - 121 | | | | |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 15.08 | 1.0 | 20 | 0 | 75.4 | 70 - 136 | | | | |
| 1,1,2-Trichloroethane | 21.19 | 1.0 | 20 | 0 | 106 | 80 - 119 | | | | |
| 1,1-Dichloroethane | 22.05 | 1.0 | 20 | 0 | 110 | 77 - 125 | | | | |
| 1,1-Dichloroethene | 17.69 | 1.0 | 20 | 0 | 88.5 | 71 - 131 | | | | |
| 1,1-Dichloropropene | 19.01 | 1.0 | 20 | 0 | 95.1 | 78 - 125 | | | | |
| 1,2,3-Trichlorobenzene | 16.32 | 1.0 | 20 | 0 | 81.6 | 69 - 129 | | | | |
| 1,2,3-Trichloropropane | 21.53 | 1.0 | 20 | 0 | 108 | 73 - 122 | | | | |
| 1,2,4-Trichlorobenzene | 16.12 | 1.0 | 20 | 0 | 80.6 | 69 - 130 | | | | |
| 1,2,4-Trimethylbenzene | 19.88 | 1.0 | 20 | 0 | 99.4 | 76 - 124 | | | | |
| 1,2-Dibromo-3-chloropropane | 19.14 | 1.0 | 20 | 0 | 95.7 | 62 - 128 | | | | |
| 1,2-Dibromoethane | 21.13 | 1.0 | 20 | 0 | 106 | 77 - 121 | | | | |
| 1,2-Dichlorobenzene | 20.18 | 1.0 | 20 | 0 | 101 | 80 - 119 | | | | |
| 1,2-Dichloroethane | 22.39 | 1.0 | 20 | 0 | 112 | 73 - 128 | | | | |
| 1,2-Dichloropropane | 21.49 | 1.0 | 20 | 0 | 107 | 78 - 122 | | | | |
| 1,3,5-Trimethylbenzene | 19.66 | 1.0 | 20 | 0 | 98.3 | 75 - 124 | | | | |
| 1,3-Dichlorobenzene | 20.34 | 1.0 | 20 | 0 | 102 | 80 - 119 | | | | |
| 1,3-Dichloropropane | 21.21 | 1.0 | 20 | 0 | 106 | 80 - 119 | | | | |
| 1,4-Dichlorobenzene | 20.36 | 1.0 | 20 | 0 | 102 | 79 - 118 | | | | |
| 2,2-Dichloropropane | 20.73 | 1.0 | 20 | 0 | 104 | 60 - 139 | | | | |
| 2-Butanone | 43.48 | 2.0 | 40 | 0 | 109 | 56 - 143 | | | | |
| 2-Chlorotoluene | 21.59 | 1.0 | 20 | 0 | 108 | 79 - 122 | | | | |
| 2-Hexanone | 41.11 | 2.0 | 40 | 0 | 103 | 57 - 139 | | | | |
| 4-Chlorotoluene | 20.76 | 1.0 | 20 | 0 | 104 | 78 - 122 | | | | |
| 4-Isopropyltoluene | 17.75 | 1.0 | 20 | 0 | 88.8 | 77 - 127 | | | | |
| 4-Methyl-2-pentanone | 41.7 | 2.0 | 40 | 0 | 104 | 67 - 130 | | | | |
| Acetone | 41.89 | 2.0 | 40 | 0 | 105 | 39 - 160 | | | | |
| Benzene | 21.59 | 1.0 | 20 | 0 | 108 | 79 - 120 | | | | |
| Bromobenzene | 21.59 | 1.0 | 20 | 0 | 108 | 80 - 120 | | | | |
| Bromochloromethane | 22.35 | 1.0 | 20 | 0 | 112 | 78 - 123 | | | | |
| Bromodichloromethane | 21.83 | 1.0 | 20 | 0 | 109 | 79 - 125 | | | | |
| Bromoform | 20.25 | 1.0 | 20 | 0 | 101 | 66 - 130 | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-191206** Units: **UG/L** Analysis Date: **06-Dec-2019 12:08**
Client ID: Run ID: **VOA6_352004** SeqNo: **5378430** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 20.92 | 1.0 | 20 | 0 | 105 | 53 - 141 | | | | |
| Carbon disulfide | 41.67 | 2.0 | 40 | 0 | 104 | 64 - 133 | | | | |
| Carbon tetrachloride | 17.86 | 1.0 | 20 | 0 | 89.3 | 72 - 136 | | | | |
| Chlorobenzene | 20.25 | 1.0 | 20 | 0 | 101 | 82 - 118 | | | | |
| Chloroethane | 19.24 | 1.0 | 20 | 0 | 96.2 | 60 - 138 | | | | |
| Chloroform | 21.45 | 1.0 | 20 | 0 | 107 | 79 - 124 | | | | |
| Chloromethane | 16.63 | 1.0 | 20 | 0 | 83.2 | 50 - 139 | | | | |
| cis-1,2-Dichloroethene | 22.76 | 1.0 | 20 | 0 | 114 | 78 - 123 | | | | |
| cis-1,3-Dichloropropene | 21.99 | 1.0 | 20 | 0 | 110 | 75 - 124 | | | | |
| Dibromochloromethane | 21.12 | 1.0 | 20 | 0 | 106 | 74 - 126 | | | | |
| Dibromomethane | 21.74 | 1.0 | 20 | 0 | 109 | 79 - 123 | | | | |
| Dichlorodifluoromethane | 20.87 | 1.0 | 20 | 0 | 104 | 32 - 152 | | | | |
| Ethylbenzene | 19.49 | 1.0 | 20 | 0 | 97.5 | 79 - 121 | | | | |
| Hexachlorobutadiene | 14.25 | 1.0 | 20 | 0 | 71.2 | 66 - 134 | | | | |
| Isopropylbenzene | 18.25 | 1.0 | 20 | 0 | 91.3 | 72 - 131 | | | | |
| m,p-Xylene | 38.77 | 2.0 | 40 | 0 | 96.9 | 80 - 121 | | | | |
| Methylene chloride | 21.52 | 2.0 | 20 | 0 | 108 | 74 - 124 | | | | |
| Naphthalene | 16.04 | 1.0 | 20 | 0 | 80.2 | 61 - 128 | | | | |
| n-Butylbenzene | 17.25 | 1.0 | 20 | 0 | 86.3 | 75 - 128 | | | | |
| n-Propylbenzene | 19.36 | 1.0 | 20 | 0 | 96.8 | 76 - 126 | | | | |
| o-Xylene | 19.68 | 1.0 | 20 | 0 | 98.4 | 78 - 122 | | | | |
| sec-Butylbenzene | 17.72 | 1.0 | 20 | 0 | 88.6 | 77 - 126 | | | | |
| Styrene | 19.89 | 1.0 | 20 | 0 | 99.4 | 78 - 123 | | | | |
| tert-Butylbenzene | 18.39 | 1.0 | 20 | 0 | 92.0 | 78 - 124 | | | | |
| Tetrachloroethene | 17.57 | 1.0 | 20 | 0 | 87.9 | 74 - 129 | | | | |
| Toluene | 20.37 | 1.0 | 20 | 0 | 102 | 80 - 121 | | | | |
| trans-1,2-Dichloroethene | 21.75 | 1.0 | 20 | 0 | 109 | 75 - 124 | | | | |
| trans-1,3-Dichloropropene | 21.92 | 1.0 | 20 | 0 | 110 | 73 - 127 | | | | |
| Trichloroethene | 20.52 | 1.0 | 20 | 0 | 103 | 79 - 123 | | | | |
| Trichlorofluoromethane | 17.46 | 1.0 | 20 | 0 | 87.3 | 65 - 141 | | | | |
| Vinyl chloride | 18.51 | 1.0 | 20 | 0 | 92.6 | 58 - 137 | | | | |
| *Surr: 1,2-Dichloroethane-d4* | *53.28* | *1.0* | *50* | *0* | *107* | *81 - 118* | | | | |
| *Surr: 4-Bromofluorobenzene* | *49.73* | *1.0* | *50* | *0* | *99.5* | *85 - 114* | | | | |
| *Surr: Dibromofluoromethane* | *51.09* | *1.0* | *50* | *0* | *102* | *80 - 119* | | | | |

**ALS Houston, US** Date: 09-Dec-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**LCS** Sample ID: **VLCSW-191206** Units: **UG/L** Analysis Date: **06-Dec-2019 12:08**
Client ID: Run ID: **VOA6_352004** SeqNo: **5378430** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *45.75* | *1.0* | *50* | *0* | *91.5* | *89 - 112* | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19120153-06MS** Units: **UG/L** Analysis Date: **06-Dec-2019 17:24**
Client ID: **12WW22-191203** Run ID: **VOA6_352004** SeqNo: **5378439** 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 | 12.65 | 1.0 | 20 | 0 | 63.3 | 78 - 124 | | | S |
| 1,1,1-Trichloroethane | 14.11 | 1.0 | 20 | 0 | 70.5 | 74 - 131 | | | S |
| 1,1,2,2-Tetrachloroethane | 12.82 | 1.0 | 20 | 0 | 64.1 | 71 - 121 | | | S |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 12.23 | 1.0 | 20 | 0 | 61.1 | 70 - 136 | | | S |
| 1,1,2-Trichloroethane | 12.68 | 1.0 | 20 | 0 | 63.4 | 80 - 119 | | | S |
| 1,1-Dichloroethane | 13.68 | 1.0 | 20 | 0 | 68.4 | 77 - 125 | | | S |
| 1,1-Dichloroethene | 12.12 | 1.0 | 20 | 0 | 60.6 | 71 - 131 | | | S |
| 1,1-Dichloropropene | 13.7 | 1.0 | 20 | 0 | 68.5 | 78 - 125 | | | S |
| 1,2,3-Trichlorobenzene | 9.047 | 1.0 | 20 | 0 | 45.2 | 69 - 129 | | | S |
| 1,2,3-Trichloropropane | 12.67 | 1.0 | 20 | 0 | 63.4 | 73 - 122 | | | S |
| 1,2,4-Trichlorobenzene | 9.809 | 1.0 | 20 | 0 | 49.0 | 69 - 130 | | | S |
| 1,2,4-Trimethylbenzene | 13.71 | 1.0 | 20 | 0 | 68.6 | 76 - 124 | | | S |
| 1,2-Dibromo-3-chloropropane | 11.61 | 1.0 | 20 | 0 | 58.1 | 62 - 128 | | | S |
| 1,2-Dibromoethane | 12.59 | 1.0 | 20 | 0 | 63.0 | 77 - 121 | | | S |
| 1,2-Dichlorobenzene | 12.63 | 1.0 | 20 | 0 | 63.1 | 80 - 119 | | | S |
| 1,2-Dichloroethane | 13.27 | 1.0 | 20 | 0 | 66.3 | 73 - 128 | | | S |
| 1,2-Dichloropropane | 12.81 | 1.0 | 20 | 0 | 64.0 | 78 - 122 | | | S |
| 1,3,5-Trimethylbenzene | 13.81 | 1.0 | 20 | 0 | 69.0 | 75 - 124 | | | S |
| 1,3-Dichlorobenzene | 13.21 | 1.0 | 20 | 0 | 66.0 | 80 - 119 | | | S |
| 1,3-Dichloropropane | 12.65 | 1.0 | 20 | 0 | 63.3 | 80 - 119 | | | S |
| 1,4-Dichlorobenzene | 12.9 | 1.0 | 20 | 0 | 64.5 | 79 - 118 | | | S |
| 2,2-Dichloropropane | 13.38 | 1.0 | 20 | 0 | 66.9 | 60 - 139 | | | |
| 2-Butanone | 24.35 | 2.0 | 40 | 0 | 60.9 | 56 - 143 | | | |
| 2-Chlorotoluene | 14.27 | 1.0 | 20 | 0 | 71.4 | 79 - 122 | | | S |
| 2-Hexanone | 24.39 | 2.0 | 40 | 0 | 61.0 | 57 - 139 | | | |
| 4-Chlorotoluene | 13.72 | 1.0 | 20 | 0 | 68.6 | 78 - 122 | | | S |
| 4-Isopropyltoluene | 13.53 | 1.0 | 20 | 0 | 67.7 | 77 - 127 | | | S |
| 4-Methyl-2-pentanone | 24.98 | 2.0 | 40 | 0 | 62.5 | 67 - 130 | | | S |
| Acetone | 18.95 | 2.0 | 40 | 0 | 47.4 | 39 - 160 | | | |
| Benzene | 13.67 | 1.0 | 20 | 0 | 68.3 | 79 - 120 | | | S |
| Bromobenzene | 13.2 | 1.0 | 20 | 0 | 66.0 | 80 - 120 | | | S |
| Bromochloromethane | 13.12 | 1.0 | 20 | 0 | 65.6 | 78 - 123 | | | S |
| Bromodichloromethane | 13.27 | 1.0 | 20 | 0 | 66.3 | 79 - 125 | | | S |
| Bromoform | 12.33 | 1.0 | 20 | 0 | 61.7 | 66 - 130 | | | S |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19120153-06MS** Units: **UG/L** Analysis Date: **06-Dec-2019 17:24**
Client ID: **12WW22-191203** Run ID: **VOA6_352004** SeqNo: **5378439** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %RPD | RPD Limit Qual |
|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 11.25 | 1.0 | 20 | 0 | 56.2 | 53 - 141 | | | |
| Carbon disulfide | 28.93 | 2.0 | 40 | 0 | 72.3 | 64 - 133 | | | |
| Carbon tetrachloride | 13.36 | 1.0 | 20 | 0 | 66.8 | 72 - 136 | | | S |
| Chlorobenzene | 12.68 | 1.0 | 20 | 0 | 63.4 | 82 - 118 | | | S |
| Chloroethane | 15.51 | 1.0 | 20 | 0 | 77.5 | 60 - 138 | | | |
| Chloroform | 13 | 1.0 | 20 | 0 | 65.0 | 79 - 124 | | | S |
| Chloromethane | 9.774 | 1.0 | 20 | 0 | 48.9 | 50 - 139 | | | S |
| cis-1,2-Dichloroethene | 14.05 | 1.0 | 20 | 0 | 70.3 | 78 - 123 | | | S |
| cis-1,3-Dichloropropene | 13 | 1.0 | 20 | 0 | 65.0 | 75 - 124 | | | S |
| Dibromochloromethane | 12.68 | 1.0 | 20 | 0 | 63.4 | 74 - 126 | | | S |
| Dibromomethane | 12.93 | 1.0 | 20 | 0 | 64.7 | 79 - 123 | | | S |
| Dichlorodifluoromethane | 10.69 | 1.0 | 20 | 0 | 53.4 | 32 - 152 | | | |
| Ethylbenzene | 13.12 | 1.0 | 20 | 0 | 65.6 | 79 - 121 | | | S |
| Hexachlorobutadiene | 8.799 | 1.0 | 20 | 0 | 44.0 | 66 - 134 | | | S |
| Isopropylbenzene | 13.31 | 1.0 | 20 | 0 | 66.5 | 72 - 131 | | | S |
| m,p-Xylene | 26.31 | 2.0 | 40 | 0 | 65.8 | 80 - 121 | | | S |
| Methylene chloride | 12.87 | 2.0 | 20 | 0 | 64.3 | 74 - 124 | | | S |
| Naphthalene | 9.296 | 1.0 | 20 | 0 | 46.5 | 61 - 128 | | | S |
| n-Butylbenzene | 13.37 | 1.0 | 20 | 0 | 66.9 | 75 - 128 | | | S |
| n-Propylbenzene | 14.18 | 1.0 | 20 | 0 | 70.9 | 76 - 126 | | | S |
| o-Xylene | 12.83 | 1.0 | 20 | 0 | 64.2 | 78 - 122 | | | S |
| sec-Butylbenzene | 13.95 | 1.0 | 20 | 0 | 69.8 | 77 - 126 | | | S |
| Styrene | 12.58 | 1.0 | 20 | 0 | 62.9 | 78 - 123 | | | S |
| tert-Butylbenzene | 14.02 | 1.0 | 20 | 0 | 70.1 | 78 - 124 | | | S |
| Tetrachloroethene | 13.02 | 1.0 | 20 | 0 | 65.1 | 74 - 129 | | | S |
| Toluene | 13.13 | 1.0 | 20 | 0 | 65.7 | 80 - 121 | | | S |
| trans-1,2-Dichloroethene | 14.03 | 1.0 | 20 | 0 | 70.1 | 75 - 124 | | | S |
| trans-1,3-Dichloropropene | 12.77 | 1.0 | 20 | 0 | 63.9 | 73 - 127 | | | S |
| Trichloroethene | 13.5 | 1.0 | 20 | 0 | 67.5 | 79 - 123 | | | S |
| Trichlorofluoromethane | 12.46 | 1.0 | 20 | 0 | 62.3 | 65 - 141 | | | S |
| Vinyl chloride | 11.28 | 1.0 | 20 | 0 | 56.4 | 58 - 137 | | | S |
| *Surr: 1,2-Dichloroethane-d4* | *50.82* | *1.0* | *50* | *0* | *102* | *81 - 118* | | | |
| *Surr: 4-Bromofluorobenzene* | *50.72* | *1.0* | *50* | *0* | *101* | *85 - 114* | | | |
| *Surr: Dibromofluoromethane* | *50.48* | *1.0* | *50* | *0* | *101* | *80 - 119* | | | |

**ALS Houston, US** Date: 09-Dec-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MS** Sample ID: **HS19120153-06MS** Units: **UG/L** Analysis Date: **06-Dec-2019 17:24**
Client ID: **12WW22-191203** Run ID: **VOA6_352004** SeqNo: **5378439** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *47.25* | *1.0* | *50* | *0* | *94.5* | *89 - 112* | | | | |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19120153-06MSD** Units: **UG/L** Analysis Date: **06-Dec-2019 17:48**
Client ID: **12WW22-191203** Run ID: **VOA6_352004** SeqNo: **5378440** 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 | 13.6 | 1.0 | 20 | 0 | 68.0 | 78 - 124 | 12.65 | 7.19 | 20 | S |
| 1,1,1-Trichloroethane | 14.46 | 1.0 | 20 | 0 | 72.3 | 74 - 131 | 14.11 | 2.49 | 20 | S |
| 1,1,2,2-Tetrachloroethane | 13.99 | 1.0 | 20 | 0 | 70.0 | 71 - 121 | 12.82 | 8.73 | 20 | S |
| 1,1,2-Trichlor-1,2,2-trifluoroethane | 12.3 | 1.0 | 20 | 0 | 61.5 | 70 - 136 | 12.23 | 0.603 | 20 | S |
| 1,1,2-Trichloroethane | 13.73 | 1.0 | 20 | 0 | 68.7 | 80 - 119 | 12.68 | 7.97 | 20 | S |
| 1,1-Dichloroethane | 14.38 | 1.0 | 20 | 0 | 71.9 | 77 - 125 | 13.68 | 5.01 | 20 | S |
| 1,1-Dichloroethene | 12.36 | 1.0 | 20 | 0 | 61.8 | 71 - 131 | 12.12 | 1.93 | 20 | S |
| 1,1-Dichloropropene | 14.29 | 1.0 | 20 | 0 | 71.5 | 78 - 125 | 13.7 | 4.27 | 20 | S |
| 1,2,3-Trichlorobenzene | 11.35 | 1.0 | 20 | 0 | 56.7 | 69 - 129 | 9.047 | 22.6 | 20 | SR |
| 1,2,3-Trichloropropane | 13.9 | 1.0 | 20 | 0 | 69.5 | 73 - 122 | 12.67 | 9.27 | 20 | S |
| 1,2,4-Trichlorobenzene | 11.44 | 1.0 | 20 | 0 | 57.2 | 69 - 130 | 9.809 | 15.4 | 20 | S |
| 1,2,4-Trimethylbenzene | 14.44 | 1.0 | 20 | 0 | 72.2 | 76 - 124 | 13.71 | 5.18 | 20 | S |
| 1,2-Dibromo-3-chloropropane | 12.27 | 1.0 | 20 | 0 | 61.3 | 62 - 128 | 11.61 | 5.49 | 20 | S |
| 1,2-Dibromoethane | 13.51 | 1.0 | 20 | 0 | 67.6 | 77 - 121 | 12.59 | 7.04 | 20 | S |
| 1,2-Dichlorobenzene | 13.54 | 1.0 | 20 | 0 | 67.7 | 80 - 119 | 12.63 | 6.97 | 20 | S |
| 1,2-Dichloroethane | 14.34 | 1.0 | 20 | 0 | 71.7 | 73 - 128 | 13.27 | 7.79 | 20 | S |
| 1,2-Dichloropropane | 13.8 | 1.0 | 20 | 0 | 69.0 | 78 - 122 | 12.81 | 7.45 | 20 | S |
| 1,3,5-Trimethylbenzene | 14.69 | 1.0 | 20 | 0 | 73.5 | 75 - 124 | 13.81 | 6.21 | 20 | S |
| 1,3-Dichlorobenzene | 14.19 | 1.0 | 20 | 0 | 71.0 | 80 - 119 | 13.21 | 7.19 | 20 | S |
| 1,3-Dichloropropane | 13.63 | 1.0 | 20 | 0 | 68.1 | 80 - 119 | 12.65 | 7.41 | 20 | S |
| 1,4-Dichlorobenzene | 13.91 | 1.0 | 20 | 0 | 69.6 | 79 - 118 | 12.9 | 7.52 | 20 | S |
| 2,2-Dichloropropane | 13.74 | 1.0 | 20 | 0 | 68.7 | 60 - 139 | 13.38 | 2.67 | 20 | |
| 2-Butanone | 26.06 | 2.0 | 40 | 0 | 65.1 | 56 - 143 | 24.35 | 6.76 | 20 | |
| 2-Chlorotoluene | 15.4 | 1.0 | 20 | 0 | 77.0 | 79 - 122 | 14.27 | 7.58 | 20 | S |
| 2-Hexanone | 25.98 | 2.0 | 40 | 0 | 64.9 | 57 - 139 | 24.39 | 6.3 | 20 | |
| 4-Chlorotoluene | 14.61 | 1.0 | 20 | 0 | 73.1 | 78 - 122 | 13.72 | 6.28 | 20 | S |
| 4-Isopropyltoluene | 14.56 | 1.0 | 20 | 0 | 72.8 | 77 - 127 | 13.53 | 7.31 | 20 | S |
| 4-Methyl-2-pentanone | 26.71 | 2.0 | 40 | 0 | 66.8 | 67 - 130 | 24.98 | 6.69 | 20 | S |
| Acetone | 20.15 | 2.0 | 40 | 0 | 50.4 | 39 - 160 | 18.95 | 6.17 | 20 | |
| Benzene | 14.36 | 1.0 | 20 | 0 | 71.8 | 79 - 120 | 13.67 | 4.98 | 20 | S |
| Bromobenzene | 14.19 | 1.0 | 20 | 0 | 70.9 | 80 - 120 | 13.2 | 7.21 | 20 | S |
| Bromochloromethane | 13.85 | 1.0 | 20 | 0 | 69.3 | 78 - 123 | 13.12 | 5.45 | 20 | S |
| Bromodichloromethane | 13.96 | 1.0 | 20 | 0 | 69.8 | 79 - 125 | 13.27 | 5.06 | 20 | S |
| Bromoform | 13.06 | 1.0 | 20 | 0 | 65.3 | 66 - 130 | 12.33 | 5.69 | 20 | S |

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19120153-06MSD** Units: **UG/L** Analysis Date: **06-Dec-2019 17:48**
Client ID: **12WW22-191203** Run ID: **VOA6_352004** SeqNo: **5378440** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | RPD %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane | 10.88 | 1.0 | 20 | 0 | 54.4 | 53 - 141 | 11.25 | 3.33 | 20 | |
| Carbon disulfide | 29.74 | 2.0 | 40 | 0 | 74.4 | 64 - 133 | 28.93 | 2.78 | 20 | |
| Carbon tetrachloride | 14.02 | 1.0 | 20 | 0 | 70.1 | 72 - 136 | 13.36 | 4.84 | 20 | S |
| Chlorobenzene | 13.47 | 1.0 | 20 | 0 | 67.3 | 82 - 118 | 12.68 | 6.02 | 20 | S |
| Chloroethane | 18.62 | 1.0 | 20 | 0 | 93.1 | 60 - 138 | 15.51 | 18.2 | 20 | |
| Chloroform | 13.61 | 1.0 | 20 | 0 | 68.0 | 79 - 124 | 13 | 4.53 | 20 | S |
| Chloromethane | 9.761 | 1.0 | 20 | 0 | 48.8 | 50 - 139 | 9.774 | 0.126 | 20 | S |
| cis-1,2-Dichloroethene | 14.45 | 1.0 | 20 | 0 | 72.3 | 78 - 123 | 14.05 | 2.82 | 20 | S |
| cis-1,3-Dichloropropene | 13.86 | 1.0 | 20 | 0 | 69.3 | 75 - 124 | 13 | 6.4 | 20 | S |
| Dibromochloromethane | 13.36 | 1.0 | 20 | 0 | 66.8 | 74 - 126 | 12.68 | 5.23 | 20 | S |
| Dibromomethane | 13.92 | 1.0 | 20 | 0 | 69.6 | 79 - 123 | 12.93 | 7.35 | 20 | S |
| Dichlorodifluoromethane | 10.8 | 1.0 | 20 | 0 | 54.0 | 32 - 152 | 10.69 | 1.05 | 20 | |
| Ethylbenzene | 14 | 1.0 | 20 | 0 | 70.0 | 79 - 121 | 13.12 | 6.51 | 20 | S |
| Hexachlorobutadiene | 10.18 | 1.0 | 20 | 0 | 50.9 | 66 - 134 | 8.799 | 14.5 | 20 | S |
| Isopropylbenzene | 14.03 | 1.0 | 20 | 0 | 70.2 | 72 - 131 | 13.31 | 5.3 | 20 | S |
| m,p-Xylene | 27.79 | 2.0 | 40 | 0 | 69.5 | 80 - 121 | 26.31 | 5.46 | 20 | S |
| Methylene chloride | 13.5 | 2.0 | 20 | 0 | 67.5 | 74 - 124 | 12.87 | 4.82 | 20 | S |
| Naphthalene | 11.22 | 1.0 | 20 | 0 | 56.1 | 61 - 128 | 9.296 | 18.7 | 20 | S |
| n-Butylbenzene | 14.44 | 1.0 | 20 | 0 | 72.2 | 75 - 128 | 13.37 | 7.63 | 20 | S |
| n-Propylbenzene | 15.15 | 1.0 | 20 | 0 | 75.7 | 76 - 126 | 14.18 | 6.59 | 20 | S |
| o-Xylene | 13.55 | 1.0 | 20 | 0 | 67.8 | 78 - 122 | 12.83 | 5.46 | 20 | S |
| sec-Butylbenzene | 14.9 | 1.0 | 20 | 0 | 74.5 | 77 - 126 | 13.95 | 6.56 | 20 | S |
| Styrene | 13.59 | 1.0 | 20 | 0 | 67.9 | 78 - 123 | 12.58 | 7.71 | 20 | S |
| tert-Butylbenzene | 14.9 | 1.0 | 20 | 0 | 74.5 | 78 - 124 | 14.02 | 6.08 | 20 | S |
| Tetrachloroethene | 13.62 | 1.0 | 20 | 0 | 68.1 | 74 - 129 | 13.02 | 4.51 | 20 | S |
| Toluene | 13.97 | 1.0 | 20 | 0 | 69.8 | 80 - 121 | 13.13 | 6.15 | 20 | S |
| trans-1,2-Dichloroethene | 14.48 | 1.0 | 20 | 0 | 72.4 | 75 - 124 | 14.03 | 3.17 | 20 | S |
| trans-1,3-Dichloropropene | 13.58 | 1.0 | 20 | 0 | 67.9 | 73 - 127 | 12.77 | 6.13 | 20 | S |
| Trichloroethene | 14.24 | 1.0 | 20 | 0 | 71.2 | 79 - 123 | 13.5 | 5.29 | 20 | S |
| Trichlorofluoromethane | 12.68 | 1.0 | 20 | 0 | 63.4 | 65 - 141 | 12.46 | 1.71 | 20 | S |
| Vinyl chloride | 11.78 | 1.0 | 20 | 0 | 58.9 | 58 - 137 | 11.28 | 4.28 | 20 | |
| *Surr: 1,2-Dichloroethane-d4* | *50.52* | *1.0* | *50* | *0* | *101* | *81 - 118* | *50.82* | *0.592* | *20* | |
| *Surr: 4-Bromofluorobenzene* | *50.29* | *1.0* | *50* | *0* | *101* | *85 - 114* | *50.72* | *0.851* | *20* | |
| *Surr: Dibromofluoromethane* | *50.02* | *1.0* | *50* | *0* | *100* | *80 - 119* | *50.48* | *0.917* | *20* | |

**ALS Houston, US** Date: 09-Dec-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** HS19120153

**QC BATCH REPORT**

**Batch ID:** R352004 ( 0 ) **Instrument:** VOA6 **Method:** VOLATILES ORGANICS BY METHOD 8260C

**MSD** Sample ID: **HS19120153-06MSD** Units: **UG/L** Analysis Date: **06-Dec-2019 17:48**
Client ID: **12WW22-191203** Run ID: **VOA6_352004** SeqNo: **5378440** PrepDate: DF: **1**

| Analyte | Result | PQL | SPK Val | SPK Ref Value | %REC | Control Limit | RPD Ref Value | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| *Surr: Toluene-d8* | *47.51* | *1.0* | *50* | *0* | *95.0* | *89 - 112* | *47.25* | *0.56* | *20* | |

**The following samples were analyzed in this batch:** HS19120153-01 HS19120153-02 HS19120153-03 HS19120153-04 HS19120153-05 HS19120153-06 HS19120153-07

**ALS Houston, US** Date: 09-Dec-19

**Client:** Aptim Environmental & Infrastucture, Inc.
**Project:** Longhorn Army Ammunition Plant LHAAP - 12
**WorkOrder:** **HS19120153**

**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 | 19-028-0 | 27-Mar-2020 |
| California | 2919, 2019-2020 | 30-Apr-2020 |
| Dept of Defense | ANAB L2231 | 20-Dec-2021 |
| Florida | E87611-28 | 30-Jun-2020 |
| Illinois | 2000322019-2 | 09-May-2020 |
| Kansas | E-10352 2019-2020 | 31-Jul-2020 |
| Kentucky | 123043, 2019-2020 | 30-Apr-2020 |
| Louisiana | 03087, 2019-2020 | 30-Jun-2020 |
| Maryland | 343, 2019-2020 | 30-Jun-2020 |
| North Carolina | 624-2019 | 31-Dec-2019 |
| North Dakota | R-193 2019-2020 | 30-Apr-2020 |
| Oklahoma | 2019-067 | 31-Aug-2020 |
| Texas | TX104704231-19-23 | 30-Apr-2020 |

**ALS Houston, US** Date: 09-Dec-19

## Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS19120153
Date/Time Received: **04-Dec-2019 09:13**
Received by: **PMG**

Checklist completed by: *Jared R. Makan* eSignature 4-Dec-2019 Date
Reviewed by: *RJ Modashia* eSignature 5-Dec-2019 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 ☑ |
| VOA/TX1005/TX1006 Solids in hermetically sealed vials? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | 1 Page(s) |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | COC IDs:N/A |
| Samplers name present on COC? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| 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): | 1.3°C / 1.3°C UC/C | IR25 |
| Cooler(s)/Kit(s): | 42971 | |
| Date/Time sample(s) sent to storage: | 12/04/2019 18:15 | |

| | | | |
|---|---|---|---|
| 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:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of

COC ID: 12LHAAP2019-1912__-ALS

TURNAROUND TIME:

RUSH:

| PROJECT/CLIENT INFO | | | | LABORATORY | | | | OTHER INFO | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facility Name | Longhorn AAP | | | Lab Name | ALS Laboratories | | | Email Invoice To | FedInvoices@aptim.com | | |
| Project Number | 501032 | | | Lab Contact | RJ Modashia | | | | | | |
| | LHAAP-12 | | | Email | RJ.Modashia@alsglobal.com | | | Email Report To | Susan.Huang@aptim.com | | |
| Address | 1203-B East Grand Avenue | | | Address | 10450 Stancliff Rd., Suite 210 | | | Mail Reports To | Susan Huang | | |
| | PMB 202 | | | | | | | Address | 4005 Port Chicago Highway, Suite 200 | | |
| City | Marshall | State | TX | City | Houston | State | TX | City | Concord | State | CA |
| Postal Code | 75670 | Country | USA | Postal Code | 77099 | Country | USA | Postal Code | 94520 | Country | USA |
| Phone Number | 715.243.7264 | | | 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. | Sample Container and Preservatives: 3-40ml VOA Vials/HCL — ANALYSIS: VOC by 8260B |
|---|---|---|---|---|---|---|---|---|---|
| 12WW10R-191203 | LHAAP 12 | | | | WG | 12/3/19 | 0830 | 3 | X |
| 12WW21-191203 | LHAAP 12 | | | | WG | 12/3/19 | 0920 | 3 | X |
| 12WW21-191203-FD | LHAAP 12 | | | | WG | 12/3/19 | 0920 | 3 | X |
| 12WW24-191203 | LHAAP 12 | | | | WG | 12/3/19 | 1010 | 3 | X |
| 12WW20-191203 | LHAAP 12 | | | | WG | 12/3/19 | 1055 | 3 | X |
| 12WW22-191203 | LHAAP 12 | | | | WG | 12/3/19 | 1145 | 3 | X |
| 12WW22-191203-MS | LHAAP 12 | | | | WG | 12/3/19 | 1145 | 3 | X |
| 12WW22-191203-MSD | LHAAP 12 | | | | WG | 12/3/19 | 1145 | 3 | X |
| TRIP BLANK | LHAAP 12 | | | | WG | 12/3/19 | | 2 | X |

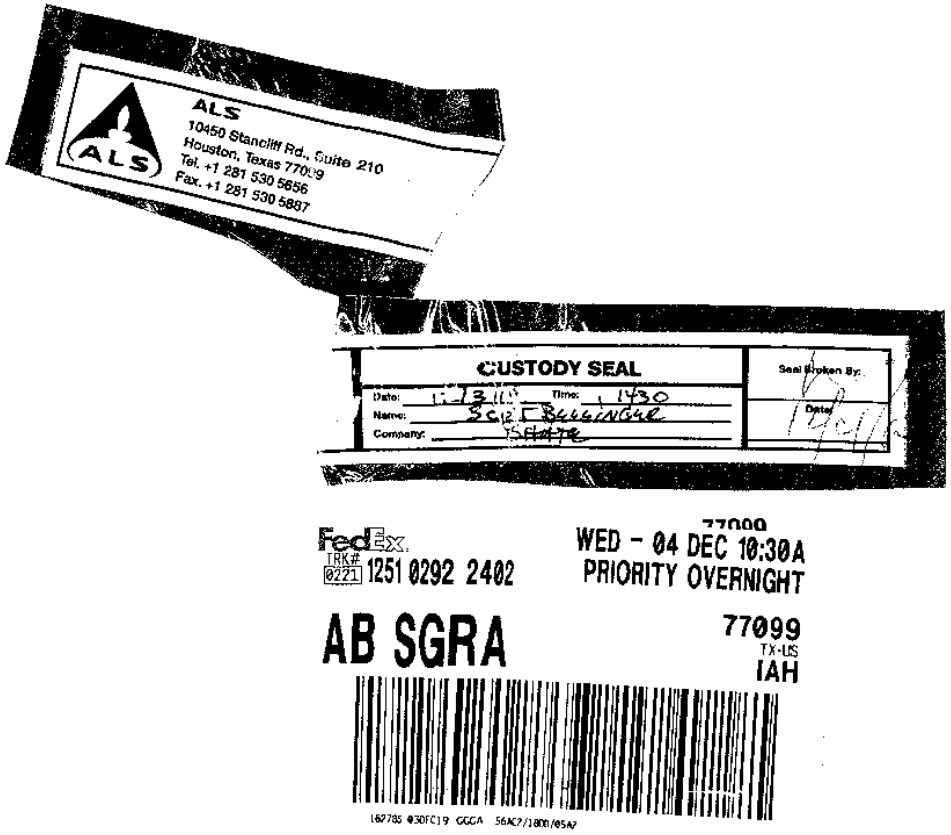
HS19120153

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant LHAAP - 12

| ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS | RELINQUISHED BY/AFFILIATION | DATE/TIME | ACCEPTED BY/AFFILIATION | DATE/TIME |
|---|---|---|---|---|
| | Scott Boisjoly / BHATE | 12/3/19 1430 | | 12/4/19 09:13 |

42971 1.3° 23 C 11-0-0


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Seal Broken By:
Date:
Time:
Name:
Company:
FedEx
TRK# 0221 1251 0292 2402
WED - 04 DEC 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH

# HS19120153 8260 Raw Data

ALS WO# HS19120153

# MSVOA06 -Logbook

**Batch:** 38366 **Analyst:** Presenta Cabascango

**Date:** 11-18-2019 **Reviewer:**

**Method:** 8260 **Laboratory:** Houston

**Comments:**

| # | Samp ID | Type | Analyzed | DF | Init Wt/Vol | Final Vol | File ID | Matrix | Status | pH |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BFB | TUNE | 11-18-2019 01:23 pm | 1.00 | 50 mL | 50 mL | X111801.D | Liquid | Y | NA |
| | *Auto find/ purged* | | | | | | | | | |
| 2 | VSTD000.25 | ICAL1 | 11-18-2019 01:47 pm | 1.00 | 50 mL | 50 mL | X111802.D | Liquid | Y | NA |
| | *0.10 uL cal std/100 mL DI* | | | | | | | | | |
| 3 | VSTD000.5 | ICAL2 | 11-18-2019 02:35 pm | 1.00 | 50 mL | 50 mL | X111803.D | Liquid | Y | NA |
| | *0.10 uL cal std/50 mL DI* | | | | | | | | | |
| 4 | VSTD001 | ICAL3 | 11-18-2019 02:59 pm | 1.00 | 50 mL | 50 mL | X111804.D | Liquid | Y | NA |
| | *0.20 uL cal std/50 mL DI* | | | | | | | | | |
| 5 | VSTD002 | ICAL4 | 11-18-2019 03:23 pm | 1.00 | 50 mL | 50 mL | X111805.D | Liquid | Y | NA |
| | *0.40 uL cal std/50 mL DI* | | | | | | | | | |
| 6 | VSTD005 | ICAL5 | 11-18-2019 03:47 pm | 1.00 | 50 mL | 50 mL | X111806.D | Liquid | Y | NA |
| | *1.0 uL cal std/50 mL DI* | | | | | | | | | |
| 7 | VSTD020 | ICAL6 | 11-18-2019 04:11 pm | 1.00 | 50 mL | 50 mL | X111807.D | Liquid | Y | NA |
| | *4.0 uL cal std/50 mL DI* | | | | | | | | | |
| 8 | VSTD050 | ICAL7 | 11-18-2019 04:35 pm | 1.00 | 50 mL | 50 mL | X111808.D | Liquid | Y | NA |
| | *10 uL cal std/50 mL DI* | | | | | | | | | |
| 9 | VSTD100 | ICAL8 | 11-18-2019 04:59 pm | 1.00 | 50 mL | 50 mL | X111809.D | Liquid | Y | NA |
| | *20 uL cal std/50 mL DI* | | | | | | | | | |
| 10 | VSTD150 | ICAL9 | 11-18-2019 05:22 pm | 1.00 | 50 mL | 50 mL | X111810.D | Liquid | Y | NA |
| | *30 uL cal std/50 mL DI* | | | | | | | | | |
| 11 | VSTD200 | ICAL | 11-18-2019 05:46 pm | 1.00 | 50 mL | 50 mL | X111811.D | Liquid | Y | NA |
| | *40 uL cal std/50 mL DI* | | | | | | | | | |
| 12 | BLANK | SAMP | 11-18-2019 06:10 pm | 1.00 | 50 mL | 50 mL | X111812.D | Liquid | Y | NA |
| 13 | BLANK | SAMP | 11-18-2019 06:34 pm | 1.00 | 50 mL | 50 mL | X111813.D | Liquid | Y | NA |
| 14 | CCV | ICCV | 11-18-2019 06:58 pm | 1.00 | 50 mL | 50 mL | X111814.D | Liquid | Y | NA |
| | *10 uL cal std/50 mL DI* | | | | | | | | | |
| 15 | BLANK | SAMP | 11-18-2019 07:22 pm | 1.00 | 50 mL | 50 mL | X111815.D | Liquid | Y | NA |
| 16 | BFB | TUNE | 11-18-2019 07:47 pm | 1.00 | 50 mL | 50 mL | Y111801.D | Liquid | Y | NA |
| | *Auto find/ purged* | | | | | | | | | |
| 17 | CCV | CCV | 11-18-2019 08:10 pm | 1.00 | 50 mL | 50 mL | Y111802a.D | Liquid | Y | NA |
| | *10 uL cal std/50 mL DI/ not used* | | | | | | | | | |
| 18 | CCV | CCV | 11-18-2019 08:34 pm | 1.00 | 50 mL | 50 mL | Y111803.D | Liquid | Y | NA |
| | *10 uL cal std/50 mL DI* | | | | | | | | | |
| 19 | CCB | SAMP | 11-18-2019 08:58 pm | 1.00 | 50 mL | 50 mL | Y111804.D | Liquid | Y | NA |
| 20 | VLCSW-191118 | LCS | 11-18-2019 09:22 pm | 1.00 | 50 mL | 50 mL | Y111805.D | Liquid | Y | NA |
| | *4.0 uL cal std/50 mL DI* | | | | | | | | | |
| 21 | BLK | SAMP | 11-18-2019 09:46 pm | 1.00 | 50 mL | 50 mL | Y111806.D | Liquid | Y | NA |
| 22 | VBLKW-191118 | MBLK | 11-18-2019 10:10 pm | 1.00 | 50 mL | 50 mL | Y111807.D | Liquid | Y | NA |
| 23 | HS19110861-01 | SAMP | 11-18-2019 10:34 pm | 1.00 | 50 mL | 50 mL | Y111808.D | Liquid | Y | NA |
| 24 | HS19110861-02 | SAMP | 11-18-2019 10:59 pm | 1.00 | 50 mL | 50 mL | Y111809.D | Liquid | Y | NA |
| 25 | HS19110861-03 | SAMP | 11-18-2019 11:23 pm | 1.00 | 50 mL | 50 mL | Y111810.D | Liquid | Y | NA |
| 26 | HS19110861-04 | SAMP | 11-18-2019 11:47 pm | 1.00 | 50 mL | 50 mL | Y111811.D | Liquid | Y | NA |
| 27 | HS19110861-05 | SAMP | 11-19-2019 12:11 am | 1.00 | 50 mL | 50 mL | Y111812.D | Liquid | Y | NA |
| 28 | HS19110861-06 | SAMP | 11-19-2019 12:35 am | 1.00 | 50 mL | 50 mL | Y111813.D | Liquid | Y | NA |
| 29 | HS19110829-13 | SAMP | 11-19-2019 12:59 am | 1.00 | 50 mL | 50 mL | Y111814.D | Liquid | Y | NA |
| 30 | HS19110829-11 | SAMP | 11-19-2019 01:23 am | 1.00 | 50 mL | 50 mL | Y111815.D | Liquid | Y | NA |
| 31 | HS19110829-01 | SAMP | 11-19-2019 01:47 am | 1.00 | 50 mL | 50 mL | Y111816.D | Liquid | Y | NA |
| 32 | HS19110829-01MS | MS | 11-19-2019 02:11 am | 1.00 | 50 mL | 50 mL | Y111817.D | Liquid | Y | NA |
| | *3.5*0 uL cal std/40 mL samp | | | | | | | | | |

# MSVOA06 -Logbook

| # | Samp ID | Type | Analyzed | DF | Init Wt/Vol | Final Vol | File ID | Matrix | Status | pH |
|---|---|---|---|---|---|---|---|---|---|---|
| 33 | HS19110829-01MSD | MSD | 11-19-2019 02:35 am | 1.00 | 50 mL | 50 mL | Y111818.D | Liquid | Y | NA |
| | *3.5 uL cal std/40 mL samp* | | | | | | | | | |
| 34 | HS19110829-02 | SAMP | 11-19-2019 02:59 am | 1.00 | 50 mL | 50 mL | Y111819.D | Liquid | Y | NA |
| 35 | HS19110829-03 | SAMP | 11-19-2019 03:23 am | 1.00 | 50 mL | 50 mL | Y111820.D | Liquid | Y | NA |
| 36 | HS19110829-04 | SAMP | 11-19-2019 03:47 am | 1.00 | 50 mL | 50 mL | Y111821.D | Liquid | Y | NA |
| 37 | HS19110829-05 | SAMP | 11-19-2019 04:11 am | 1.00 | 50 mL | 50 mL | Y111822.D | Liquid | Y | NA |
| 38 | HS19110829-06 | SAMP | 11-19-2019 04:35 am | 1.00 | 50 mL | 50 mL | Y111823.D | Liquid | Y | NA |
| 39 | HS19110829-07 | SAMP | 11-19-2019 04:59 am | 1.00 | 50 mL | 50 mL | Y111824.D | Liquid | Y | NA |
| 40 | HS19110829-08 | SAMP | 11-19-2019 05:23 am | 1.00 | 50 mL | 50 mL | Y111825.D | Liquid | Y | NA |
| 41 | HS19110829-09 | SAMP | 11-19-2019 05:47 am | 1.00 | 50 mL | 50 mL | Y111826.D | Liquid | Y | NA |
| 42 | HS19110829-10 | SAMP | 11-19-2019 06:11 am | 1.00 | 50 mL | 50 mL | Y111827.D | Liquid | Y | NA |
| 43 | HS19110829-12 | SAMP | 11-19-2019 06:36 am | 1.00 | 50 mL | 50 mL | Y111828.D | Liquid | Y | NA |
| 44 | HS19110716-06 | SAMP | 11-19-2019 07:00 am | 1.00 | 50 mL | 50 mL | Y111829.D | Liquid | Y | NA |

| Chemical | Value |
|---|---|
| SURR SPK ID | 31106-04-03 |
| IS ID | 31106-04-04 |
| ICV STD ID | 30603-92-01 |
| LCS/MS ID | 30603-92-01 |
| CAL STD ID | 31106-04-01/02 |
| BFB ID | 31106-04-03 |
| pH Paper | 634-64-11 |

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19120153

Matrix Spike - Sample No.: ICV

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE AMOUNT () | % REC # | QC. LIMITS REC. |
|---|---|---|---|---|
| cis-1,3-Dichloropropene | 50.00 | 52.07 | 104 | 80-120 |
| trans-1,3-Dichloroprope | 50.00 | 51.83 | 104 | 80-120 |
| 1,3-Dichlorobenzene | 50.00 | 50.58 | 101 | 80-120 |
| 2,2-Dichloropropane | 50.00 | 52.35 | 105 | 80-120 |
| 1,1-Dichloropropene | 50.00 | 49.88 | 100 | 80-120 |
| Dibromomethane | 50.00 | 50.50 | 101 | 80-120 |
| 1,2-Dibromoethane | 50.00 | 50.00 | 100 | 80-120 |
| trans-1,2-Dichloroethen | 50.00 | 52.31 | 105 | 80-120 |
| 1,1,1,2-Tetrachloroetha | 50.00 | 51.37 | 103 | 80-120 |
| 1,1,1-Trichloroethane | 50.00 | 52.74 | 105 | 80-120 |
| 1,1,2,2-Tetrachloroetha | 50.00 | 49.68 | 99 | 80-120 |
| Toluene | 50.00 | 49.55 | 99 | 80-120 |
| 1,1,2-Trichloroethane | 50.00 | 49.22 | 98 | 80-120 |
| 1,1-Dichloroethane | 50.00 | 51.46 | 103 | 80-120 |
| 1,1-Dichloroethene | 50.00 | 53.02 | 106 | 80-120 |
| Trichlorofluoromethane | 50.00 | 55.57 | 111 | 80-120 |
| 1,2,3-Trichlorobenzene | 50.00 | 58.28 | 116 | 80-120 |
| Tetrachloroethene | 50.00 | 49.33 | 99 | 80-120 |
| 1,2,4-Trichlorobenzene | 50.00 | 55.34 | 111 | 80-120 |
| 1,2,4-Trimethylbenzene | 50.00 | 50.40 | 101 | 80-120 |
| tert-Butylbenzene | 50.00 | 51.37 | 103 | 80-120 |
| Trichloroethene | 50.00 | 51.78 | 104 | 80-120 |
| 1,2-Dichlorobenzene | 50.00 | 49.42 | 99 | 80-120 |
| 1,2-Dichloroethane | 50.00 | 51.38 | 103 | 80-120 |
| 1,2-Dichloropropane | 50.00 | 49.50 | 99 | 80-120 |
| 1,3,5-Trimethylbenzene | 50.00 | 52.04 | 104 | 80-120 |
| 1,3-Dichloropropane | 50.00 | 49.18 | 98 | 80-120 |
| 1,4-Dichlorobenzene | 50.00 | 49.63 | 99 | 80-120 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19120153

Matrix Spike - Sample No.: ICV

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE AMOUNT () | % REC # | QC. LIMITS REC. |
|---|---|---|---|---|
| 2-Butanone | 100.00 | 105.25 | 105 | 80-120 |
| 2-Chlorotoluene | 50.00 | 50.41 | 101 | 80-120 |
| 2-Hexanone | 100.00 | 96.09 | 96 | 80-120 |
| 4-Chlorotoluene | 50.00 | 50.58 | 101 | 80-120 |
| Styrene | 50.00 | 50.35 | 101 | 80-120 |
| 4-Methyl-2-Pentanone | 100.00 | 97.68 | 98 | 80-120 |
| Acetone | 100.00 | 111.37 | 111 | 80-120 |
| Benzene | 50.00 | 50.85 | 102 | 80-120 |
| Bromobenzene | 50.00 | 51.16 | 102 | 80-120 |
| Bromochloromethane | 50.00 | 51.34 | 103 | 80-120 |
| Bromodichloromethane | 50.00 | 51.00 | 102 | 80-120 |
| Bromoform | 50.00 | 49.08 | 98 | 80-120 |
| Bromomethane | 50.00 | 57.73 | 115 | 80-120 |
| Carbon Disulfide | 100.00 | 109.76 | 110 | 80-120 |
| Carbon Tetrachloride | 50.00 | 51.07 | 102 | 80-120 |
| Chlorobenzene | 50.00 | 49.20 | 98 | 80-120 |
| Chloroethane | 50.00 | 51.64 | 103 | 80-120 |
| Chloroform | 50.00 | 49.36 | 99 | 80-120 |
| Chloromethane | 50.00 | 50.43 | 101 | 80-120 |
| cis-1,2-Dichloroethene | 50.00 | 53.16 | 106 | 80-120 |
| Dibromochloromethane | 50.00 | 49.93 | 100 | 80-120 |
| Dichlorodifluoromethane | 50.00 | 52.99 | 106 | 80-120 |
| Ethylbenzene | 50.00 | 50.22 | 100 | 80-120 |
| Hexachlorobutadiene | 50.00 | 61.69 | 123* | 80-120 |
| Isopropylbenzene | 50.00 | 50.14 | 100 | 80-120 |
| m,p-Xylenes | 100.00 | 101.69 | 102 | 80-120 |
| Methylene Chloride | 50.00 | 49.65 | 99 | 80-120 |
| n-Butylbenzene | 50.00 | 52.07 | 104 | 80-120 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19120153

Matrix Spike - Sample No.: ICV

| COMPOUND | SPIKE ADDED (ug/L) | SAMPLE AMOUNT () | % REC # | QC. LIMITS REC. |
|---|---|---|---|---|
| n-Propylbenzene | 50.00 | 51.90 | 104 | 80-120 |
| Naphthalene | 50.00 | 51.04 | 102 | 80-120 |
| o-Xylene | 50.00 | 49.72 | 99 | 80-120 |
| sec-Butylbenzene | 50.00 | 51.77 | 104 | 80-120 |
| Vinyl Chloride | 50.00 | 51.98 | 104 | 80-120 |
| 1,2,3-Trichloropropane | 50.00 | 49.40 | 99 | 80-120 |
| p-Isopropyltoluene | 50.00 | 51.77 | 104 | 80-120 |
| 1,2-Dibromo-3-Chloropro | 50.00 | 51.39 | 103 | 80-120 |
| Freon TF | 50.00 | 55.79 | 112 | 80-120 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19120153

Lab File ID: X111801 BFB Injection Date: 11/18/19

Instrument ID: VOA6 BFB Injection Time: 1323

GC Column: DB624 ID: 0.25 (mm) Heated Purge: (Y/N) N

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 15.0 - 40.0% of mass 95 | 20.9 |
| 75 | 30.0 - 60.0% of mass 95 | 54.9 |
| 95 | Base Peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 7.6 |
| 173 | Less than 2.0% of mass 174 | 0.4 ( 0.7)1 |
| 174 | Greater than 50.0% of mass 95 | 65.0 |
| 175 | 5.0 - 9.0% of mass 174 | 5.8 ( 8.9)1 |
| 176 | 95.0 - 101.0% of mass 174 | 62.0 ( 95.4)1 |
| 177 | 5.0 - 9.0% of mass 176 | 5.1 ( 8.2)2 |

1-Value is % mass 174 2-Value is % mass 176

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

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | VSTD000.25 | VSTD000.25 | X111802 | 11/18/19 | 1347 |
| 02 | VSTD000.5 | VSTD000.5 | X111803 | 11/18/19 | 1435 |
| 03 | VSTD001 | VSTD001 | X111804 | 11/18/19 | 1459 |
| 04 | VSTD002 | VSTD002 | X111805 | 11/18/19 | 1523 |
| 05 | VSTD005 | VSTD005 | X111806 | 11/18/19 | 1547 |
| 06 | VSTD020 | VSTD020 | X111807 | 11/18/19 | 1611 |
| 07 | VSTD050 | VSTD050 | X111808 | 11/18/19 | 1635 |
| 08 | VSTD100 | VSTD100 | X111809 | 11/18/19 | 1659 |
| 09 | VSTD150 | VSTD150 | X111810 | 11/18/19 | 1722 |
| 10 | VSTD200 | VSTD200 | X111811 | 11/18/19 | 1746 |
| 11 | ICV | ICV | X111814 | 11/18/19 | 1858 |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
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FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS19120153

Instrument ID: VOA6 Calibration Date(s): 11/18/19 11/18/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1347 1746

LAB FILE ID: RF0.25: X111802 RF0.5: X111803 RF1: X111804
RF2: X111805 RF5: X111806 RF20: X111807

| COMPOUND | RF0.25 | RF0.5 | RF1 | RF2 | RF5 | RF20 |
|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | | 0.326 | 0.553 | 0.497 | 0.554 | 0.476 |
| trans-1,3-Dichloropropene | | 0.304 | 0.464 | 0.458 | 0.504 | 0.445 |
| 1,3-Dichlorobenzene | | 1.036 | 1.601 | 1.542 | 1.622 | 1.411 |
| 2,2-Dichloropropane | | 0.547 | 0.815 | 0.674 | 0.705 | 0.610 |
| 1,1-Dichloropropene | | 0.332 | 0.476 | 0.441 | 0.432 | 0.372 |
| Dibromomethane | | 0.139 | 0.244 | 0.233 | 0.245 | 0.207 |
| 1,2-Dibromoethane | | 0.245 | 0.385 | 0.380 | 0.402 | 0.348 |
| trans-1,2-Dichloroethene | | 0.285 | 0.489 | 0.436 | 0.440 | 0.386 |
| 1,1,1,2-Tetrachloroethane | | 0.248 | 0.403 | 0.375 | 0.406 | 0.356 |
| 1,1,1-Trichloroethane | | 0.492 | 0.775 | 0.723 | 0.717 | 0.640 |
| 1,1,2,2-Tetrachloroethane | | 0.602 | 0.844 | 0.735 | 0.800 | 0.680 |
| Toluene | | 1.077 | 1.582 | 1.498 | 1.570 | 1.359 |
| 1,1,2-Trichloroethane | | 0.180 | 0.311 | 0.285 | 0.294 | 0.253 |
| 1,1-Dichloroethane | | 0.569 | 0.830 | 0.781 | 0.786 | 0.690 |
| 1,1-Dichloroethene | | 0.349 | 0.423 | 0.469 | 0.464 | 0.390 |
| Trichlorofluoromethane | | 0.511 | 0.831 | 0.818 | 0.813 | 0.707 |
| 1,2,3-Trichlorobenzene | | 421 | 1182 | 2753 | 6553 | 21856 |
| Tetrachloroethene | | 0.266 | 0.412 | 0.394 | 0.398 | 0.333 |
| 1,2,4-Trichlorobenzene | | 0.325 | 0.435 | 0.465 | 0.518 | 0.418 |
| 1,2,4-Trimethylbenzene | | 1.739 | 2.619 | 2.442 | 2.563 | 2.286 |
| tert-Butylbenzene | | 1.338 | 2.168 | 2.060 | 2.126 | 1.865 |
| Trichloroethene | | 0.226 | 0.390 | 0.387 | 0.396 | 0.344 |
| 1,2-Dichlorobenzene | | 0.916 | 1.484 | 1.429 | 1.497 | 1.292 |
| 1,2-Dichloroethane | | 0.277 | 0.470 | 0.408 | 0.432 | 0.391 |
| 1,2-Dichloropropane | | 0.294 | 0.294 | 0.312 | 0.339 | 0.284 |
| 1,3,5-Trimethylbenzene | | 1.606 | 2.354 | 2.372 | 2.481 | 2.215 |
| 1,3-Dichloropropane | | 0.431 | 0.613 | 0.570 | 0.583 | 0.512 |
| 1,4-Dichlorobenzene | | 1.108 | 1.632 | 1.581 | 1.609 | 1.417 |
| 2-Butanone | | 0.167 | 0.156 | 0.152 | 0.164 | 0.146 |
| 2-Chlorotoluene | | 1.263 | 1.990 | 1.903 | 2.032 | 1.735 |
| 2-Hexanone | | 0.180 | 0.237 | 0.204 | 0.235 | 0.191 |
| 4-Chlorotoluene | | 1.550 | 2.500 | 2.222 | 2.378 | 2.079 |
| Styrene | | 0.702 | 1.134 | 1.076 | 1.148 | 1.004 |
| 4-Methyl-2-Pentanone | | 0.220 | 0.321 | 0.313 | 0.331 | 0.281 |
| Acetone | | 4579 | 5956 | 7954 | 15992 | 43200 |
| Benzene | | 0.788 | 1.327 | 1.220 | 1.289 | 1.109 |
| Bromobenzene | | 0.584 | 1.003 | 0.940 | 0.994 | 0.873 |
| Bromochloromethane | | 0.229 | 0.323 | 0.309 | 0.284 | 0.255 |
| Bromodichloromethane | | 0.298 | 0.490 | 0.424 | 0.473 | 0.395 |
| Bromoform | | 887 | 3197 | 5989 | 16084 | 56416 |
| Bromomethane | | 2741 | 6334 | 12041 | 28671 | 93456 |
| Carbon Disulfide | | 0.747 | 1.257 | 1.216 | 1.254 | 1.101 |
| Carbon Tetrachloride | | 0.340 | 0.503 | 0.483 | 0.478 | 0.403 |
| Chlorobenzene | | 0.738 | 1.108 | 1.028 | 1.090 | 0.934 |

# FORM 6
## VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1912015

Instrument ID: VOA6 Calibration Date(s): 11/18/19 11/18/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1347 1746

LAB FILE ID: RF0.25: X111802 RF0.5: X111803 RF1: X111804
RF2: X111805 RF5: X111806 RF20: X111807

| COMPOUND | RF0.25 | RF0.5 | RF1 | RF2 | RF5 | RF20 |
|---|---|---|---|---|---|---|
| Chloroethane | | 0.279 | 0.361 | 0.345 | 0.323 | 0.283 |
| Chloroform | | 0.775 | 0.990 | 0.890 | 0.850 | 0.736 |
| Chloromethane | | 2201 | 6118 | 10461 | 24949 | 85402 |
| cis-1,2-Dichloroethene | | 0.327 | 0.540 | 0.493 | 0.541 | 0.454 |
| Dibromochloromethane | | 0.253 | 0.433 | 0.392 | 0.429 | 0.370 |
| Dichlorodifluoromethane | | 1269 | 3829 | 7335 | 18346 | 63810 |
| Ethylbenzene | | 0.353 | 0.562 | 0.515 | 0.576 | 0.493 |
| Hexachlorobutadiene | | 1376 | 2468 | 4522 | 11525 | 37789 |
| Isopropylbenzene | | 1.054 | 1.627 | 1.570 | 1.602 | 1.425 |
| m,p-Xylenes | | 0.393 | 0.653 | 0.644 | 0.678 | 0.591 |
| Methylene Chloride | | 0.422 | 0.556 | 0.483 | 0.491 | 0.406 |
| n-Butylbenzene | | 1.620 | 2.055 | 2.004 | 2.069 | 1.888 |
| n-Propylbenzene | | 2.290 | 3.358 | 3.192 | 3.345 | 2.976 |
| Naphthalene | | 0.510 | 0.569 | 0.604 | 0.614 | 0.512 |
| o-Xylene | | 0.390 | 0.677 | 0.656 | 0.658 | 0.582 |
| sec-Butylbenzene | | 1.995 | 2.859 | 2.859 | 2.813 | 2.501 |
| Vinyl Chloride | | 0.490 | 0.545 | 0.546 | 0.504 | 0.454 |
| 1,2,3-Trichloropropane | | 0.455 | 0.730 | 0.701 | 0.662 | 0.580 |
| p-Isopropyltoluene | | 1.839 | 2.630 | 2.538 | 2.573 | 2.307 |
| 1,2-Dibromo-3-Chloropropane | | 125 | 464 | 859 | 2641 | 8805 |
| Freon TF | | 0.296 | 0.488 | 0.452 | 0.457 | 0.380 |
| 4-Bromofluorobenzene | | 3844 | 5731 | 10468 | 25804 | 94194 |
| Dibromofluoromethane | | 2303 | 3882 | 8127 | 20237 | 75094 |
| Toluene-d8 | | 1.628 | 1.327 | 1.357 | 1.369 | 1.263 |
| 1,2-Dichloroethane-d4 | | 2522 | 4458 | 8034 | 20921 | 75813 |

# FORM 6
## VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1912015

Instrument ID: VOA6 Calibration Date(s): 11/18/19 11/18/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1347 1746

LAB FILE ID: RF50: X111808 RF100: X111809 RF150: X111810
RF200: X111811

| COMPOUND | RF50 | RF100 | RF150 | RF200 |
|---|---|---|---|---|
| cis-1,3-Dichloropropene | 0.499 | 0.494 | 0.497 | 0.493 |
| trans-1,3-Dichloropropene | 0.452 | 0.455 | 0.456 | 0.461 |
| 1,3-Dichlorobenzene | 1.457 | 1.422 | 1.398 | 1.417 |
| 2,2-Dichloropropane | 0.644 | 0.644 | 0.646 | 0.658 |
| 1,1-Dichloropropene | 0.402 | 0.392 | 0.391 | 0.392 |
| Dibromomethane | 0.211 | 0.206 | 0.208 | 0.208 |
| 1,2-Dibromoethane | 0.348 | 0.347 | 0.350 | 0.351 |
| trans-1,2-Dichloroethene | 0.410 | 0.413 | 0.416 | 0.427 |
| 1,1,1,2-Tetrachloroethane | 0.368 | 0.369 | 0.369 | 0.370 |
| 1,1,1-Trichloroethane | 0.673 | 0.676 | 0.678 | 0.697 |
| 1,1,2,2-Tetrachloroethane | 0.672 | 0.670 | 0.662 | 0.661 |
| Toluene | 1.411 | 1.408 | 1.420 | 1.435 |
| 1,1,2-Trichloroethane | 0.256 | 0.258 | 0.256 | 0.259 |
| 1,1-Dichloroethane | 0.710 | 0.716 | 0.728 | 0.737 |
| 1,1-Dichloroethene | 0.430 | 0.429 | 0.426 | 0.434 |
| Trichlorofluoromethane | 0.823 | 0.824 | 0.813 | 0.840 |
| 1,2,3-Trichlorobenzene | 52554 | 102660 | 156391 | 210414 |
| Tetrachloroethene | 0.352 | 0.340 | 0.332 | 0.334 |
| 1,2,4-Trichlorobenzene | 0.421 | 0.402 | 0.400 | 0.406 |
| 1,2,4-Trimethylbenzene | 2.419 | 2.440 | 2.397 | 2.446 |
| tert-Butylbenzene | 2.012 | 2.011 | 1.967 | 1.996 |
| Trichloroethene | 0.359 | 0.350 | 0.348 | 0.348 |
| 1,2-Dichlorobenzene | 1.330 | 1.327 | 1.324 | 1.344 |
| 1,2-Dichloroethane | 0.401 | 0.397 | 0.397 | 0.398 |
| 1,2-Dichloropropane | 0.295 | 0.290 | 0.290 | 0.290 |
| 1,3,5-Trimethylbenzene | 2.368 | 2.377 | 2.339 | 2.377 |
| 1,3-Dichloropropane | 0.516 | 0.521 | 0.514 | 0.516 |
| 1,4-Dichlorobenzene | 1.465 | 1.445 | 1.412 | 1.445 |
| 2-Butanone | 0.146 | 0.147 | 0.153 | 0.148 |
| 2-Chlorotoluene | 1.853 | 1.827 | 1.787 | 1.800 |
| 2-Hexanone | 0.192 | 0.201 | 0.204 | 0.204 |
| 4-Chlorotoluene | 2.208 | 2.230 | 2.205 | 2.250 |
| Styrene | 1.056 | 1.073 | 1.093 | 1.113 |
| 4-Methyl-2-Pentanone | 0.283 | 0.291 | 0.298 | 0.298 |
| Acetone | 103091 | 202207 | 284604 | 372223 |
| Benzene | 1.164 | 1.135 | 1.133 | 1.128 |
| Bromobenzene | 0.878 | 0.857 | 0.837 | 0.854 |
| Bromochloromethane | 0.263 | 0.261 | 0.260 | 0.255 |
| Bromodichloromethane | 0.412 | 0.408 | 0.412 | 0.412 |
| Bromoform | 143798 | 293256 | 447981 | 602595 |
| Bromomethane | 215480 | 396733 | 529714 | |
| Carbon Disulfide | 1.192 | 1.188 | 1.192 | 1.228 |
| Carbon Tetrachloride | 0.452 | 0.442 | 0.435 | 0.440 |
| Chlorobenzene | 0.965 | 0.966 | 0.974 | 0.982 |

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1912015

Instrument ID: VOA6 Calibration Date(s): 11/18/19 11/18/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1347 1746

LAB FILE ID: RF50: X111808 RF100: X111809 RF150: X111810
RF200: X111811

| COMPOUND | RF50 | RF100 | RF150 | RF200 |
|---|---|---|---|---|
| Chloroethane | 0.311 | 0.311 | 0.310 | 0.311 |
| Chloroform | 0.751 | 0.754 | 0.761 | 0.780 |
| Chloromethane | 215753 | 420936 | 613254 | 811388 |
| cis-1,2-Dichloroethene | 0.470 | 0.475 | 0.478 | 0.488 |
| Dibromochloromethane | 0.381 | 0.386 | 0.386 | 0.387 |
| Dichlorodifluoromethane | 186161 | 359790 | 504807 | 695305 |
| Ethylbenzene | 0.512 | 0.509 | 0.506 | 0.512 |
| Hexachlorobutadiene | 99881 | 192455 | | |
| Isopropylbenzene | 1.523 | 1.544 | 1.538 | 1.560 |
| m,p-Xylenes | 0.623 | 0.628 | 0.627 | 0.639 |
| Methylene Chloride | 0.421 | 0.425 | 0.428 | 0.436 |
| n-Butylbenzene | 2.162 | 2.176 | 2.153 | 2.197 |
| n-Propylbenzene | 3.234 | 3.176 | 3.089 | 3.155 |
| Naphthalene | 0.521 | 0.505 | 0.514 | 0.512 |
| o-Xylene | 0.600 | 0.608 | 0.611 | 0.623 |
| sec-Butylbenzene | 2.823 | 2.798 | 2.726 | 2.790 |
| Vinyl Chloride | 0.505 | 0.510 | 0.510 | 0.523 |
| 1,2,3-Trichloropropane | 0.577 | 0.564 | 0.549 | 0.543 |
| p-Isopropyltoluene | 2.571 | 2.546 | 2.480 | 2.534 |
| 1,2-Dibromo-3-Chloropropane | 21800 | 42468 | 65470 | 86827 |
| Freon TF | 0.459 | 0.462 | 0.452 | 0.472 |
| 4-Bromofluorobenzene | 222328 | 465570 | 688600 | 933083 |
| Dibromofluoromethane | 173990 | 354918 | 514854 | 681300 |
| Toluene-d8 | 1.212 | 1.246 | 1.223 | 1.231 |
| 1,2-Dichloroethane-d4 | 178006 | 364646 | 532181 | 713282 |

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1912015

Instrument ID: VOA6 Calibration Date(s): 11/18/19 11/18/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1347 1746

| COMPOUND | CURVE | COEFFICENTS A0 | A1 | A2 | %RSD OR R^2 | MAX %RSD OR R^2 |
|---|---|---|---|---|---|---|
| cis-1,3-Dichloropropene | AVRG | | 0.48761342 | | 13.630 | 15.000 |
| trans-1,3-Dichloropropene | AVRG | | 0.44441818 | | 12.432 | 15.000 |
| 1,3-Dichlorobenzene | AVRG | | 1.43390401 | | 11.978 | 15.000 |
| 2,2-Dichloropropane | AVRG | | 0.66029305 | | 11.040 | 15.000 |
| 1,1-Dichloropropene | AVRG | | 0.40332539 | | 10.380 | 15.000 |
| Dibromomethane | AVRG | | 0.21136309 | | 14.886 | 15.000 |
| 1,2-Dibromoethane | AVRG | | 0.35067597 | | 12.763 | 15.000 |
| trans-1,2-Dichloroethene | AVRG | | 0.41138839 | | 13.381 | 15.000 |
| 1,1,1,2-Tetrachloroethane | AVRG | | 0.36274186 | | 12.717 | 15.000 |
| 1,1,1-Trichloroethane | AVRG | | 0.67453438 | | 11.648 | 15.000 |
| 1,1,2,2-Tetrachloroethane | AVRG | | 0.70308768 | | 10.825 | 15.000 |
| Toluene | AVRG | | 1.41788930 | | 10.479 | 15.000 |
| 1,1,2-Trichloroethane | AVRG | | 0.26137158 | | 14.102 | 15.000 |
| 1,1-Dichloroethane | AVRG | | 0.72750643 | | 10.197 | 15.000 |
| 1,1-Dichloroethene | AVRG | | 0.42373367 | | 8.607 | 15.000 |
| Trichlorofluoromethane | AVRG | | 0.77561874 | | 13.736 | 15.000 |
| 1,2,3-Trichlorobenzene | 2ORDR | -1.73e-002 | 5.50264123 | -0.1707432 | 0.9998373 | 0.9900000 |
| Tetrachloroethene | AVRG | | 0.35131312 | | 12.801 | 15.000 |
| 1,2,4-Trichlorobenzene | AVRG | | 0.42118311 | | 12.391 | 15.000 |
| 1,2,4-Trimethylbenzene | AVRG | | 2.37245105 | | 10.778 | 15.000 |
| tert-Butylbenzene | AVRG | | 1.94917789 | | 12.586 | 15.000 |
| Trichloroethene | AVRG | | 0.34966887 | | 14.517 | 15.000 |
| 1,2-Dichlorobenzene | AVRG | | 1.32701574 | | 12.905 | 15.000 |
| 1,2-Dichloroethane | AVRG | | 0.39691390 | | 12.978 | 15.000 |
| 1,2-Dichloropropane | AVRG | | 0.29867989 | | 5.660 | 15.000 |
| 1,3,5-Trimethylbenzene | AVRG | | 2.27648393 | | 11.444 | 15.000 |
| 1,3-Dichloropropane | AVRG | | 0.53064503 | | 9.928 | 15.000 |
| 1,4-Dichlorobenzene | AVRG | | 1.45709302 | | 10.715 | 15.000 |
| 2-Butanone | AVRG | | 0.15342086 | | 5.109 | 15.000 |
| 2-Chlorotoluene | AVRG | | 1.79889065 | | 12.374 | 15.000 |
| 2-Hexanone | AVRG | | 0.20539492 | | 9.225 | 15.000 |
| 4-Chlorotoluene | AVRG | | 2.18043218 | | 12.121 | 15.000 |
| Styrene | AVRG | | 1.04451403 | | 12.966 | 15.000 |
| 4-Methyl-2-Pentanone | AVRG | | 0.29296235 | | 10.958 | 15.000 |
| Acetone | LINR | -7.72e-002 | 8.02348321 | | 0.9999004 | 0.9900000 |
| Benzene | AVRG | | 1.14377224 | | 13.444 | 15.000 |
| Bromobenzene | AVRG | | 0.86897432 | | 14.186 | 15.000 |
| Bromochloromethane | AVRG | | 0.27086566 | | 10.835 | 15.000 |
| Bromodichloromethane | AVRG | | 0.41377448 | | 13.021 | 15.000 |
| Bromoform | LINR | 1.997e-002 | 3.29171060 | | 0.9995506 | 0.9900000 |
| Bromomethane | LINR | -4.72e-002 | 2.10632186 | | 0.9967362 | 0.9900000 |
| Carbon Disulfide | AVRG | | 1.15275096 | | 13.789 | 15.000 |
| Carbon Tetrachloride | AVRG | | 0.44181701 | | 10.990 | 15.000 |
| Chlorobenzene | AVRG | | 0.97614522 | | 10.975 | 15.000 |

# FORM 6
## VOLATILE INITIAL CALIBRATION DATA

Lab Name: ALS HOUSTON Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1912015

Instrument ID: VOA6 Calibration Date(s): 11/18/19 11/18/19

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1347 1746

| COMPOUND | CURVE | COEFFICENTS A0 | A1 | A2 | %RSD OR R^2 | MAX %RSD OR R^2 |
|---|---|---|---|---|---|---|
| Chloroethane | AVRG | | 0.31480657 | | 8.302 | 15.000 |
| Chloroform | AVRG | | 0.80974969 | | 10.425 | 15.000 |
| Chloromethane | LINR | 3.748e-003 | 1.83460007 | | 0.9998260 | 0.9900000 |
| cis-1,2-Dichloroethene | AVRG | | 0.47416954 | | 13.204 | 15.000 |
| Dibromochloromethane | AVRG | | 0.37970849 | | 13.683 | 15.000 |
| Dichlorodifluoromethane | LINR | 1.763e-002 | 2.15619239 | | 0.9988587 | 0.9900000 |
| Ethylbenzene | AVRG | | 0.50436028 | | 12.486 | 15.000 |
| Hexachlorobutadiene | LINR | -1.03e-002 | 2.88504774 | | 0.9991601 | 0.9900000 |
| Isopropylbenzene | AVRG | | 1.49389834 | | 11.672 | 15.000 |
| m,p-Xylenes | AVRG | | 0.60861655 | | 13.850 | 15.000 |
| Methylene Chloride | AVRG | | 0.45210476 | | 10.732 | 15.000 |
| n-Butylbenzene | AVRG | | 2.03598696 | | 9.063 | 15.000 |
| n-Propylbenzene | AVRG | | 3.09059969 | | 10.434 | 15.000 |
| Naphthalene | AVRG | | 0.54020307 | | 8.055 | 15.000 |
| o-Xylene | AVRG | | 0.60066696 | | 14.145 | 15.000 |
| sec-Butylbenzene | AVRG | | 2.68486077 | | 10.468 | 15.000 |
| Vinyl Chloride | AVRG | | 0.50958661 | | 5.494 | 15.000 |
| 1,2,3-Trichloropropane | AVRG | | 0.59573805 | | 14.502 | 15.000 |
| p-Isopropyltoluene | AVRG | | 2.44651692 | | 10.015 | 15.000 |
| 1,2-Dibromo-3-Chloropropane | LINR | -6.81e-003 | 12.9714748 | | 0.9998714 | 0.9900000 |
| Freon TF | AVRG | | 0.43530320 | | 13.846 | 15.000 |
| 4-Bromofluorobenzene | LINR | 8.357e-003 | 2.13170980 | | 0.9997055 | 0.9900000 |
| Dibromofluoromethane | LINR | 7.36e-003 | 2.18334297 | | 0.9997712 | 0.9900000 |
| Toluene-d8 | AVRG | | 1.31739803 | | 9.895 | 15.000 |
| 1,2-Dichloroethane-d4 | LINR | 1.473e-002 | 2.09453233 | | 0.9994184 | 0.9900000 |

FORM VI VOA

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111801.D

Page 1

Date : 18-NOV-2019 13:23

Client ID: BFB

Instrument: voa6.i

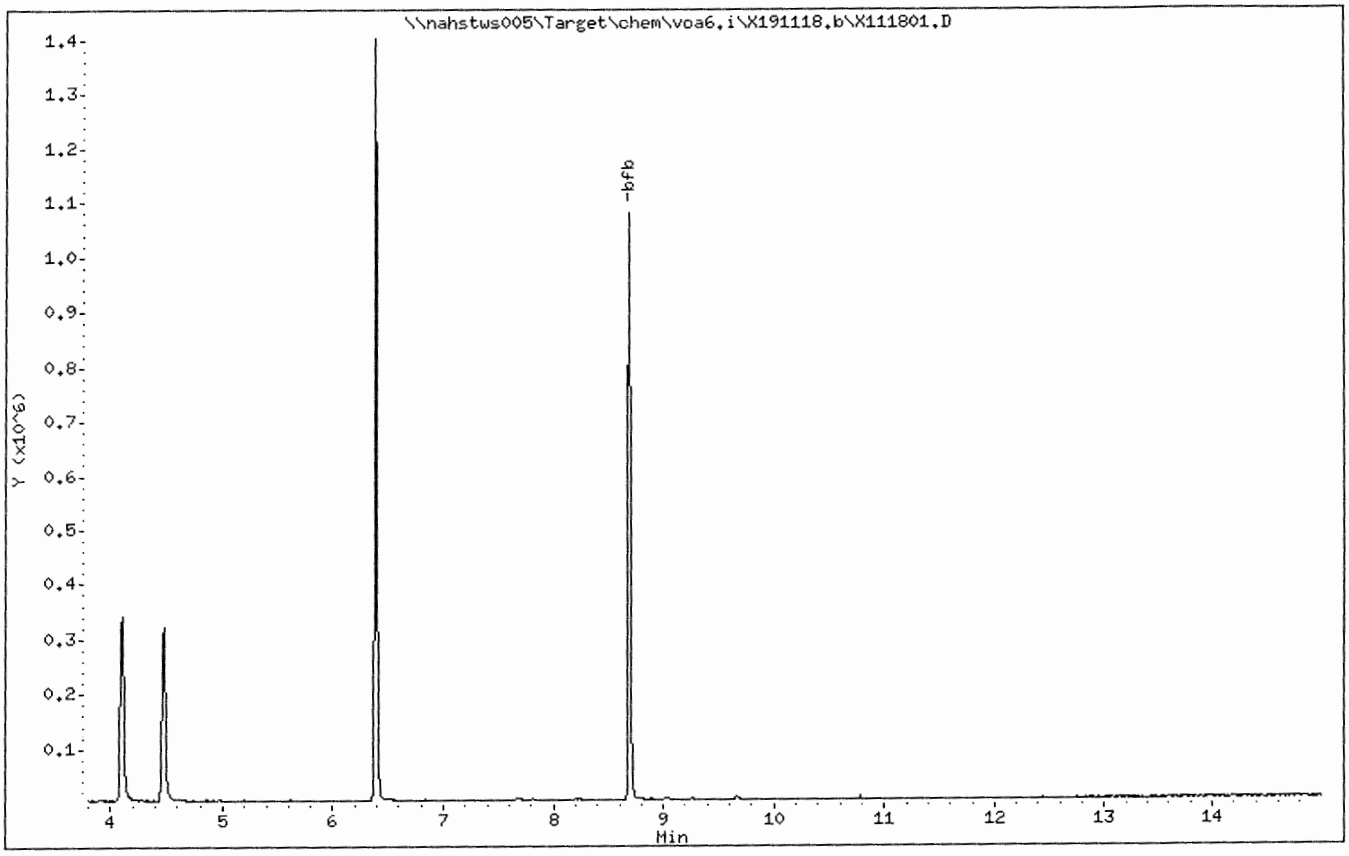
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111801.D Page 2

Date : 18-NOV-2019 13:23

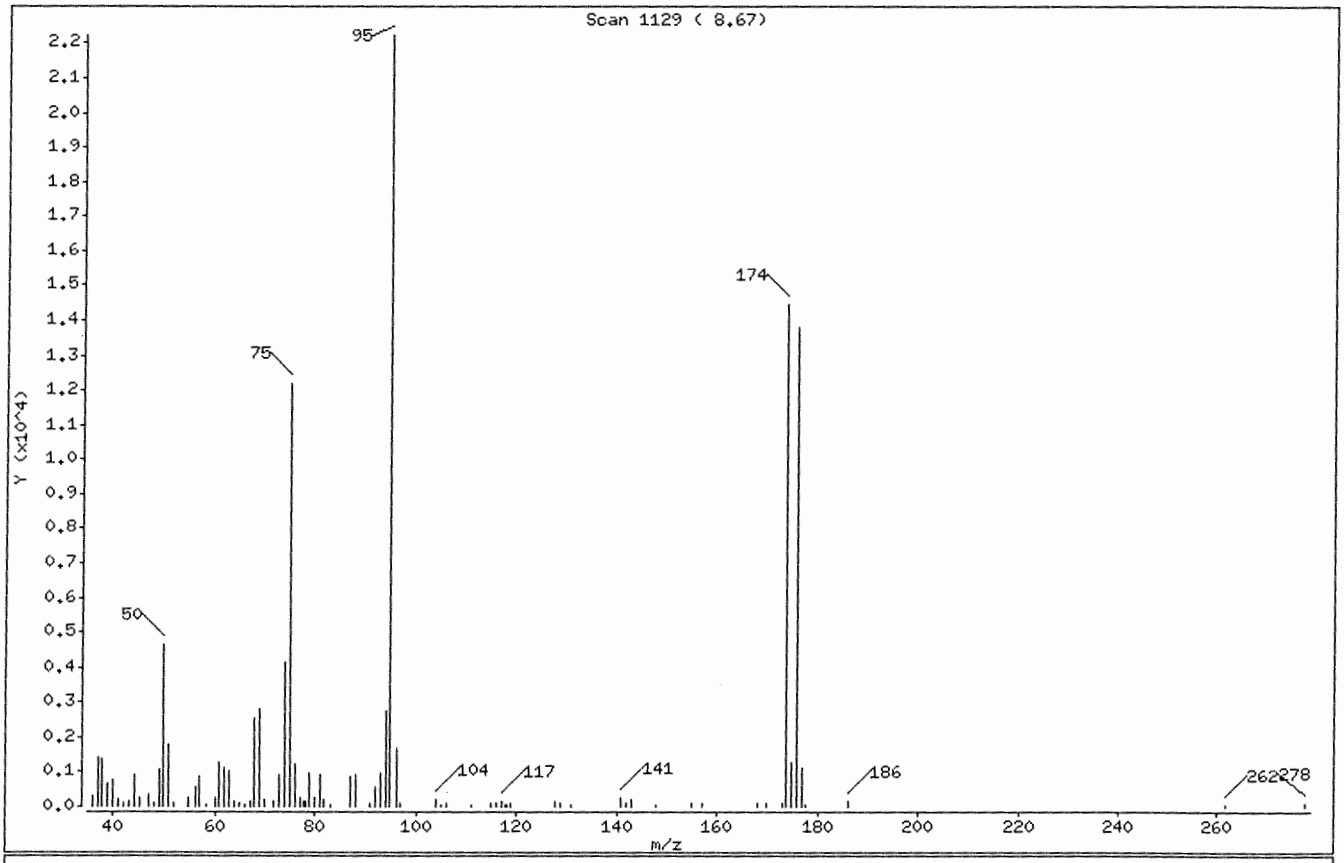
Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

1 bfb




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 95 | Base Peak, 100% relative abundance | 100.00 |
| 50 | 15.00 - 40.00% of mass 95 | 20.86 |
| 75 | 30.00 - 60.00% of mass 95 | 54.86 |
| 96 | 5.00 - 9.00% of mass 95 | 7.62 |
| 173 | Less than 2.00% of mass 174 | 0.43 ( 0.66) |
| 174 | Greater than 50.00% of mass 95 | 65.03 |
| 175 | 5.00 - 9.00% of mass 174 | 5.82 ( 8.95) |
| 176 | 95.00 - 101.00% of mass 174 | 62.04 ( 95.41) |
| 177 | 5.00 - 9.00% of mass 176 | 5.11 ( 8.24) |

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111801.D

Date : 18-NOV-2019 13:23

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: X111801.D
Spectrum: Scan 1129 ( 8.67)
Location of Maximum: 95.00
Number of points: 83

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 36.00 | 329 | 61.00 | 1259 | 81.80 | 217 | 127.90 | 153 |
| 37.00 | 1409 | 62.00 | 1149 | 83.00 | 50 | 128.90 | 116 |
| 38.00 | 1370 | 62.90 | 1001 | 86.90 | 880 | 130.90 | 70 |
| 39.00 | 662 | 64.00 | 138 | 88.00 | 941 | 141.00 | 249 |
| 40.00 | 775 | 65.10 | 110 | 91.10 | 116 | 141.90 | 94 |
| 41.00 | 191 | 66.00 | 72 | 92.10 | 565 | 142.90 | 216 |
| 42.00 | 77 | 67.10 | 153 | 93.00 | 990 | 148.10 | 62 |
| 43.00 | 166 | 68.00 | 2578 | 94.00 | 2783 | 155.00 | 87 |
| 44.10 | 928 | 69.00 | 2816 | 95.00 | 22224 | 157.00 | 77 |
| 45.10 | 261 | 69.90 | 217 | 96.10 | 1694 | 168.00 | 85 |
| 47.00 | 367 | 71.90 | 143 | 97.00 | 111 | 170.00 | 86 |
| 48.10 | 104 | 73.00 | 931 | 103.90 | 180 | 172.90 | 96 |
| 49.00 | 1057 | 74.00 | 4135 | 105.10 | 52 | 173.90 | 14452 |
| 50.00 | 4636 | 75.00 | 12193 | 106.00 | 100 | 174.90 | 1293 |
| 51.00 | 1802 | 76.00 | 1227 | 111.10 | 63 | 175.90 | 13788 |
| 52.10 | 85 | 77.10 | 248 | 115.10 | 93 | 176.90 | 1136 |
| 55.00 | 269 | 77.80 | 150 | 116.00 | 100 | 177.80 | 71 |
| 56.10 | 539 | 78.10 | 174 | 117.00 | 158 | 186.00 | 161 |
| 56.90 | 843 | 78.90 | 948 | 117.70 | 74 | 261.90 | 57 |
| 58.20 | 60 | 79.90 | 265 | 118.10 | 74 | 277.90 | 85 |
| 60.00 | 231 | 80.90 | 936 | 119.00 | 127 | | |

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111802.D  Page 1
Report Date: 06-Dec-2019 19:56

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X191118.b\X111802.D
Lab Smp Id: VSTD000.25  Client Smp ID: VSTD000.25
Inj Date  : 18-NOV-2019 13:47
Operator  : PC  Inst ID: voa6.i
Smp Info  : VSTD000.25;VSTD000.25;1;1;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method    : \\nahstws005\Target\chem\voa6.i\X191118.b\8260W.m
Meth Date : 06-Dec-2019 19:56 voa6.i  Quant Type: ISTD
Cal Date  : 18-NOV-2019 17:46  Cal File: X111811.D
Als bottle: 2  Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version:  4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

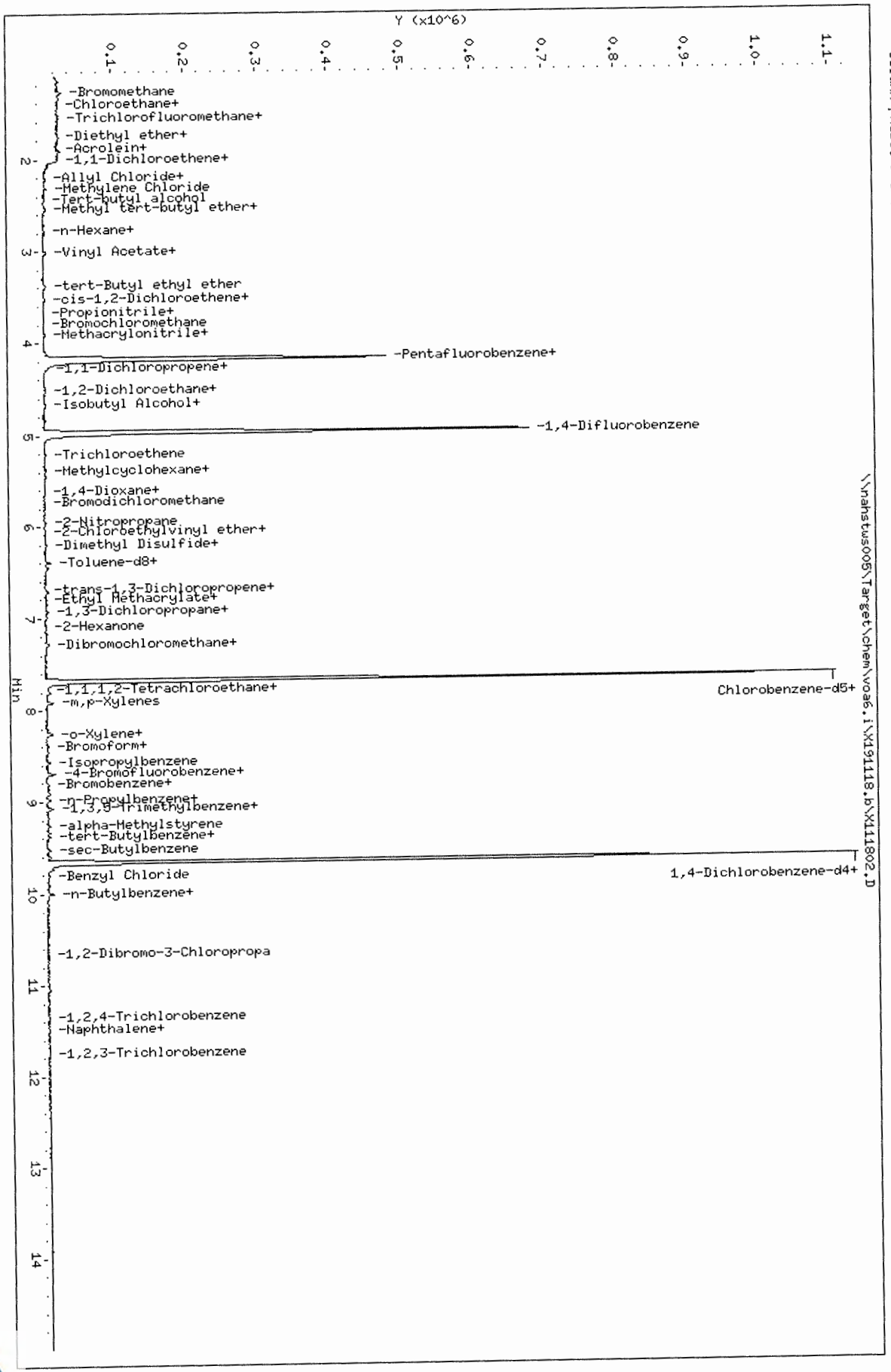
| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 431958 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 586737 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.671 | (1.000) | 529029 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.662 | 9.662 | (1.000) | 277425 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 1323 | 0.25000 | 1.05(Ta) |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 3260 | 0.25000 | 1.07(a) |
| $ | 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 1295 | 0.25000 | 0.69(a) |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 5247 | 0.25000 | 0.37(Ta) |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 814 | 0.25000 | 0.21(a) |
| | 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 1177 | 0.25000 | 0.20(a) |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 861 | 0.25000 | 0.22(aM) |
| | 138 Freon TF | 101 | 1.912 | 1.912 | (0.457) | 755 | 0.25000 | 0.20(aM) |
| | 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 656 | 0.25000 | 0.23(aM) |
| | 22 1,1-Dichloroethane | 63 | 2.922 | 2.922 | (0.699) | 1571 | 0.25000 | 0.24(aM) |
| | 11 1,1-Dichloroethene | 96 | 1.919 | 1.919 | (0.459) | 909 | 0.25000 | 0.24(a) |
| | 32 1,1-Dichloropropene | 75 | 4.283 | 4.283 | (0.862) | 1579 | 0.25000 | 0.33(a) |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.216) | 224 | 0.25000 | (aM) |
| | 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.918) | 702 | 0.25000 | 0.21(aM) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.174) | 320 | 0.25000 | 0.13(aM) |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.971) | 2742 | 0.25000 | 0.20(a) |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.658 | 10.658 | (1.103) | 103 | 0.25000 | (aM) |
| | 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 708 | 0.25000 | 0.19(a) |

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 88 | 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.035) | 1523 | 0.25000 | 0.20(a) |
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 938 | 0.25000 | 0.20(aM) |
| 42 | 1,2-Dichloropropane | 63 | 5.450 | 5.450 | (1.097) | 858 | 0.25000 | 0.24(aM) |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.075 | 9.075 | (0.939) | 2444 | 0.25000 | 0.19(a) |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.995) | 1534 | 0.25000 | 0.19(a) |
| 54 | 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 1126 | 0.25000 | 0.20(a) |
| 84 | 1,4-Dichlorobenzene | 146 | 9.683 | 9.683 | (1.002) | 1760 | 0.25000 | 0.21(a) |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 1234 | 0.25000 | 0.21(aM) |
| 24 | 2-Butanone | 43 | 3.588 | 3.588 | (0.858) | 827 | 0.50000 | 0.62(aM) |
| 76 | 2-Chlorotoluene | 91 | 8.974 | 8.974 | (0.929) | 2277 | 0.25000 | 0.22(a) |
| 52 | 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 809 | 0.50000 | 0.37(Ta) |
| 77 | 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 2873 | 0.25000 | 0.23(a) |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 2596 | 0.25000 | 0.19(a) |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.324 | 6.324 | (0.824) | 1190 | 0.50000 | 0.38(aM) |
| 10 | Acetone | 43 | 1.969 | 1.969 | (0.471) | 3213 | 0.50000 | (aM) |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 3088 | 0.25000 | 0.23(a) |
| 74 | Bromobenzene | 156 | 8.817 | 8.817 | (0.913) | 940 | 0.25000 | 0.19(a) |
| 29 | Bromochloromethane | 128 | 3.795 | 3.795 | (0.908) | 660 | 0.25000 | 0.28(aM) |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 1101 | 0.25000 | 0.22(aM) |
| 66 | Bromoform | 173 | 8.416 | 8.416 | (1.097) | 495 | 0.25000 | 1.15(aM) |
| 6 | Bromomethane | 94 | 1.339 | 1.339 | (0.320) | 1552 | 0.25000 | (aM) |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 3999 | 0.50000 | 0.40(a) |
| 34 | Carbon Tetrachloride | 117 | 4.275 | 4.275 | (0.860) | 1084 | 0.25000 | 0.20(aM) |
| 59 | Chlorobenzene | 112 | 7.692 | 7.692 | (1.003) | 2603 | 0.25000 | 0.25(a) |
| 7 | Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 672 | 0.25000 | 0.24(aM) |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.935) | 2414 | 0.25000 | 0.34(aM) |
| 3 | Chloromethane | 50 | 1.074 | 1.074 | (0.257) | 1640 | 0.25000 | 0.53(aM) |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 1103 | 0.25000 | 0.26(a) |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 1351 | 0.25000 | 0.23(aM) |
| 55 | Dibromochloromethane | 129 | 7.184 | 7.184 | (0.937) | 883 | 0.25000 | 0.21(a) |
| 44 | Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 573 | 0.25000 | 0.23(aM) |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 642 | 0.25000 | 1.04(aM) |
| 61 | Ethylbenzene | 106 | 7.800 | 7.800 | (1.017) | 1072 | 0.25000 | 0.20(a) |
| 91 | Hexachlorobutadiene | 225 | 11.481 | 11.481 | (1.188) | 367 | 0.25000 | (aM) |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 2992 | 0.25000 | 0.18(a) |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 2521 | 0.50000 | 0.39(a) |
| 17 | Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 1174 | 0.25000 | 0.30(a) |
| 87 | n-Butylbenzene | 91 | 9.999 | 9.999 | (1.035) | 2169 | 0.25000 | 0.19(a) |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.923) | 3456 | 0.25000 | 0.20(a) |
| 92 | Naphthalene | 128 | 11.553 | 11.553 | (1.196) | 764 | 0.25000 | 0.25(a) |
| 63 | o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 1221 | 0.25000 | 0.19(a) |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.986) | 3012 | 0.25000 | 0.20(a) |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 2388 | 0.25000 | 0.21(a) |
| 78 | tert-Butylbenzene | 119 | 9.340 | 9.340 | (0.967) | 2350 | 0.25000 | 0.21(a) |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 914 | 0.25000 | 0.24(a) |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 3631 | 0.25000 | 0.24(a) |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.535 | (0.606) | 826 | 0.25000 | 0.23(aM) |
| 51 | trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 996 | 0.25000 | 0.19(a) |
| 38 | Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 945 | 0.25000 | 0.23(a) |
| 8 | Trichlorofluoromethane | 101 | 1.561 | 1.561 | (0.373) | 1233 | 0.25000 | 0.18(a) |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 1052 | 0.25000 | 0.23(a) |

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.




Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111802.D
Date : 18-NOV-2019 13:47
Client ID: VSTD000.25
Sample Info: VSTD000.25;VSTD000.25;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X191118.b\X111803.D
Lab Smp Id: VSTD000.5 Client Smp ID: VSTD000.5
Inj Date : 18-NOV-2019 14:35
Operator : PC Inst ID: voa6.i
Smp Info : VSTD000.5;VSTD000.5;1;2;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X191118.b\8260W.m
Meth Date : 06-Dec-2019 19:56 voa6.i Quant Type: ISTD
Cal Date : 18-NOV-2019 13:47 Cal File: X111802.D
Als bottle: 4 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

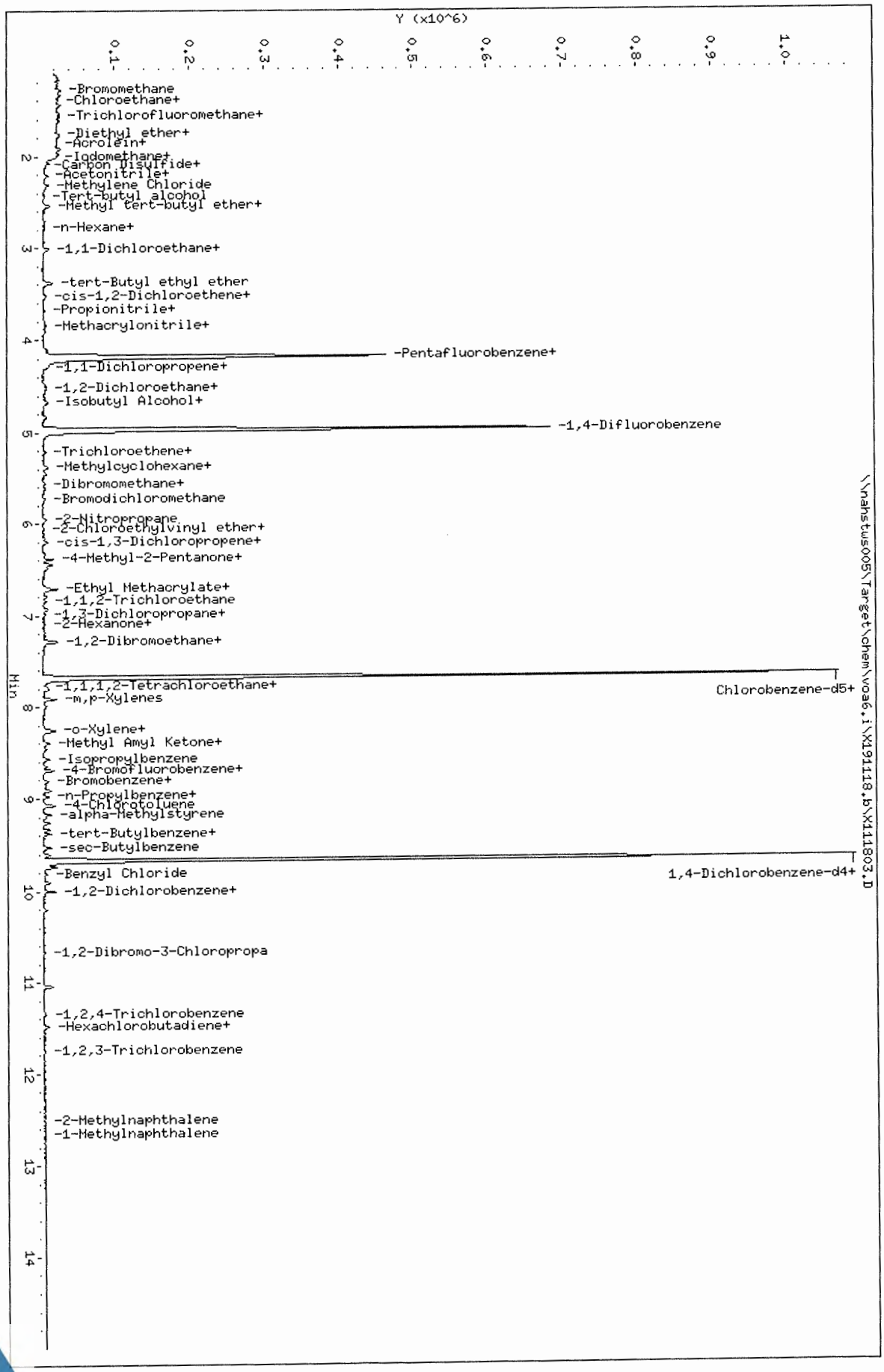
| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 417797 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 575000 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.670 | 7.670 | (1.000) | 520290 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 274172 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 2522 | 0.50000 | 1.36(Ta) |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 3844 | 0.50000 | 1.20(a) |
| $ | 30 Dibromofluoromethane | 113 | 4.110 | 4.110 | (0.983) | 2303 | 0.50000 | 0.96(a) |
| $ | 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 8468 | 0.50000 | 0.61(a) |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 1290 | 0.50000 | 0.34(a) |
| | 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 2055 | 0.50000 | 0.36(a) |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 1652 | 0.50000 | 0.42(aM) |
| | 138 Freon TF | 101 | 1.911 | 1.911 | (0.457) | 1235 | 0.50000 | 0.33(a) |
| | 53 1,1,2-Trichloroethane | 83 | 6.840 | 6.840 | (0.892) | 936 | 0.50000 | 0.34(a) |
| | 22 1,1-Dichloroethane | 63 | 2.928 | 2.928 | (0.700) | 2376 | 0.50000 | 0.39(Ta) |
| | 11 1,1-Dichloroethene | 96 | 1.911 | 1.911 | (0.457) | 1458 | 0.50000 | 0.41(aM) |
| | 32 1,1-Dichloropropene | 75 | 4.289 | 4.289 | (0.863) | 1907 | 0.50000 | 0.41(a) |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 421 | 0.50000 | (aM) |
| | 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 1248 | 0.50000 | 0.38(aM) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 892 | 0.50000 | 0.38(aM) |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.382 | 9.382 | (0.970) | 4769 | 0.50000 | 0.36(aM) |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.665 | (1.103) | 125 | 0.50000 | (aM) |
| | 57 1,2-Dibromoethane | 107 | 7.269 | 7.269 | (0.948) | 1273 | 0.50000 | 0.34(a) |

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111803.D Page 2
Report Date: 06-Dec-2019 19:56

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 88 | 1,2-Dichlorobenzene | 146 | 9.998 | 9.998 | (1.034) | 2511 | 0.50000 | 0.34 (a) |
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 1591 | 0.50000 | 0.34 (aM) |
| 42 | 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 1693 | 0.50000 | 0.49 (aM) |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.067 | 9.067 | (0.938) | 4403 | 0.50000 | 0.35 (a) |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 2841 | 0.50000 | 0.36 (a) |
| 54 | 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 2241 | 0.50000 | 0.40 (a) |
| 84 | 1,4-Dichlorobenzene | 146 | 9.683 | 9.683 | (1.001) | 3038 | 0.50000 | 0.38 (a) |
| 26 | 2,2-Dichloropropane | 77 | 3.523 | 3.523 | (0.842) | 2284 | 0.50000 | 0.41 (aM) |
| 24 | 2-Butanone | 43 | 3.595 | 3.595 | (0.860) | 1395 | 1.00000 | 1.08 (aM) |
| 76 | 2-Chlorotoluene | 91 | 8.981 | 8.981 | (0.929) | 3464 | 0.50000 | 0.35 (a) |
| 52 | 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 1875 | 1.00000 | 0.87 (a) |
| 77 | 4-Chlorotoluene | 91 | 9.074 | 9.074 | (0.939) | 4251 | 0.50000 | 0.35 (a) |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 5043 | 0.50000 | 0.37 (a) |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 2291 | 1.00000 | 0.75 (a) |
| 10 | Acetone | 43 | 1.976 | 1.976 | (0.473) | 4579 | 1.00000 | 0.53 (aM) |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 4530 | 0.50000 | 0.34 (a) |
| 74 | Bromobenzene | 156 | 8.809 | 8.809 | (0.911) | 1601 | 0.50000 | 0.33 (a) |
| 29 | Bromochloromethane | 128 | 3.802 | 3.802 | (0.909) | 956 | 0.50000 | 0.42 (a) |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 1712 | 0.50000 | 0.35 (aM) |
| 66 | Bromoform | 173 | 8.415 | 8.415 | (1.097) | 887 | 0.50000 | 1.27 (aM) |
| 6 | Bromomethane | 94 | 1.338 | 1.338 | (0.320) | 2741 | 0.50000 | (a) |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 6243 | 1.00000 | 0.64 (aM) |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 1955 | 0.50000 | 0.38 (aM) |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 3839 | 0.50000 | 0.37 (a) |
| 7 | Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 1164 | 0.50000 | 0.44 (aM) |
| 28 | Chloroform | 83 | 3.917 | 3.917 | (0.937) | 3238 | 0.50000 | 0.47 (a) |
| 3 | Chloromethane | 50 | 1.073 | 1.073 | (0.257) | 2201 | 0.50000 | 0.67 (a) |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 1368 | 0.50000 | 0.34 (a) |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 1873 | 0.50000 | 0.33 (a) |
| 55 | Dibromochloromethane | 129 | 7.176 | 7.176 | (0.936) | 1318 | 0.50000 | 0.33 (a) |
| 44 | Dibromomethane | 93 | 5.564 | 5.564 | (1.120) | 802 | 0.50000 | 0.32 (a) |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 1269 | 0.50000 | 1.20 (aM) |
| 61 | Ethylbenzene | 106 | 7.807 | 7.807 | (1.018) | 1838 | 0.50000 | 0.35 (a) |
| 91 | Hexachlorobutadiene | 225 | 11.481 | 11.481 | (1.187) | 1376 | 0.50000 | 0.21 (a) |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 5484 | 0.50000 | 0.35 (a) |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 4089 | 1.00000 | 0.64 (a) |
| 17 | Methylene Chloride | 84 | 2.305 | 2.305 | (0.551) | 1764 | 0.50000 | 0.46 (aM) |
| 87 | n-Butylbenzene | 91 | 9.998 | 9.998 | (1.034) | 4442 | 0.50000 | 0.39 (aM) |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 6280 | 0.50000 | 0.37 (a) |
| 92 | Naphthalene | 128 | 11.560 | 11.560 | (1.196) | 1399 | 0.50000 | 0.47 (a) |
| 63 | o-Xylene | 106 | 8.243 | 8.243 | (1.075) | 2028 | 0.50000 | 0.32 (a) |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 5469 | 0.50000 | 0.37 (a) |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 3653 | 0.50000 | 0.33 (a) |
| 78 | tert-Butylbenzene | 119 | 9.339 | 9.339 | (0.966) | 3670 | 0.50000 | 0.34 (a) |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 1382 | 0.50000 | 0.37 (a) |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 5603 | 0.50000 | 0.37 (a) |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.535 | (0.606) | 1192 | 0.50000 | 0.34 (a) |
| 51 | trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 1749 | 0.50000 | 0.34 (a) |
| 38 | Trichloroethene | 130 | 5.206 | 5.206 | (1.048) | 1298 | 0.50000 | 0.32 (a) |
| 8 | Trichlorofluoromethane | 101 | 1.560 | 1.560 | (0.373) | 2137 | 0.50000 | 0.32 (a) |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 2046 | 0.50000 | 0.48 (aM) |

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



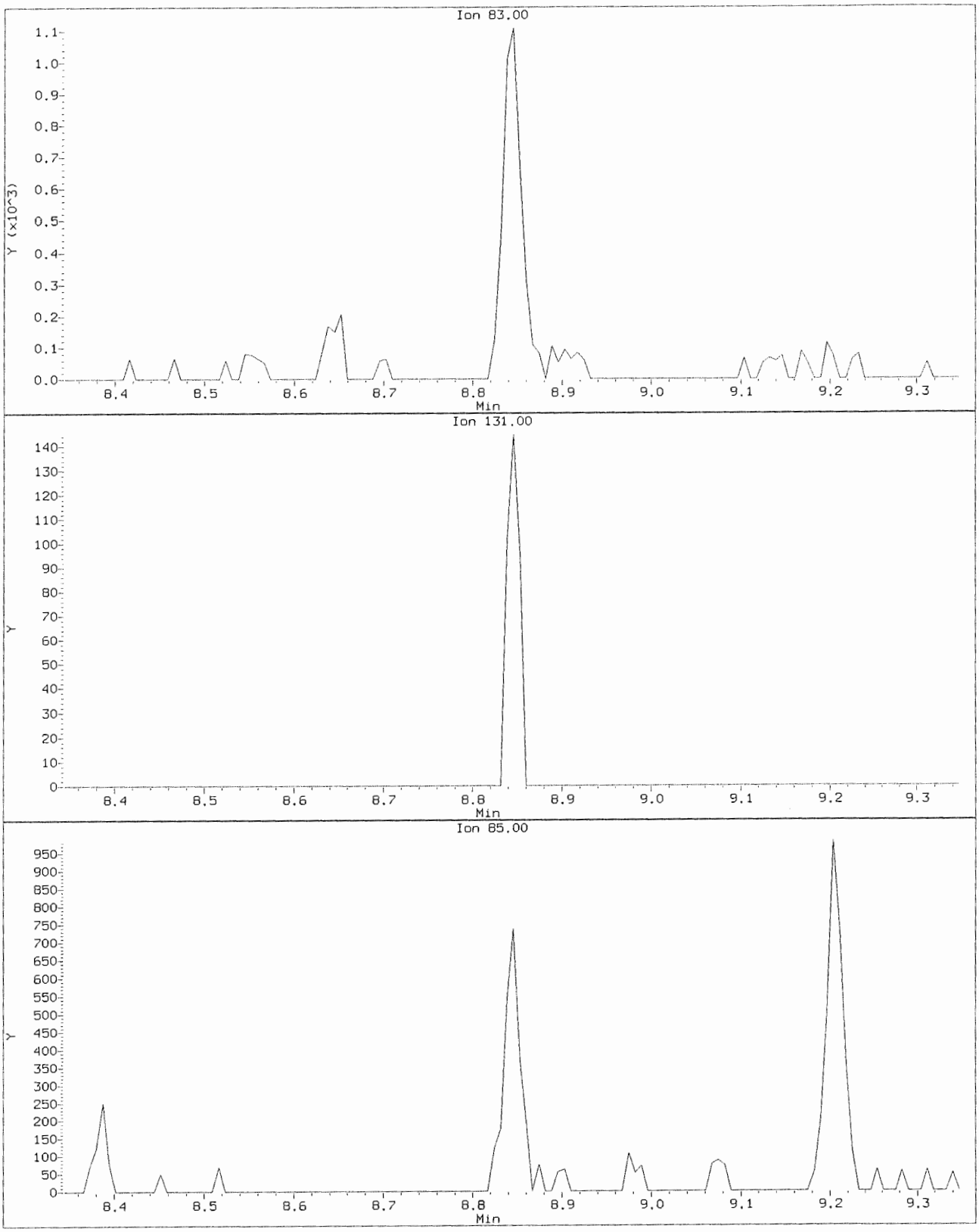

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111803.D
Date : 18-NOV-2019 14:35
Client ID: VSTD000.5
Sample Info: VSTD000.5;VSTD000.5;1;2;
Purge Volume: 5.0
Column phase: DB624

\\nahstws005\Target\chem\voa6.i\X191118.b\X111803.D

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111803.D
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



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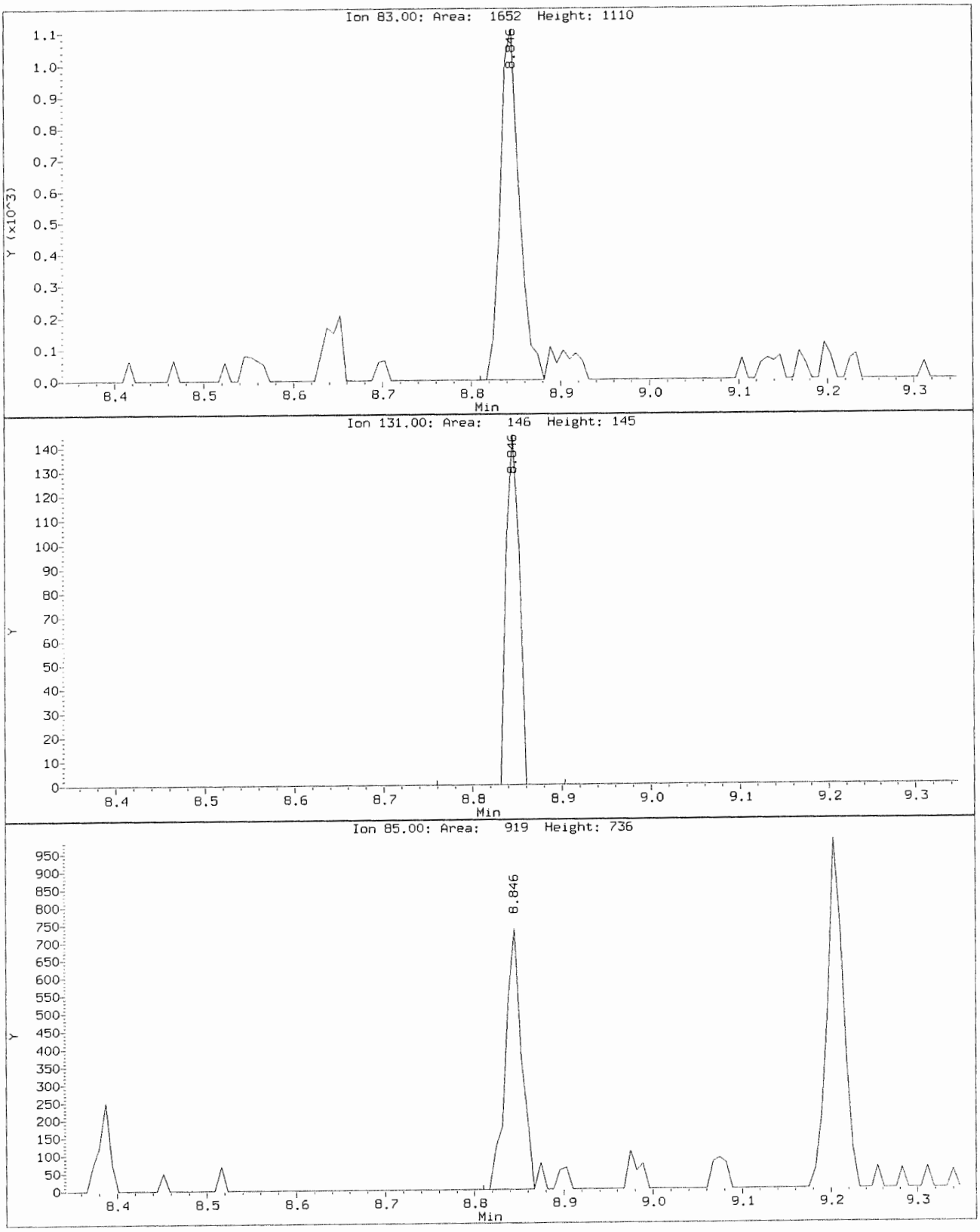
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



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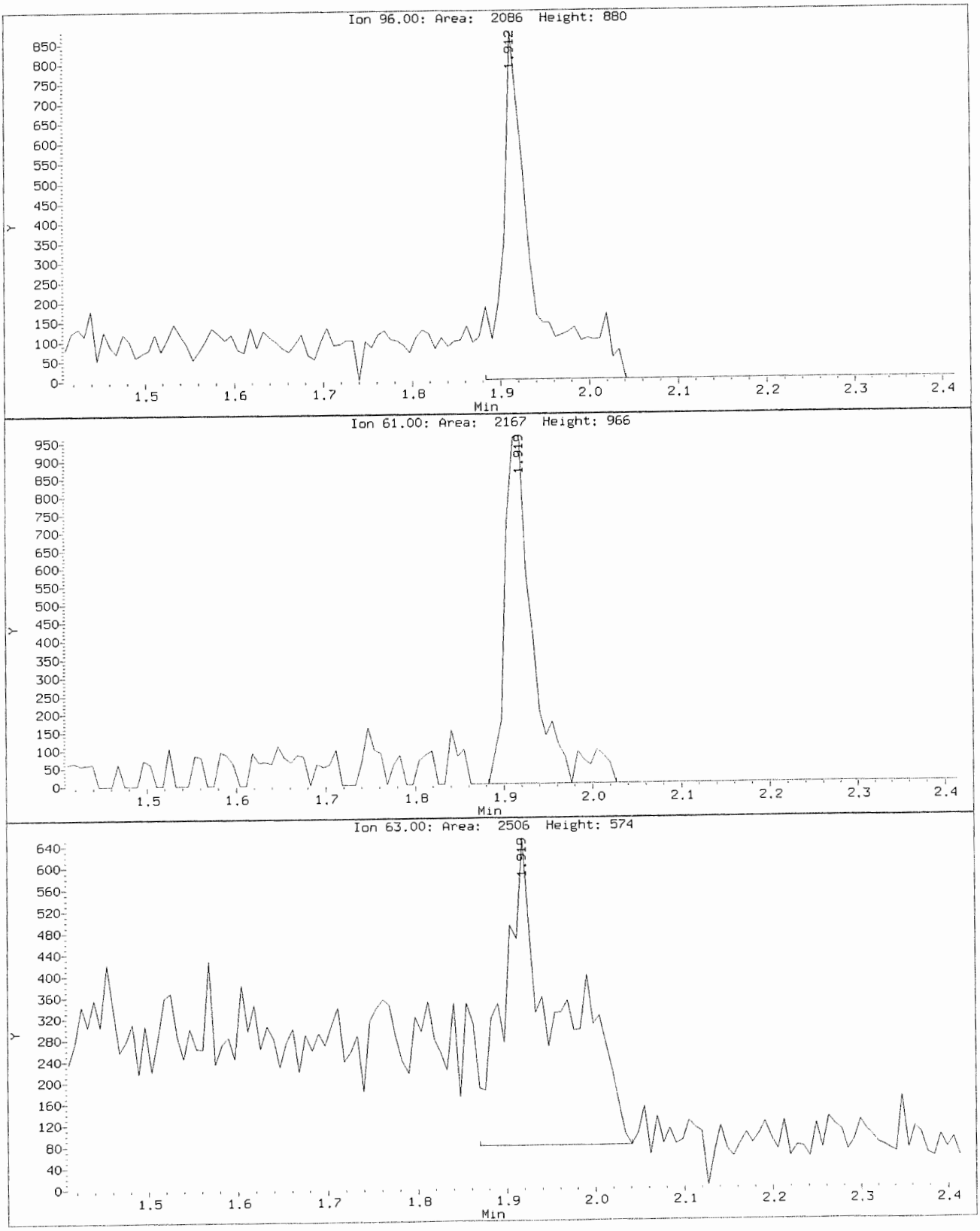
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1-Dichloroethene
CAS Number: 75-35-4



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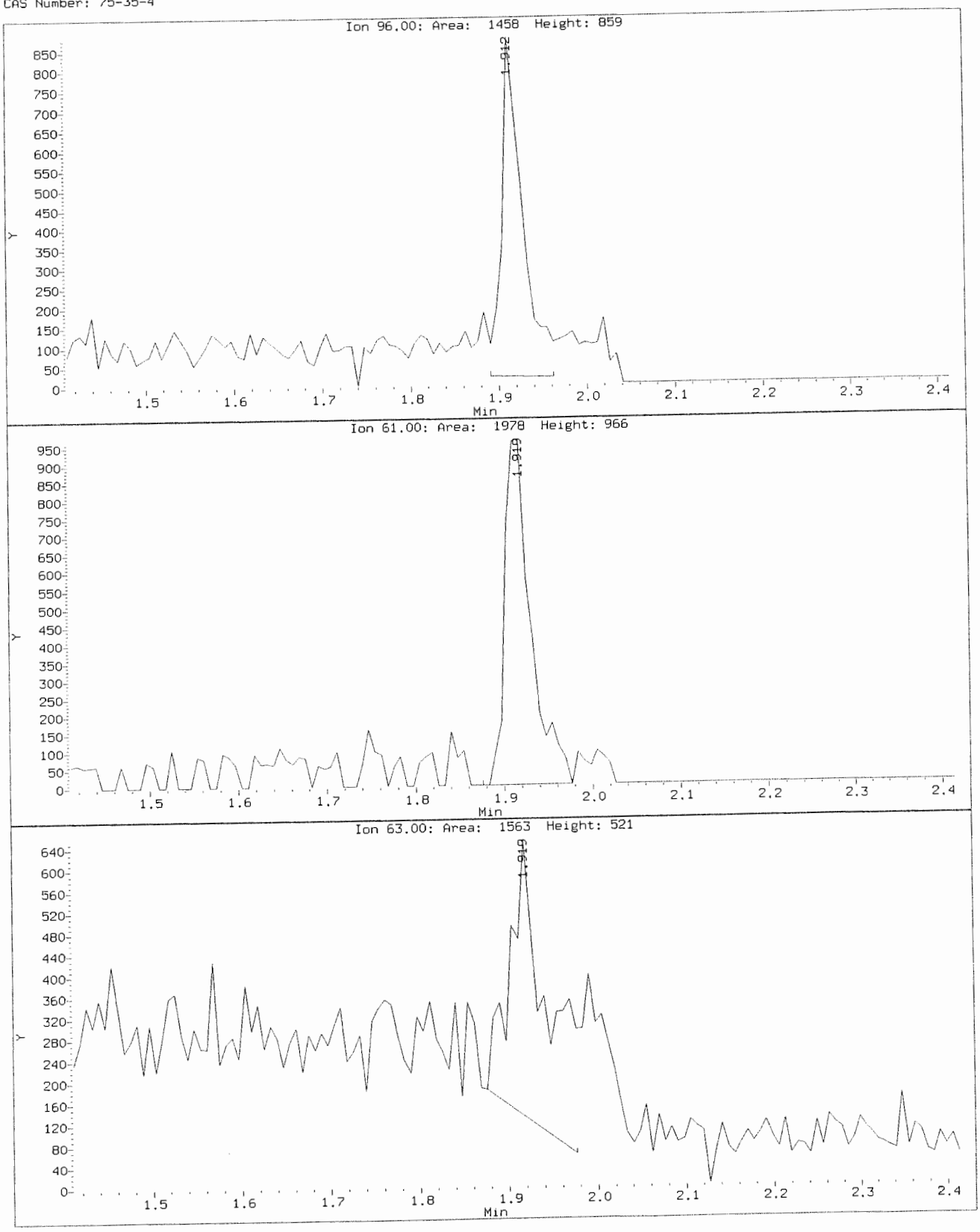
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,1-Dichloroethene
CAS Number: 75-35-4



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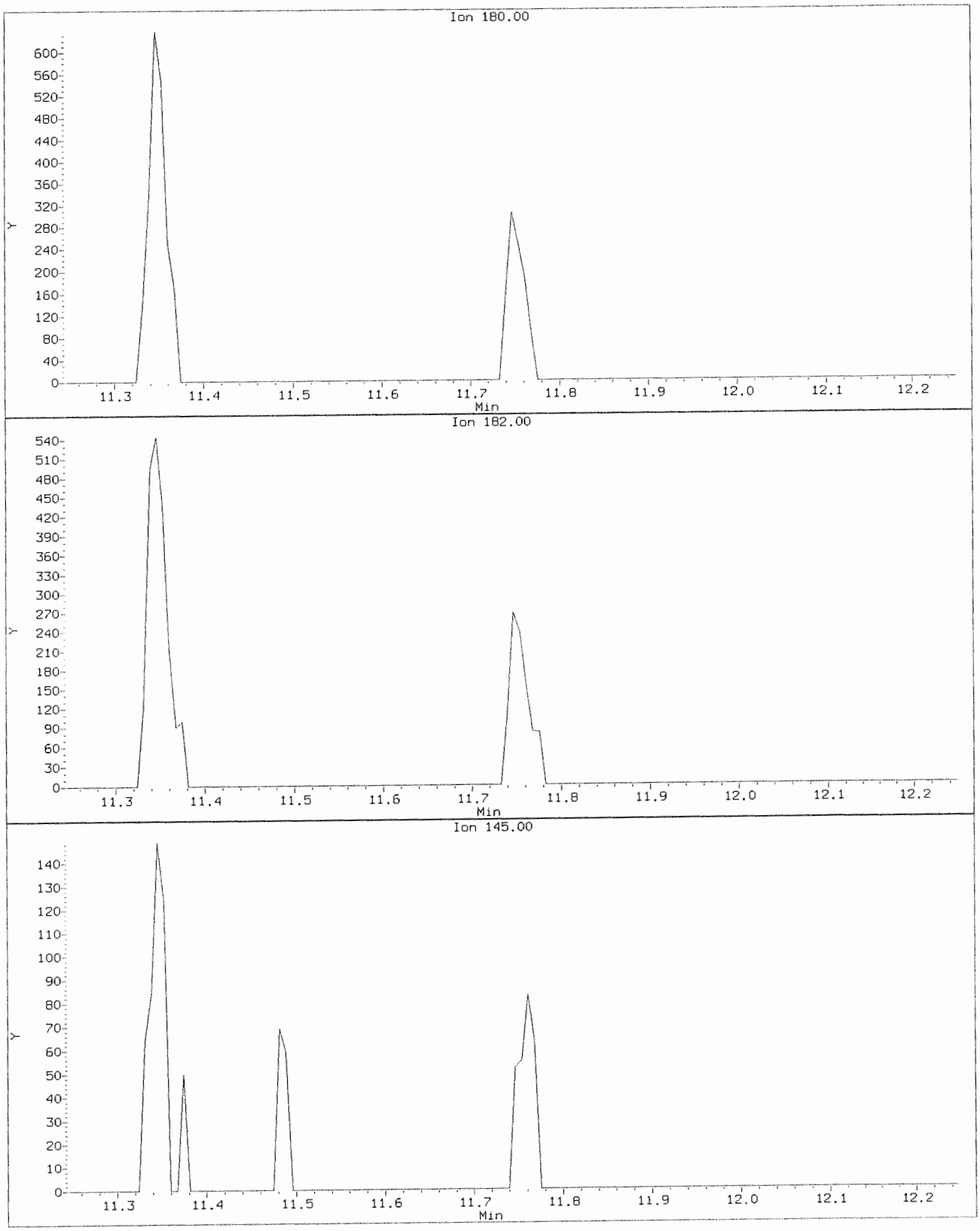
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6



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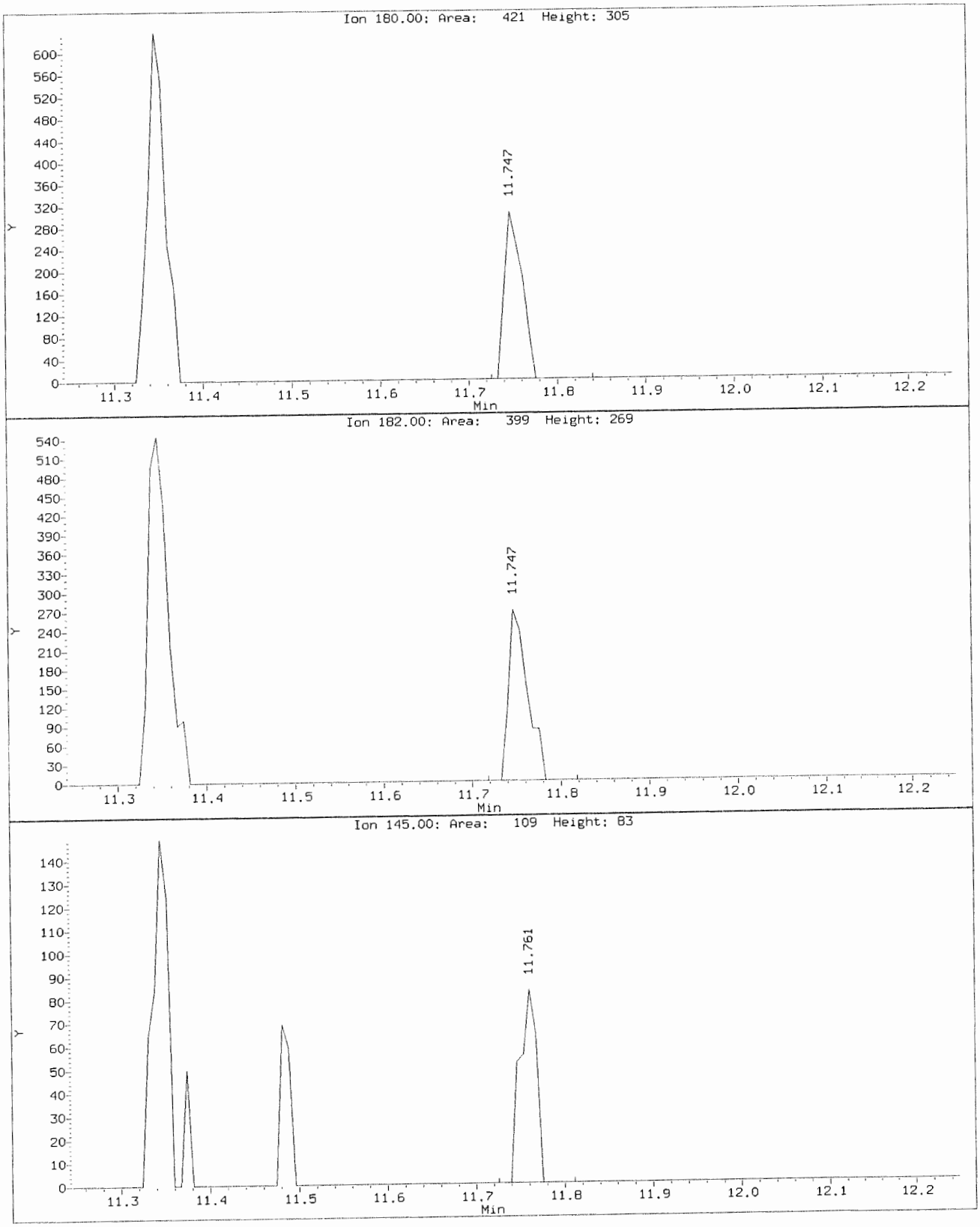
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichlorobenzene
CAS Number: 87-61-6



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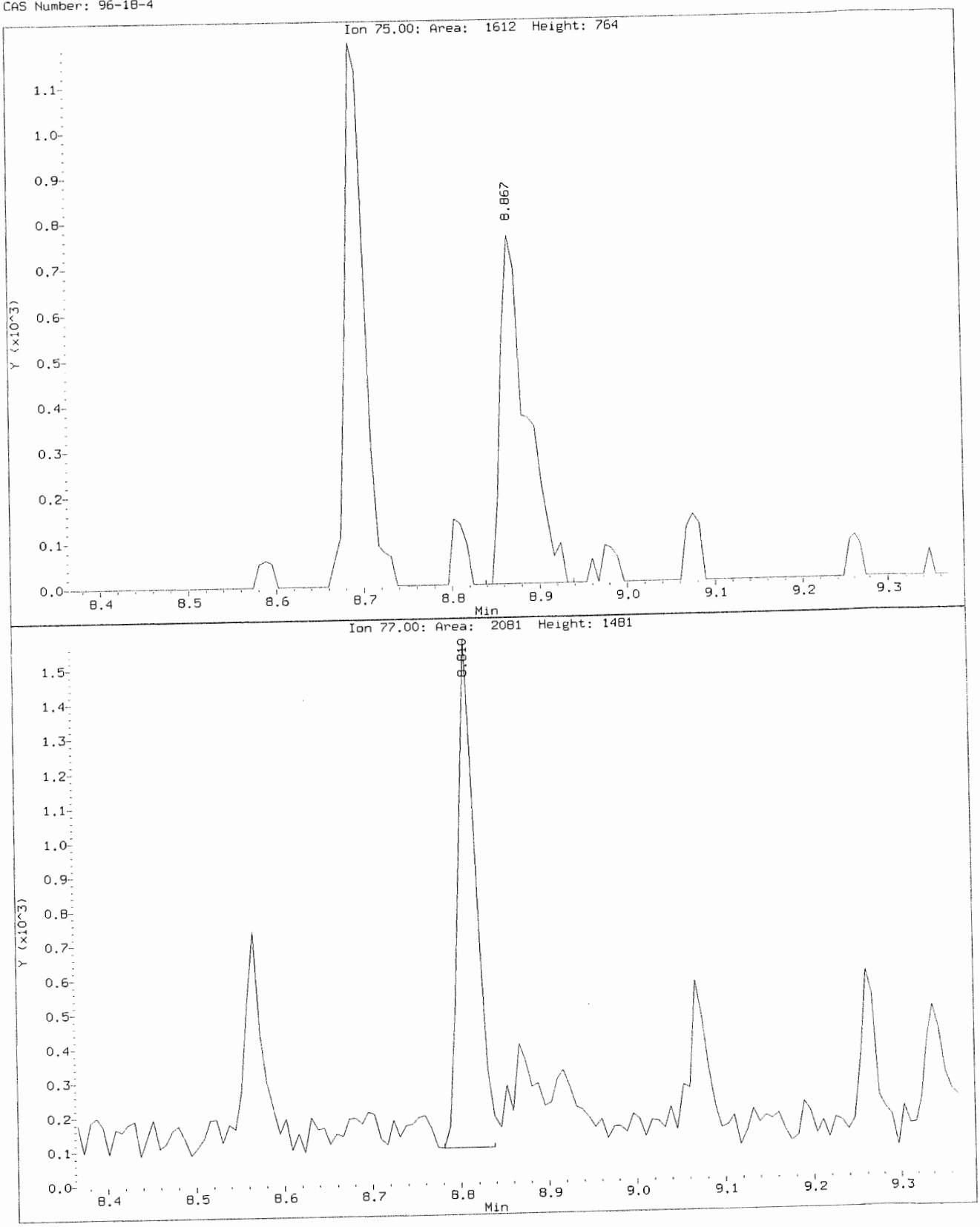
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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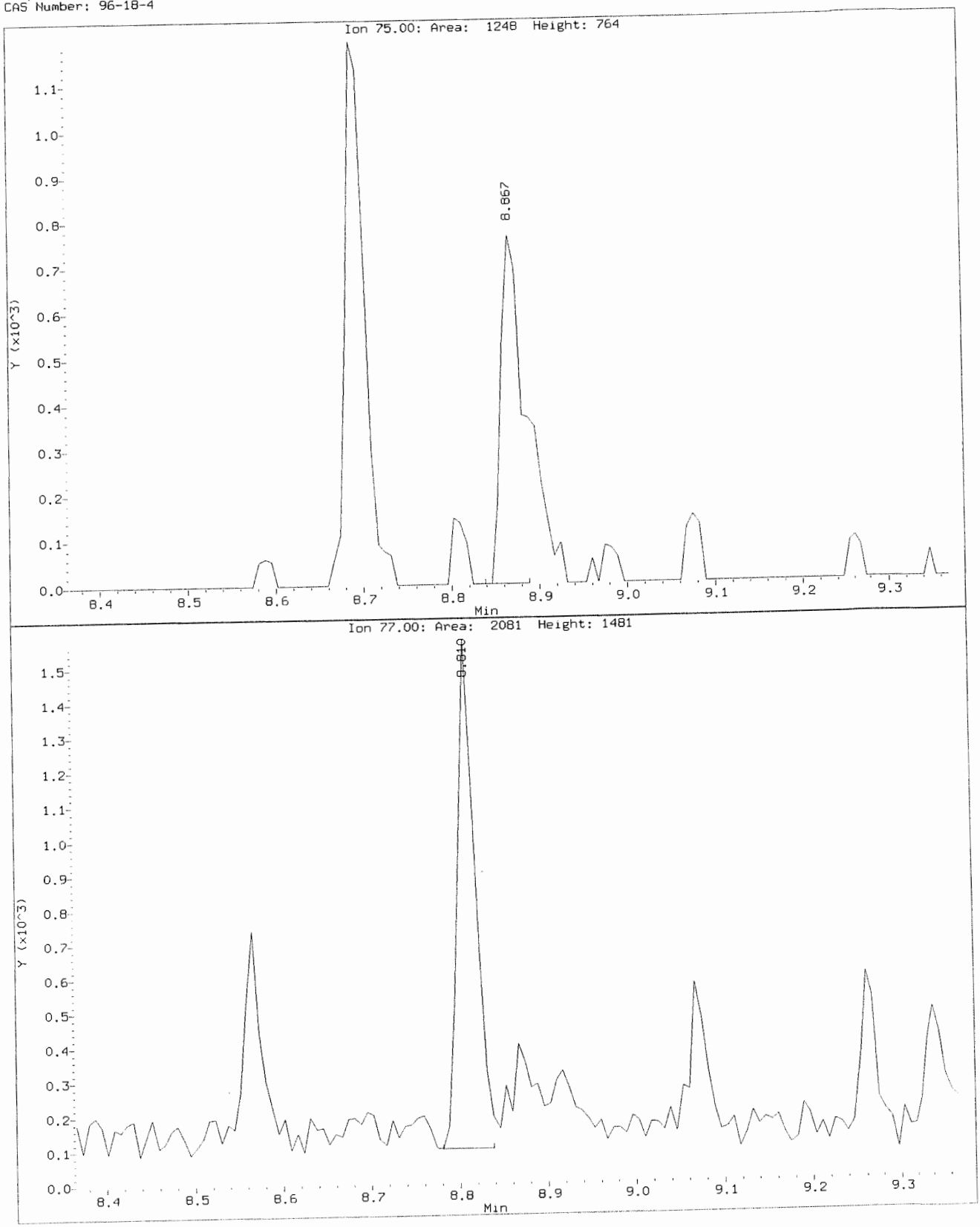
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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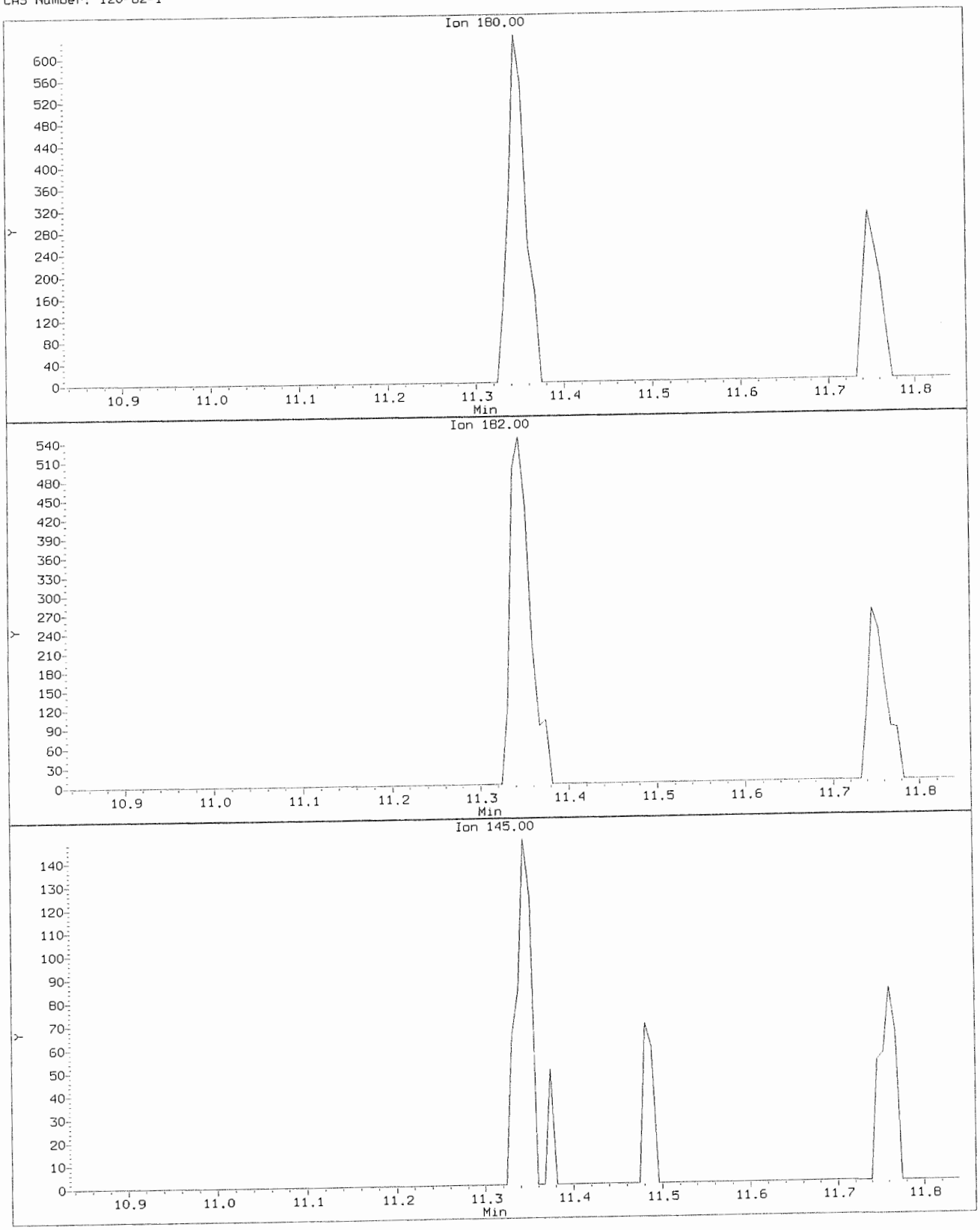
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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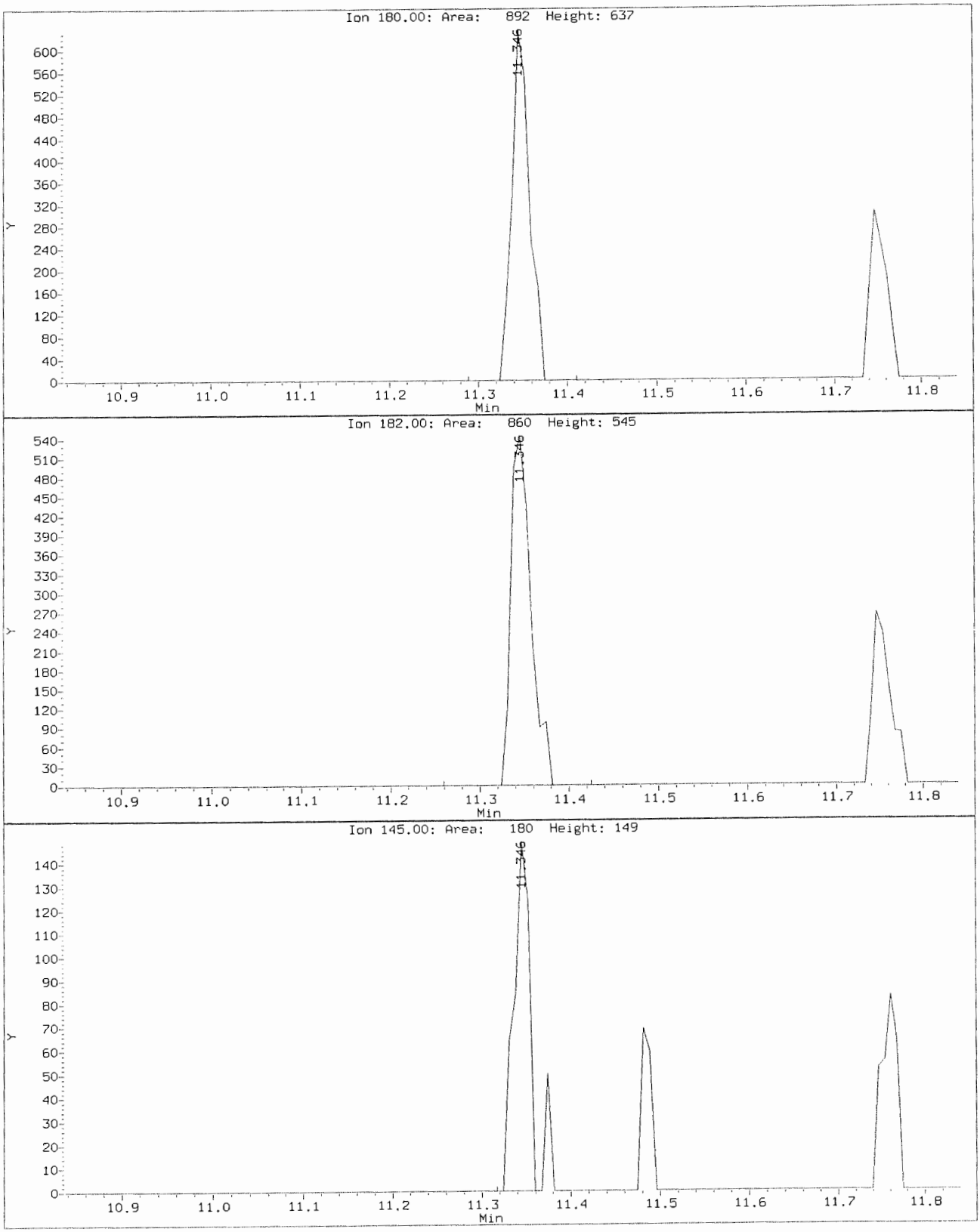
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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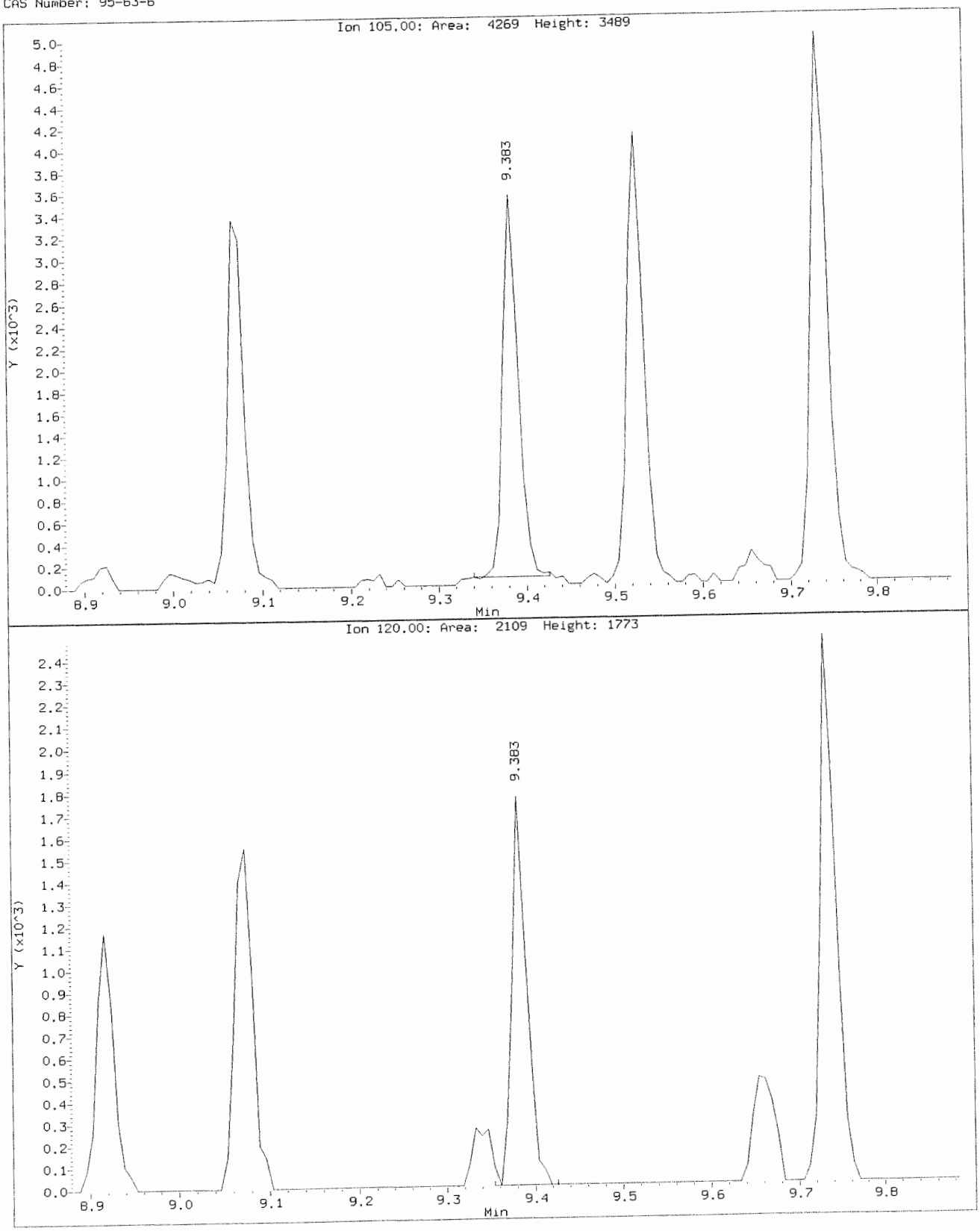
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2,4-Trimethylbenzene
CAS Number: 95-63-6



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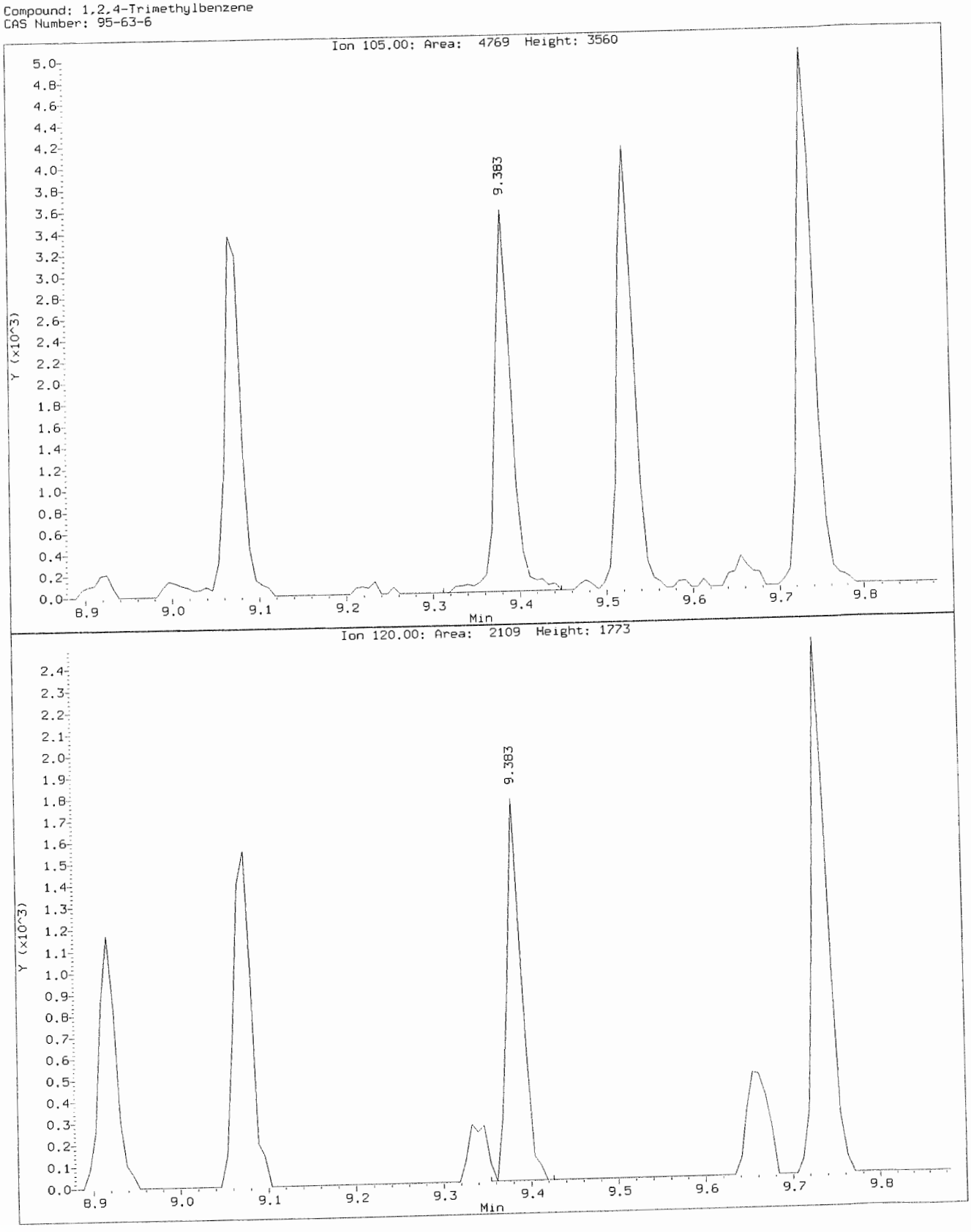
Compound: 1,2,4-Trimethylbenzene
CAS Number: 95-63-6



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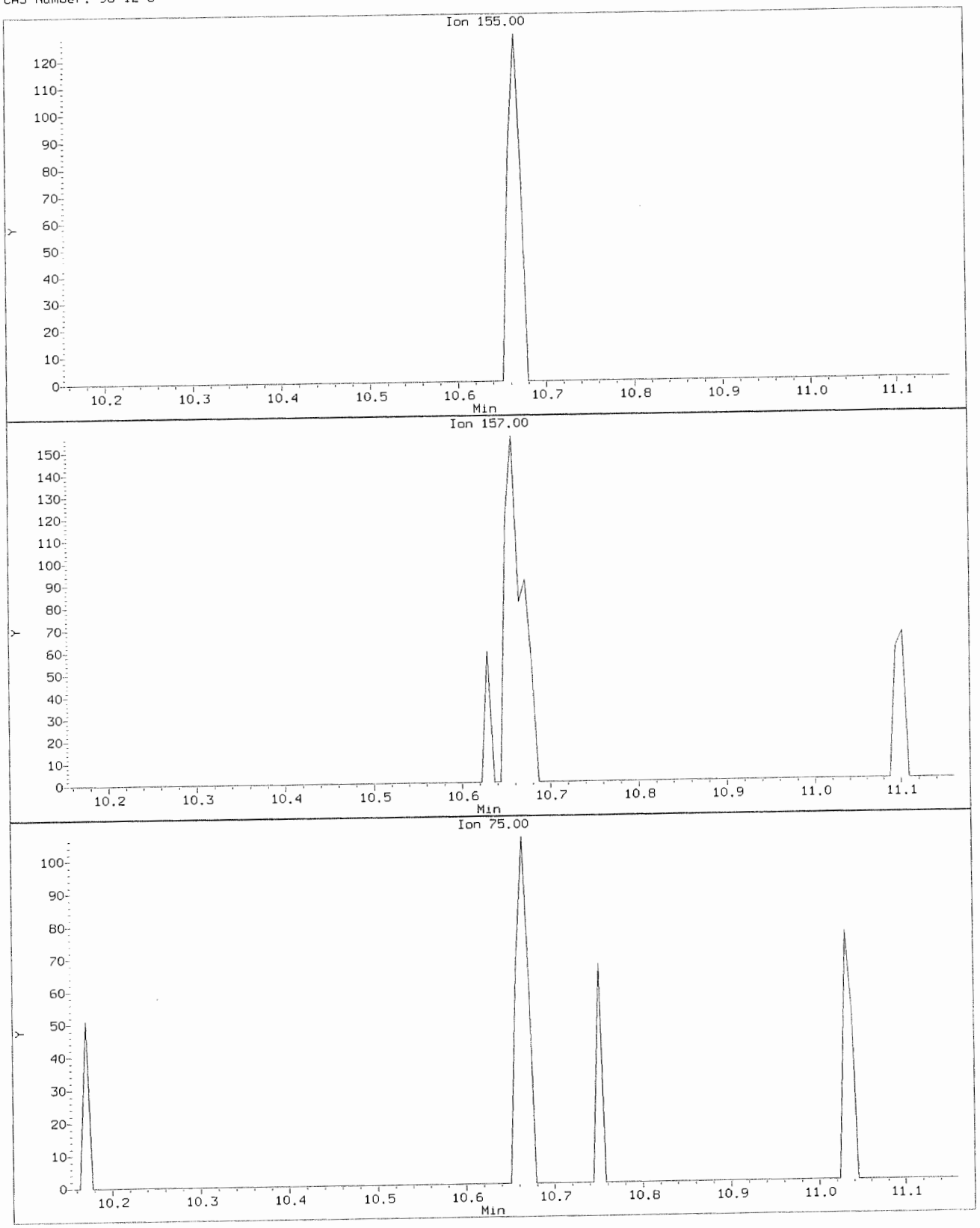
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



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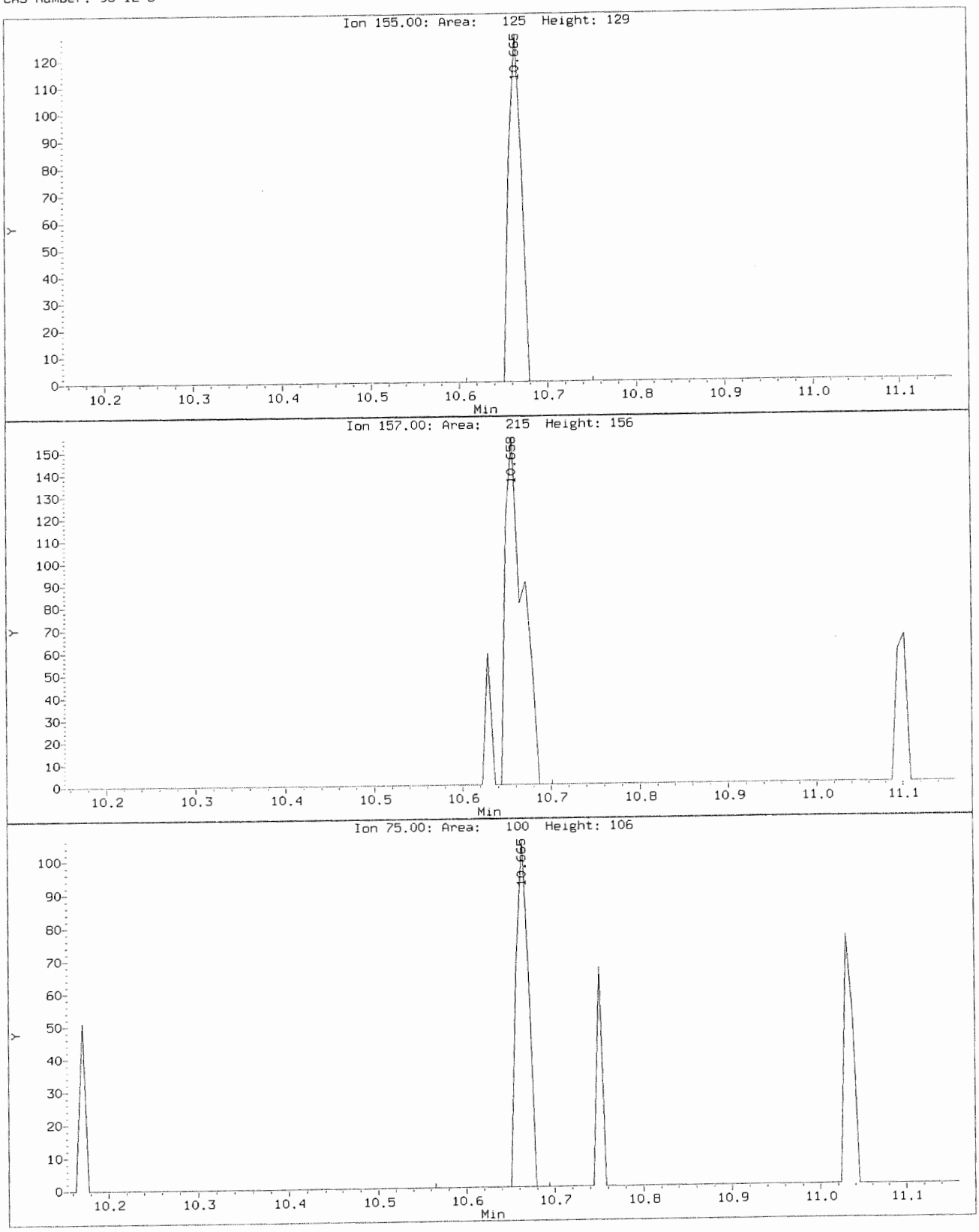
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



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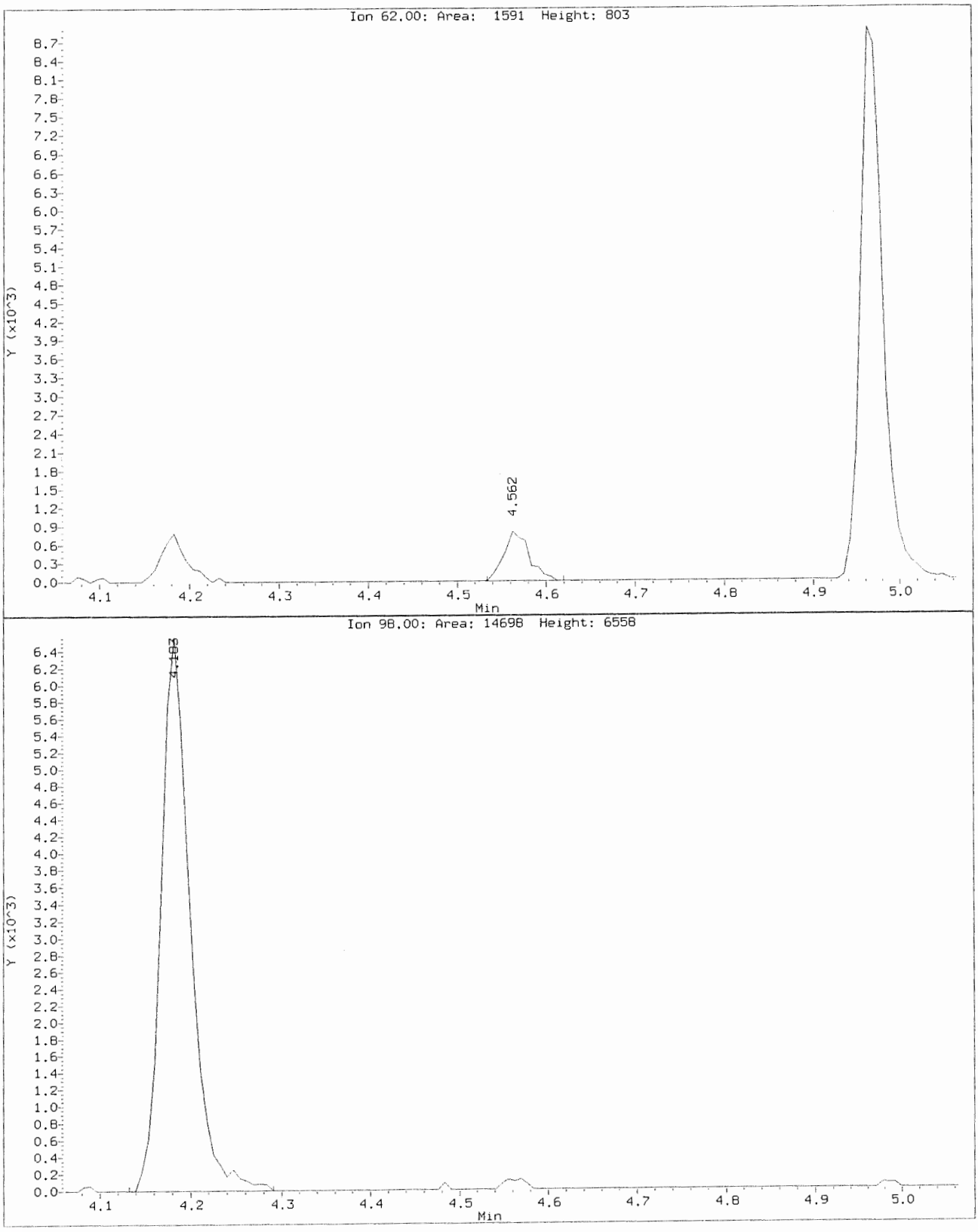
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2



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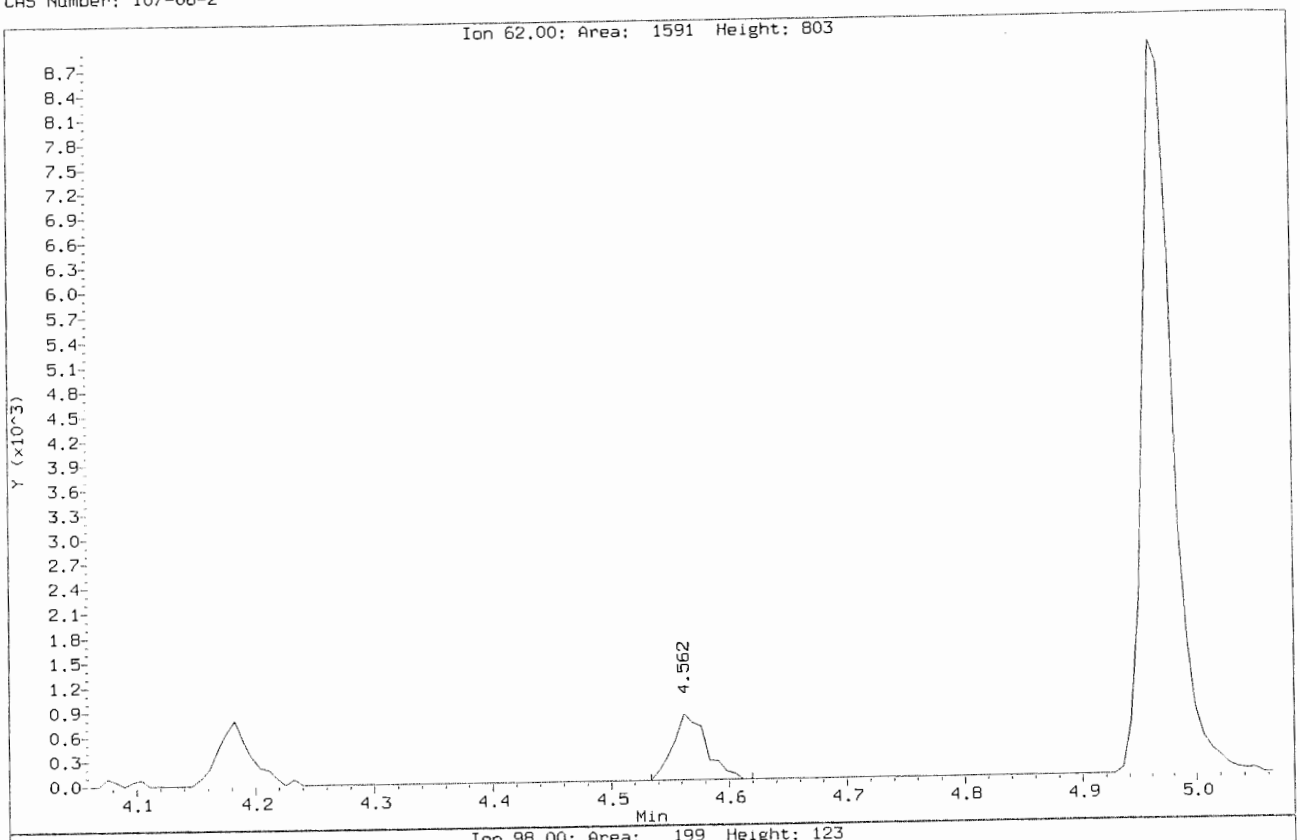
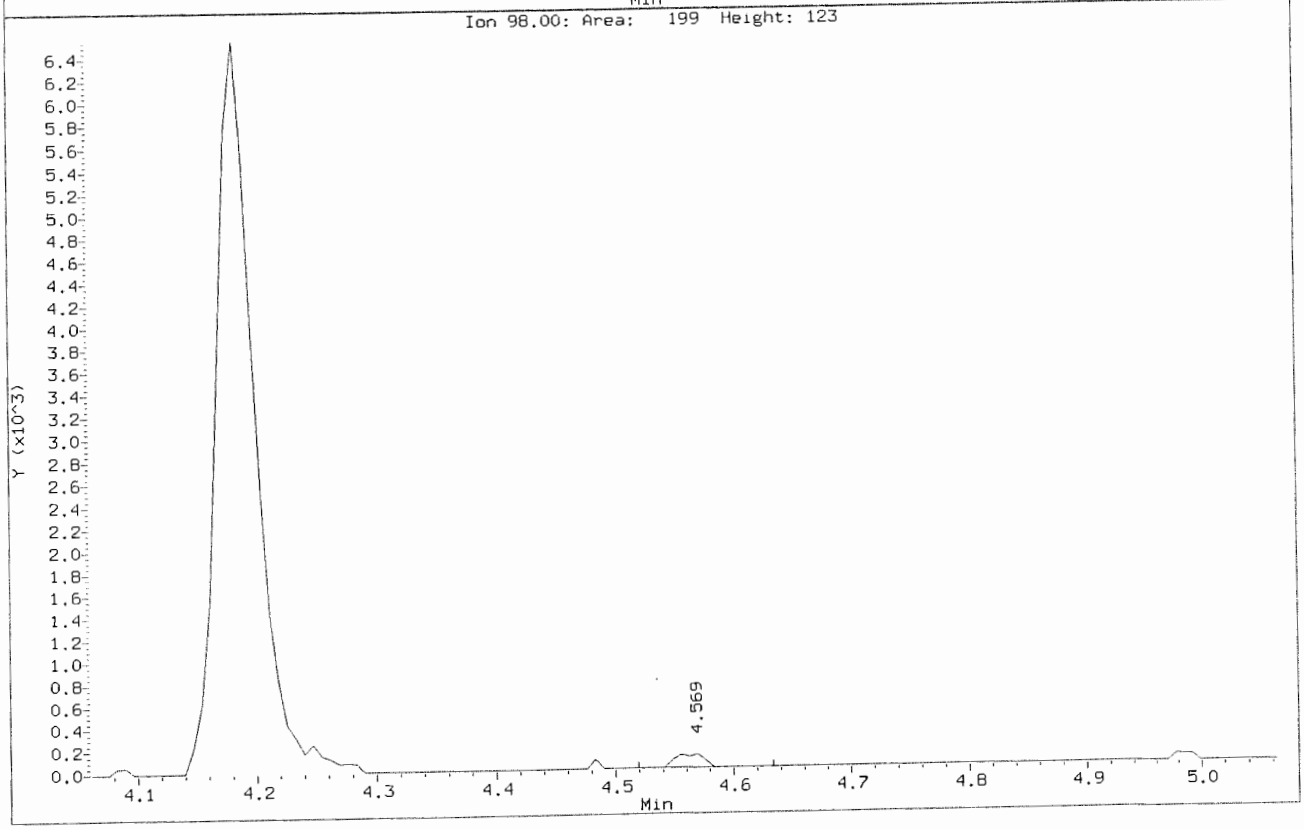
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloroethane
CAS Number: 107-06-2



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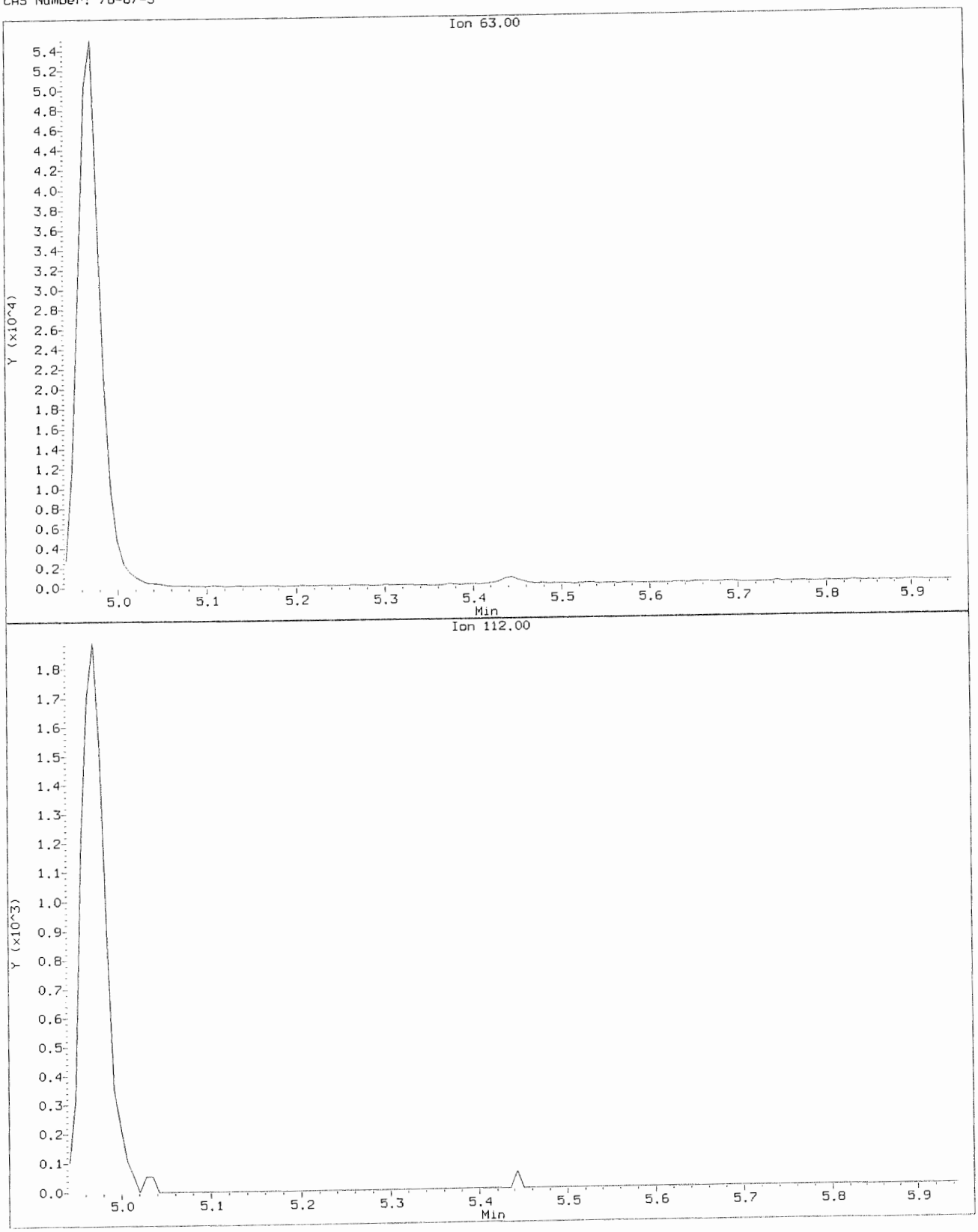
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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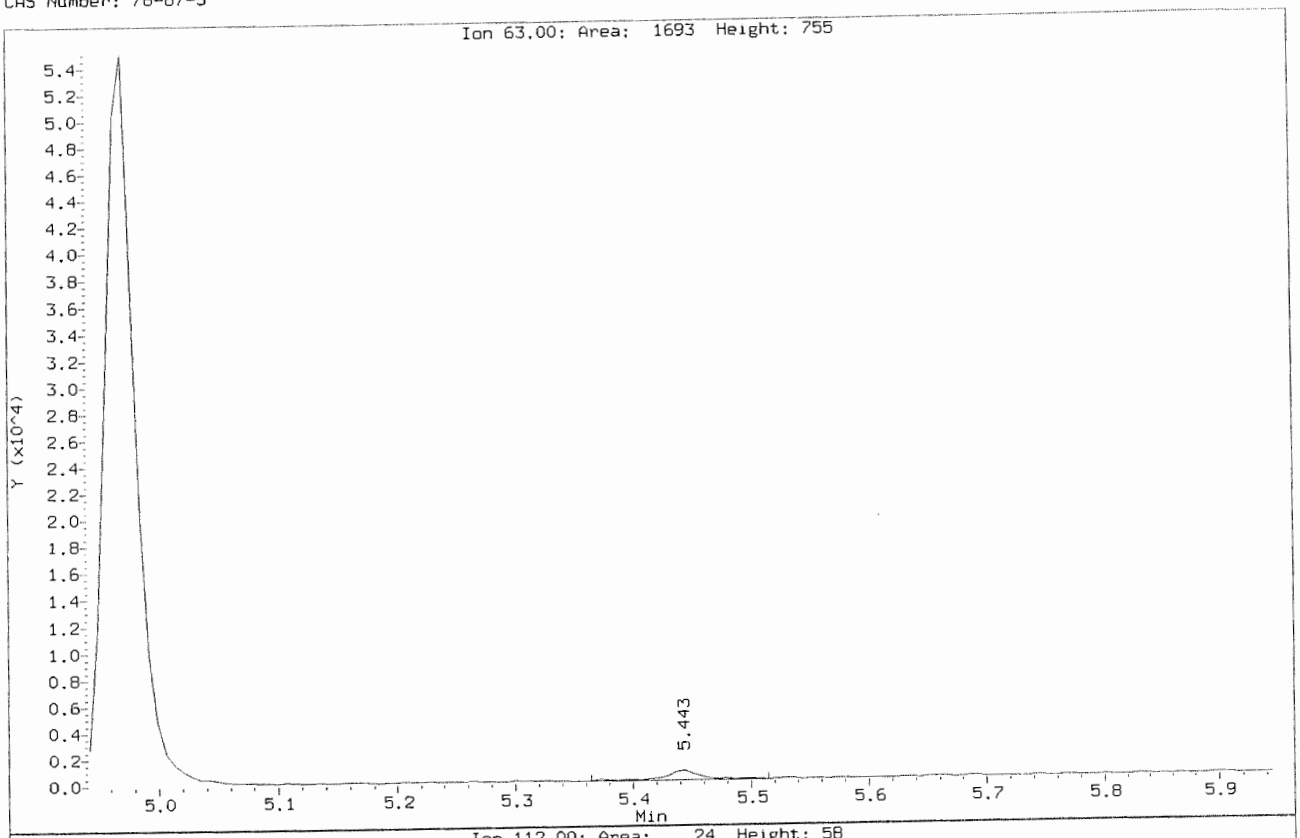
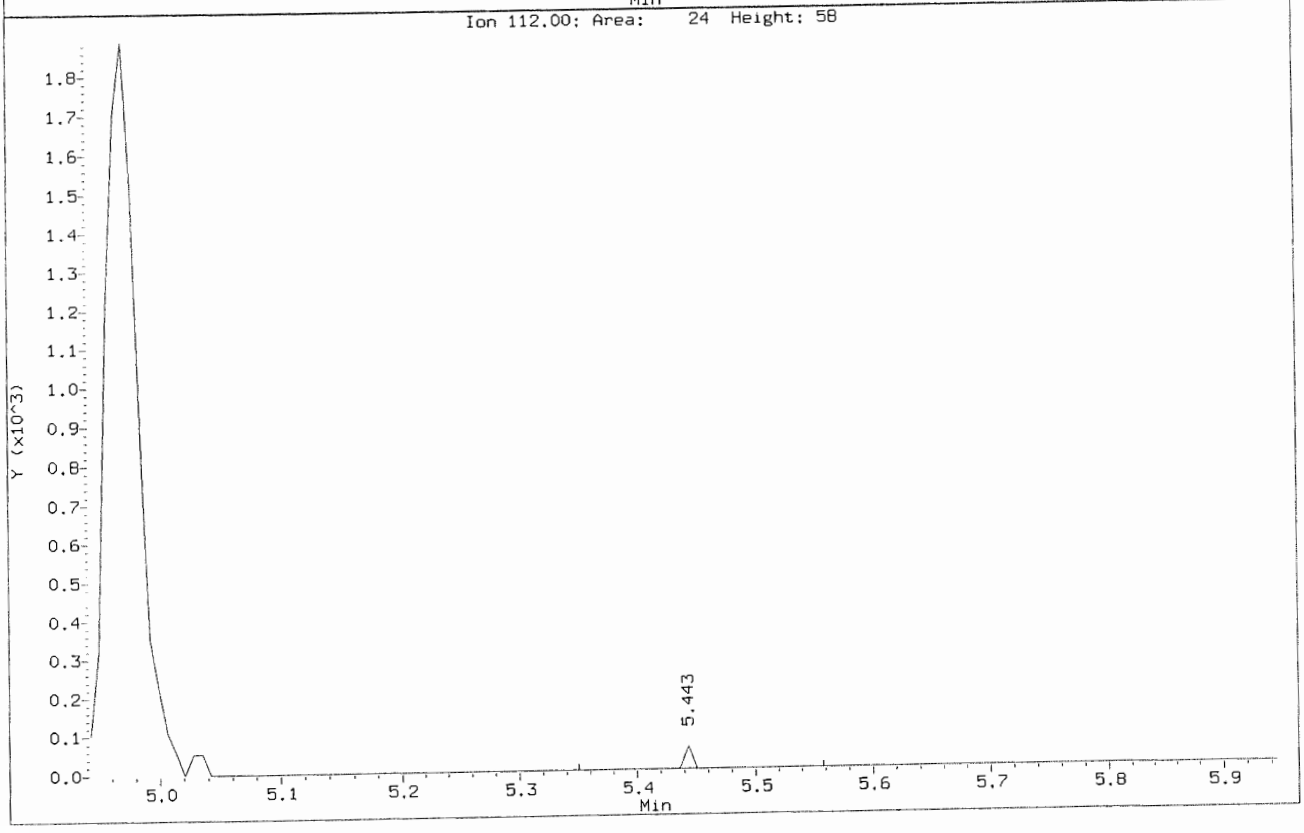
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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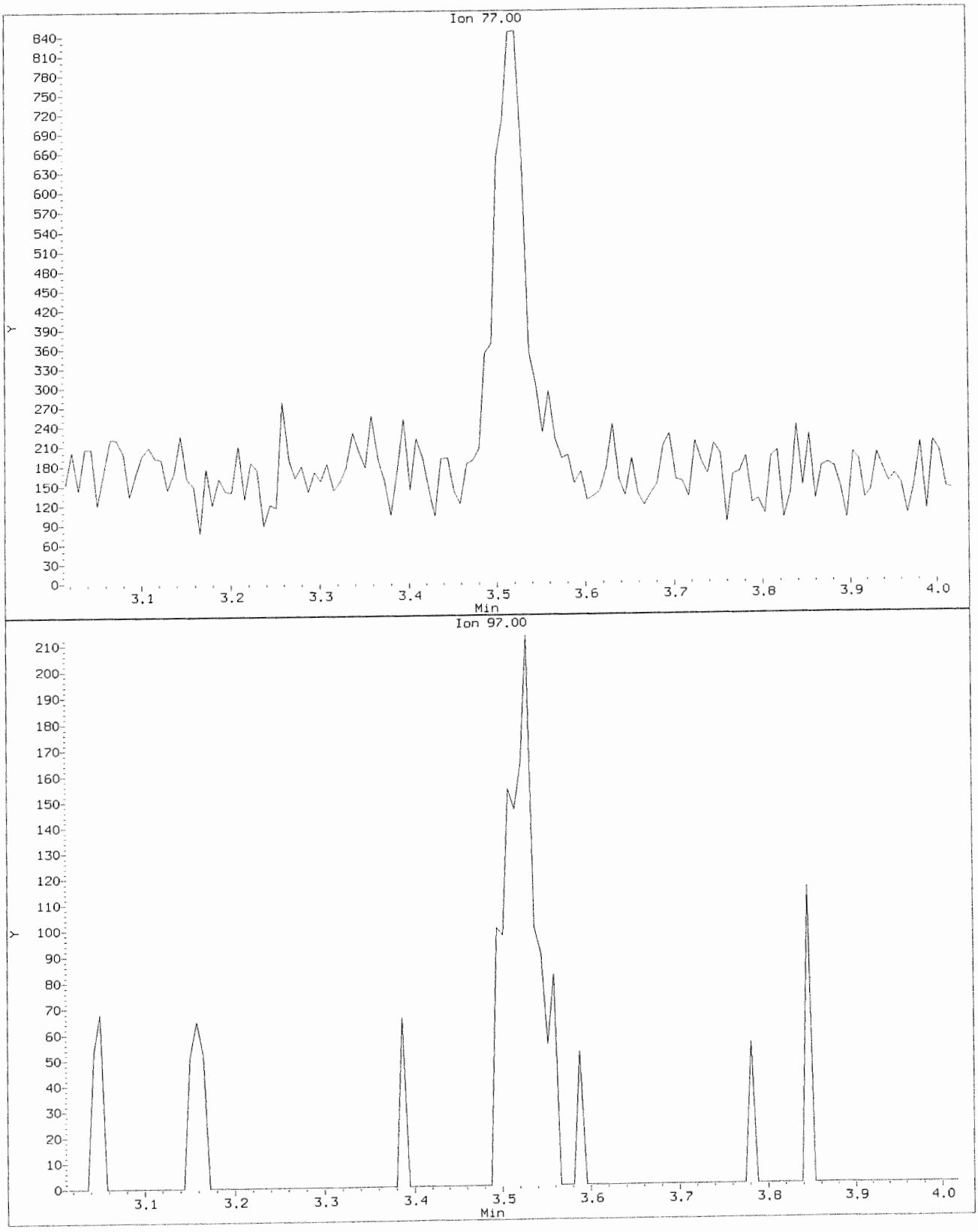
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2,2-Dichloropropane
CAS Number: 594-20-7



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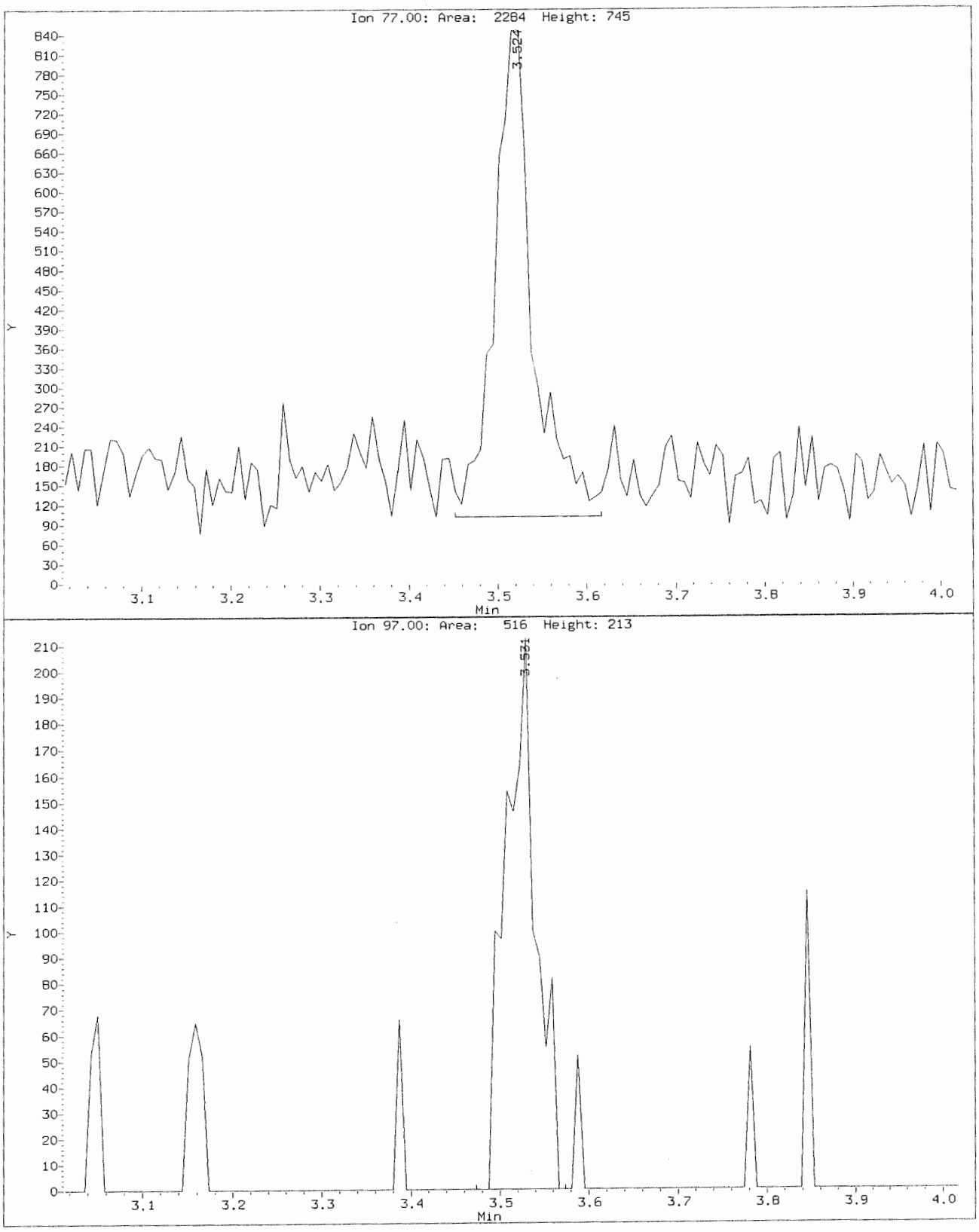
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2,2-Dichloropropane
CAS Number: 594-20-7



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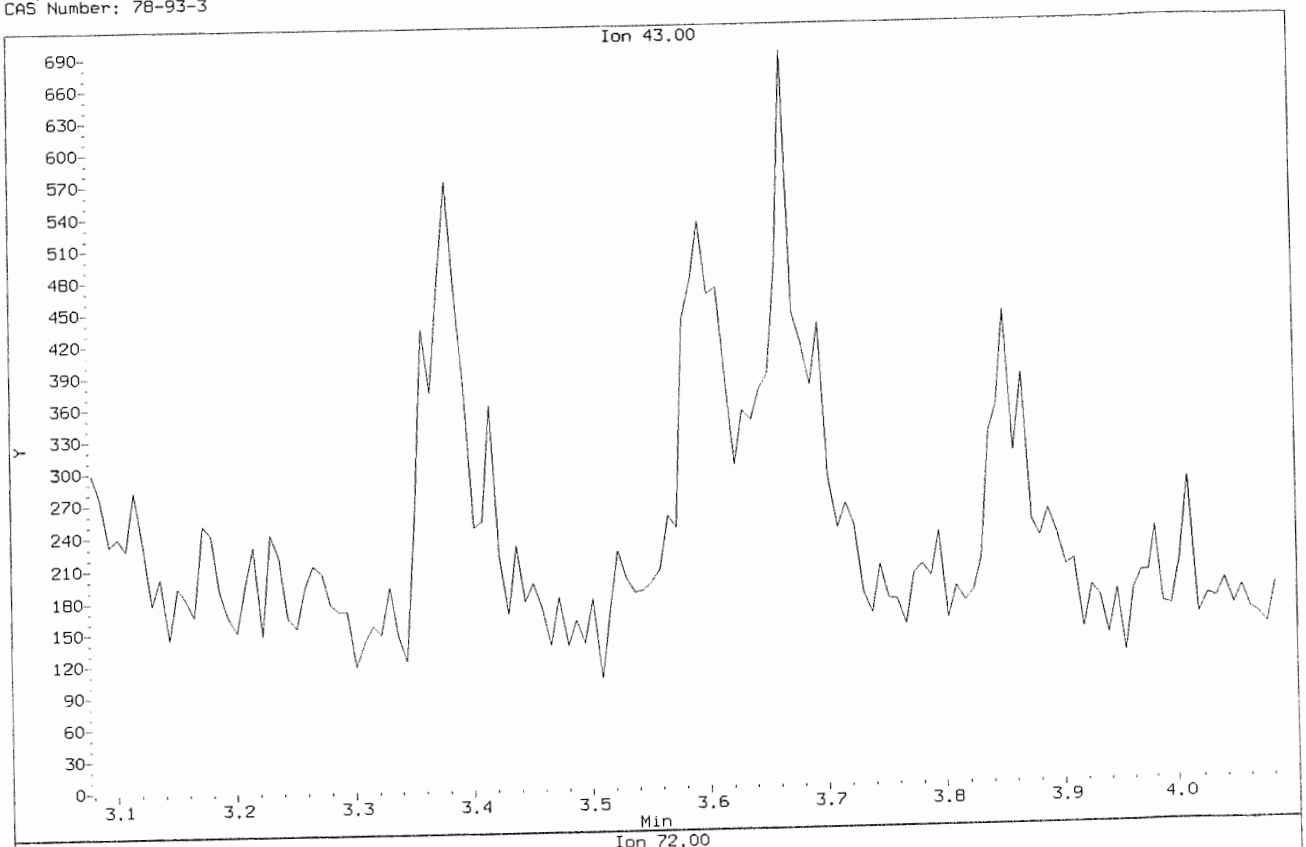
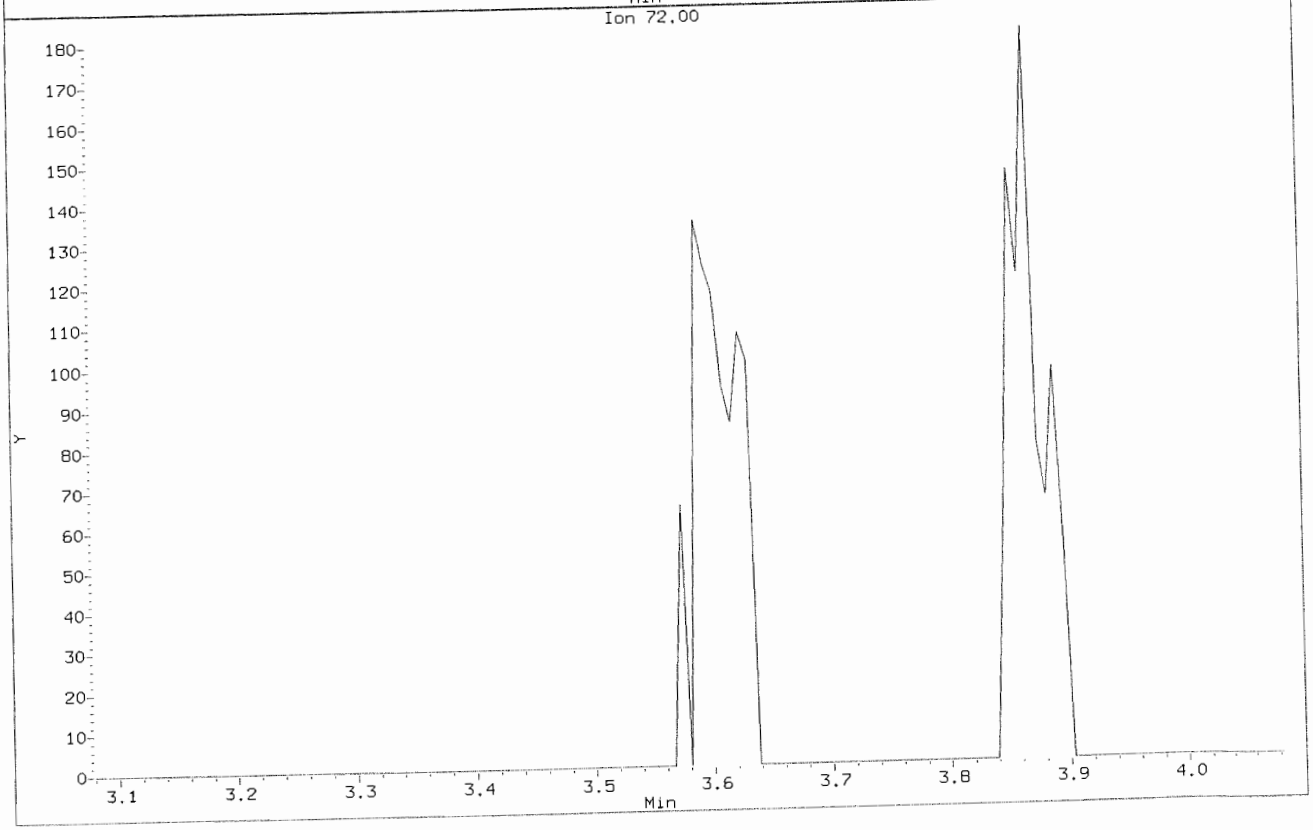
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2-Butanone
CAS Number: 78-93-3



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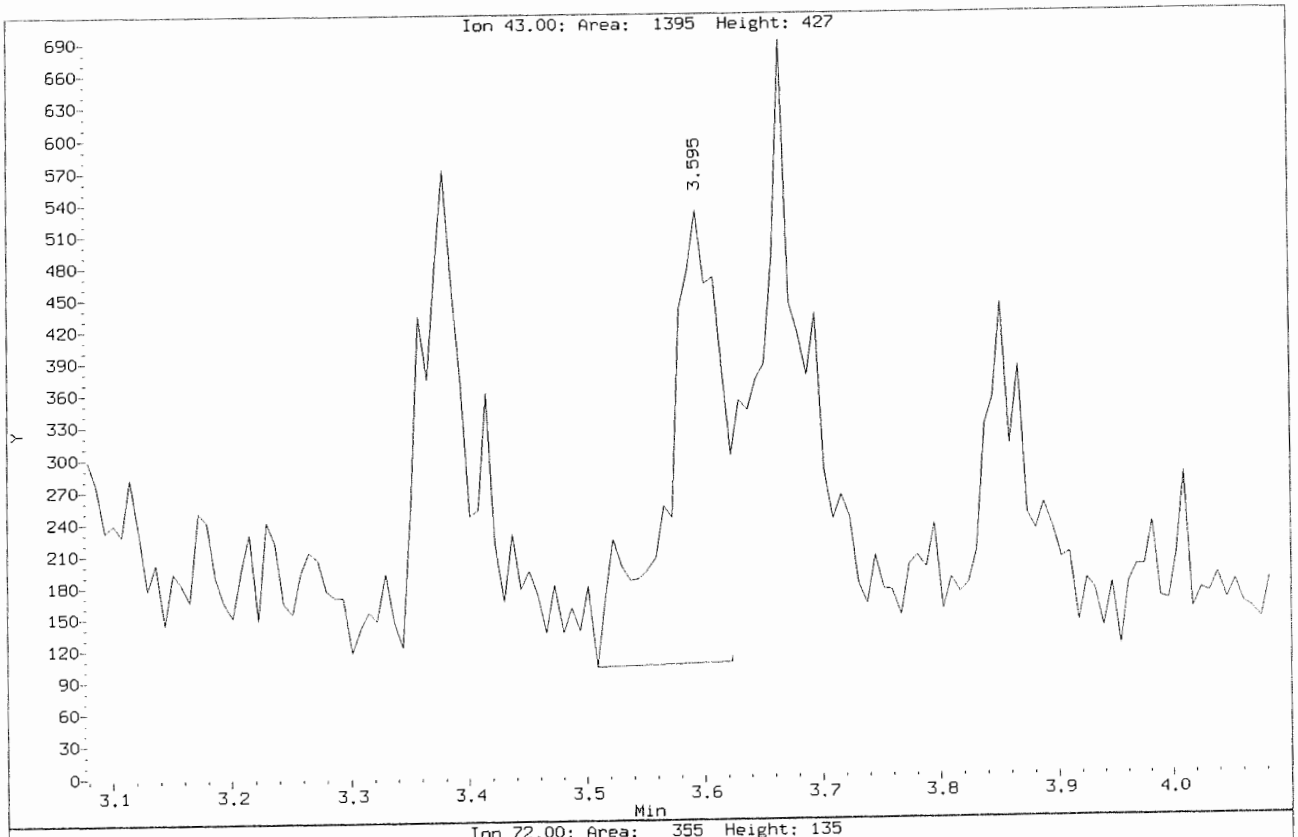
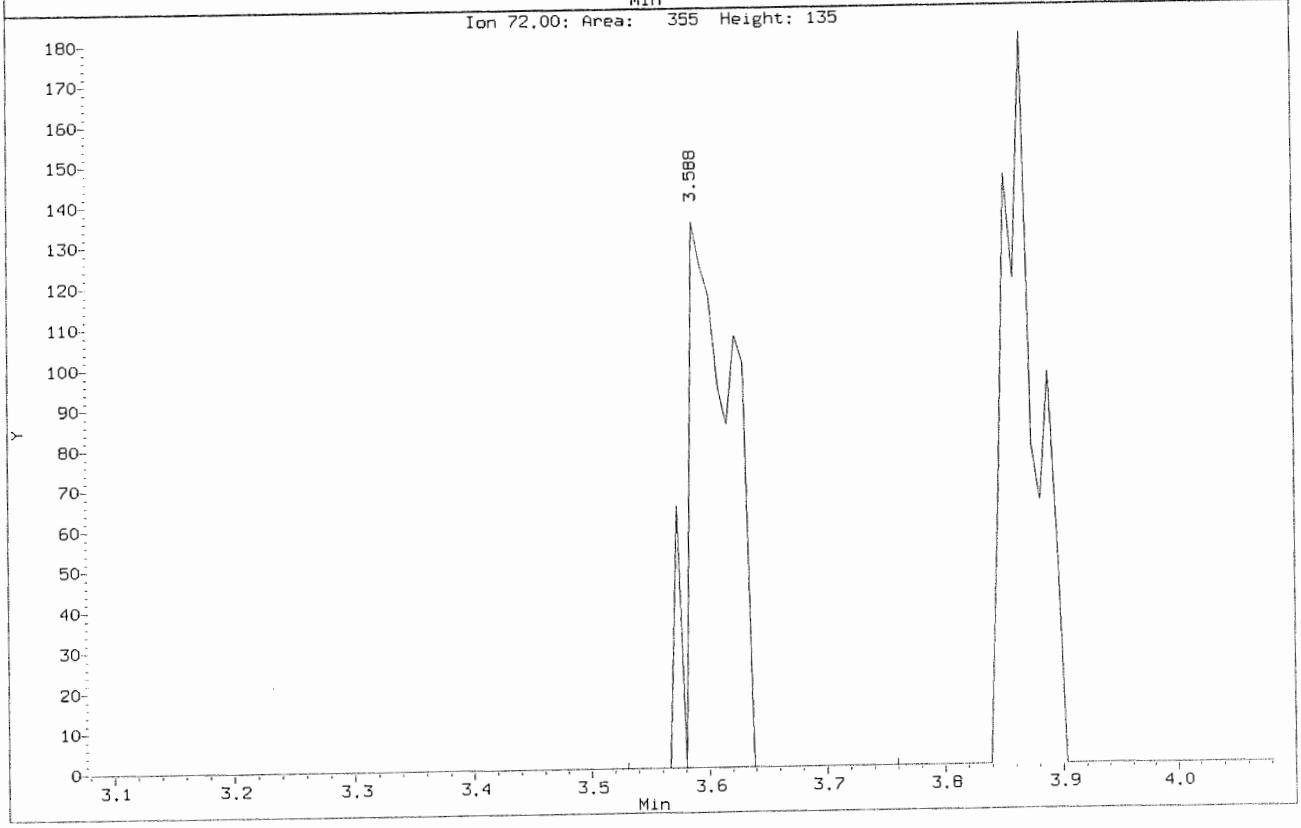
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: 2-Butanone
CAS Number: 78-93-3



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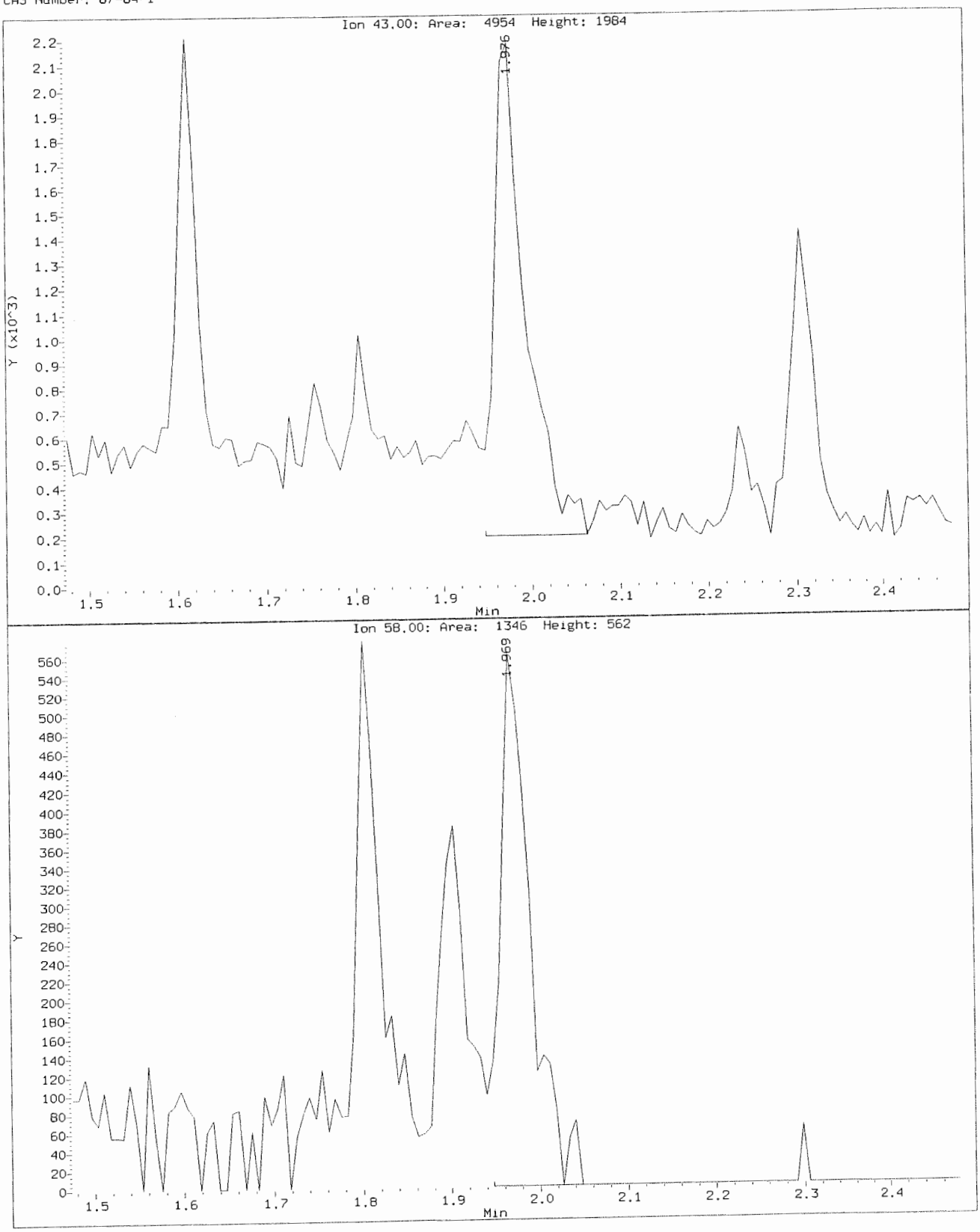
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Acetone
CAS Number: 67-64-1



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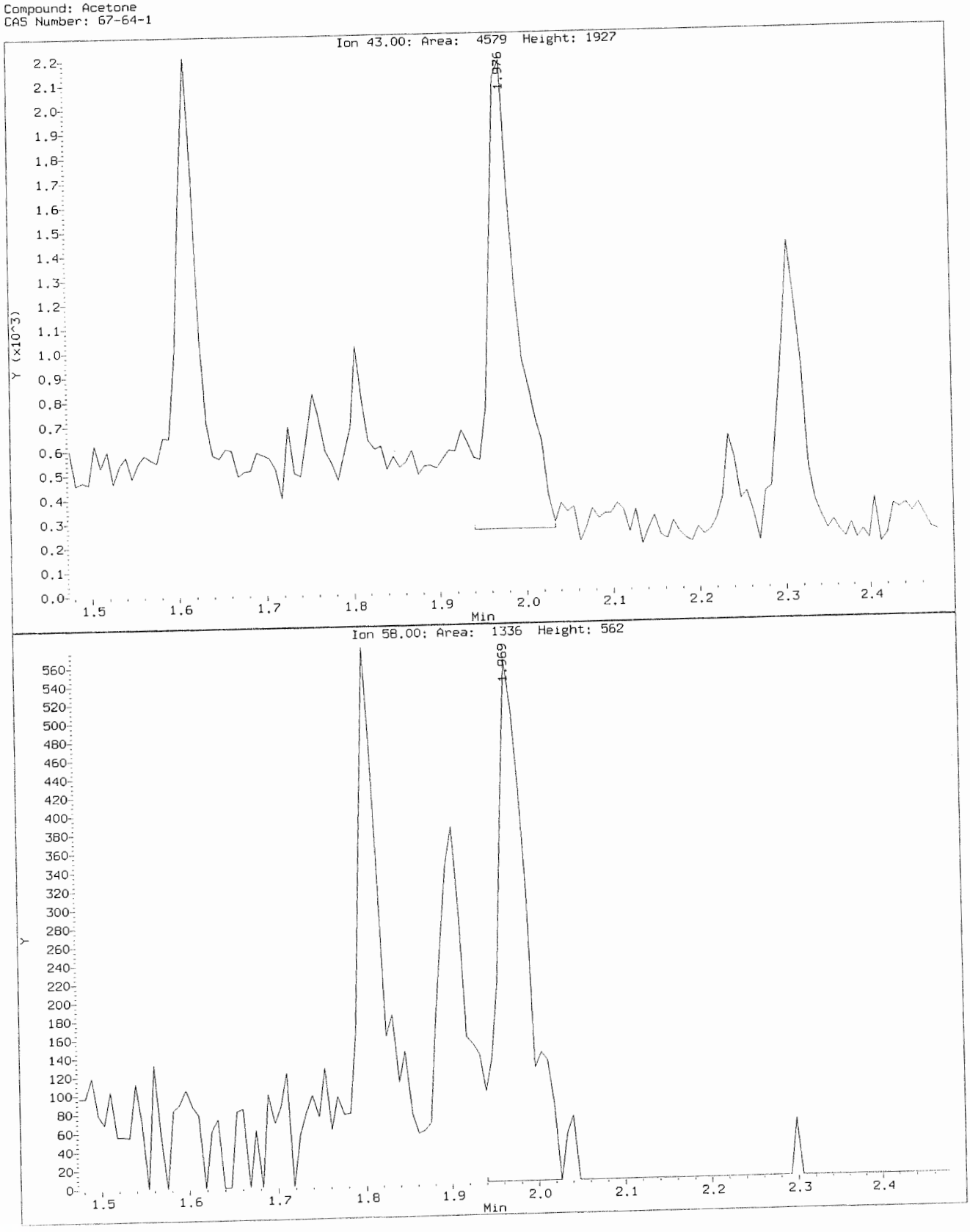
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Acetone
CAS Number: 67-64-1



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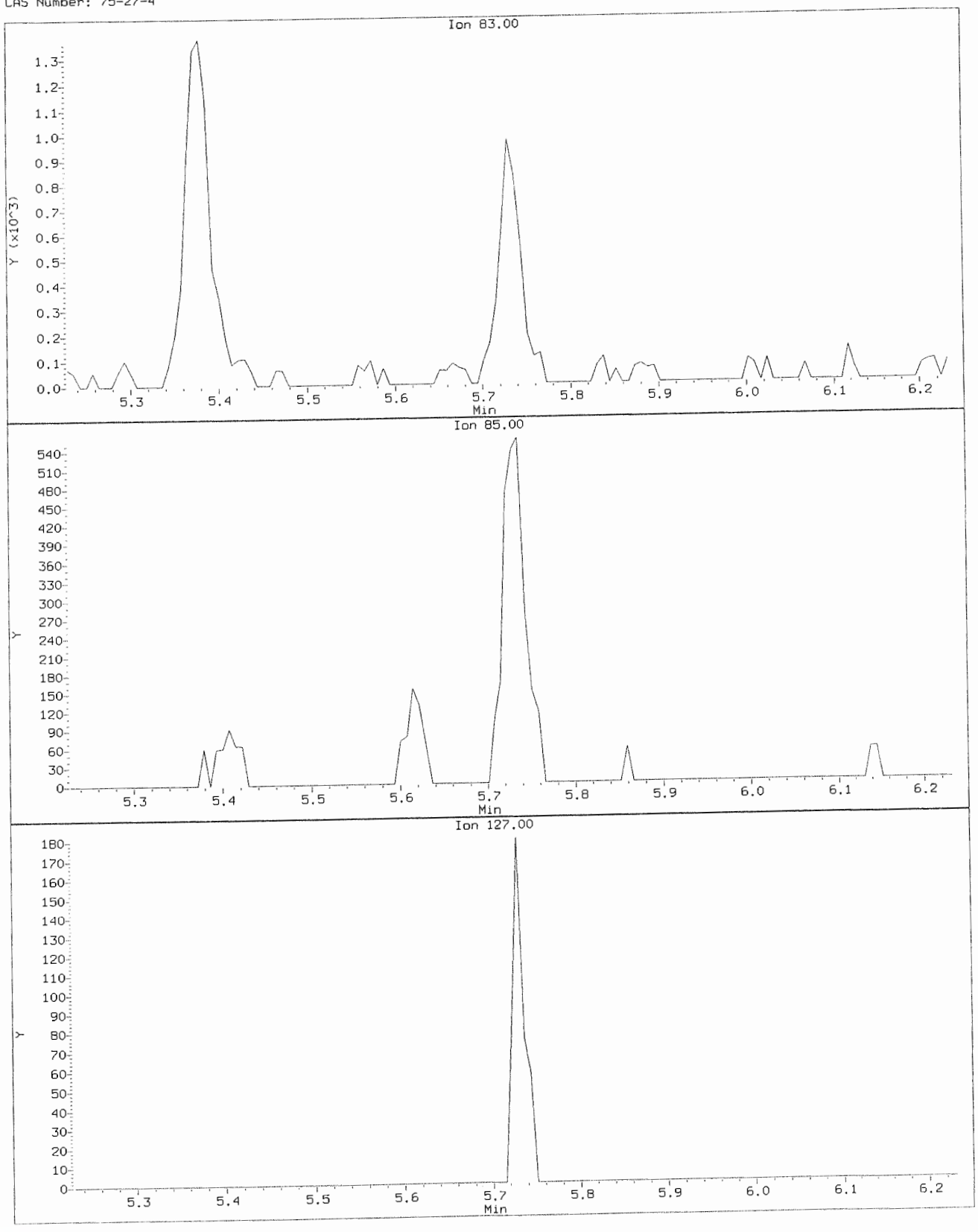
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



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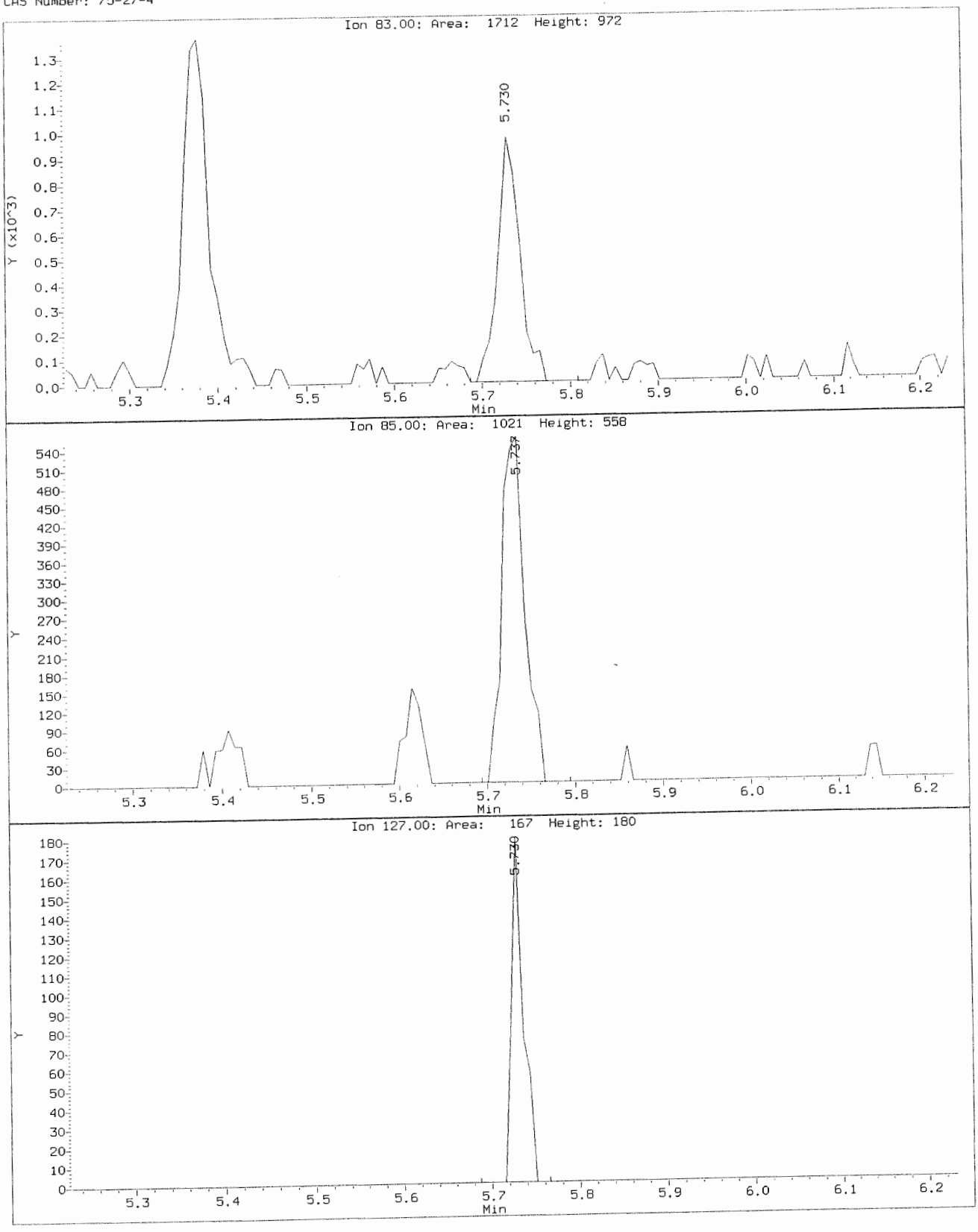
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromodichloromethane
CAS Number: 75-27-4



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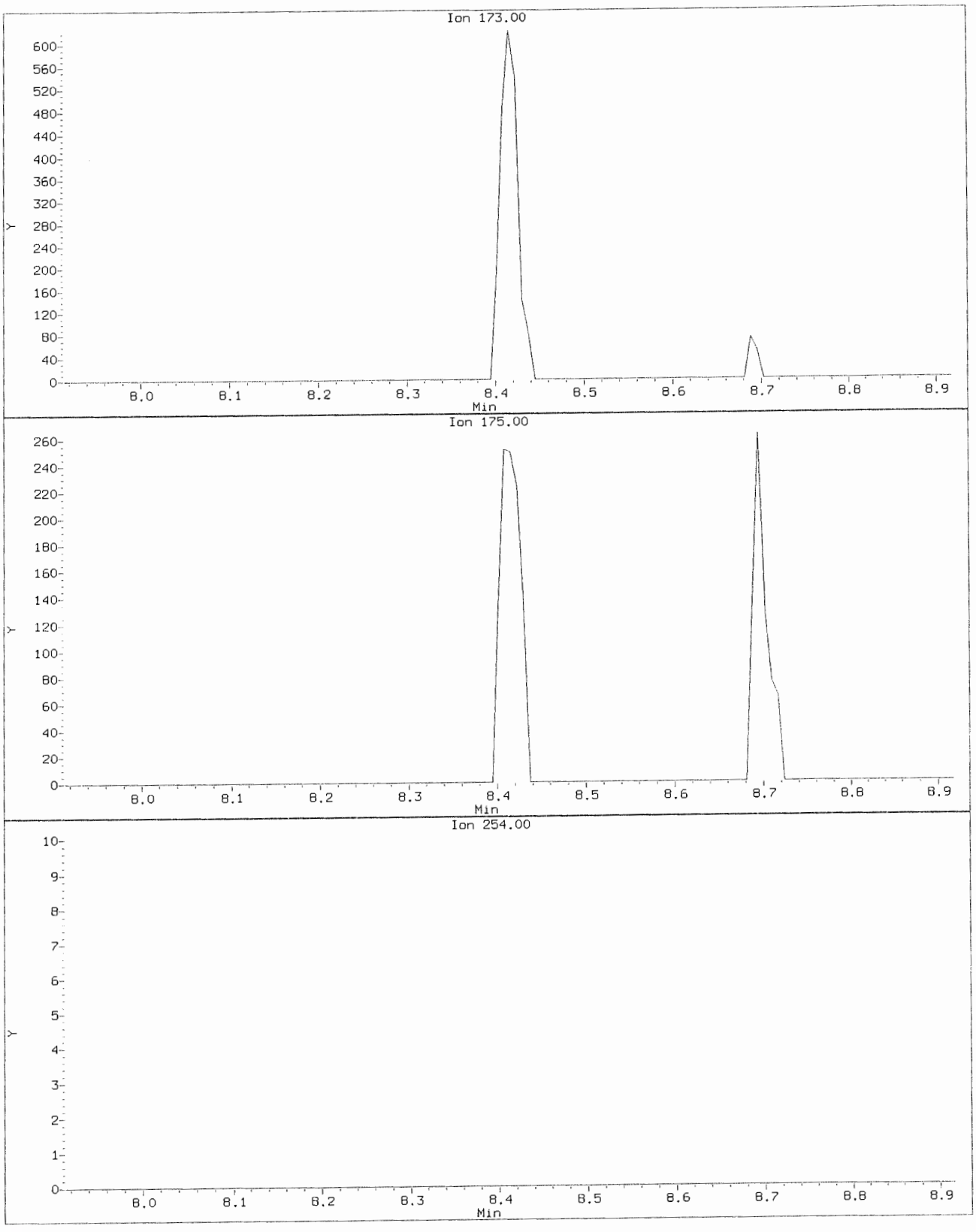
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromoform
CAS Number: 75-25-2



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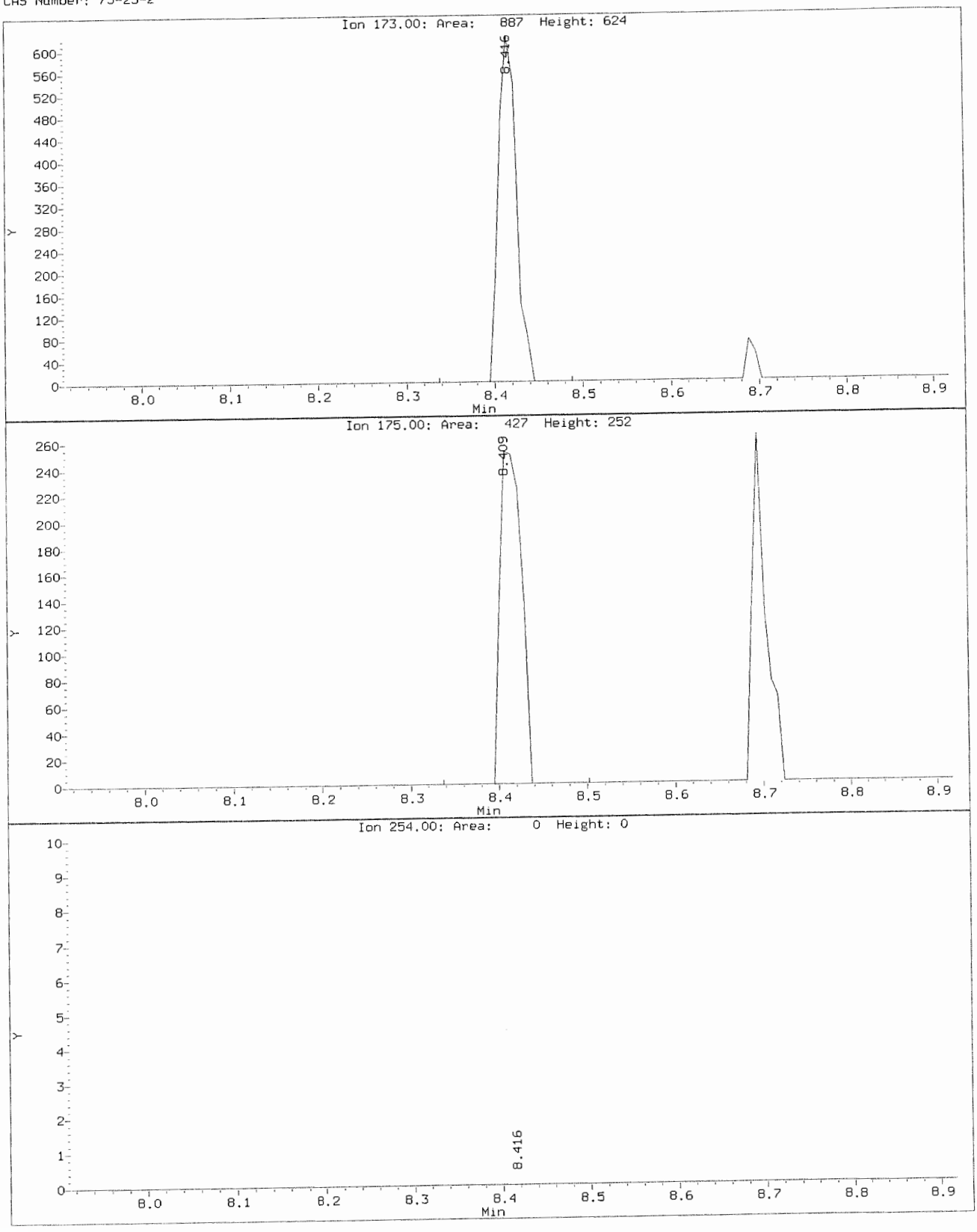
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Bromoform
CAS Number: 75-25-2



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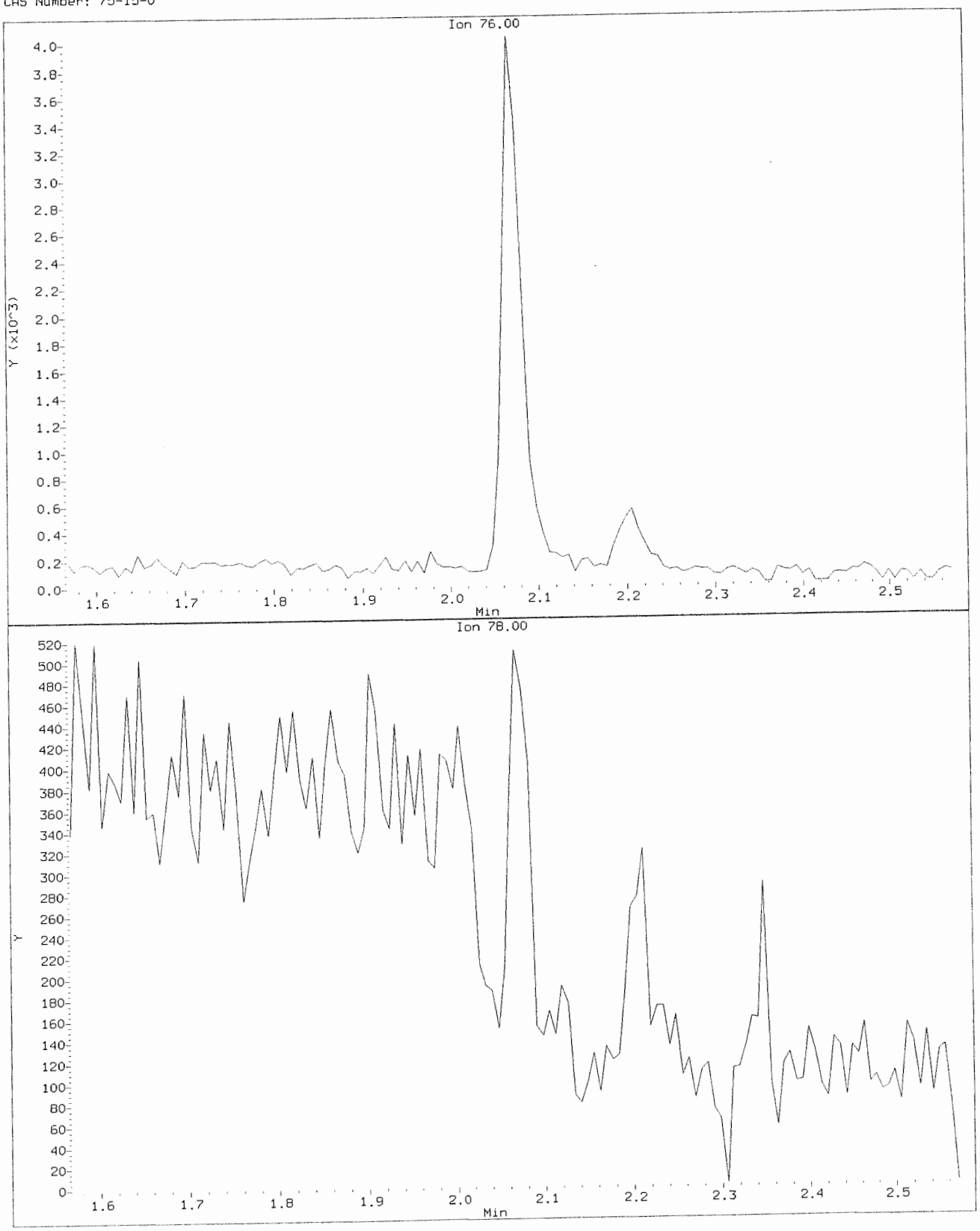
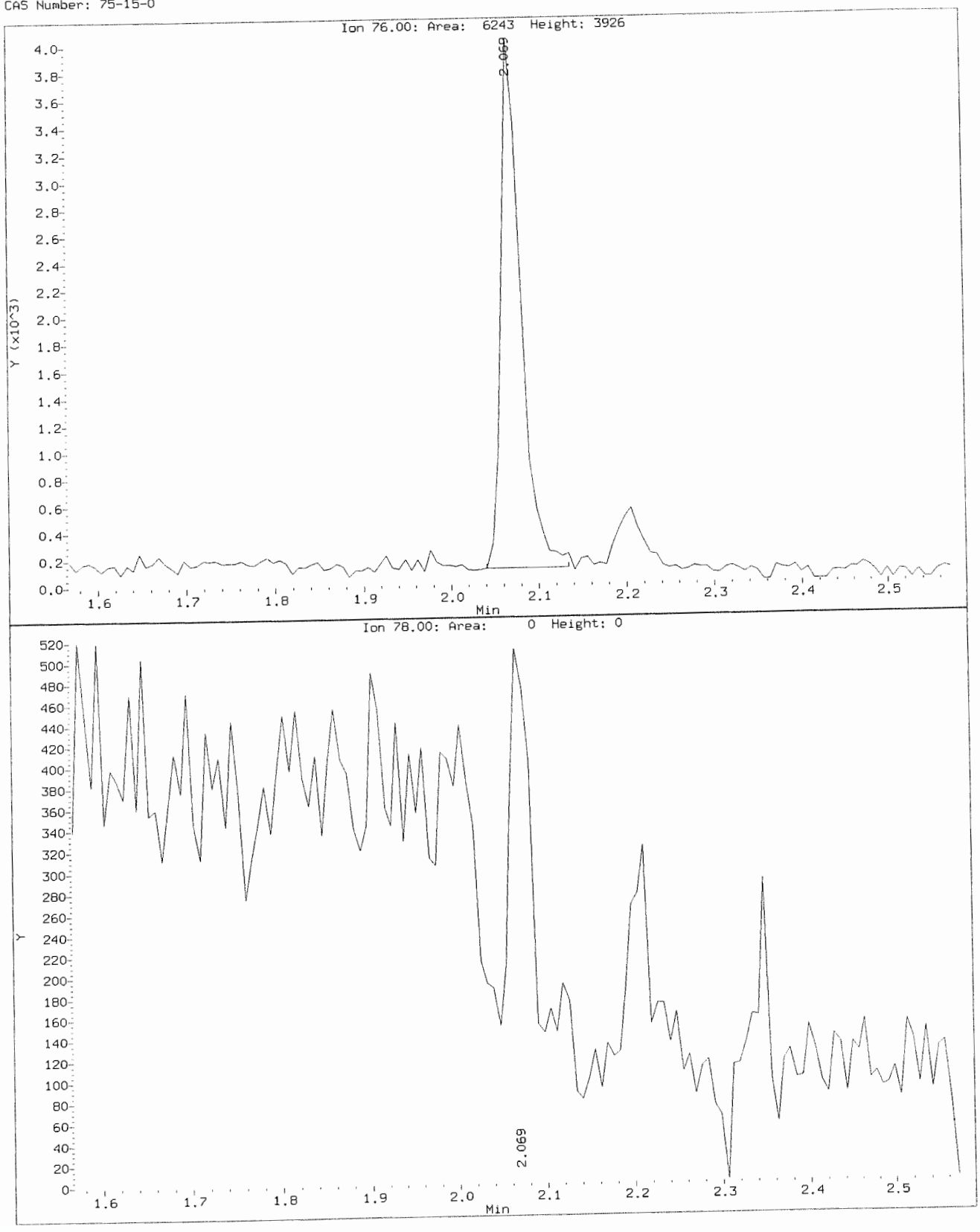
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Carbon Disulfide
CAS Number: 75-15-0



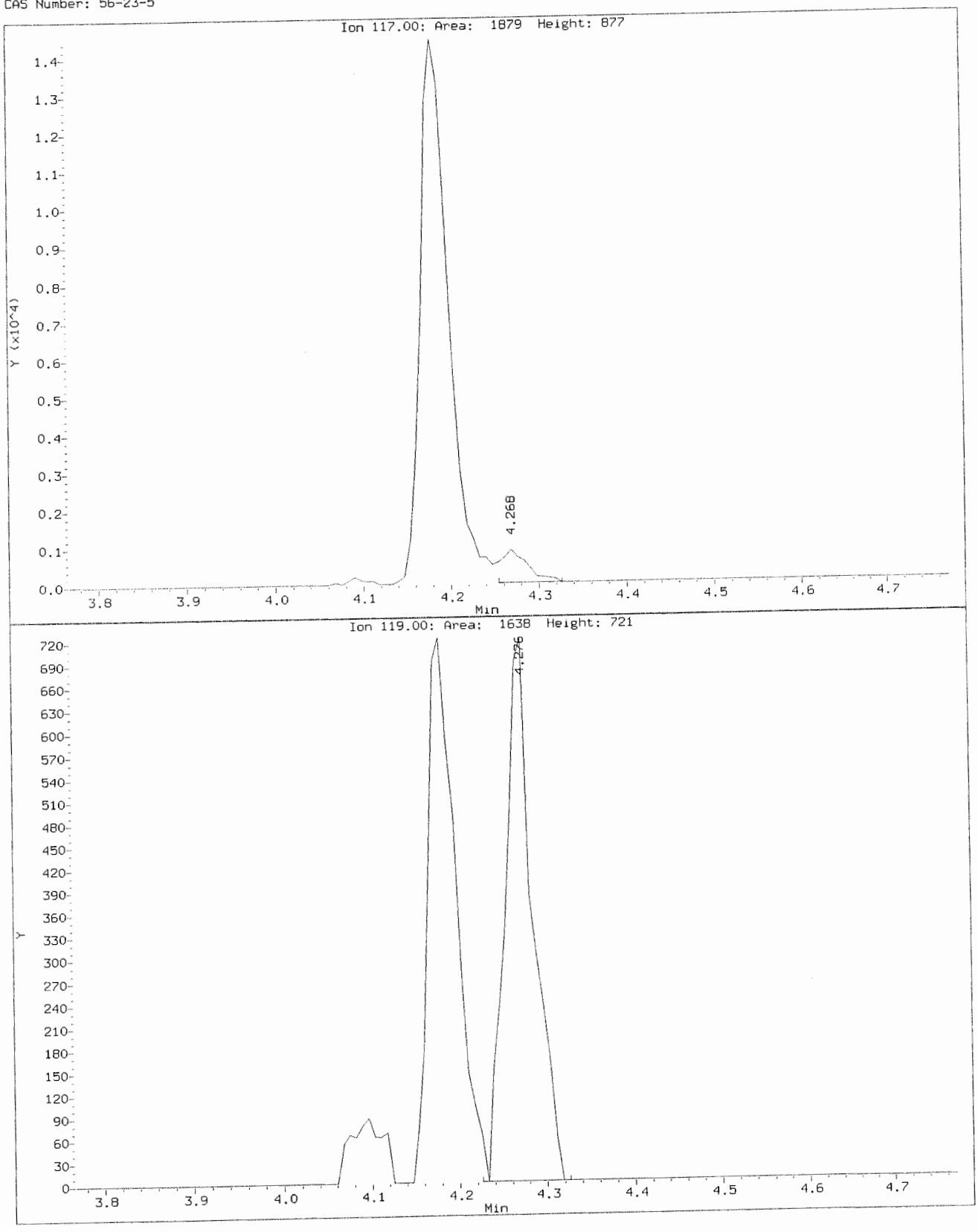
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111803.D
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Carbon Disulfide
CAS Number: 75-15-0



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111803.D
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Carbon Tetrachloride
CAS Number: 56-23-5



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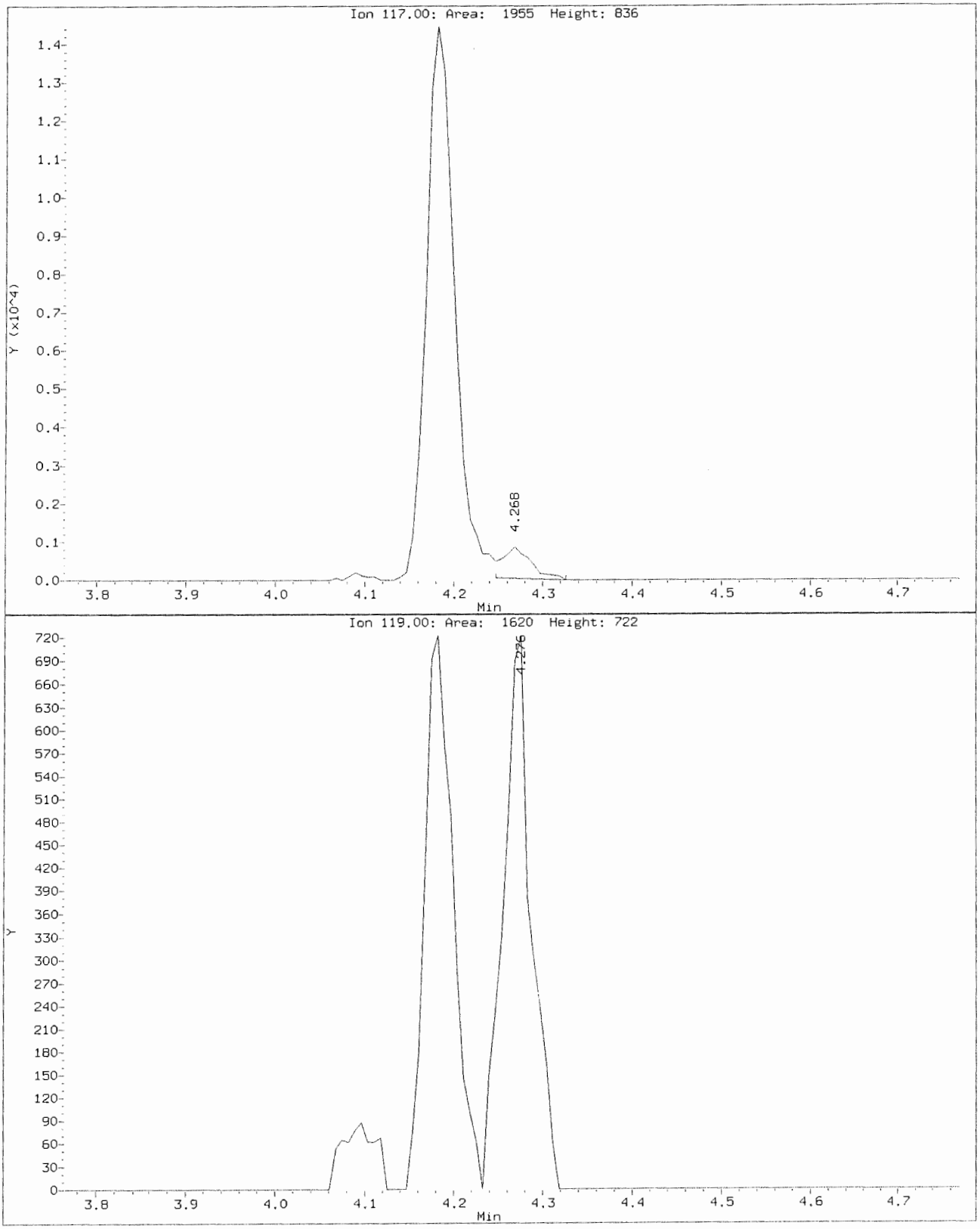
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Carbon Tetrachloride
CAS Number: 56-23-5



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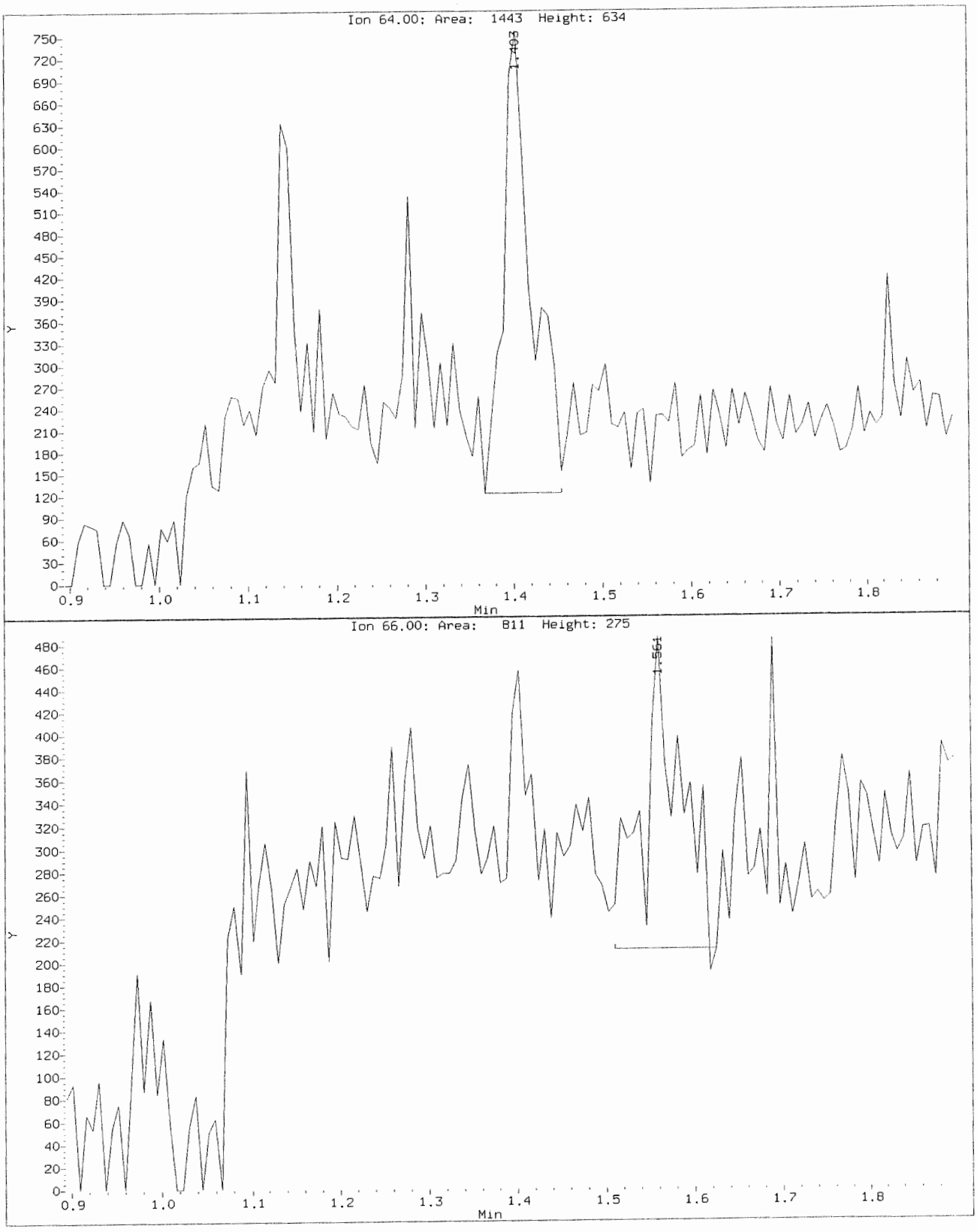
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Chloroethane
CAS Number: 75-00-3



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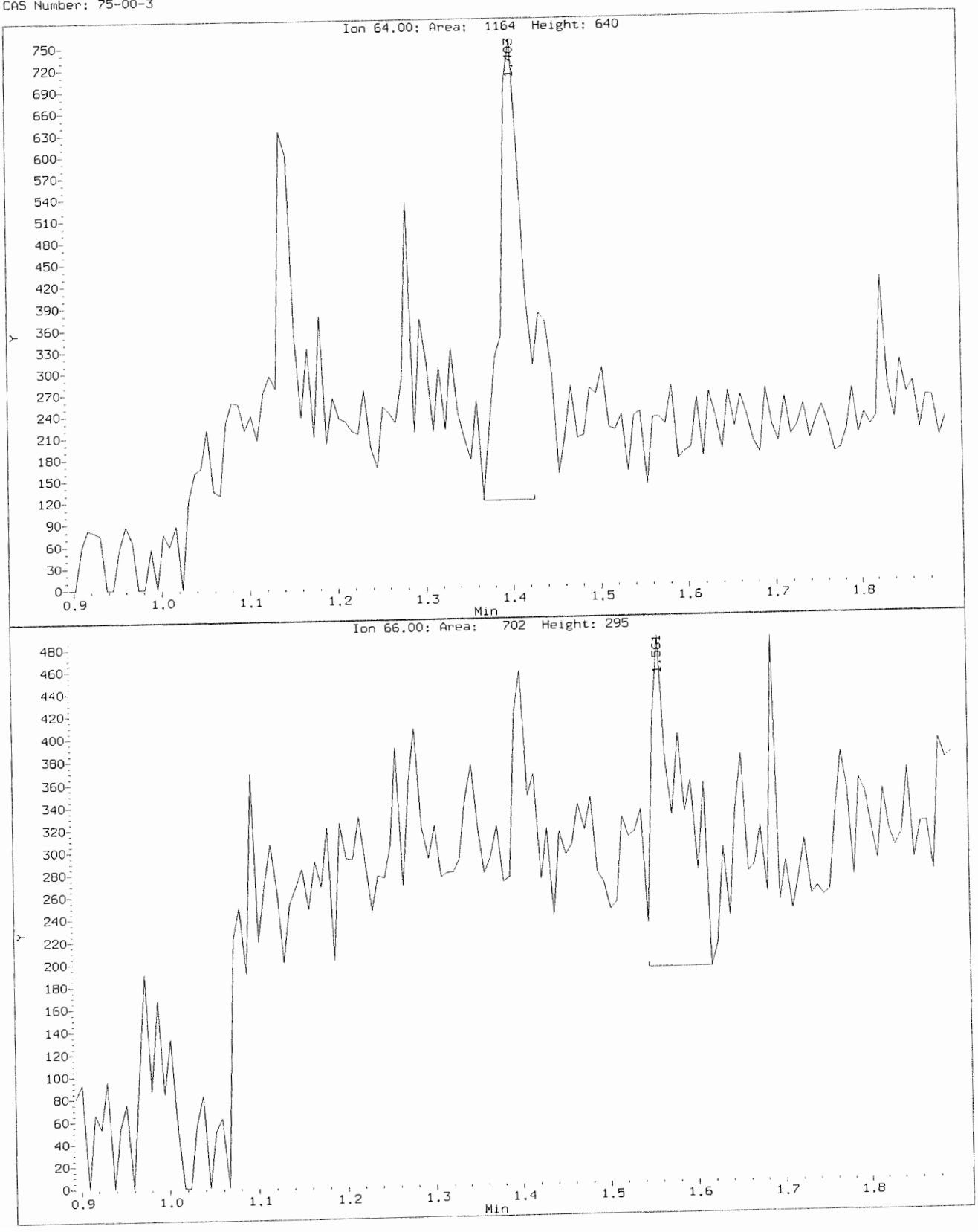
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Chloroethane
CAS Number: 75-00-3



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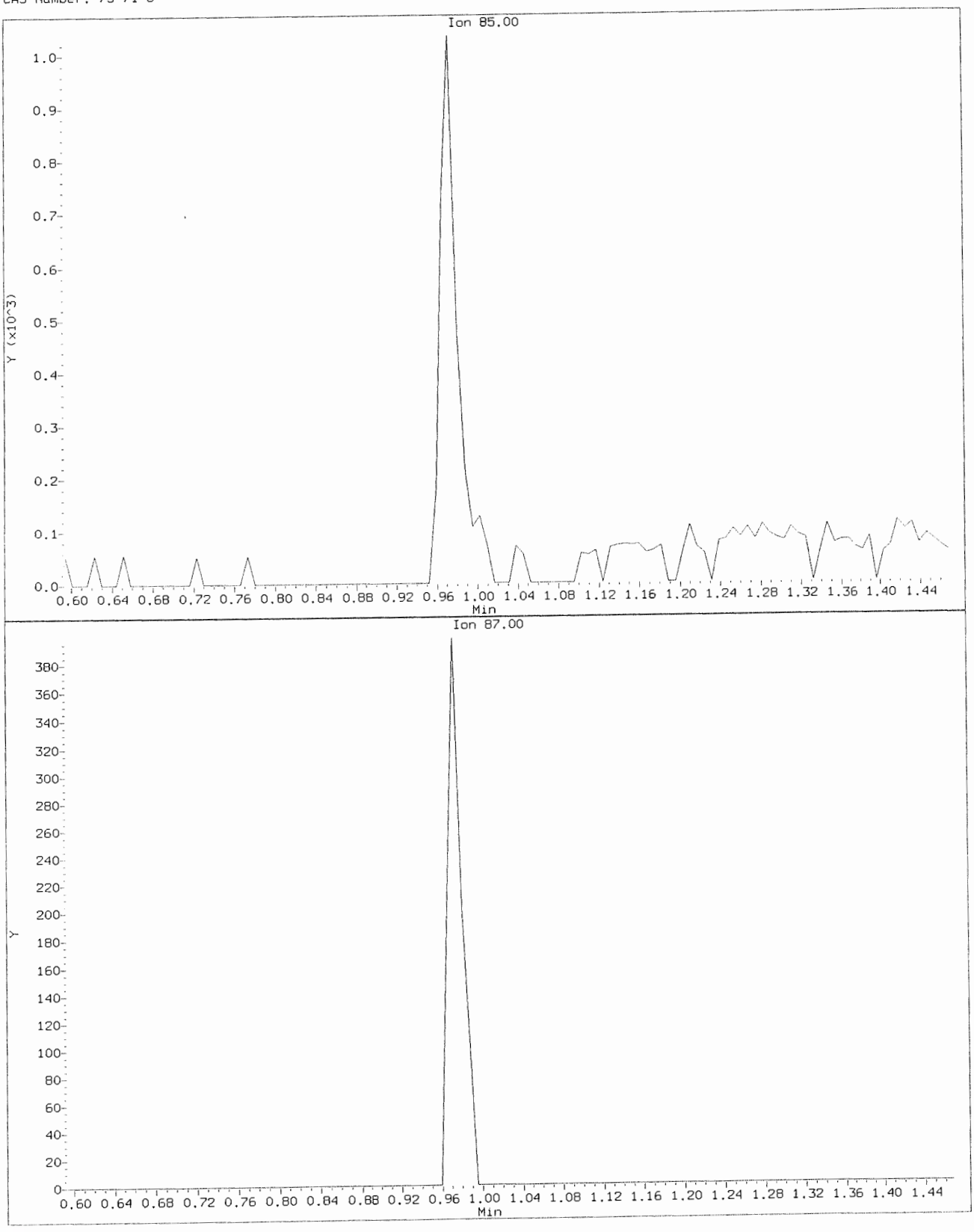
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Dichlorodifluoromethane
CAS Number: 75-71-8



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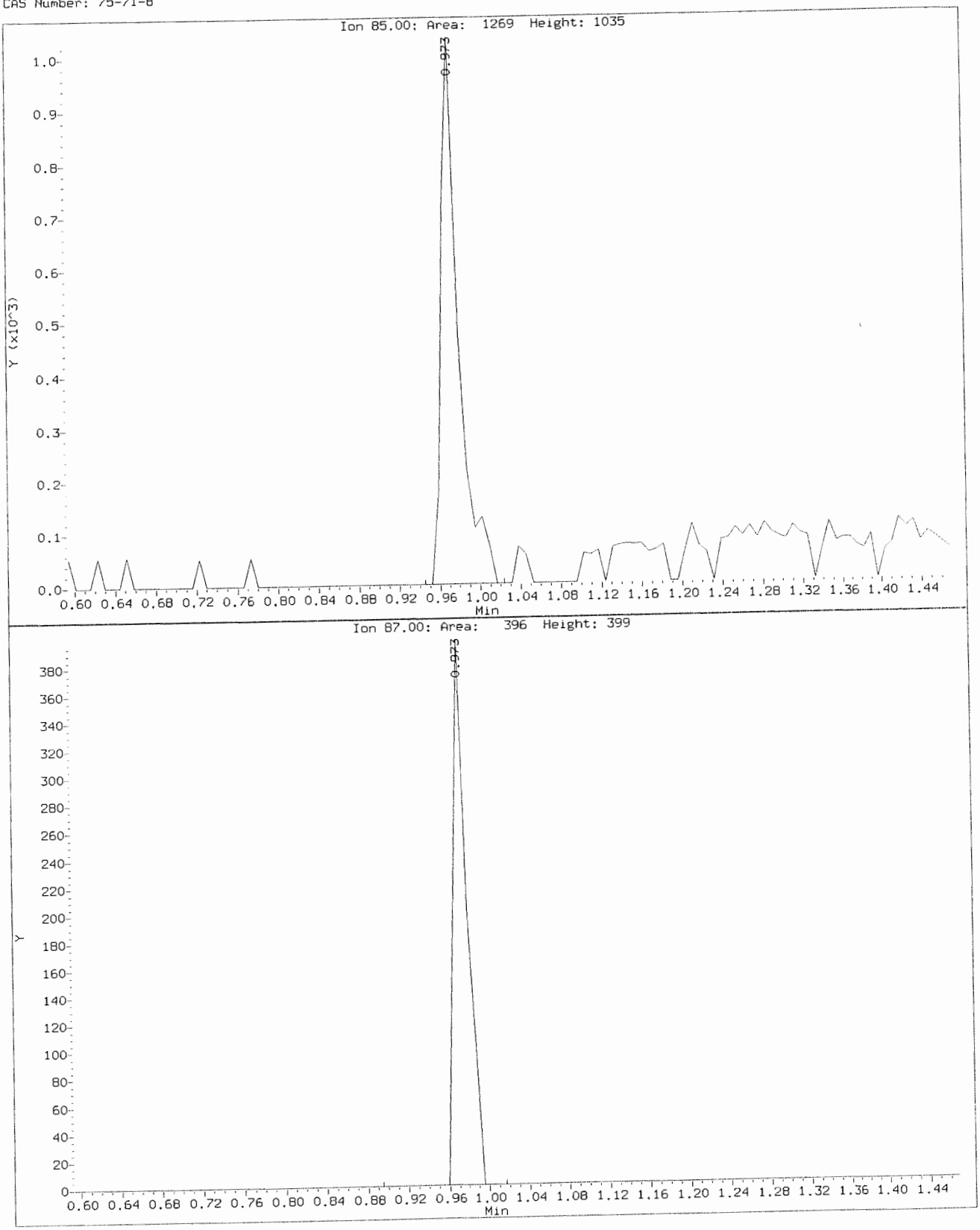
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Dichlorodifluoromethane
CAS Number: 75-71-8



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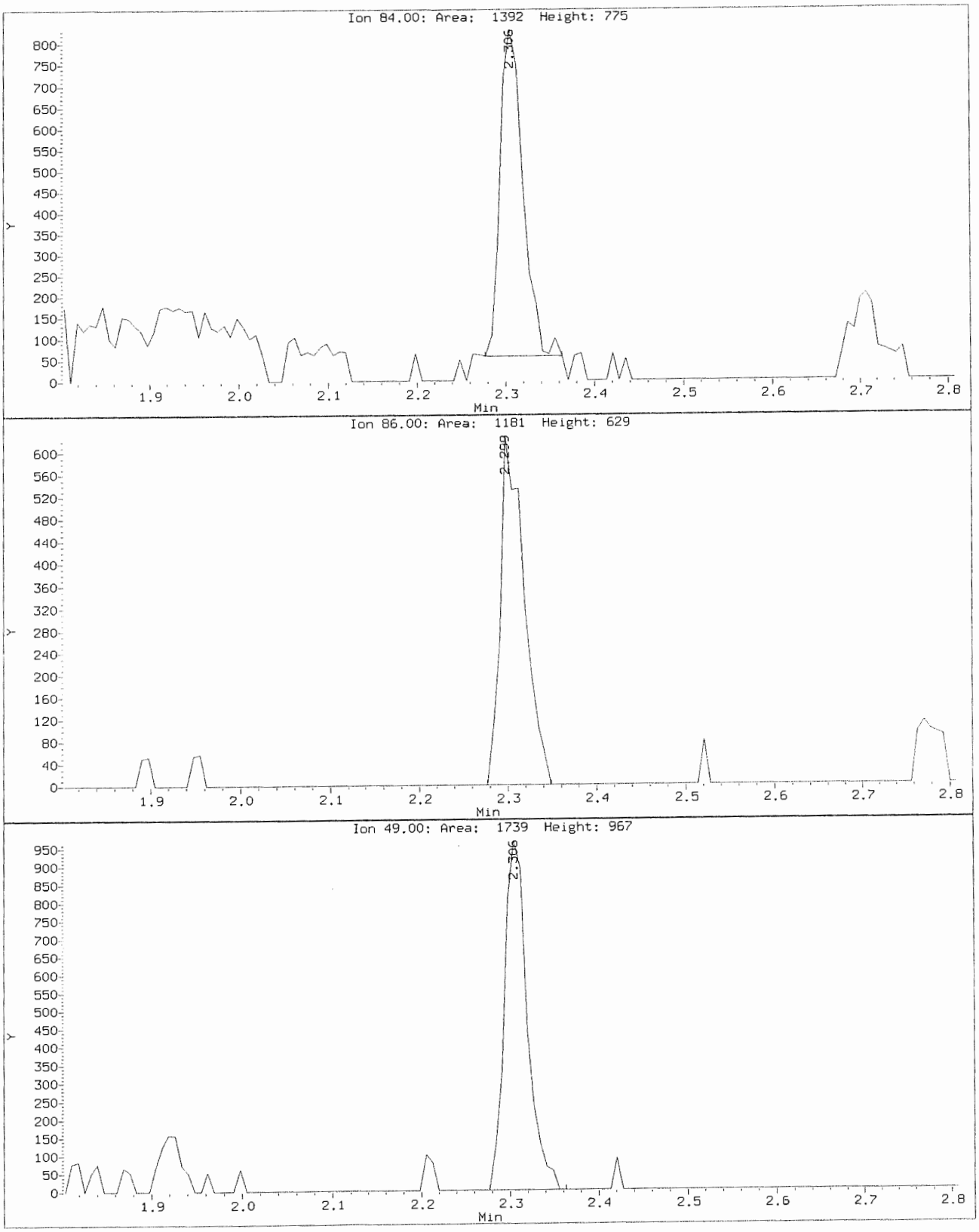
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Methylene Chloride
CAS Number: 75-09-2



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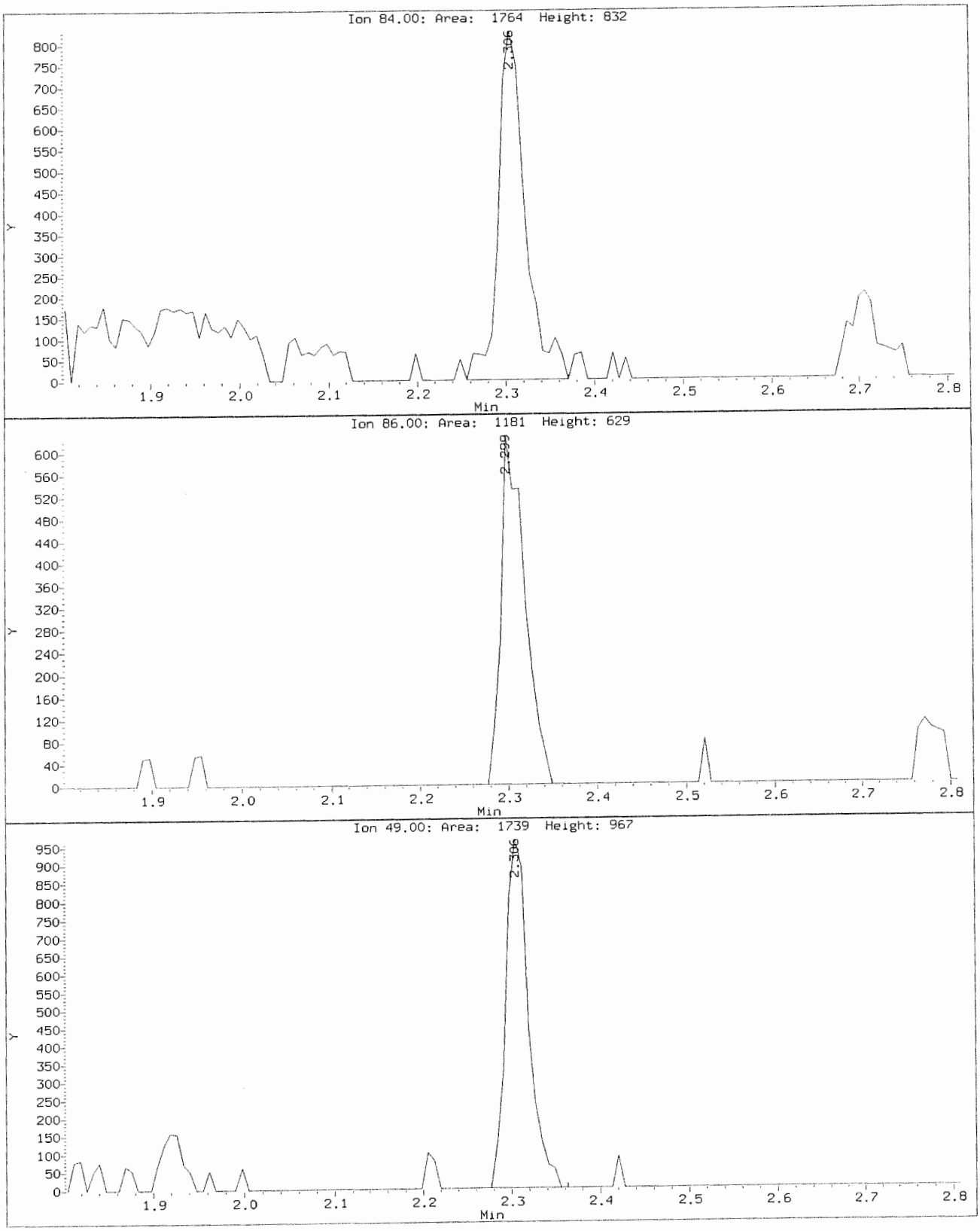
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Methylene Chloride
CAS Number: 75-09-2



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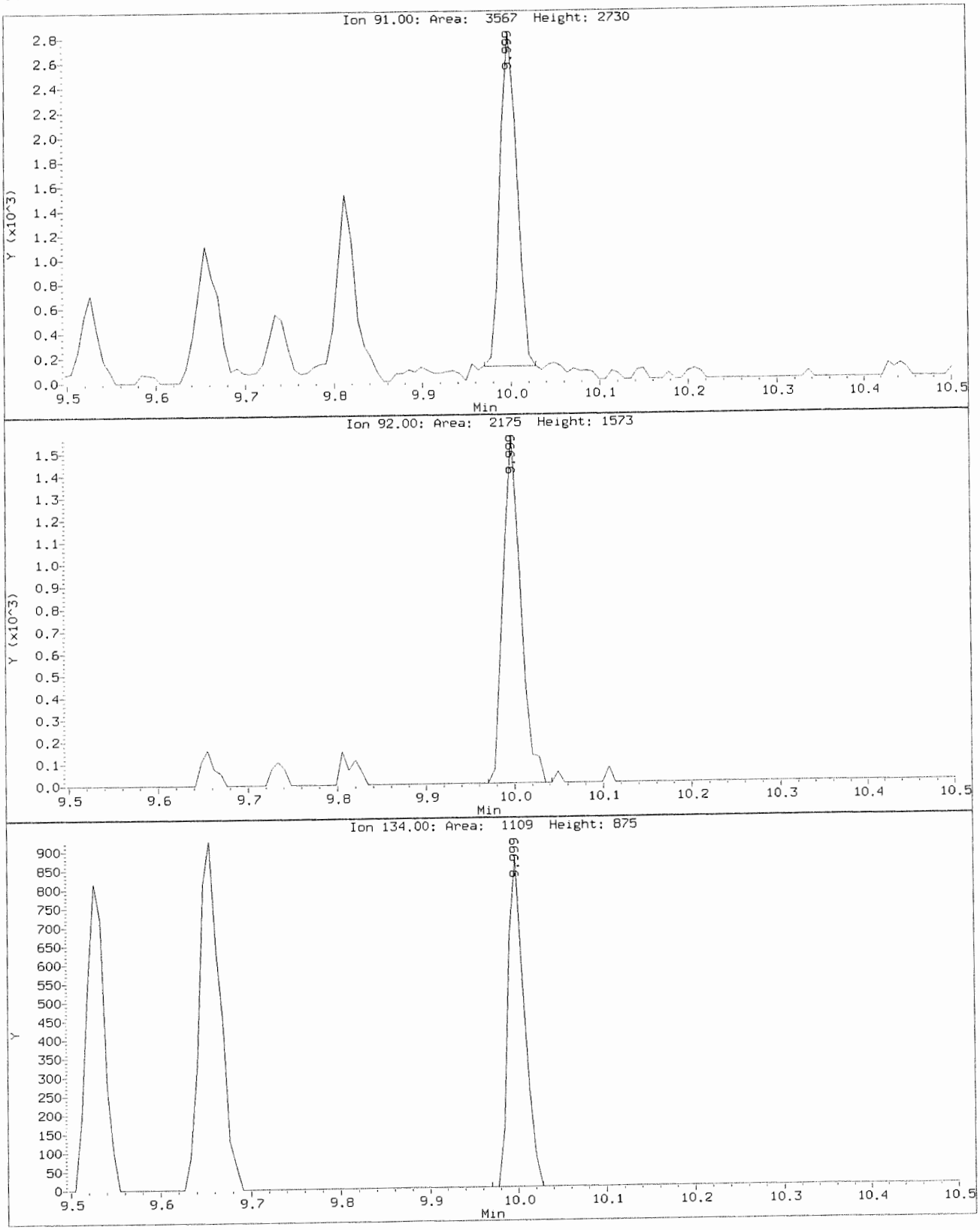
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: n-Butylbenzene
CAS Number: 104-51-8



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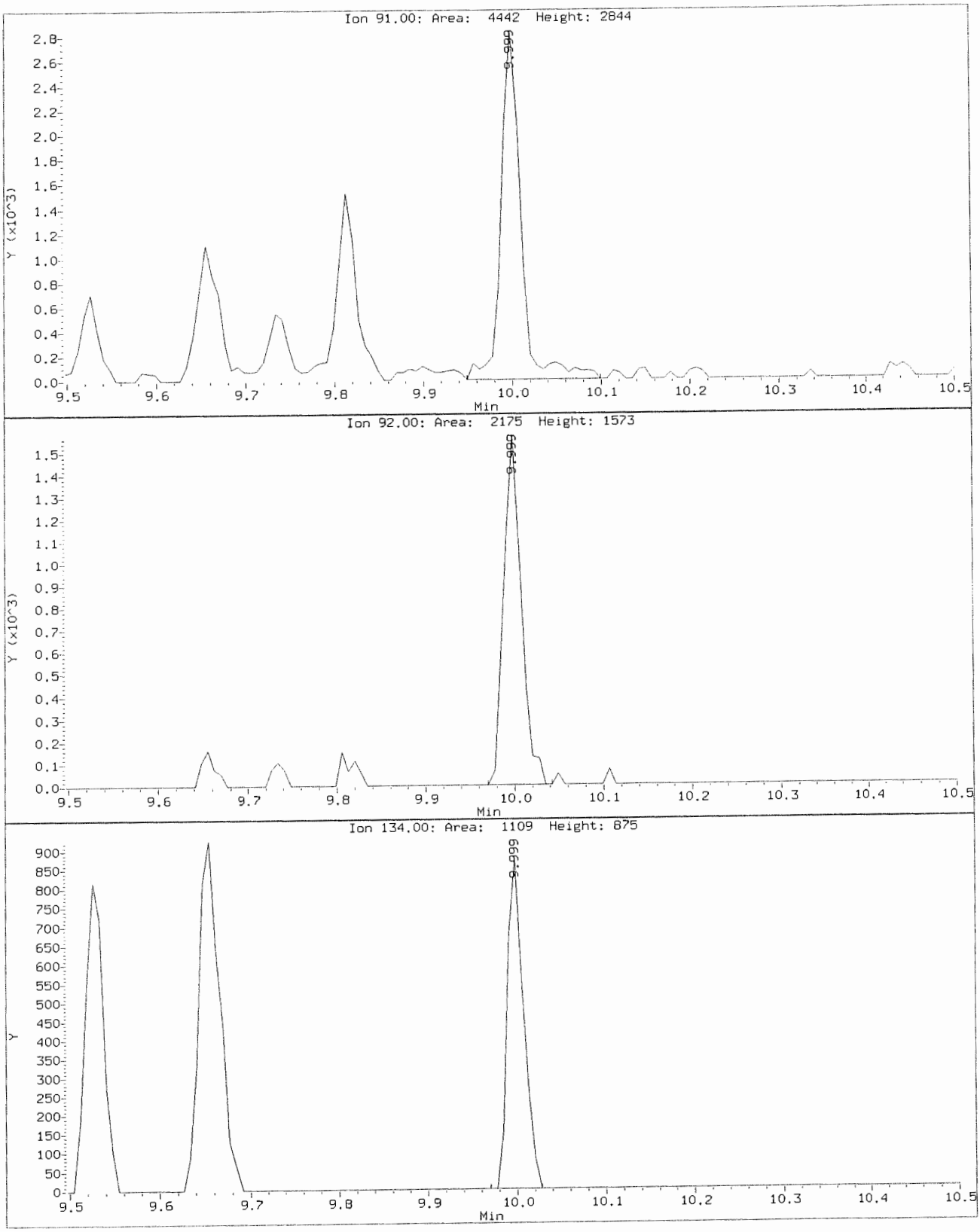
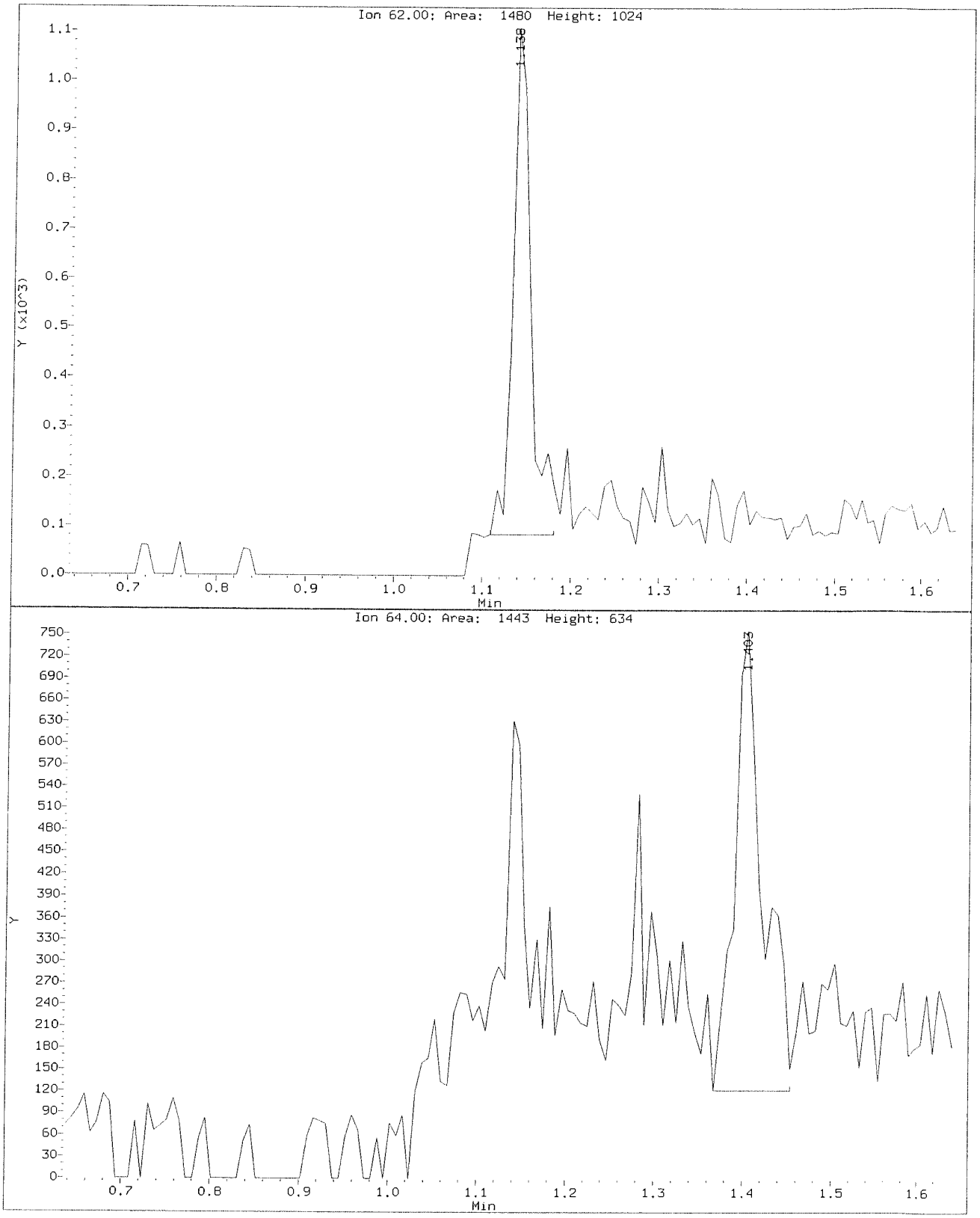
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: n-Butylbenzene
CAS Number: 104-51-8



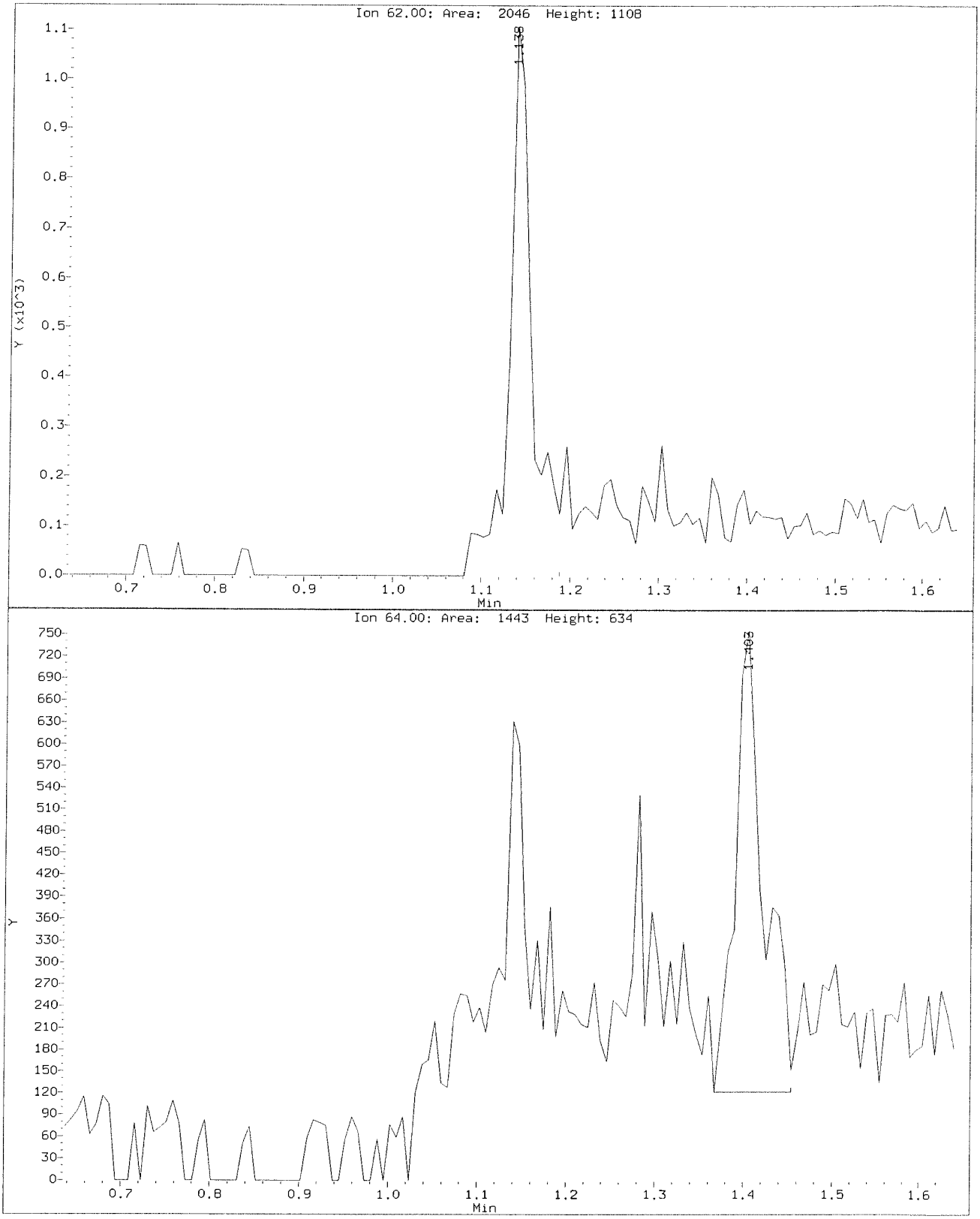
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111803.D
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Vinyl Chloride
CAS Number: 75-01-4



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111803.D
Injection Date: 18-NOV-2019 14:35
Instrument: voa6.i
Client Sample ID: VSTD000.5

Compound: Vinyl Chloride
CAS Number: 75-01-4



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 18-NOV-2019 14:59
Operator : PC Inst ID: voa6.i
Smp Info : VSTD001;VSTD001;1;3;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X191118.b\8260W.m
Meth Date : 06-Dec-2019 19:56 voa6.i Quant Type: ISTD
Cal Date : 18-NOV-2019 14:35 Cal File: X111803.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

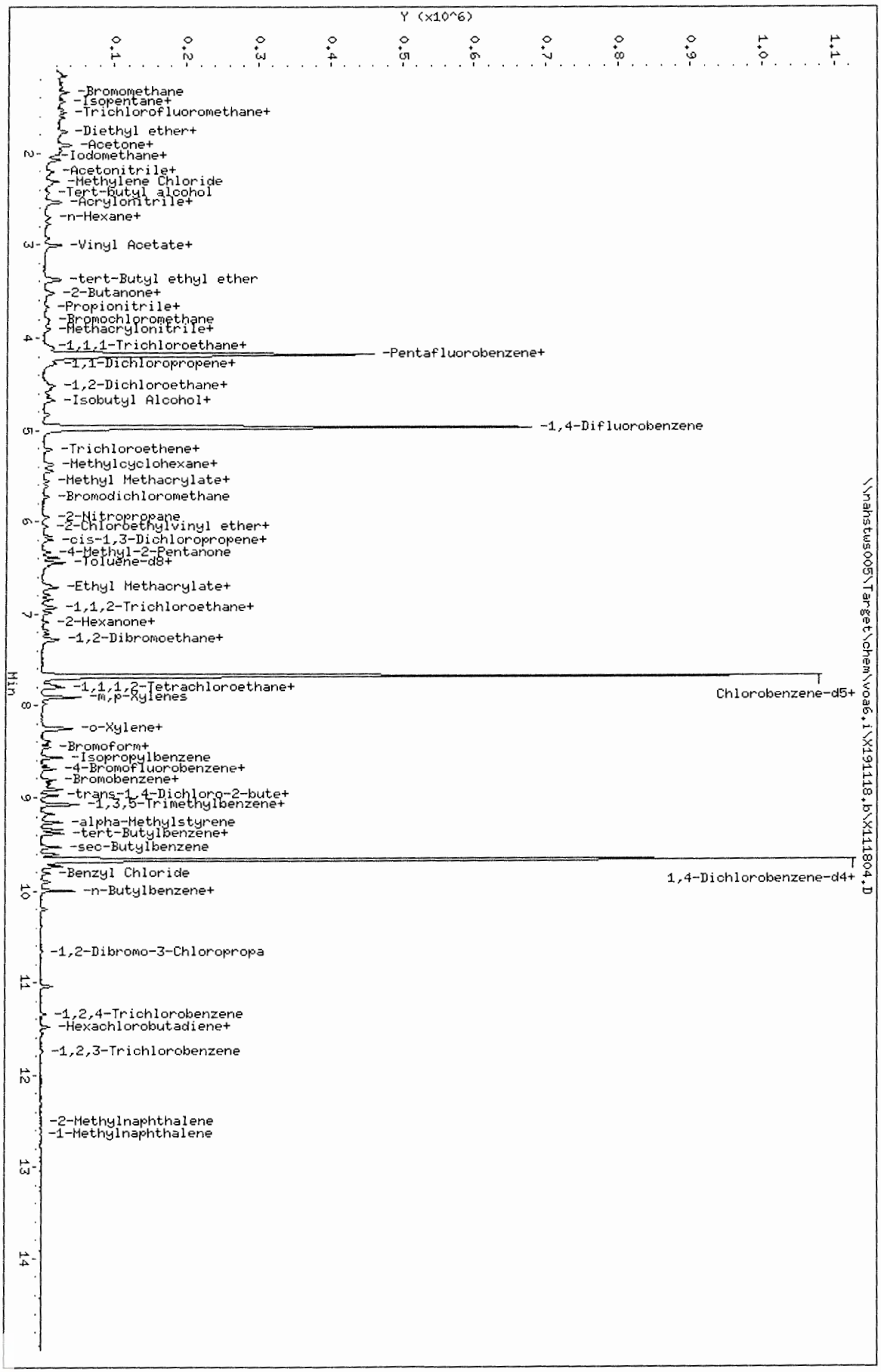
| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| * | 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 416007 | 50.0000 | |
| * | 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 570122 | 50.0000 | |
| * | 47 Chlorobenzene-d5 | 117 | 7.671 | 7.671 | (1.000) | 516622 | 50.0000 | |
| * | 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 279609 | 50.0000 | |
| $ | 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 4458 | 1.00000 | 1.85(a) |
| $ | 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 5731 | 1.00000 | 1.60(a) |
| $ | 30 Dibromofluoromethane | 113 | 4.104 | 4.104 | (0.981) | 3882 | 1.00000 | 1.38(a) |
| $ | 48 Toluene-d8 | 98 | 6.389 | 6.389 | (0.833) | 13715 | 1.00000 | 1.00(a) |
| | 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 4166 | 1.00000 | 1.11(a) |
| | 31 1,1,1-Trichloroethane | 97 | 4.082 | 4.082 | (0.976) | 6451 | 1.00000 | 1.14(a) |
| | 68 1,1,2,2-Tetrachloroethane | 83 | 8.845 | 8.845 | (0.915) | 4719 | 1.00000 | 1.20(aM) |
| | 138 Freon TF | 101 | 1.919 | 1.919 | (0.459) | 4065 | 1.00000 | 1.12(a) |
| | 53 1,1,2-Trichloroethane | 83 | 6.847 | 6.847 | (0.893) | 3216 | 1.00000 | 1.19(a) |
| | 22 1,1-Dichloroethane | 63 | 2.929 | 2.929 | (0.700) | 6907 | 1.00000 | 1.14(a) |
| | 11 1,1-Dichloroethene | 96 | 1.912 | 1.912 | (0.457) | 3522 | 1.00000 | 0.99(a) |
| | 32 1,1-Dichloropropene | 75 | 4.283 | 4.283 | (0.862) | 5427 | 1.00000 | 1.18(a) |
| | 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 1182 | 1.00000 | 0.29(a) |
| | 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 4081 | 1.00000 | 1.22(aM) |
| | 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 2432 | 1.00000 | 1.03(aM) |
| | 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 14648 | 1.00000 | 1.10(a) |
| | 89 1,2-Dibromo-3-Chloropropane | 155 | 10.665 | 10.665 | (1.103) | 464 | 1.00000 | 0.73(aM) |
| | 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 3982 | 1.00000 | 1.09(a) |

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D Page 2
Report Date: 06-Dec-2019 19:56

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 8297 | 1.00000 | 1.11(a) |
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 5359 | 1.00000 | 1.18(a) |
| 42 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 3352 | 1.00000 | 0.98(aM) |
| 75 1,3,5-Trimethylbenzene | 105 | 9.067 | 9.067 | (0.938) | 13162 | 1.00000 | 1.03(a) |
| 83 1,3-Dichlorobenzene | 146 | 9.605 | 9.605 | (0.993) | 8955 | 1.00000 | 1.11(a) |
| 54 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 6334 | 1.00000 | 1.15(a) |
| 84 1,4-Dichlorobenzene | 146 | 9.684 | 9.684 | (1.001) | 9129 | 1.00000 | 1.12(a) |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 6785 | 1.00000 | 1.23(a) |
| 24 2-Butanone | 43 | 3.588 | 3.588 | (0.858) | 2602 | 2.00000 | 2.03(a) |
| 76 2-Chlorotoluene | 91 | 8.974 | 8.974 | (0.928) | 11127 | 1.00000 | 1.10(a) |
| 52 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 4893 | 2.00000 | 2.30(a) |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 13982 | 1.00000 | 1.14(a) |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 14705 | 1.00000 | 1.07(a) |
| 45 4-Methyl-2-Pentanone | 43 | 6.331 | 6.331 | (0.825) | 6643 | 2.00000 | 2.19(a) |
| 10 Acetone | 43 | 1.969 | 1.969 | (0.471) | 5956 | 2.00000 | 1.88(a) |
| 37 Benzene | 78 | 4.519 | 4.519 | (0.909) | 15129 | 1.00000 | 1.16(a) |
| 74 Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 5611 | 1.00000 | 1.15(a) |
| 29 Bromochloromethane | 128 | 3.803 | 3.803 | (0.909) | 2687 | 1.00000 | 1.19(a) |
| 39 Bromodichloromethane | 83 | 5.730 | 5.730 | (1.153) | 5583 | 1.00000 | 1.18(aM) |
| 66 Bromoform | 173 | 8.416 | 8.416 | (1.097) | 3197 | 1.00000 | 2.01(Ta) |
| 6 Bromomethane | 94 | 1.339 | 1.339 | (0.320) | 6334 | 1.00000 | (aM) |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 20920 | 2.00000 | 2.18(a) |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 5740 | 1.00000 | 1.13(aM) |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 11449 | 1.00000 | 1.13(a) |
| 7 Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 3001 | 1.00000 | 1.14(aM) |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.935) | 8234 | 1.00000 | 1.22(a) |
| 3 Chloromethane | 50 | 1.074 | 1.074 | (0.257) | 6118 | 1.00000 | 1.53(aM) |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 4494 | 1.00000 | 1.13(a) |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 6302 | 1.00000 | 1.13(a) |
| 55 Dibromochloromethane | 129 | 7.176 | 7.176 | (0.936) | 4470 | 1.00000 | 1.13(a) |
| 44 Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 2789 | 1.00000 | 1.15(a) |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 3829 | 1.00000 | 1.87(aM) |
| 61 Ethylbenzene | 106 | 7.800 | 7.800 | (1.017) | 5813 | 1.00000 | 1.11(a) |
| 91 Hexachlorobutadiene | 225 | 11.481 | 11.481 | (1.187) | 2468 | 1.00000 | 0.76(a) |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 16809 | 1.00000 | 1.08(a) |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 13495 | 2.00000 | 2.14(a) |
| 17 Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 4626 | 1.00000 | 1.22(a) |
| 87 n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 11491 | 1.00000 | 1.00(a) |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 18779 | 1.00000 | 1.08(a) |
| 92 Naphthalene | 128 | 11.553 | 11.553 | (1.195) | 3182 | 1.00000 | 1.05(a) |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 6995 | 1.00000 | 1.12(a) |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 15987 | 1.00000 | 1.06(a) |
| 64 Styrene | 104 | 8.265 | 8.265 | (1.078) | 11719 | 1.00000 | 1.08(a) |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.340 | (0.966) | 12122 | 1.00000 | 1.11(a) |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 4263 | 1.00000 | 1.17(a) |
| 50 Toluene | 91 | 6.453 | 6.453 | (0.841) | 16346 | 1.00000 | 1.11(a) |
| 20 trans-1,2-Dichloroethene | 96 | 2.535 | 2.535 | (0.606) | 4068 | 1.00000 | 1.18(a) |
| 51 trans-1,3-Dichloropropene | 75 | 6.689 | 6.689 | (1.346) | 5295 | 1.00000 | 1.04(a) |
| 38 Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 4445 | 1.00000 | 1.11(a) |
| 8 Trichlorofluoromethane | 101 | 1.561 | 1.561 | (0.373) | 6912 | 1.00000 | 1.07(a) |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 4533 | 1.00000 | 1.06(aM) |

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

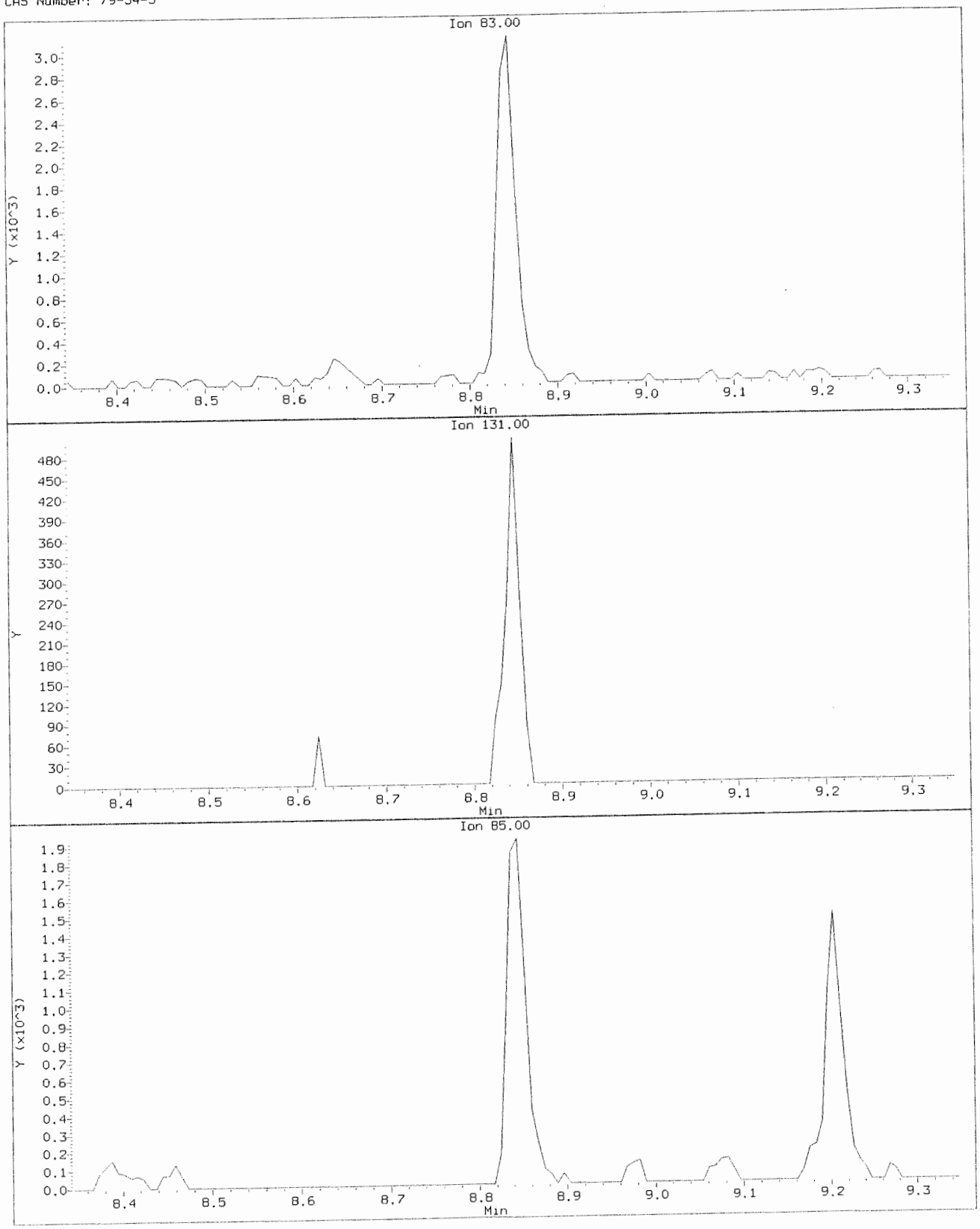



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D
Date : 18-NOV-2019 14:59
Client ID: VSTD001
Sample Info: VSTD001;VSTD0011;1;3;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

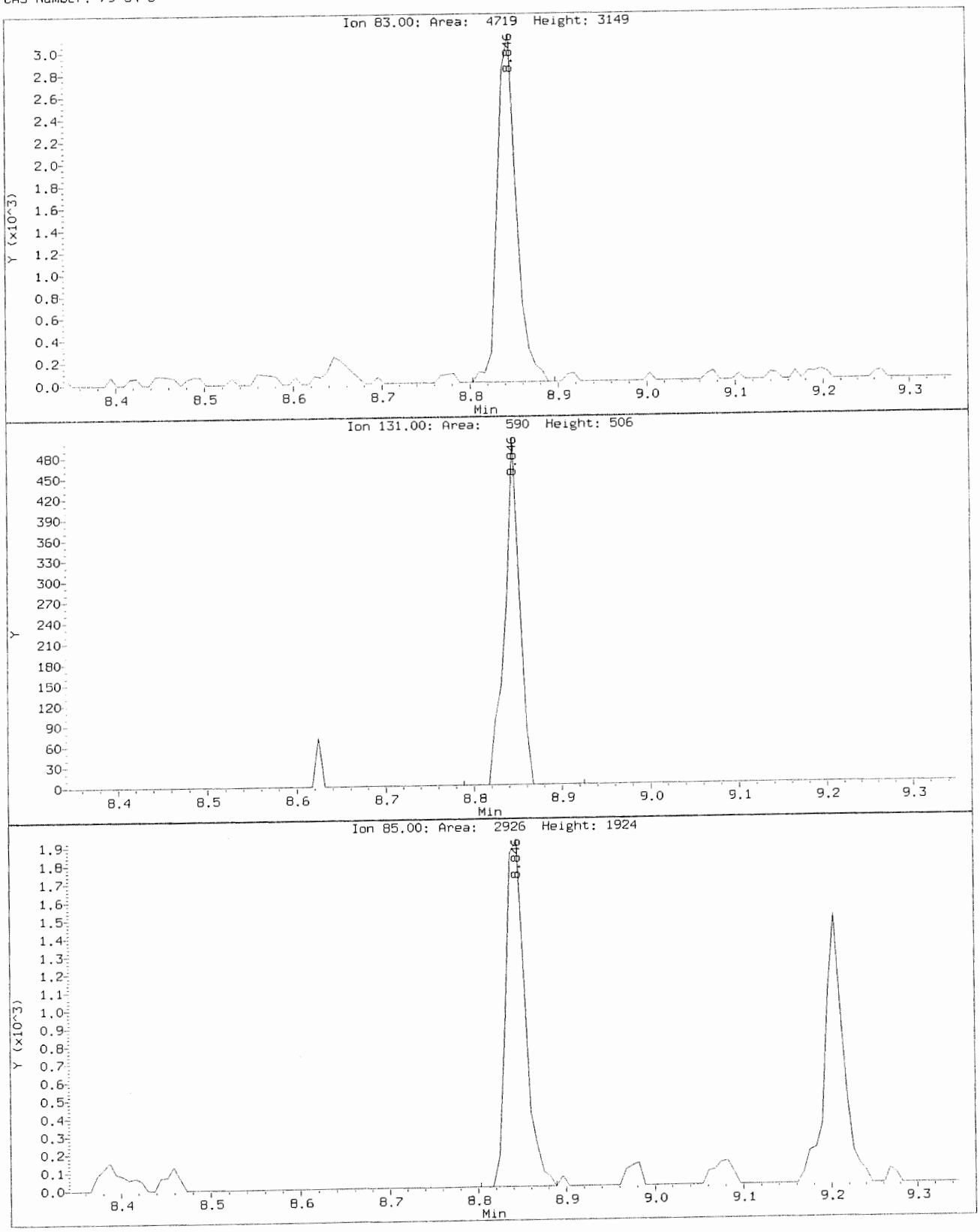
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,1,2,2-Tetrachloroethane
CAS Number: 79-34-5



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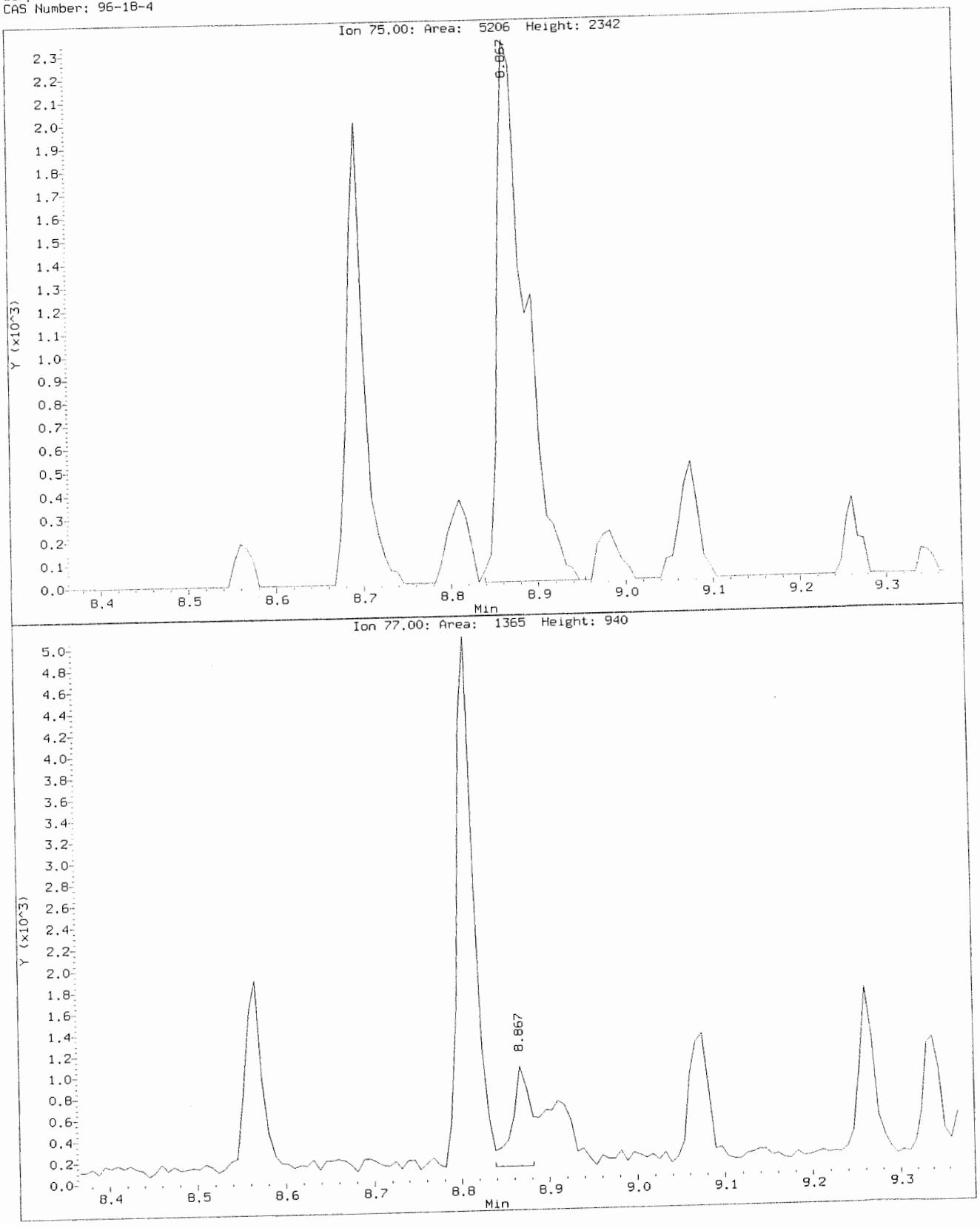
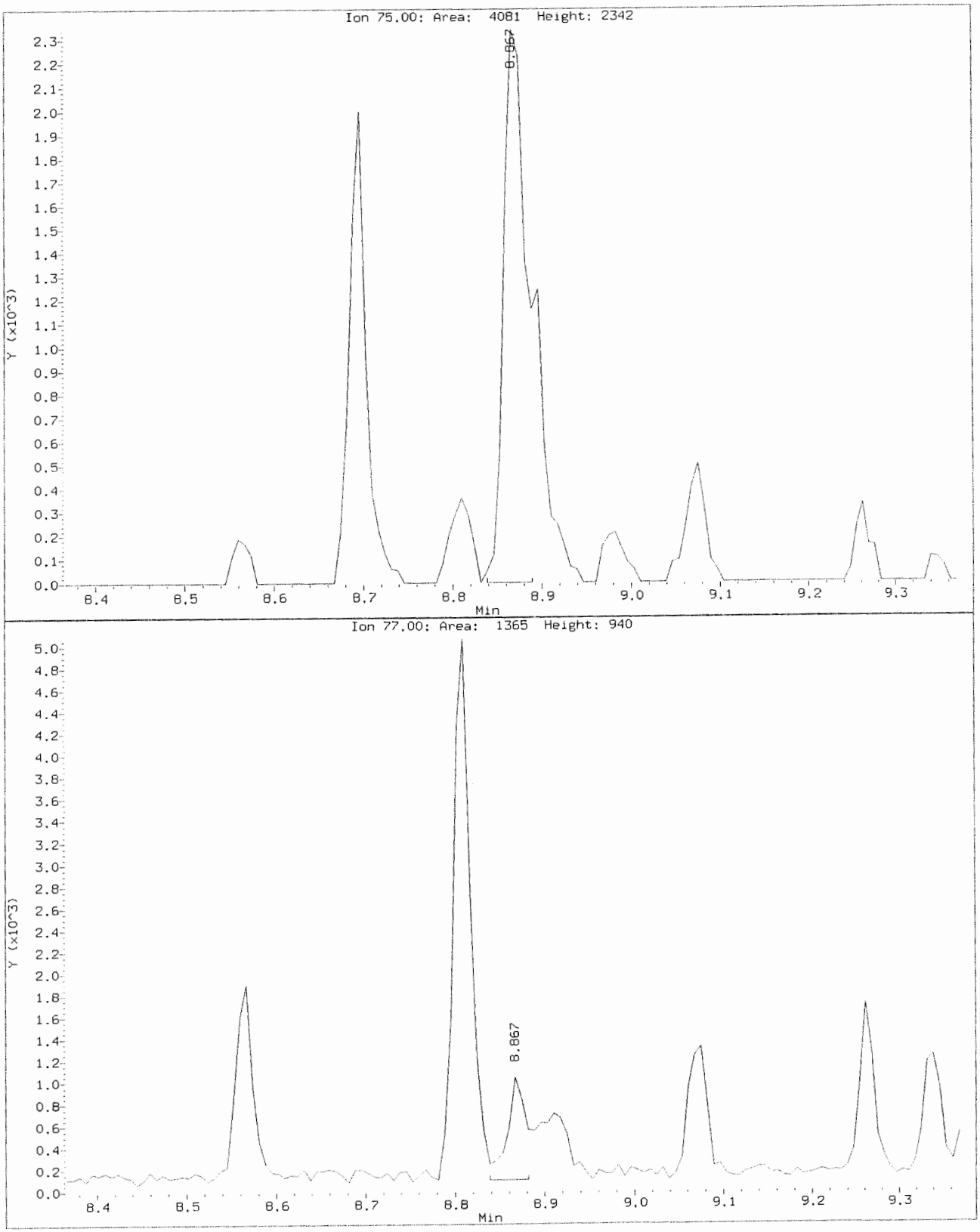
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



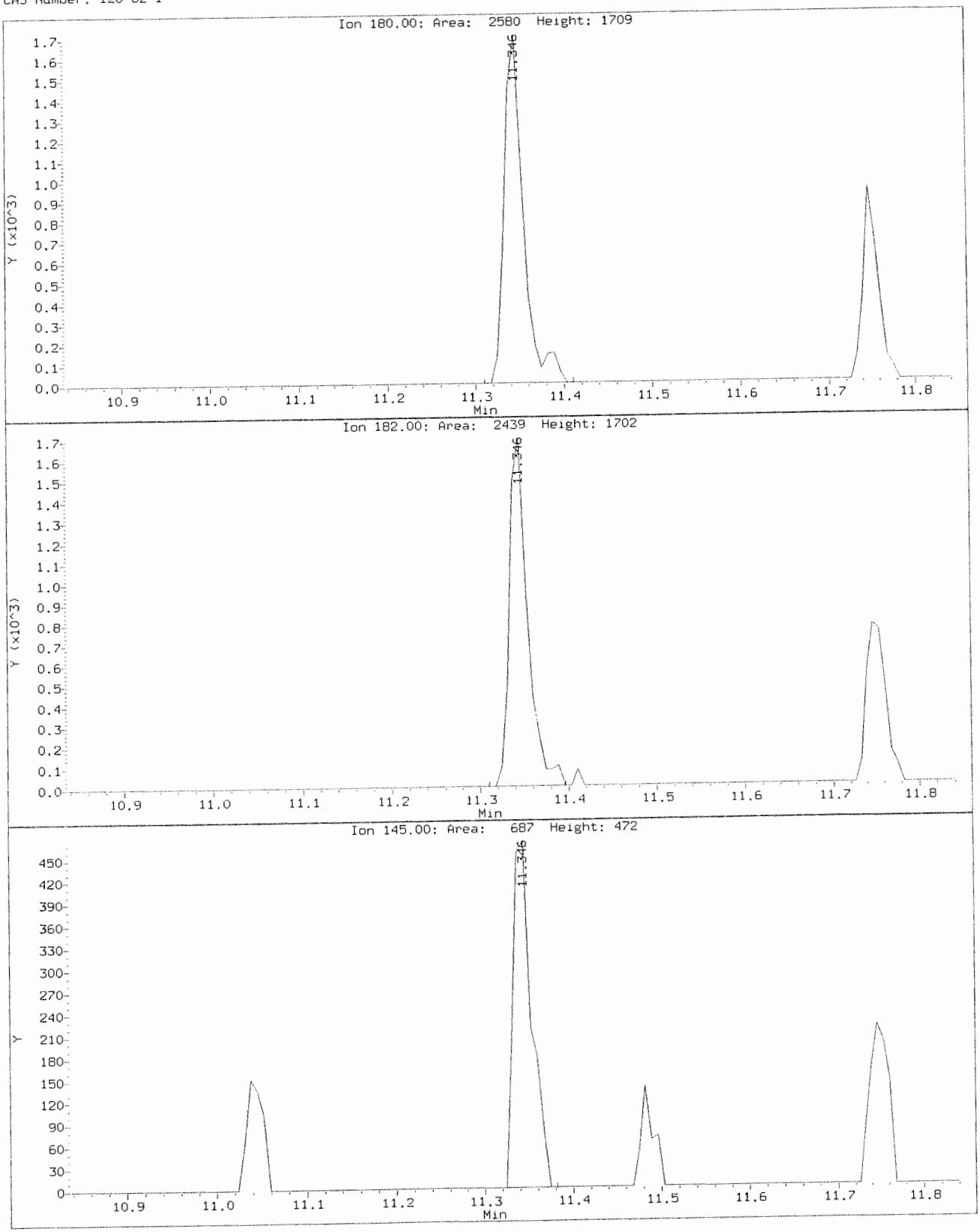
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



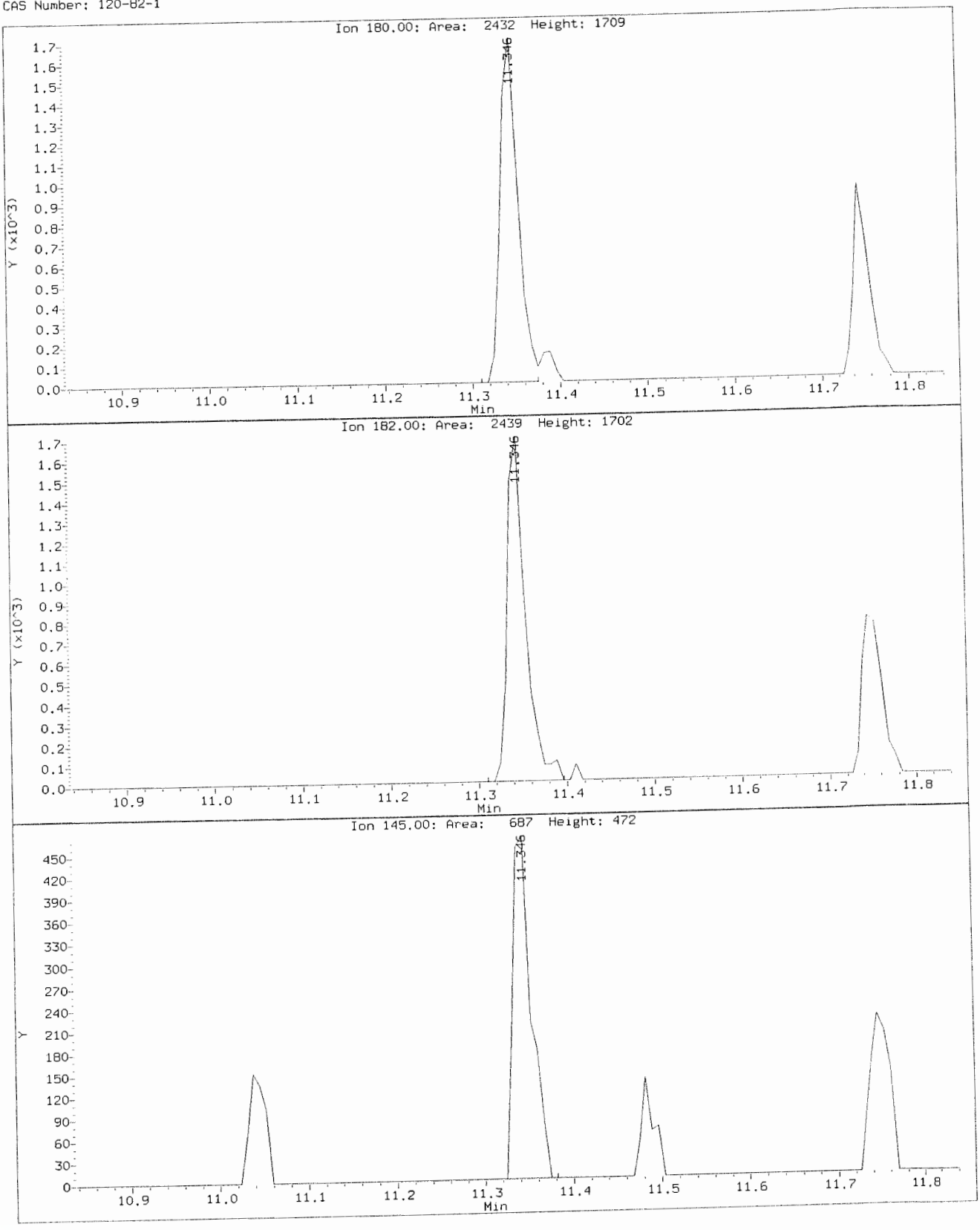
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111B04.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2,4-Trichlorobenzene
CAS Number: 120-82-1



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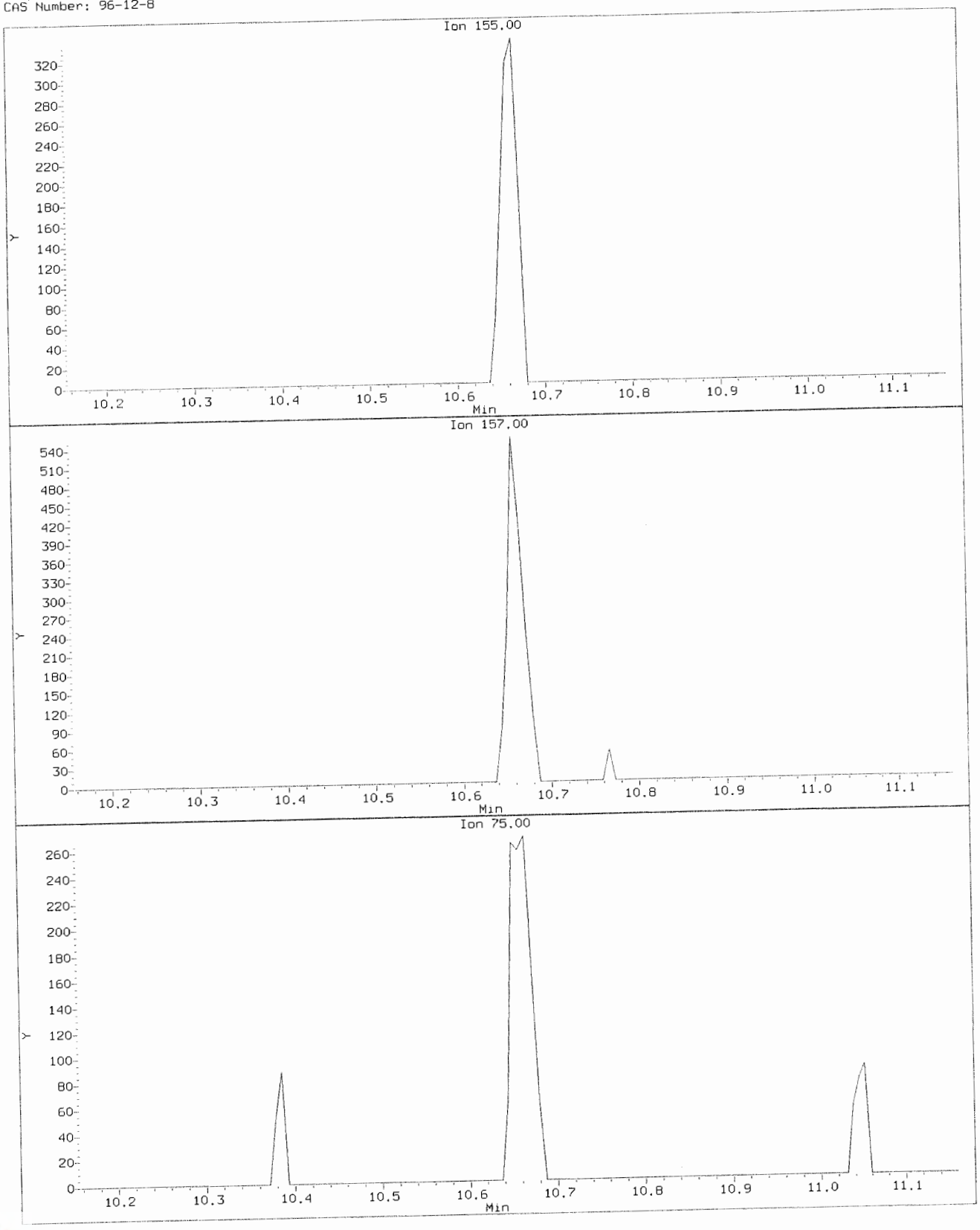
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



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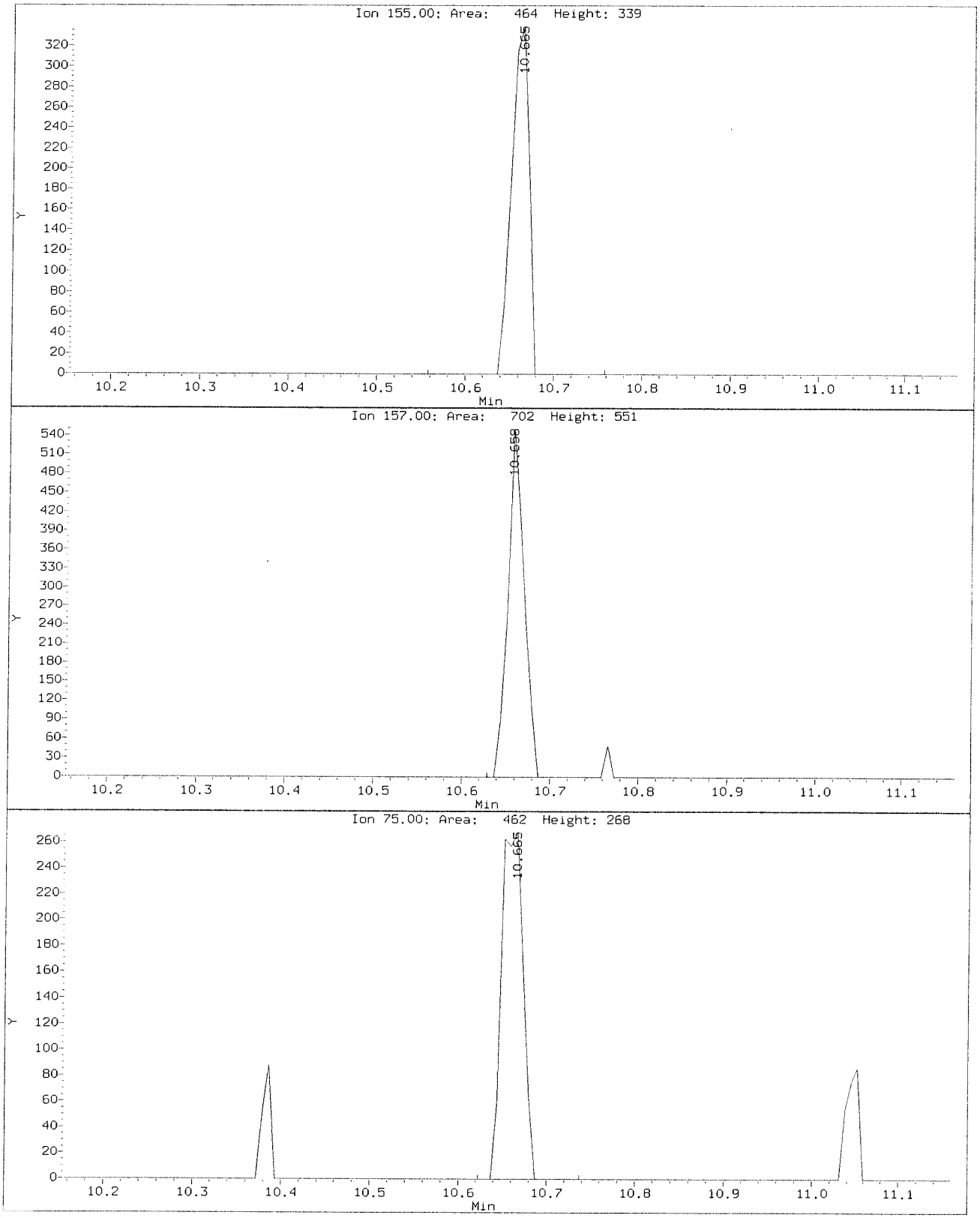
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dibromo-3-Chloropropane
CAS Number: 96-12-8



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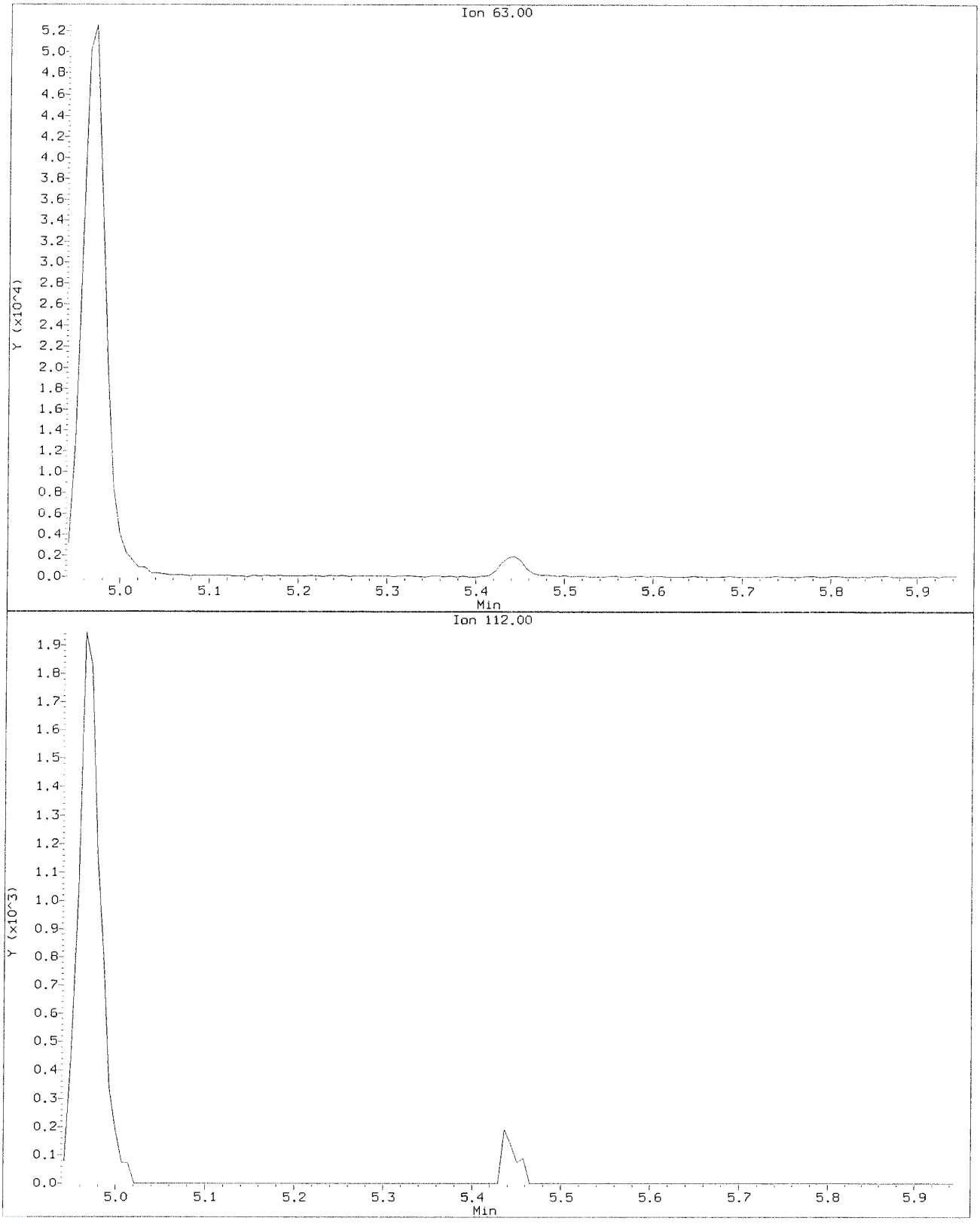
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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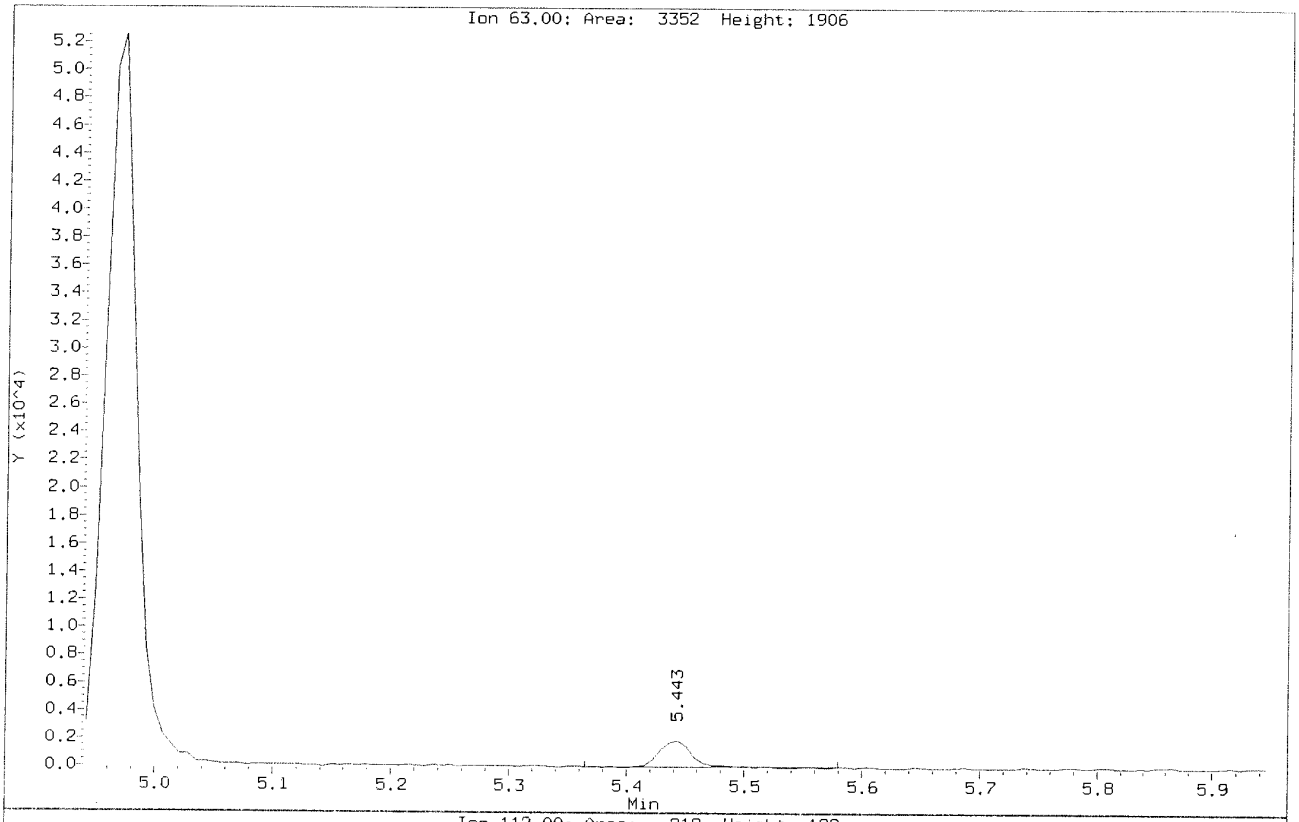
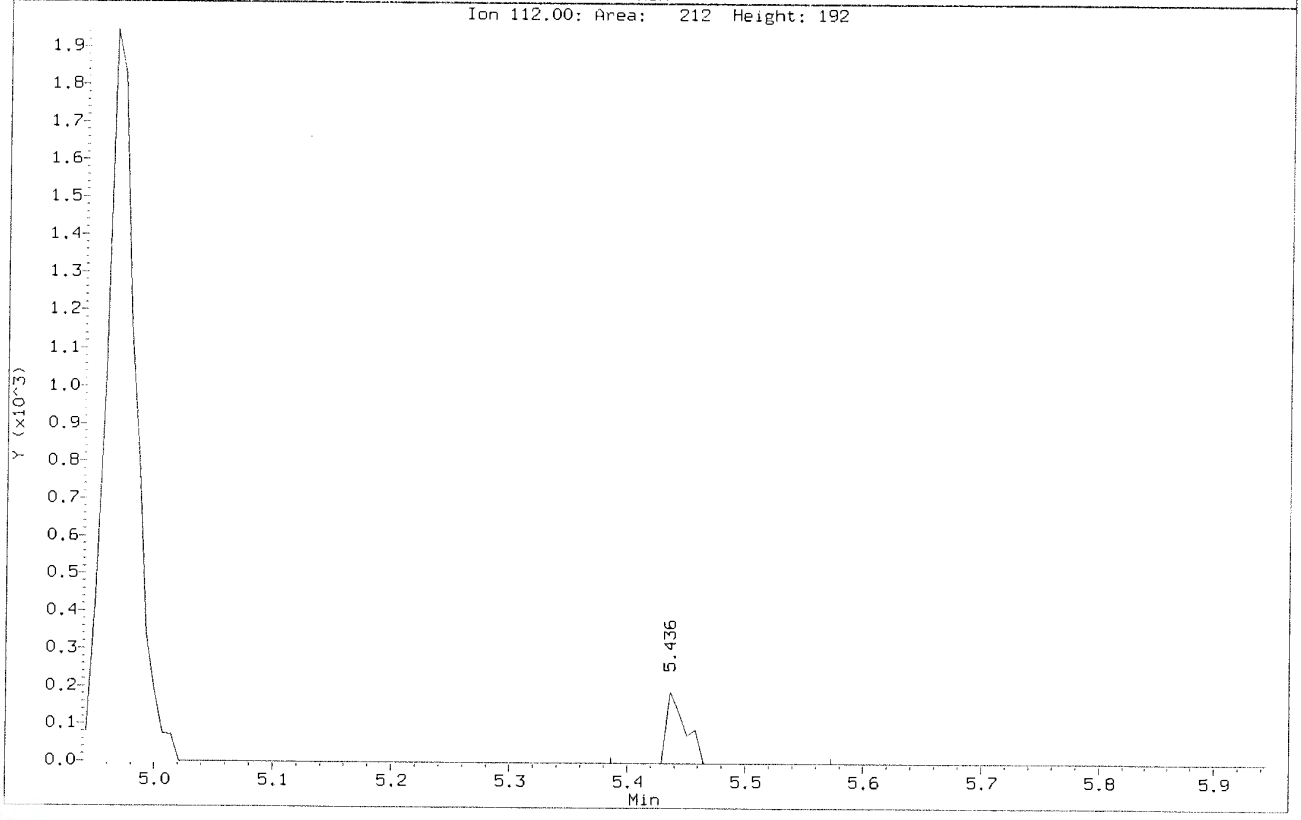
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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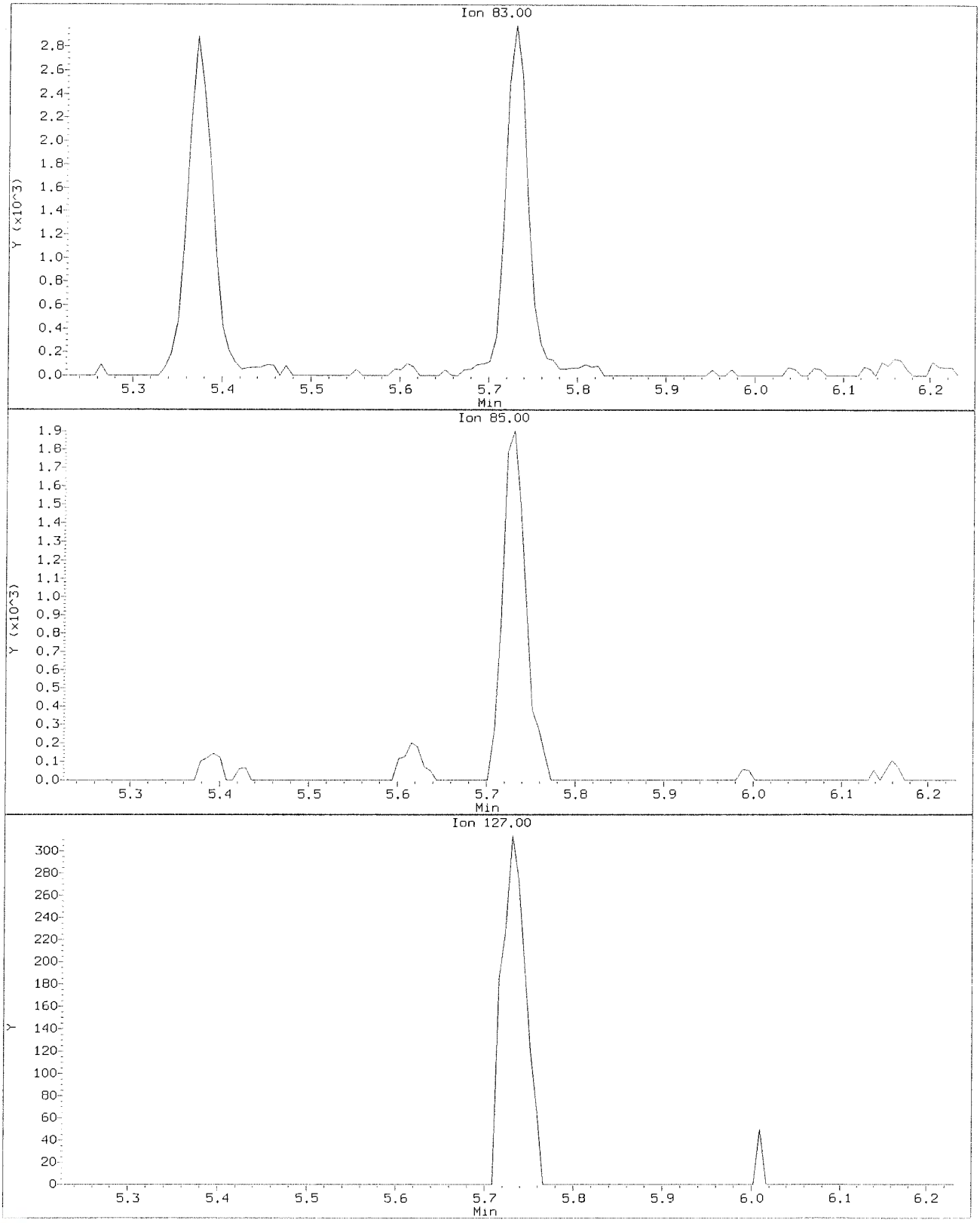
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Bromodichloromethane
CAS Number: 75-27-4



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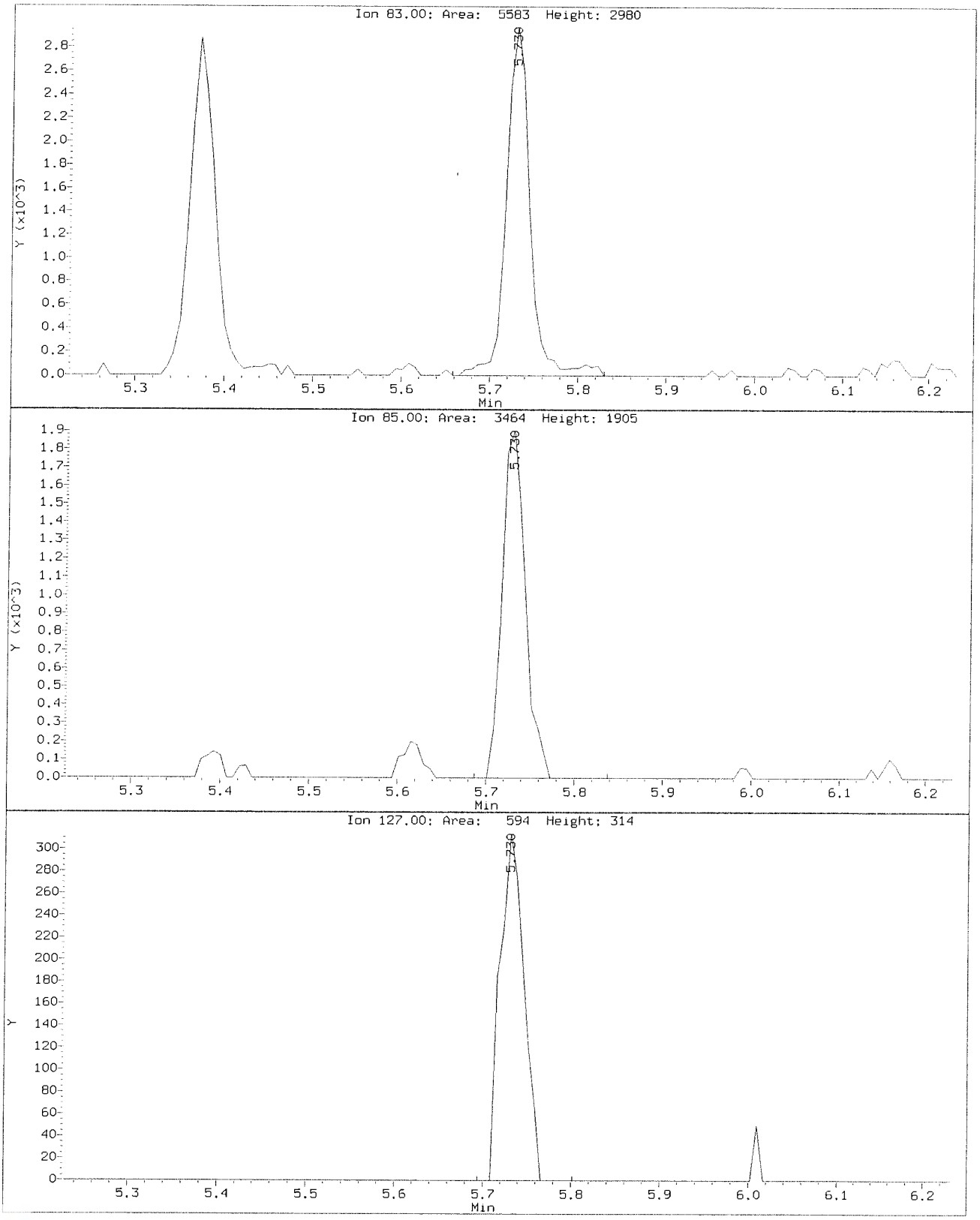
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Bromodichloromethane
CAS Number: 75-27-4



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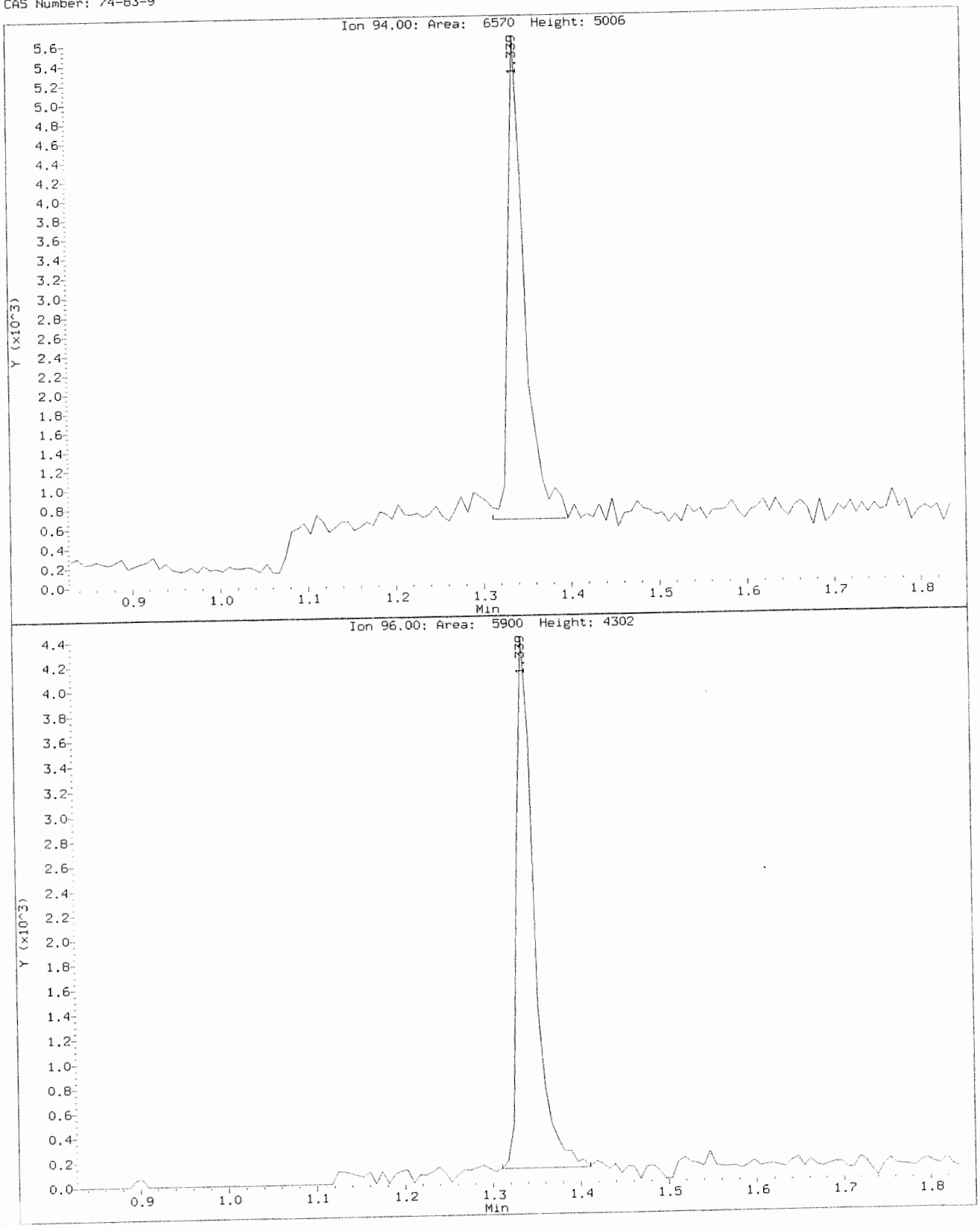
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Bromomethane
CAS Number: 74-83-9



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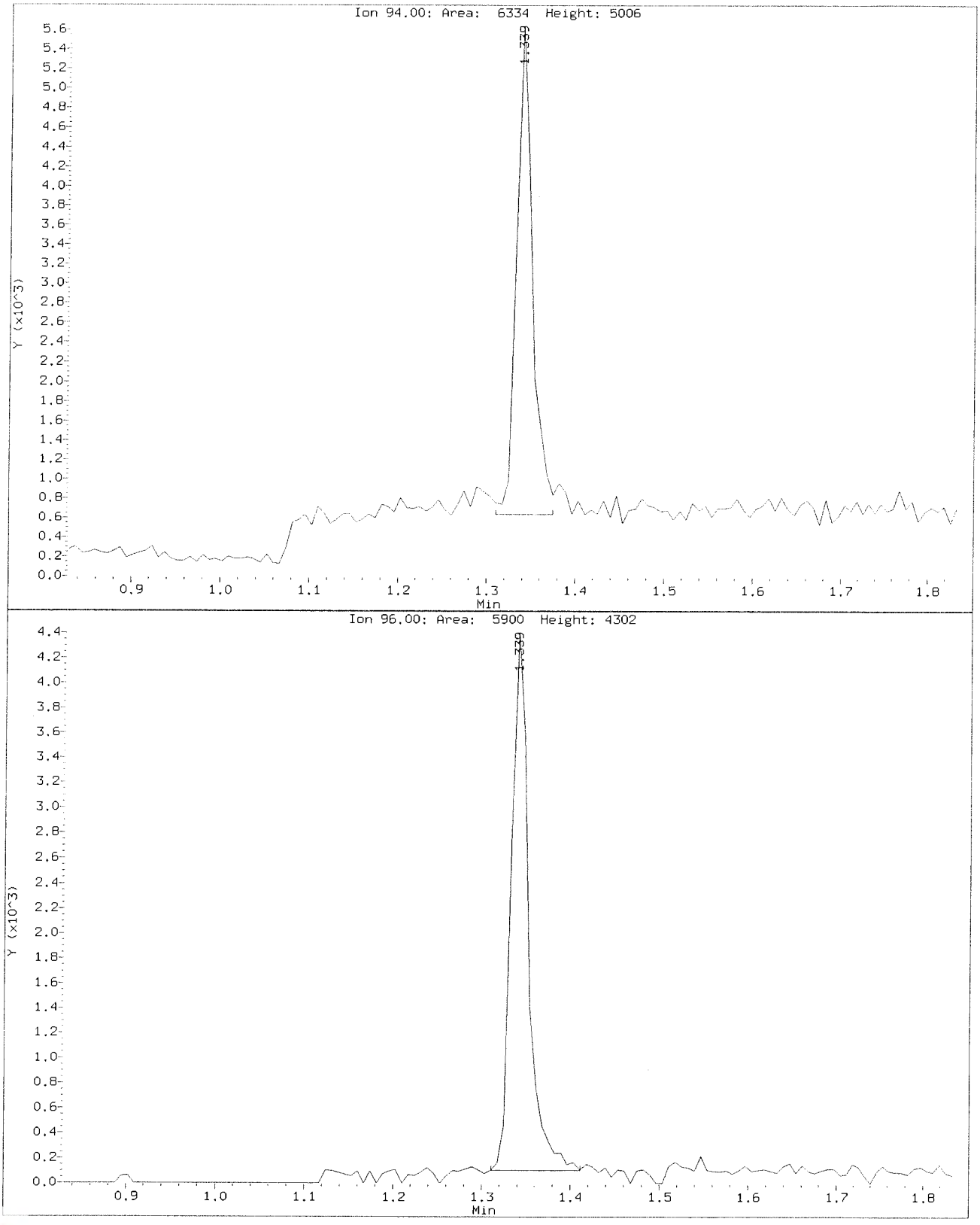
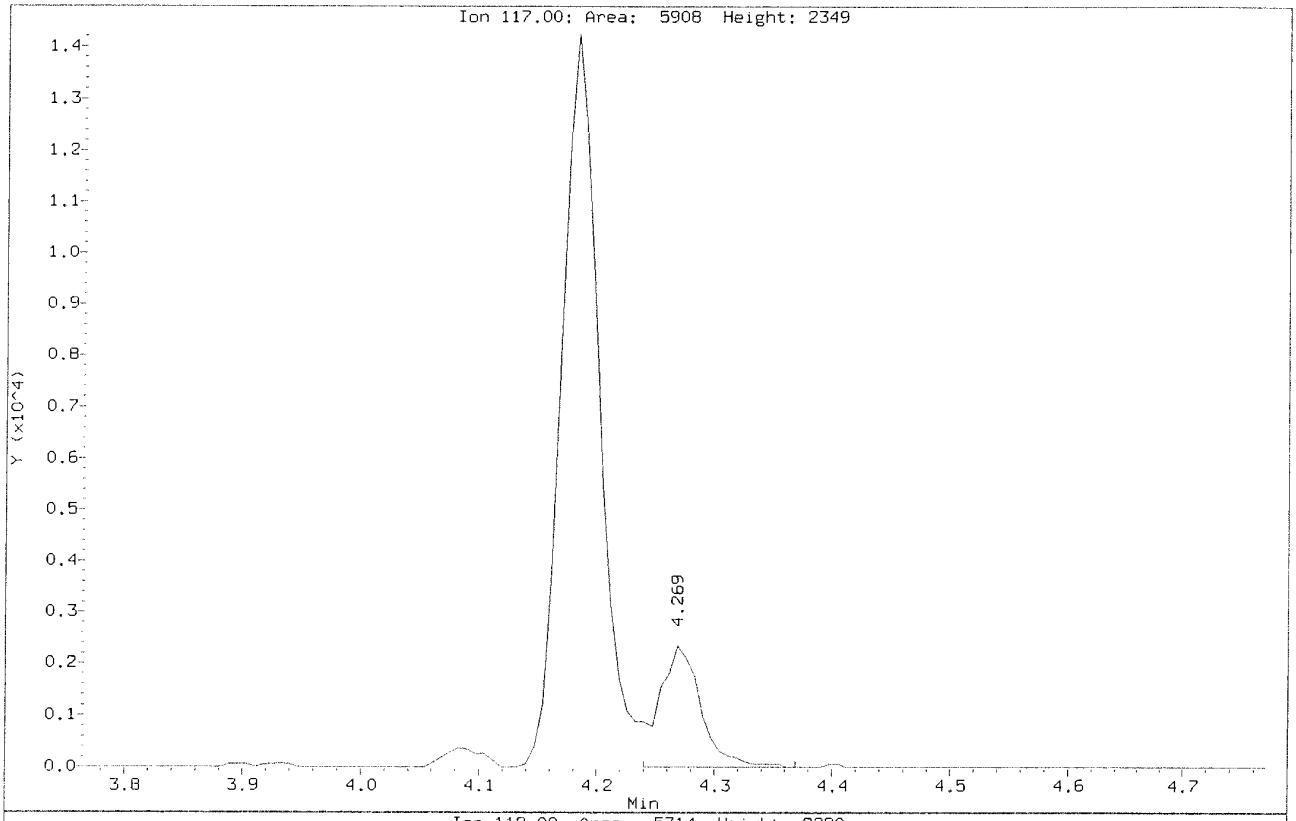
Instrument: voa6.i
Client Sample ID: VSTD001

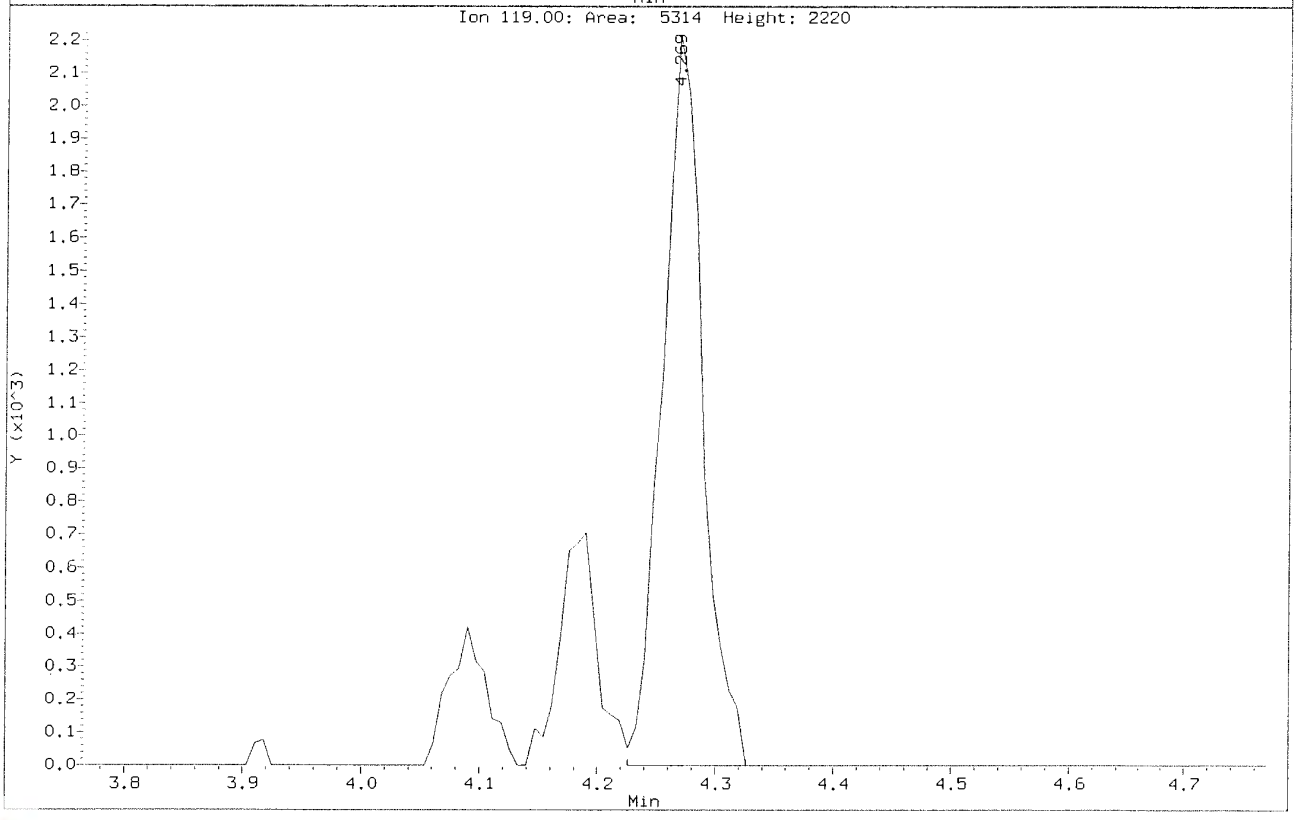
Compound: Bromomethane
CAS Number: 74-83-9



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

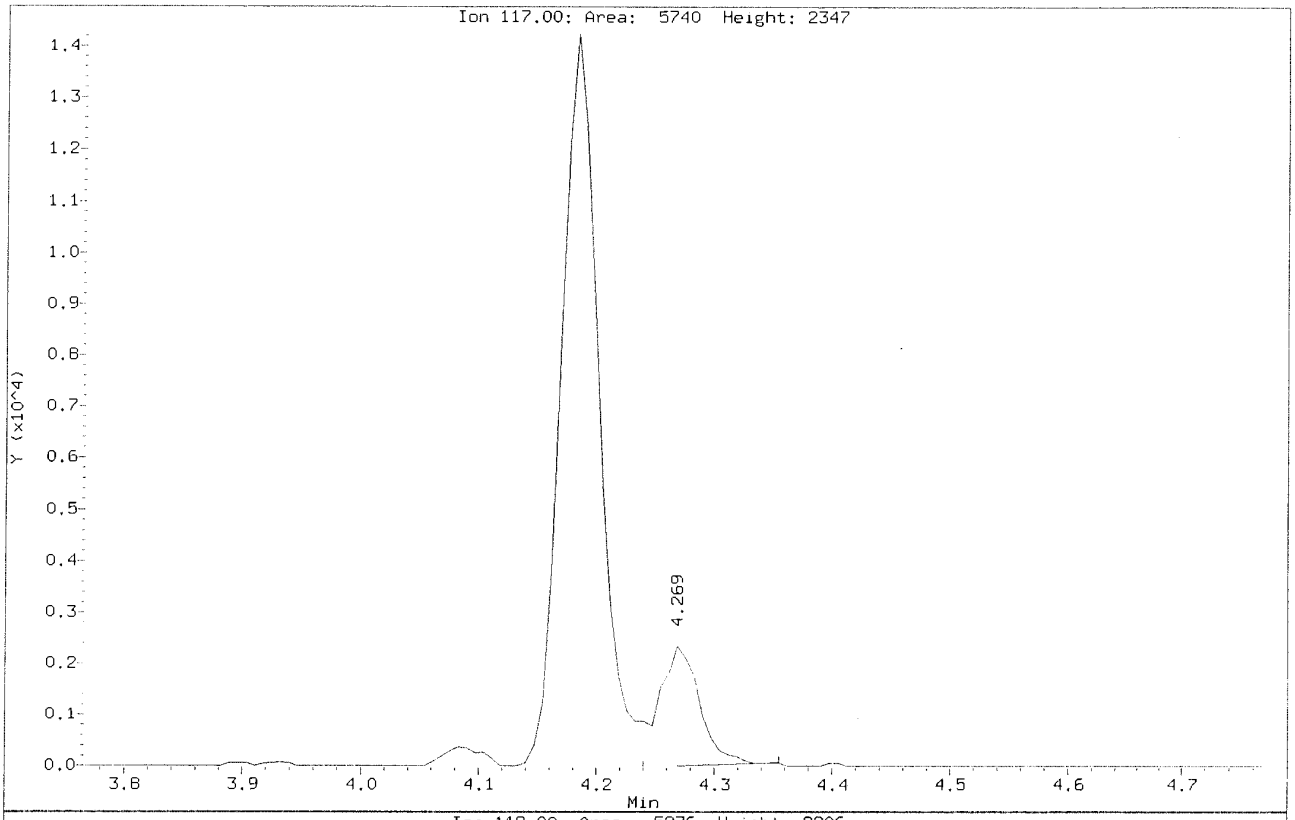
Compound: Carbon Tetrachloride
CAS Number: 56-23-5

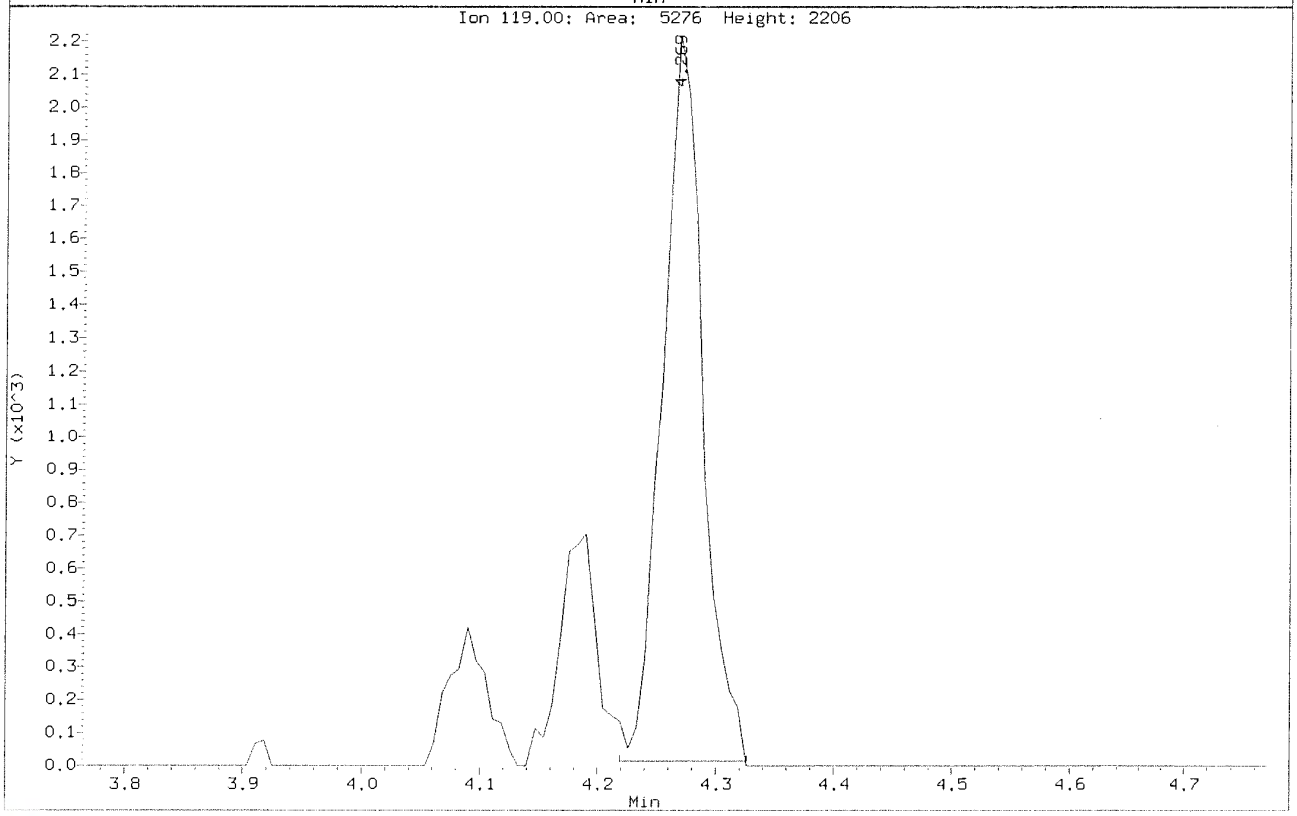


Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

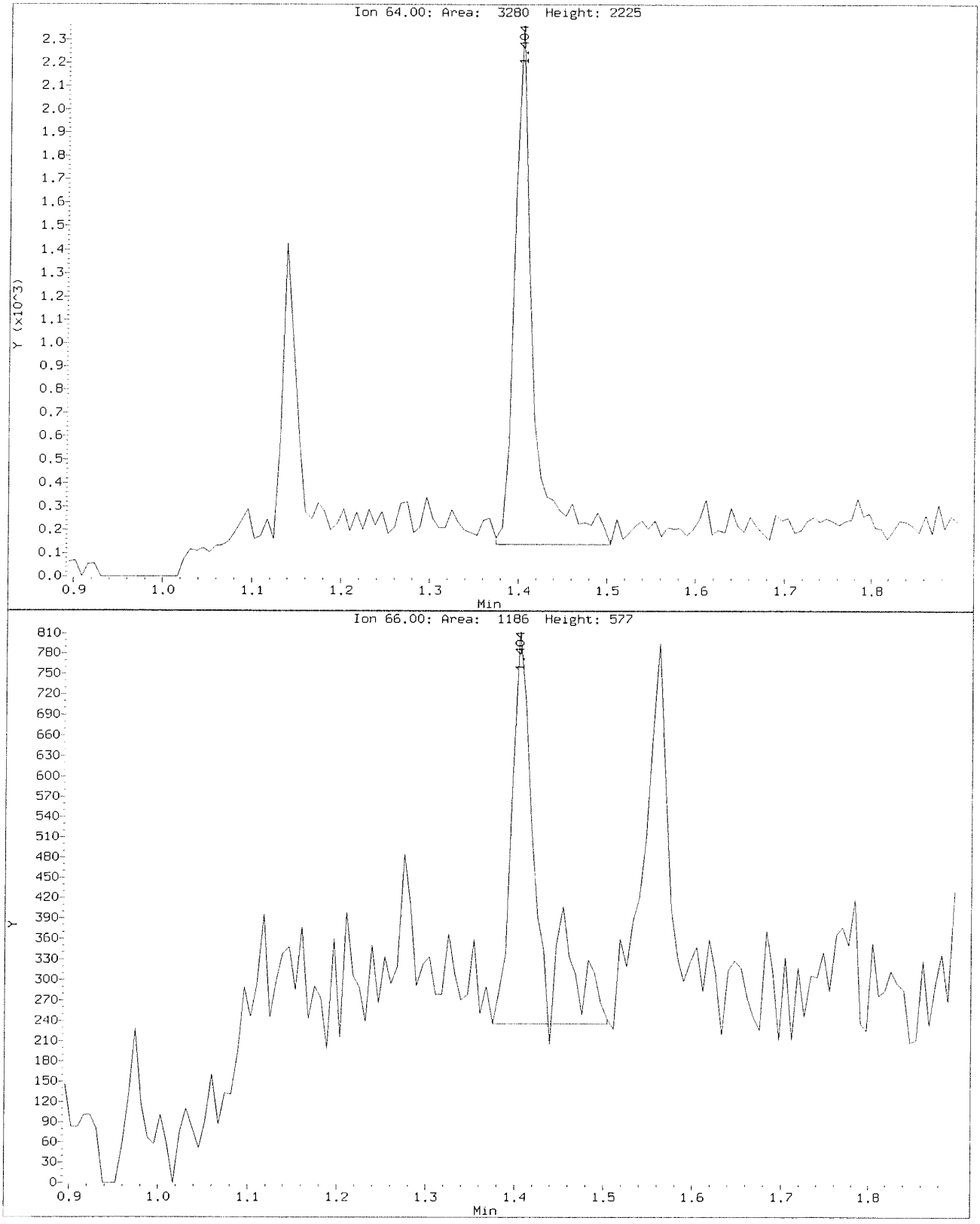
Compound: Carbon Tetrachloride
CAS Number: 56-23-5



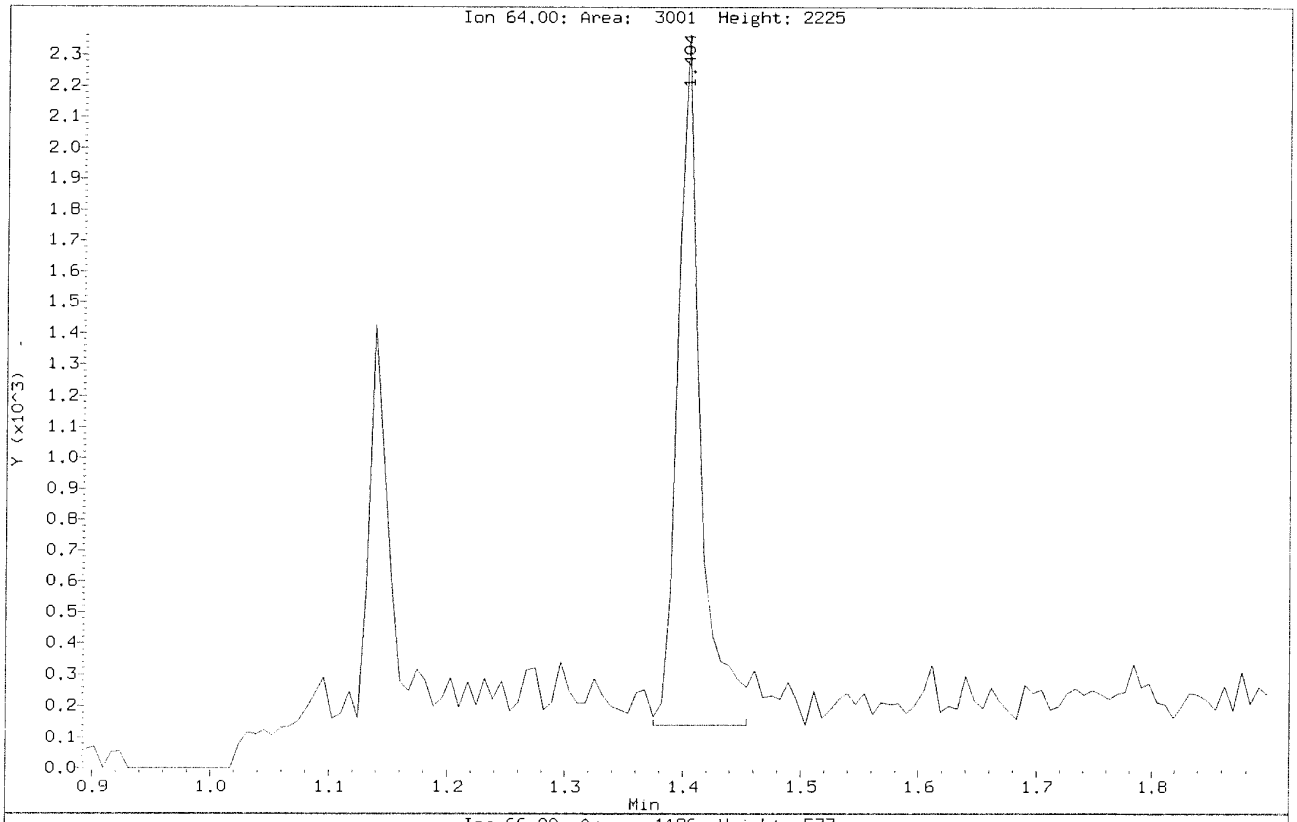
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

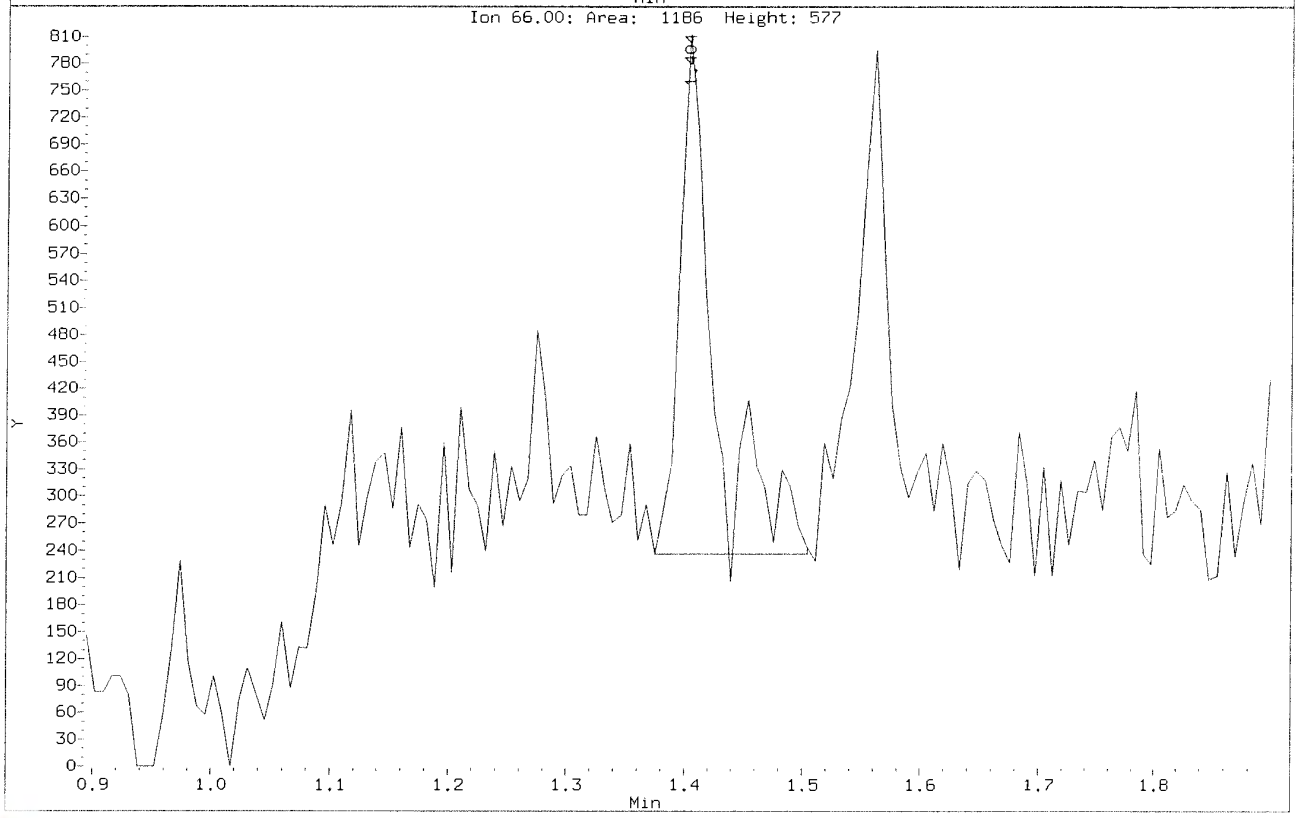
Compound: Chloroethane
CAS Number: 75-00-3



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Chloroethane
CAS Number: 75-00-3



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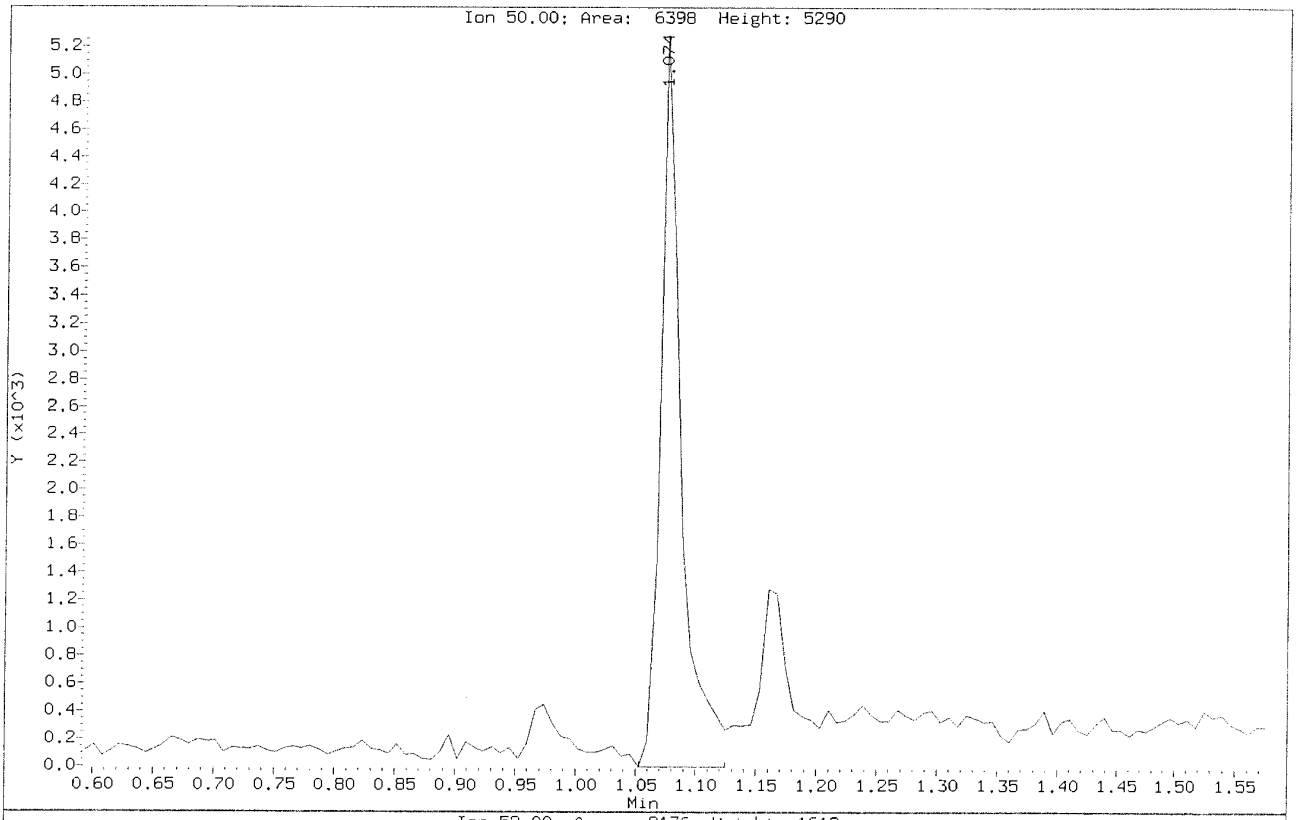
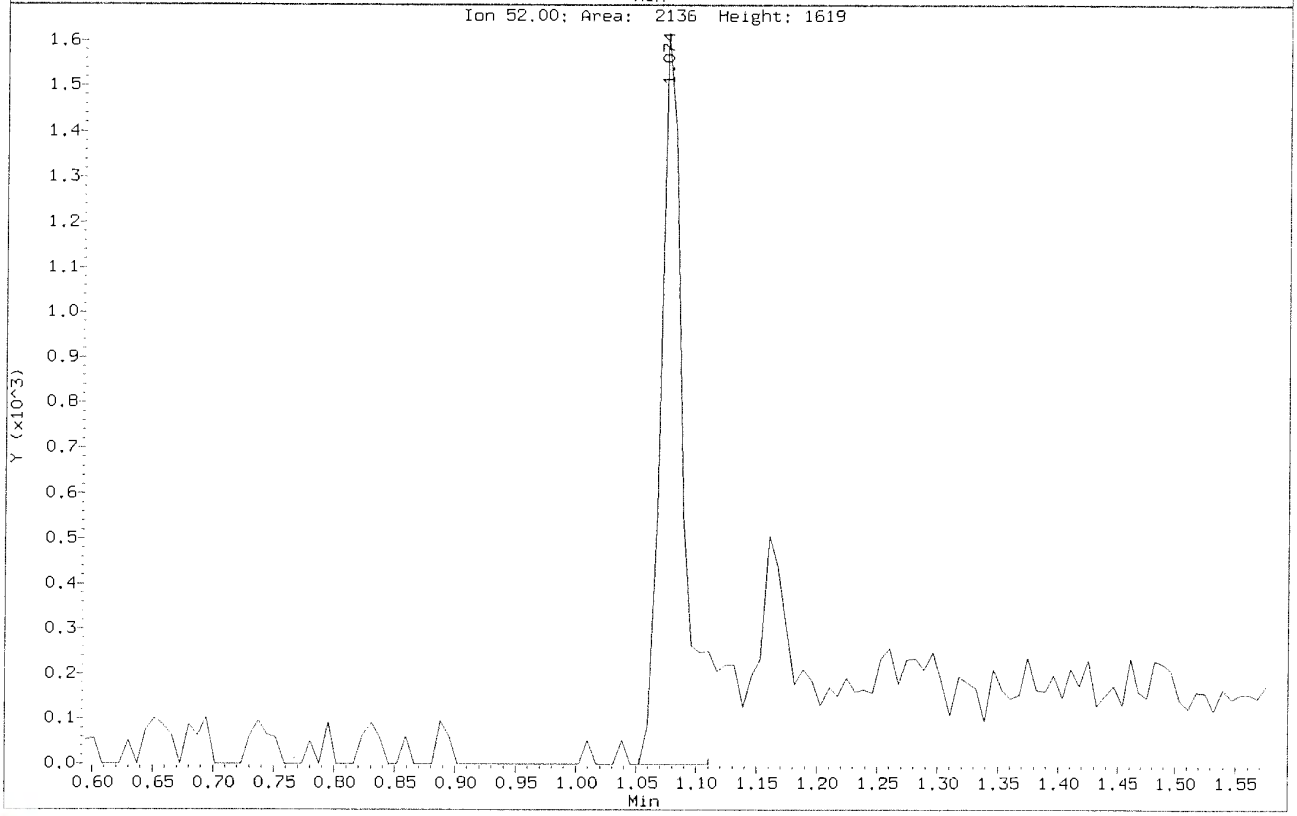
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Chloromethane
CAS Number: 74-87-3



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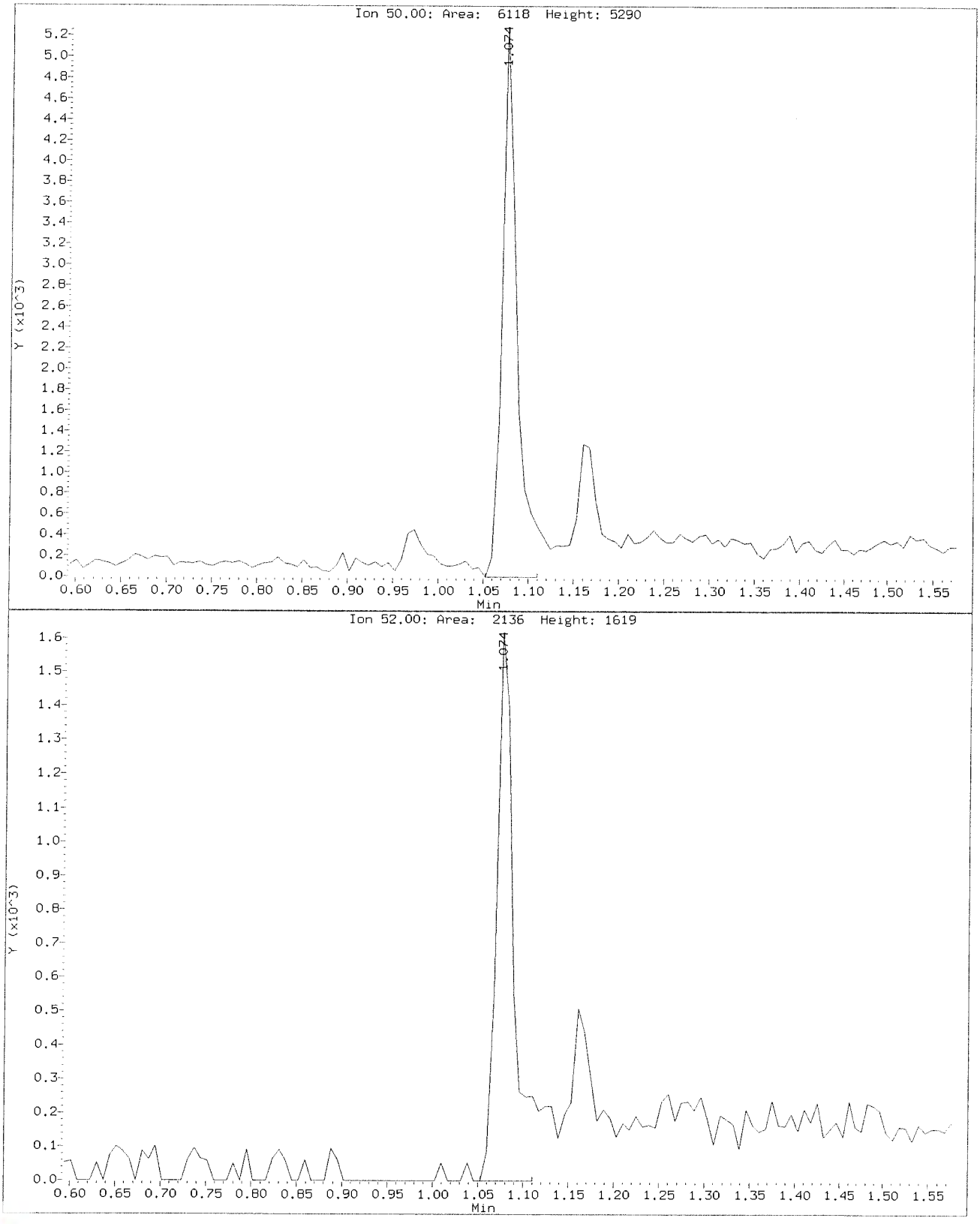
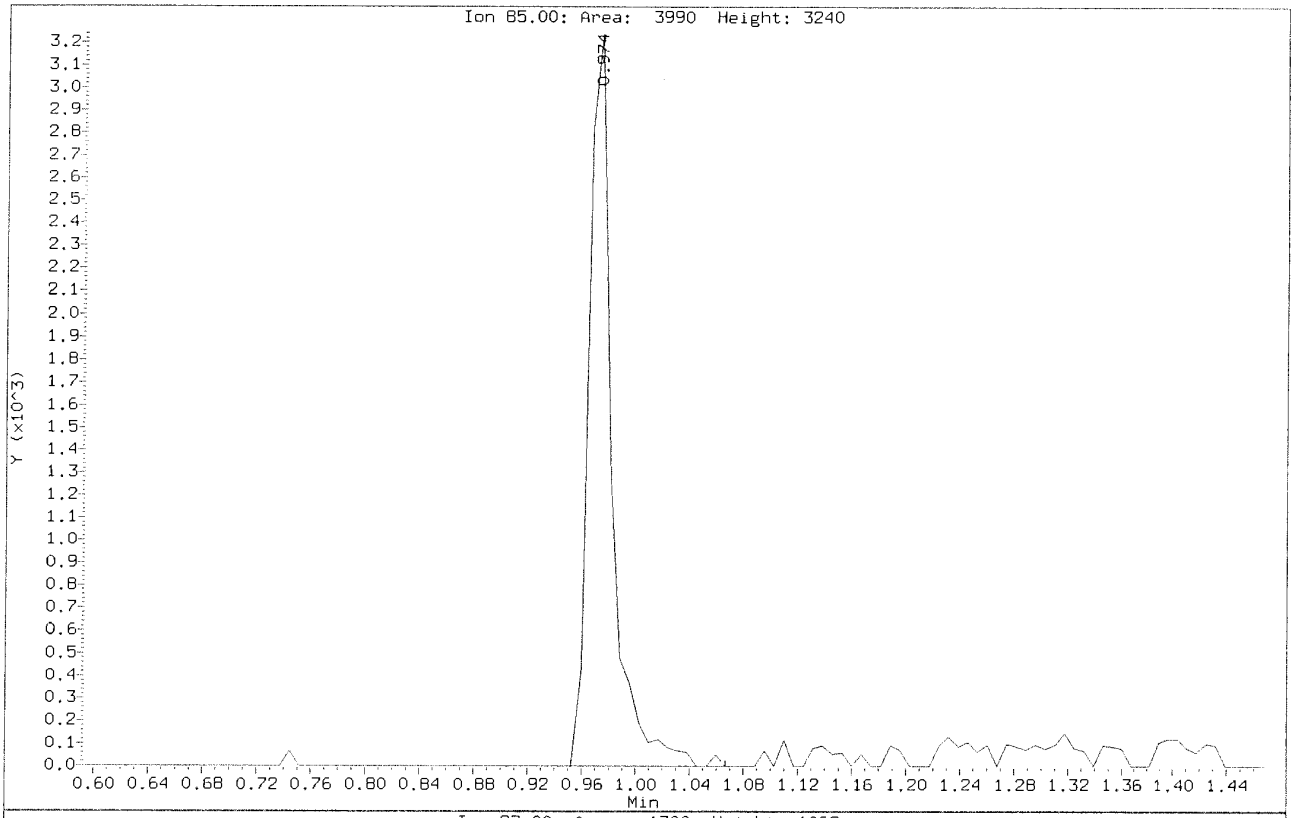
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: V5TB001

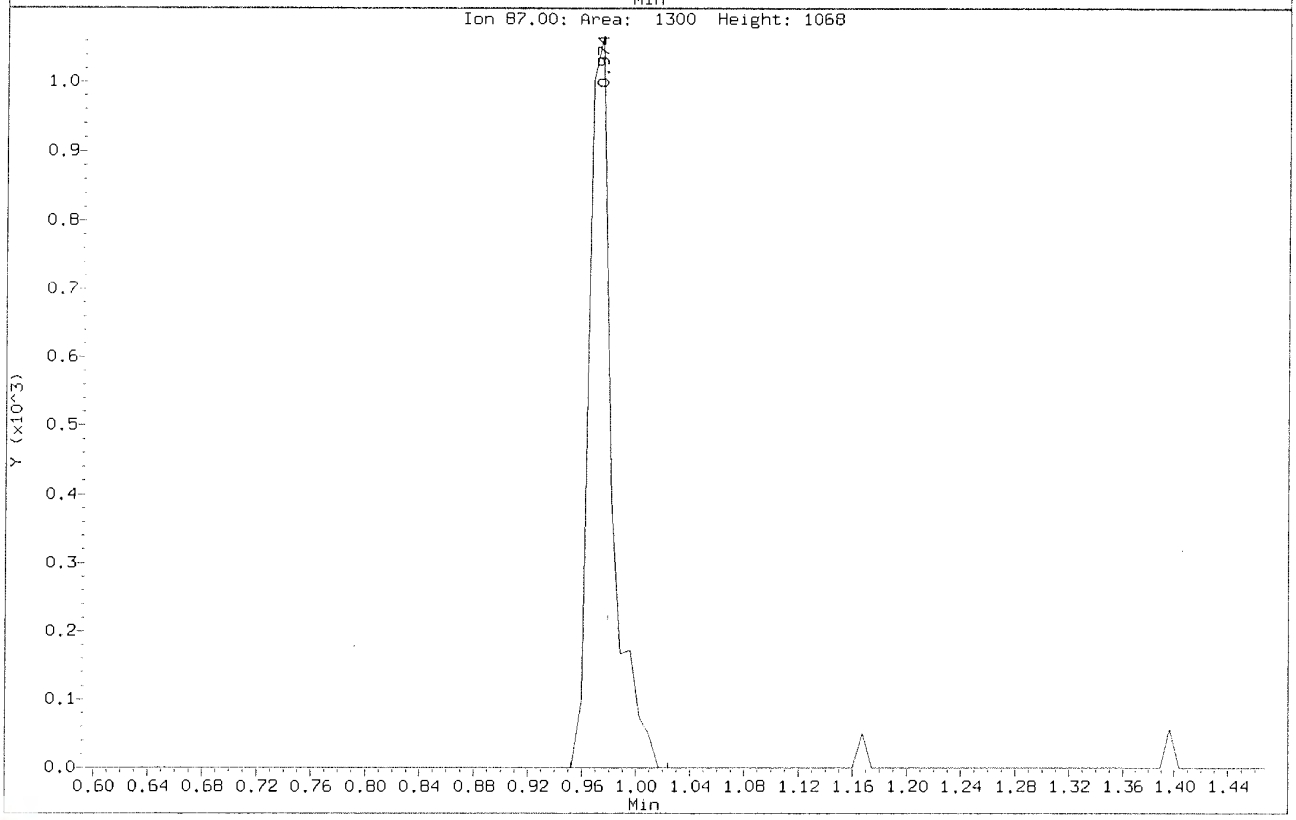
Compound: Chloromethane
CAS Number: 74-87-3



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Dichlorodifluoromethane
CAS Number: 75-71-8



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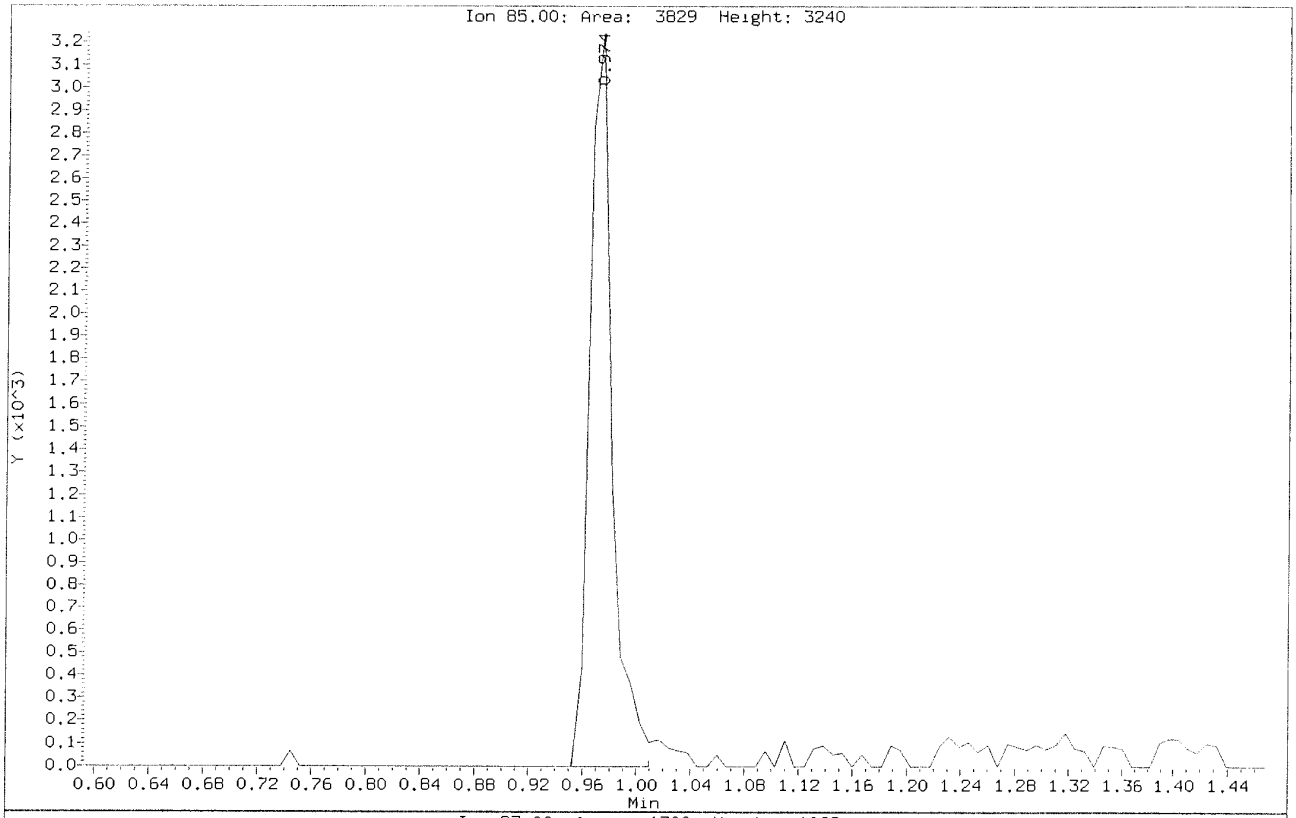
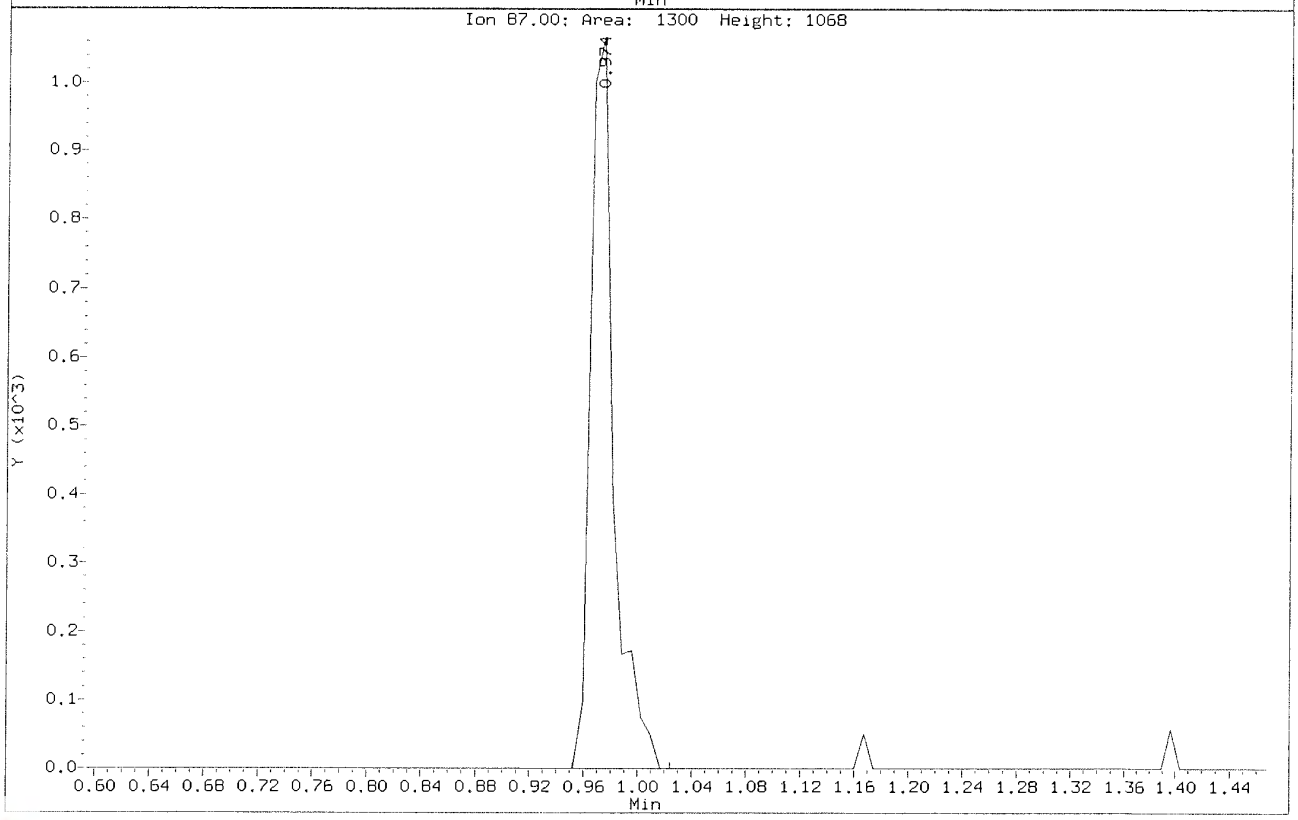
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Dichlorodifluoromethane
CAS Number: 75-71-8



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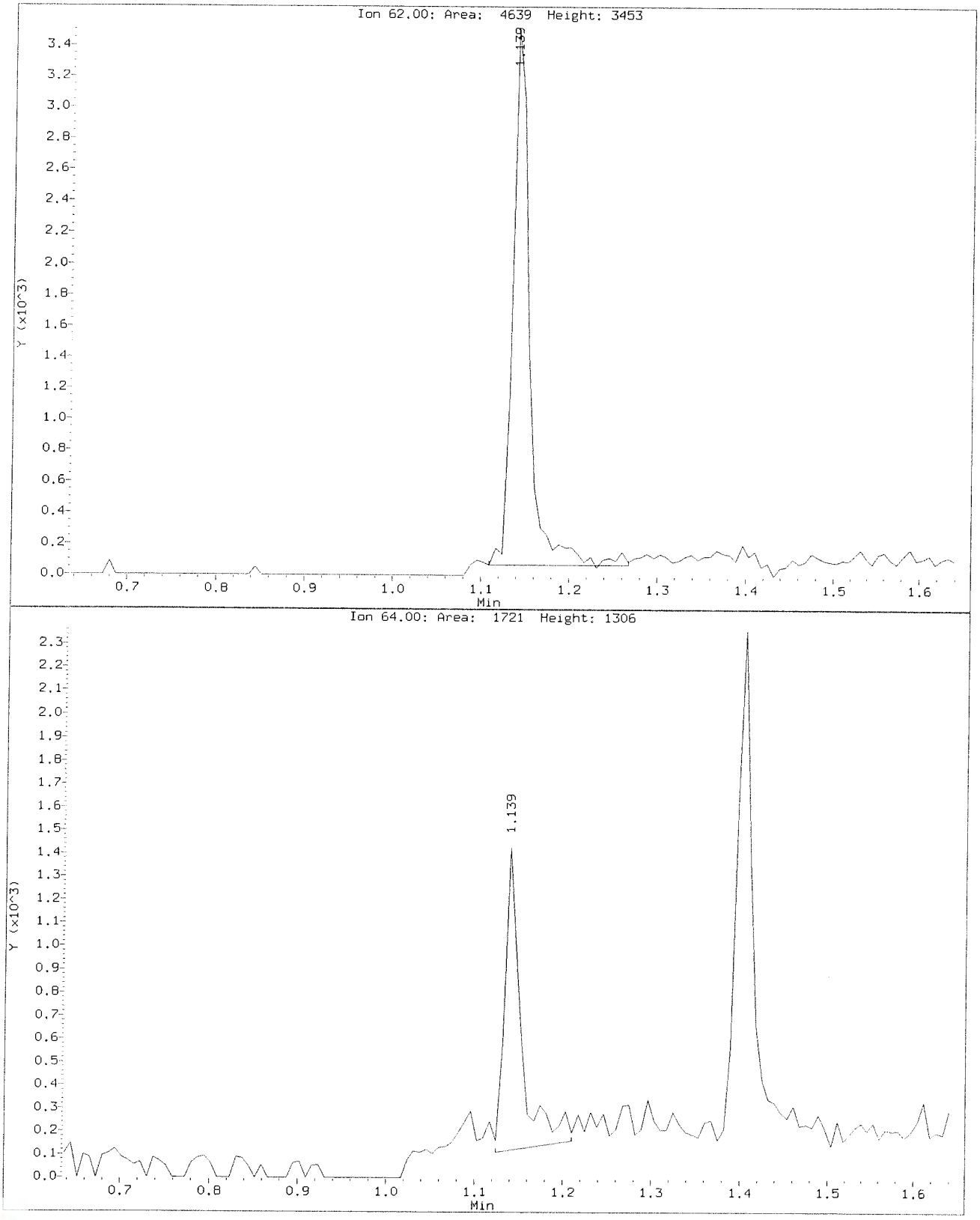
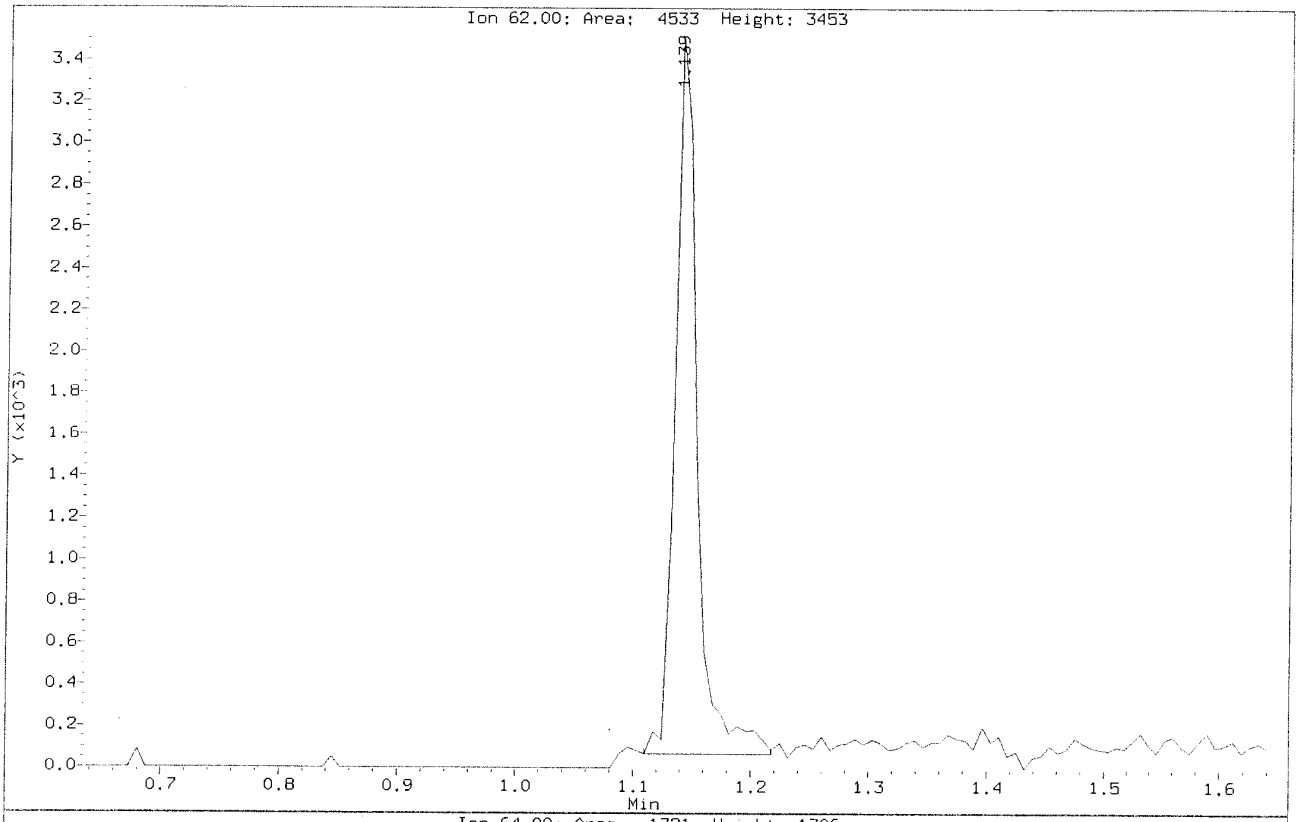
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

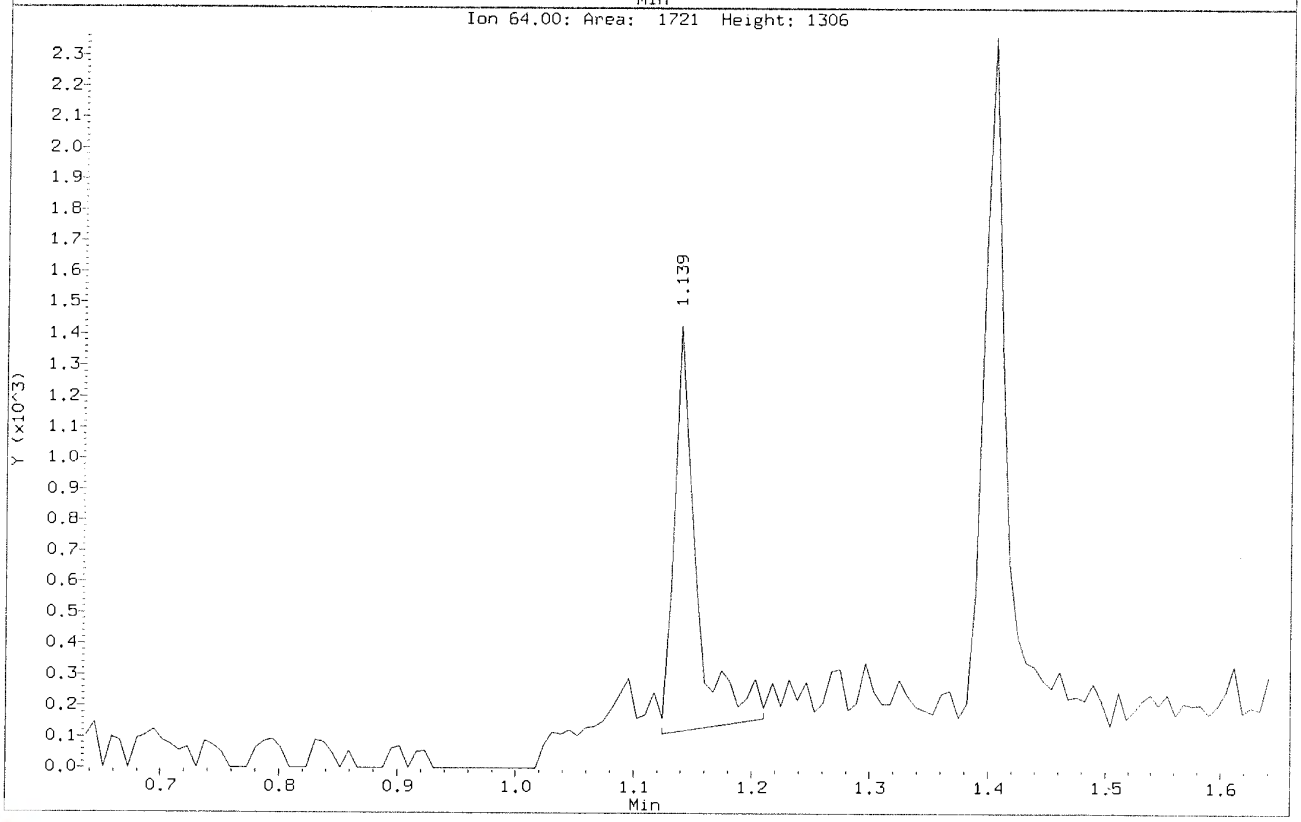
Compound: Vinyl Chloride
CAS Number: 75-01-4



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111804.D
Injection Date: 18-NOV-2019 14:59
Instrument: voa6.i
Client Sample ID: VSTD001

Compound: Vinyl Chloride
CAS Number: 75-01-4



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X191118.b\X111805.D
Lab Smp Id: VSTD002  Client Smp ID: VSTD002
Inj Date : 18-NOV-2019 15:23
Operator : PC  Inst ID: voa6.i
Smp Info : VSTD002;VSTD002;1;4;
Misc Info : HS18090001;WATER;0;1;
Comment :
Method : \\nahstws005\Target\chem\voa6.i\X191118.b\8260W.m
Meth Date : 06-Dec-2019 19:56 voa6.i  Quant Type: ISTD
Cal Date : 18-NOV-2019 14:59  Cal File: X111804.D
Als bottle: 6  Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

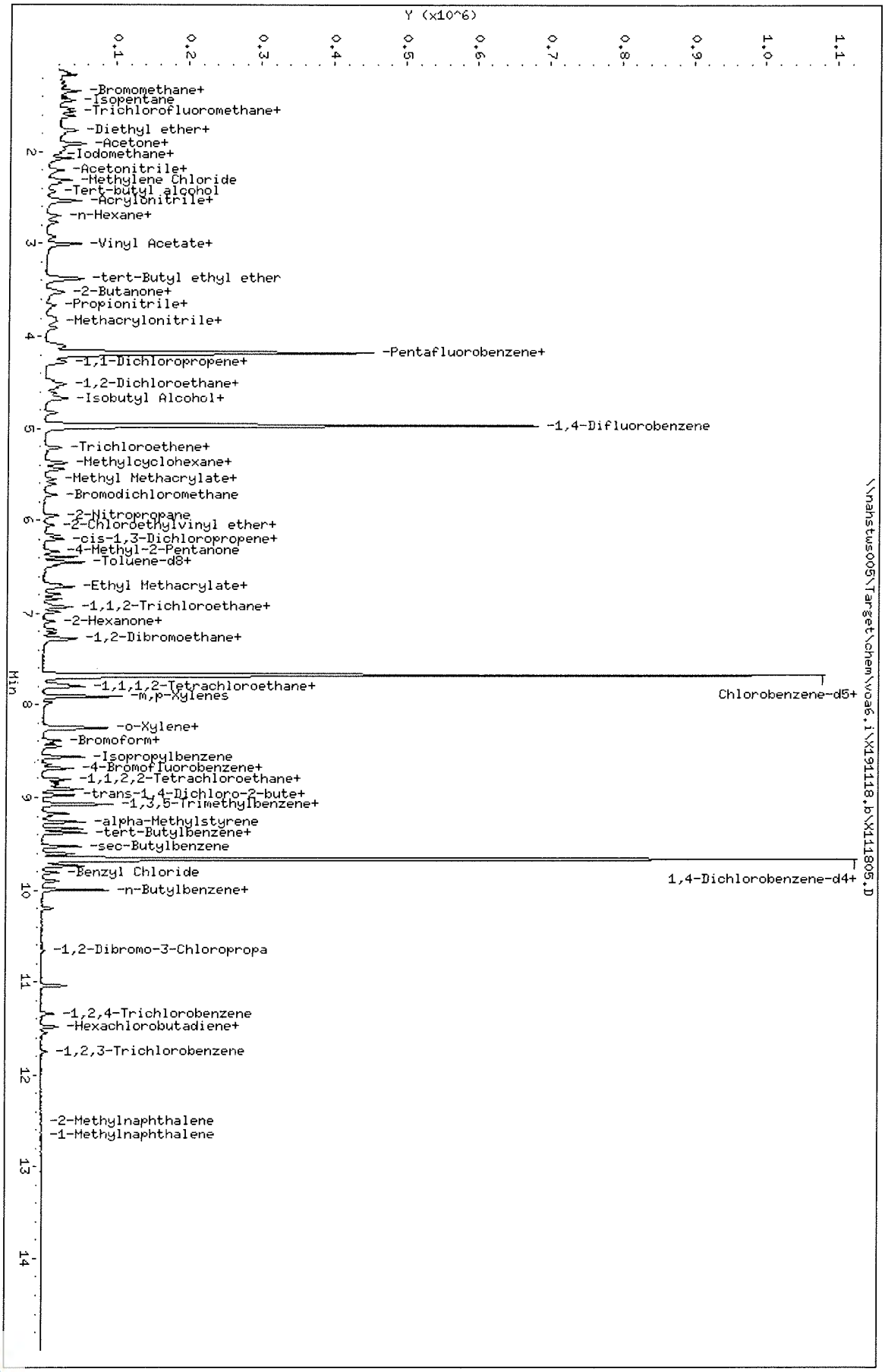
| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 415277 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 574320 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.670 | 7.670 | (1.000) | 519547 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 278615 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 8034 | 2.00000 | 2.76(a) |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 10468 | 2.00000 | 2.56(a) |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 8127 | 2.00000 | 2.50(a) |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 28201 | 2.00000 | 2.06(a) |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 7788 | 2.00000 | 2.06(a) |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 12006 | 2.00000 | 2.14(a) |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.838 | 8.838 | (0.914) | 8194 | 2.00000 | 2.09(a) |
| 138 Freon TF | 101 | 1.911 | 1.911 | (0.457) | 7504 | 2.00000 | 2.07(a) |
| 53 1,1,2-Trichloroethane | 83 | 6.840 | 6.840 | (0.892) | 5924 | 2.00000 | 2.18(a) |
| 22 1,1-Dichloroethane | 63 | 2.921 | 2.921 | (0.699) | 12973 | 2.00000 | 2.14(a) |
| 11 1,1-Dichloroethene | 96 | 1.911 | 1.911 | (0.457) | 7795 | 2.00000 | 2.21(a) |
| 32 1,1-Dichloropropene | 75 | 4.282 | 4.282 | (0.862) | 10135 | 2.00000 | 2.18(a) |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 2753 | 2.00000 | 1.85(a) |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 7810 | 2.00000 | 2.35(aM) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.345 | 11.345 | (1.173) | 5184 | 2.00000 | 2.20(a) |
| 79 1,2,4-Trimethylbenzene | 105 | 9.382 | 9.382 | (0.970) | 27218 | 2.00000 | 2.05(a) |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.657 | 10.657 | (1.102) | 859 | 2.00000 | 1.65(a) |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 7900 | 2.00000 | 2.16(a) |

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111805.D Page 2
Report Date: 06-Dec-2019 19:56

| | Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|---|
| 88 | 1,2-Dichlorobenzene | 146 | 9.998 | 9.998 | (1.034) | 15931 | 2.00000 | 2.15(a) |
| 33 | 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 9378 | 2.00000 | 2.05(a) |
| 42 | 1,2-Dichloropropane | 63 | 5.443 | 5.443 | (1.095) | 7169 | 2.00000 | 2.08(aM) |
| 75 | 1,3,5-Trimethylbenzene | 105 | 9.067 | 9.067 | (0.938) | 26432 | 2.00000 | 2.08(a) |
| 83 | 1,3-Dichlorobenzene | 146 | 9.612 | 9.612 | (0.994) | 17183 | 2.00000 | 2.15(a) |
| 54 | 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 11850 | 2.00000 | 2.14(a) |
| 84 | 1,4-Dichlorobenzene | 146 | 9.683 | 9.683 | (1.001) | 17620 | 2.00000 | 2.17(a) |
| 26 | 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 11201 | 2.00000 | 2.04(a) |
| 24 | 2-Butanone | 43 | 3.588 | 3.588 | (0.858) | 5067 | 4.00000 | 3.97(a) |
| 76 | 2-Chlorotoluene | 91 | 8.974 | 8.974 | (0.928) | 21210 | 2.00000 | 2.11(a) |
| 52 | 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 8468 | 4.00000 | 3.96(a) |
| 77 | 4-Chlorotoluene | 91 | 9.074 | 9.074 | (0.939) | 24759 | 2.00000 | 2.03(a) |
| 82 | p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 28289 | 2.00000 | 2.07(a) |
| 45 | 4-Methyl-2-Pentanone | 43 | 6.324 | 6.324 | (0.824) | 13007 | 4.00000 | 4.27(a) |
| 10 | Acetone | 43 | 1.976 | 1.976 | (0.473) | 7954 | 4.00000 | 3.82(a) |
| 37 | Benzene | 78 | 4.519 | 4.519 | (0.909) | 28031 | 2.00000 | 2.13(a) |
| 74 | Bromobenzene | 156 | 8.809 | 8.809 | (0.911) | 10482 | 2.00000 | 2.16(a) |
| 29 | Bromochloromethane | 128 | 3.795 | 3.795 | (0.908) | 5128 | 2.00000 | 2.27(a) |
| 39 | Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 9742 | 2.00000 | 2.04(a) |
| 66 | Bromoform | 173 | 8.415 | 8.415 | (1.097) | 5989 | 2.00000 | 2.89(a) |
| 6 | Bromomethane | 94 | 1.338 | 1.338 | (0.320) | 12041 | 2.00000 | 0.69(a) |
| 19 | Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 40384 | 4.00000 | 4.21(a) |
| 34 | Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 11097 | 2.00000 | 2.18(aM) |
| 59 | Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 21369 | 2.00000 | 2.10(a) |
| 7 | Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 5731 | 2.00000 | 2.19(a) |
| 28 | Chloroform | 83 | 3.910 | 3.910 | (0.935) | 14792 | 2.00000 | 2.19(a) |
| 3 | Chloromethane | 50 | 1.073 | 1.073 | (0.257) | 10461 | 2.00000 | 2.49(a) |
| 27 | cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 8197 | 2.00000 | 2.08(a) |
| 46 | cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 11415 | 2.00000 | 2.03(a) |
| 55 | Dibromochloromethane | 129 | 7.176 | 7.176 | (0.936) | 8154 | 2.00000 | 2.06(a) |
| 44 | Dibromomethane | 93 | 5.557 | 5.557 | (1.118) | 5355 | 2.00000 | 2.20(a) |
| 2 | Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 7335 | 2.00000 | 2.78(a) |
| 61 | Ethylbenzene | 106 | 7.799 | 7.799 | (1.017) | 10700 | 2.00000 | 2.04(a) |
| 91 | Hexachlorobutadiene | 225 | 11.488 | 11.488 | (1.188) | 4522 | 2.00000 | 1.82(a) |
| 67 | Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 32629 | 2.00000 | 2.10(a) |
| 62 | m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 26786 | 4.00000 | 4.23(a) |
| 17 | Methylene Chloride | 84 | 2.305 | 2.305 | (0.551) | 8025 | 2.00000 | 2.13(a) |
| 87 | n-Butylbenzene | 91 | 9.998 | 9.998 | (1.034) | 22333 | 2.00000 | 1.96(a) |
| 73 | n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 35573 | 2.00000 | 2.06(a) |
| 92 | Naphthalene | 128 | 11.553 | 11.553 | (1.195) | 6733 | 2.00000 | 2.23(a) |
| 63 | o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 13637 | 2.00000 | 2.18(a) |
| 81 | sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 31860 | 2.00000 | 2.12(a) |
| 64 | Styrene | 104 | 8.265 | 8.265 | (1.078) | 22366 | 2.00000 | 2.06(a) |
| 78 | tert-Butylbenzene | 119 | 9.339 | 9.339 | (0.966) | 22956 | 2.00000 | 2.11(a) |
| 56 | Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 8185 | 2.00000 | 2.24(a) |
| 50 | Toluene | 91 | 6.453 | 6.453 | (0.841) | 31139 | 2.00000 | 2.11(a) |
| 20 | trans-1,2-Dichloroethene | 96 | 2.535 | 2.535 | (0.606) | 7239 | 2.00000 | 2.11(a) |
| 51 | trans-1,3-Dichloropropene | 75 | 6.682 | 6.682 | (1.344) | 10523 | 2.00000 | 2.06(a) |
| 38 | Trichloroethene | 130 | 5.214 | 5.214 | (1.049) | 8894 | 2.00000 | 2.21(a) |
| 8 | Trichlorofluoromethane | 101 | 1.560 | 1.560 | (0.373) | 13581 | 2.00000 | 2.10(a) |
| 5 | Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 9073 | 2.00000 | 2.14(a) |

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

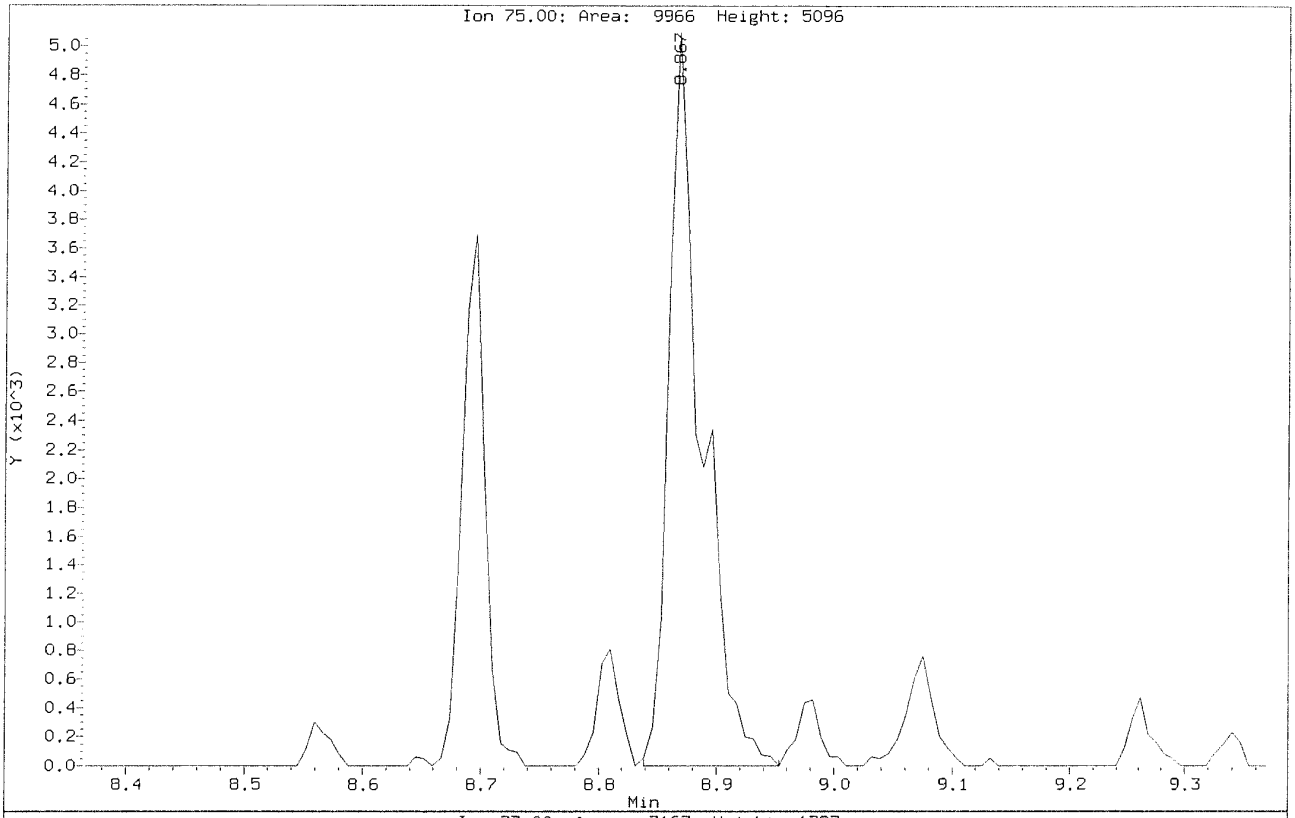


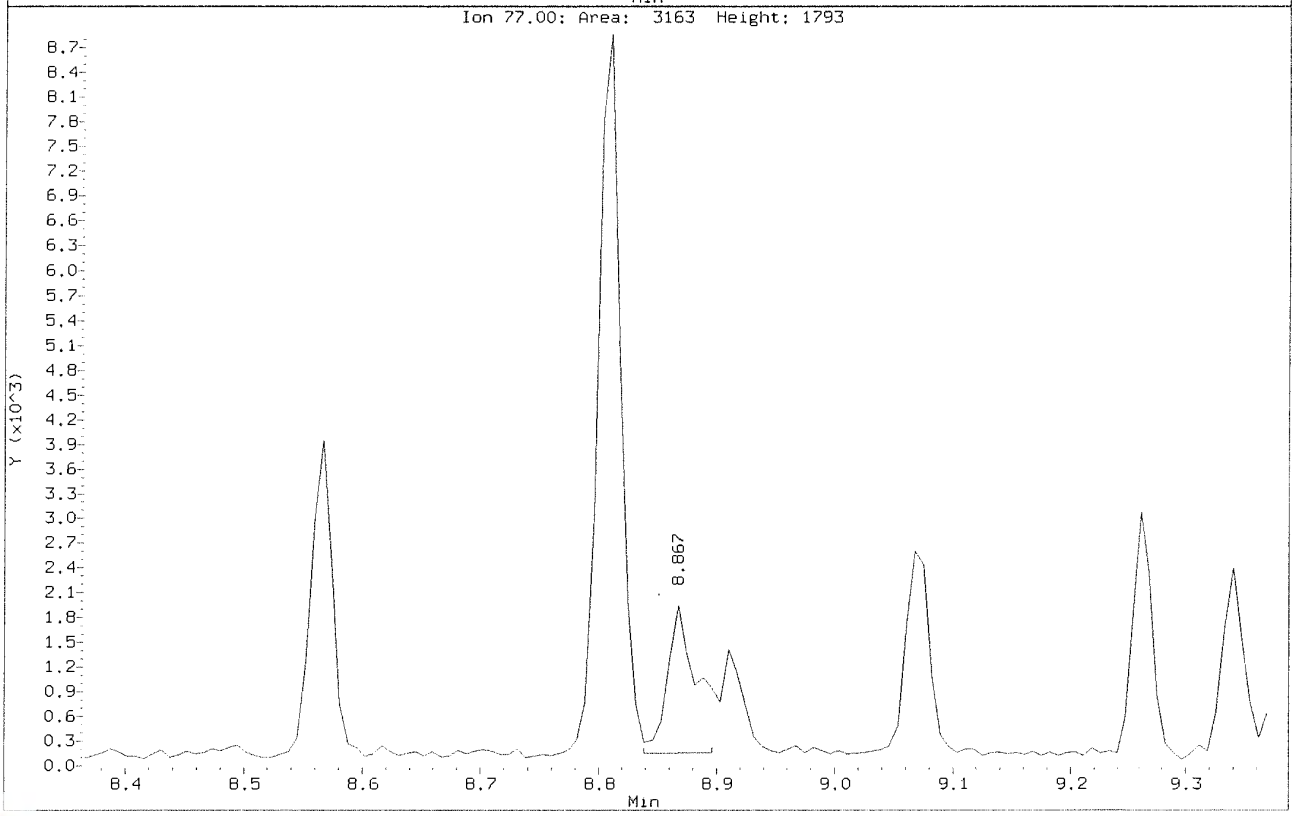

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111805.D
Date : 18-NOV-2019 15:23
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;4;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111805.D
Injection Date: 18-NOV-2019 15:23
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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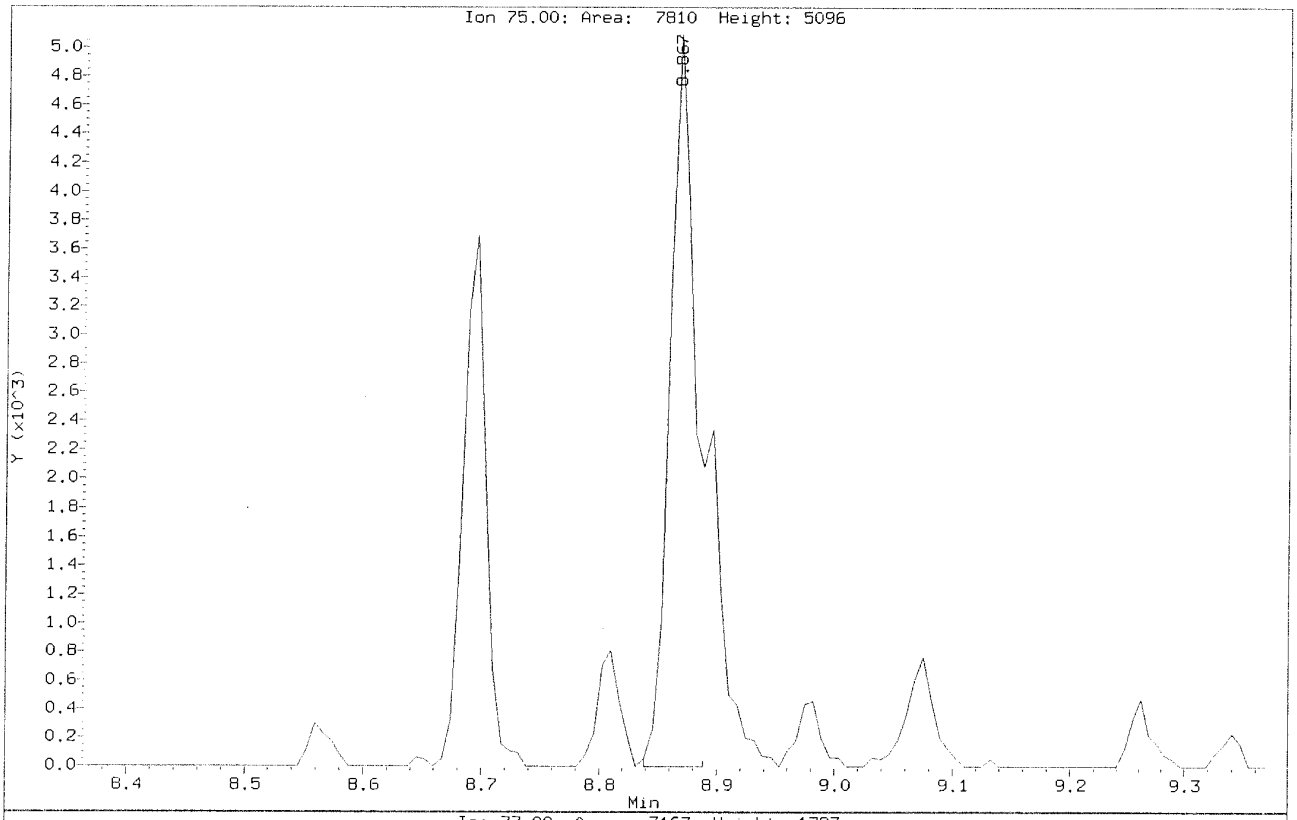
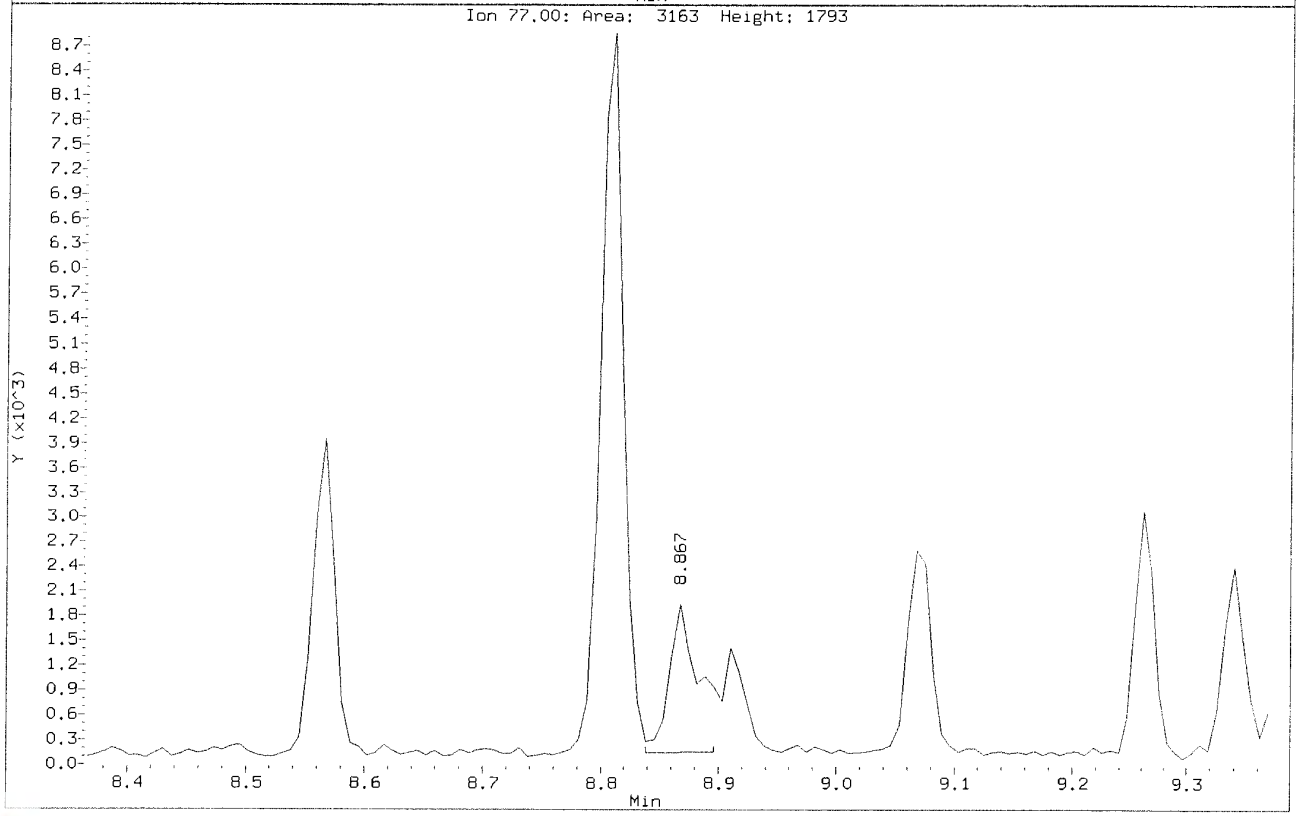
Injection Date: 18-NOV-2019 15:23
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



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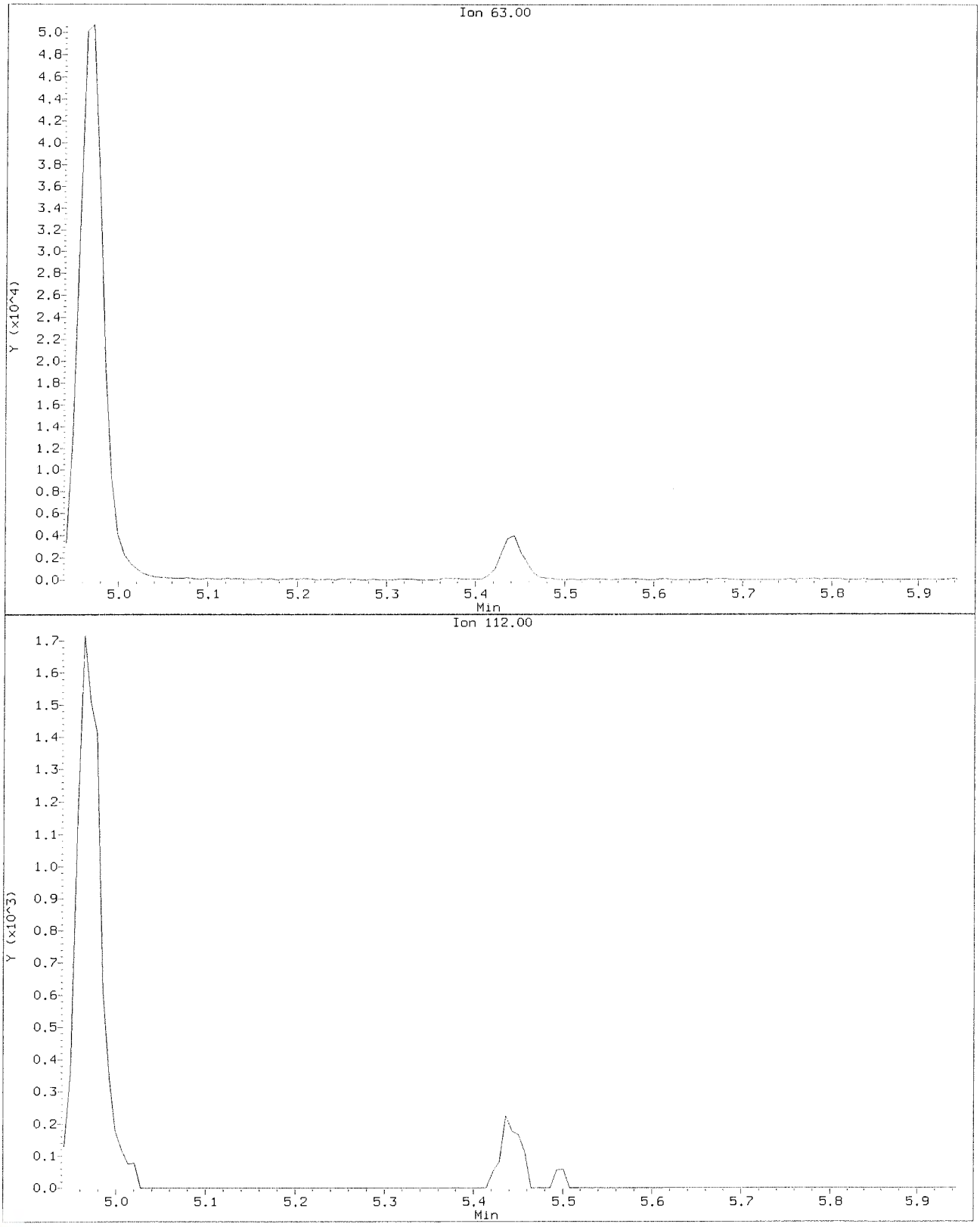
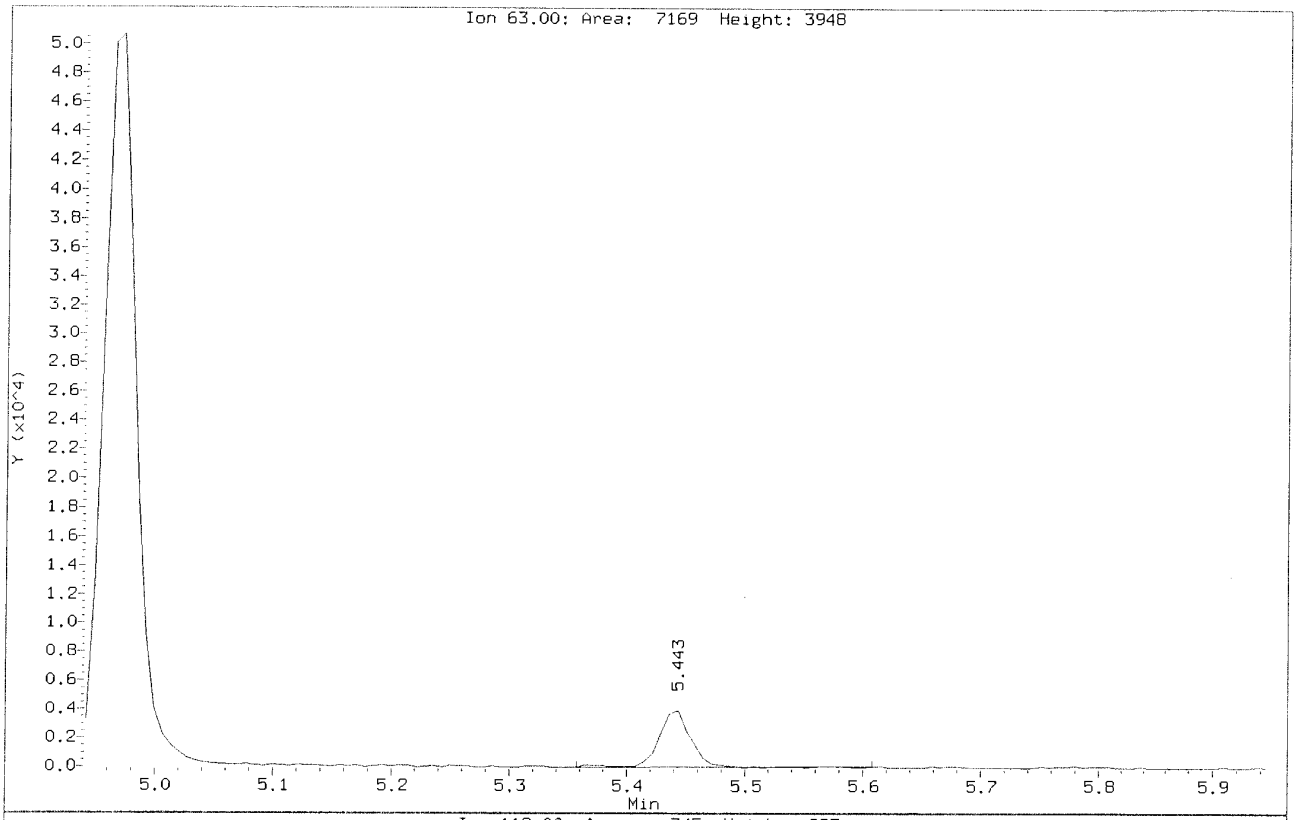
Injection Date: 18-NOV-2019 15:23
Instrument: voa6.i
Client Sample ID: VSTD002

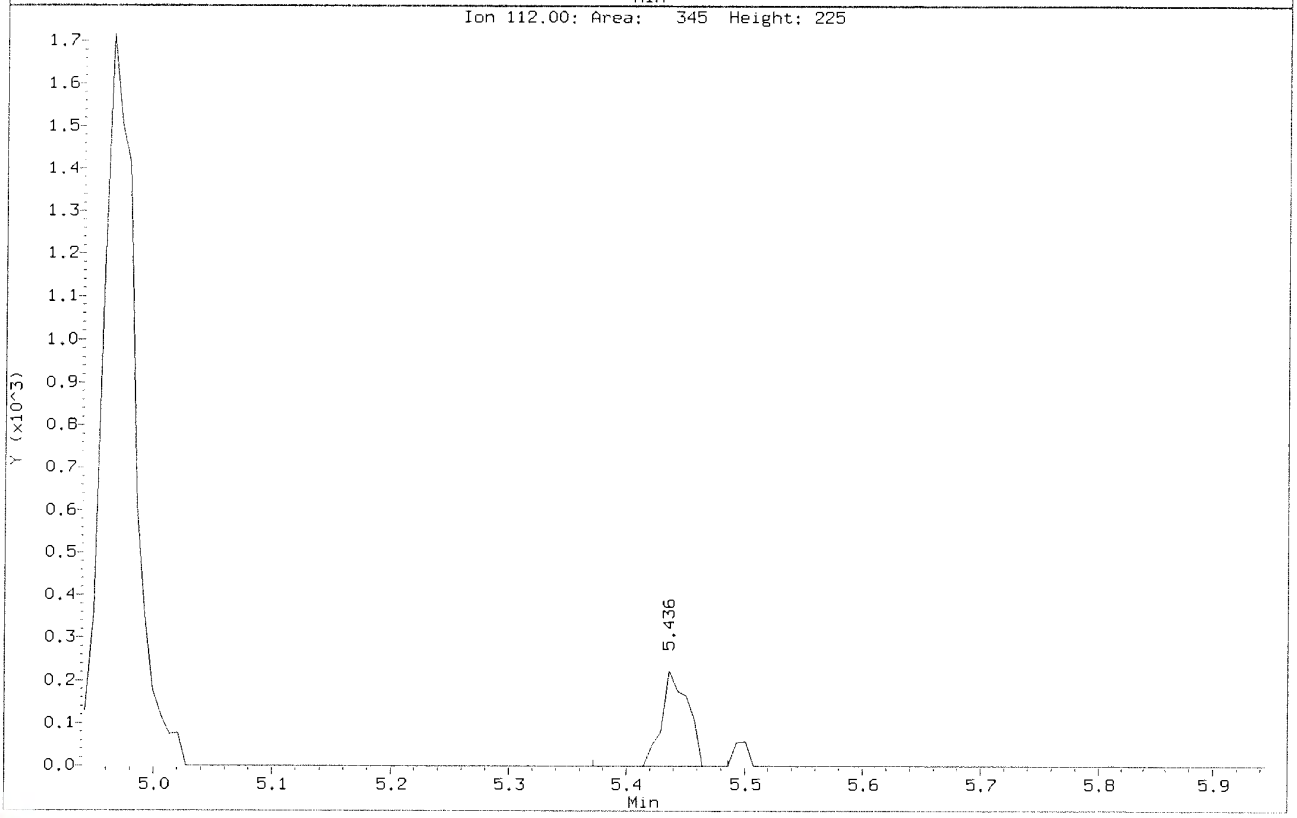
Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111805.D
Injection Date: 18-NOV-2019 15:23
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: 1,2-Dichloropropane
CAS Number: 78-87-5



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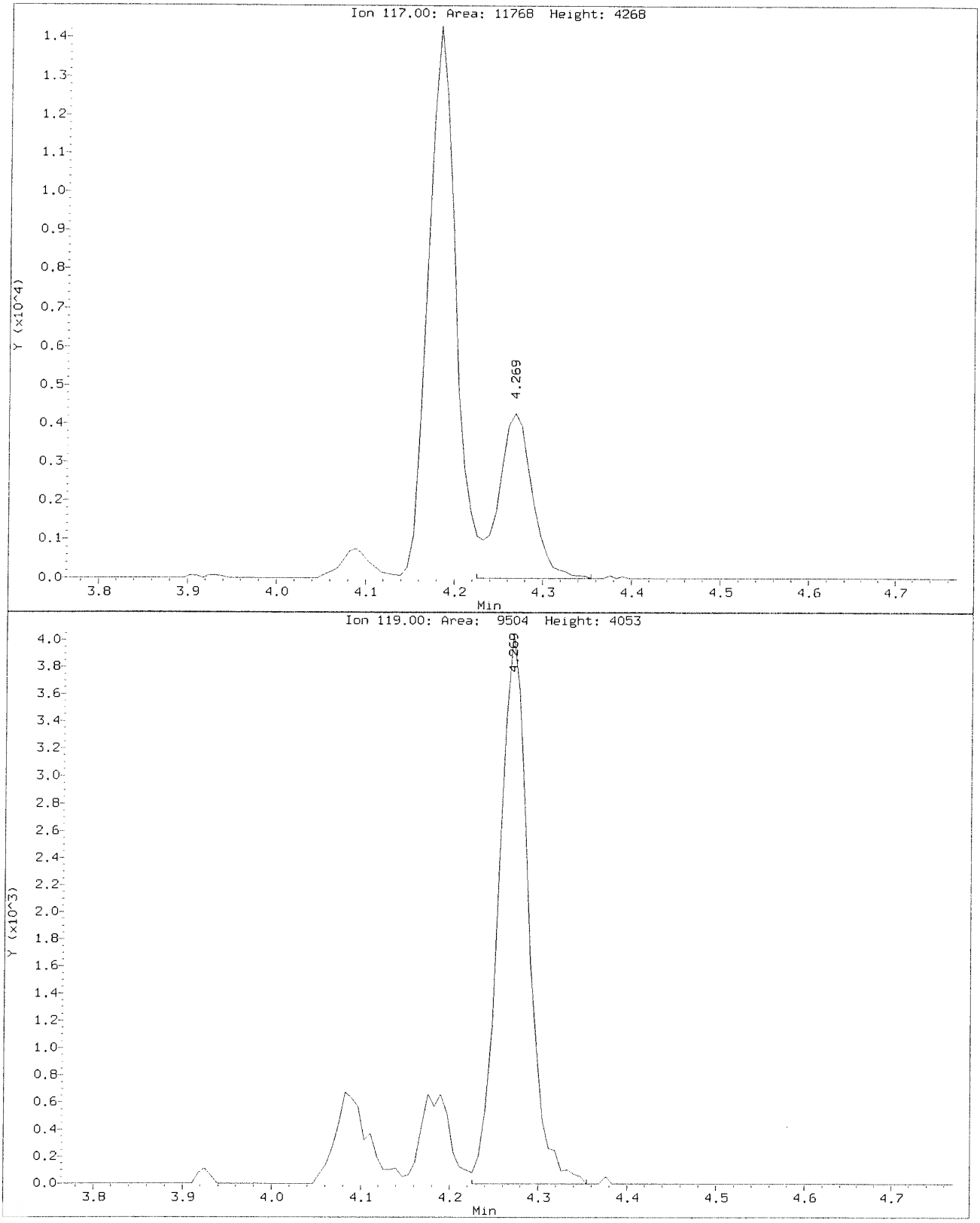
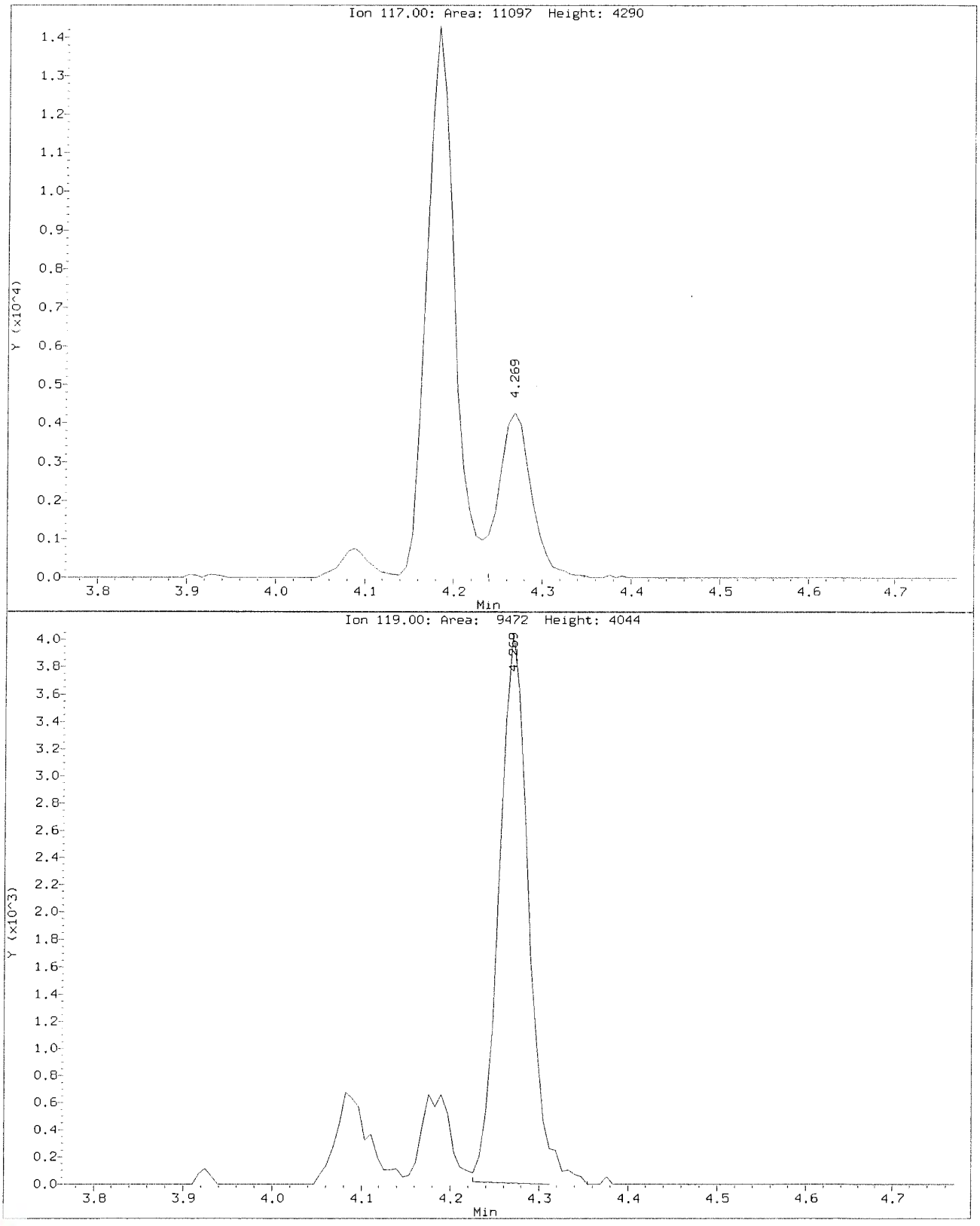
Injection Date: 18-NOV-2019 15:23
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Carbon Tetrachloride
CAS Number: 56-23-5



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111805.D
Injection Date: 18-NOV-2019 15:23
Instrument: voa6.i
Client Sample ID: VSTD002

Compound: Carbon Tetrachloride
CAS Number: 56-23-5



ALS Laboratory Group

Data file : \\nahstws005\Target\chem\voa6.i\X191118.b\X111806.D
Lab Smp Id: VSTD005  Client Smp ID: VSTD005
Inj Date  : 18-NOV-2019 15:47
Operator  : PC  Inst ID: voa6.i
Smp Info  : VSTD005;VSTD005;1;5;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method    : \\nahstws005\Target\chem\voa6.i\X191118.b\8260W.m
Meth Date : 06-Dec-2019 19:56 voa6.i  Quant Type: ISTD
Cal Date  : 18-NOV-2019 15:23  Cal File: X111805.D
Als bottle: 7  Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version:  4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

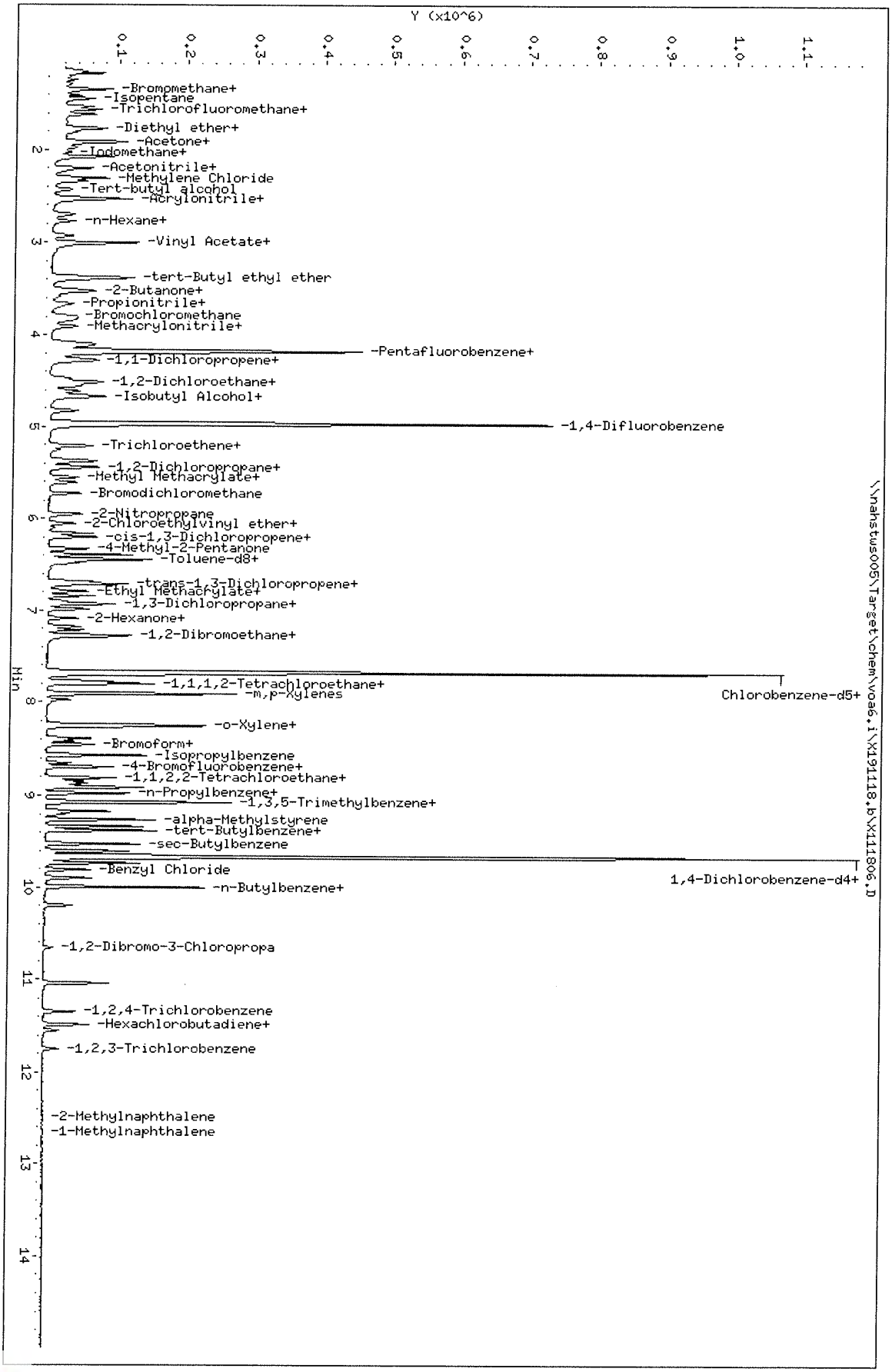
| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 410845 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 563063 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.671 | (1.000) | 510927 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.669 | 9.669 | (1.000) | 277846 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 20921 | 5.00000 | 6.06 |
| $ 69 4-Bromofluorobenzene | 95 | 8.695 | 8.695 | (1.134) | 25804 | 5.00000 | 5.80 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 20237 | 5.00000 | 5.74 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 69936 | 5.00000 | 5.19 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 20728 | 5.00000 | 5.59 |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 29459 | 5.00000 | 5.31 |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.838 | 8.838 | (0.914) | 22230 | 5.00000 | 5.68 |
| 138 Freon TF | 101 | 1.919 | 1.919 | (0.459) | 18786 | 5.00000 | 5.25 |
| 53 1,1,2-Trichloroethane | 83 | 6.840 | 6.840 | (0.892) | 15003 | 5.00000 | 5.61 |
| 22 1,1-Dichloroethane | 63 | 2.922 | 2.922 | (0.699) | 32313 | 5.00000 | 5.40 |
| 11 1,1-Dichloroethene | 96 | 1.912 | 1.912 | (0.457) | 19077 | 5.00000 | 5.47 |
| 32 1,1-Dichloropropene | 75 | 4.283 | 4.283 | (0.862) | 24310 | 5.00000 | 5.35 |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.215) | 6553 | 5.00000 | 5.62 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.917) | 18403 | 5.00000 | 5.55(M) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.338 | 11.338 | (1.173) | 14399 | 5.00000 | 6.15 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.383 | 9.383 | (0.970) | 71210 | 5.00000 | 5.40 |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.658 | 10.658 | (1.102) | 2641 | 5.00000 | 5.82 |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 20565 | 5.00000 | 5.73 |

Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111806.D Page 2
Report Date: 06-Dec-2019 19:56

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| 88 1,2-Dichlorobenzene | 146 | 9.999 | 9.999 | (1.034) | 41602 | 5.00000 | 5.64 |
| 33 1,2-Dichloroethane | 62 | 4.562 | 4.562 | (0.918) | 24346 | 5.00000 | 5.44 |
| 42 1,2-Dichloropropane | 63 | 5.436 | 5.436 | (1.094) | 19076 | 5.00000 | 5.67 |
| 75 1,3,5-Trimethylbenzene | 105 | 9.067 | 9.067 | (0.938) | 68944 | 5.00000 | 5.45 |
| 83 1,3-Dichlorobenzene | 146 | 9.605 | 9.605 | (0.993) | 45064 | 5.00000 | 5.65 |
| 54 1,3-Dichloropropane | 76 | 6.983 | 6.983 | (0.910) | 29776 | 5.00000 | 5.49 |
| 84 1,4-Dichlorobenzene | 146 | 9.683 | 9.683 | (1.001) | 44703 | 5.00000 | 5.52 |
| 26 2,2-Dichloropropane | 77 | 3.516 | 3.516 | (0.841) | 28965 | 5.00000 | 5.33 |
| 24 2-Butanone | 43 | 3.581 | 3.581 | (0.856) | 13522 | 10.0000 | 10.72 |
| 76 2-Chlorotoluene | 91 | 8.974 | 8.974 | (0.928) | 56464 | 5.00000 | 5.64 |
| 52 2-Hexanone | 43 | 7.090 | 7.090 | (0.924) | 23980 | 10.0000 | 11.42 |
| 77 4-Chlorotoluene | 91 | 9.075 | 9.075 | (0.939) | 66074 | 5.00000 | 5.45 |
| 82 p-Isopropyltoluene | 119 | 9.655 | 9.655 | (0.999) | 71485 | 5.00000 | 5.25 |
| 45 4-Methyl-2-Pentanone | 43 | 6.324 | 6.324 | (0.824) | 33803 | 10.0000 | 11.29 |
| 10 Acetone | 43 | 1.969 | 1.969 | (0.471) | 15992 | 10.0000 | 11.75 |
| 37 Benzene | 78 | 4.512 | 4.512 | (0.908) | 72584 | 5.00000 | 5.63 |
| 74 Bromobenzene | 156 | 8.810 | 8.810 | (0.911) | 27619 | 5.00000 | 5.71 |
| 29 Bromochloromethane | 128 | 3.795 | 3.795 | (0.908) | 11669 | 5.00000 | 5.24 |
| 39 Bromodichloromethane | 83 | 5.729 | 5.729 | (1.153) | 26638 | 5.00000 | 5.71 |
| 66 Bromoform | 173 | 8.416 | 8.416 | (1.097) | 16084 | 5.00000 | 6.17 |
| 6 Bromomethane | 94 | 1.338 | 1.338 | (0.320) | 28671 | 5.00000 | 4.99(a) |
| 19 Carbon Disulfide | 76 | 2.069 | 2.069 | (0.495) | 103008 | 10.0000 | 10.87 |
| 34 Carbon Tetrachloride | 117 | 4.268 | 4.268 | (0.859) | 26931 | 5.00000 | 5.41(M) |
| 59 Chlorobenzene | 112 | 7.699 | 7.699 | (1.004) | 55668 | 5.00000 | 5.58 |
| 7 Chloroethane | 64 | 1.403 | 1.403 | (0.336) | 13261 | 5.00000 | 5.12 |
| 28 Chloroform | 83 | 3.910 | 3.910 | (0.935) | 34944 | 5.00000 | 5.25 |
| 3 Chloromethane | 50 | 1.073 | 1.073 | (0.257) | 24949 | 5.00000 | 5.75 |
| 27 cis-1,2-Dichloroethene | 96 | 3.530 | 3.530 | (0.844) | 22227 | 5.00000 | 5.70 |
| 46 cis-1,3-Dichloropropene | 75 | 6.159 | 6.159 | (1.239) | 31191 | 5.00000 | 5.68 |
| 55 Dibromochloromethane | 129 | 7.176 | 7.176 | (0.936) | 21920 | 5.00000 | 5.64 |
| 44 Dibromomethane | 93 | 5.558 | 5.558 | (1.118) | 13775 | 5.00000 | 5.78 |
| 2 Dichlorodifluoromethane | 85 | 0.973 | 0.973 | (0.233) | 18346 | 5.00000 | 5.69 |
| 61 Ethylbenzene | 106 | 7.800 | 7.800 | (1.017) | 29424 | 5.00000 | 5.70 |
| 91 Hexachlorobutadiene | 225 | 11.489 | 11.489 | (1.188) | 11525 | 5.00000 | 5.47 |
| 67 Isopropylbenzene | 105 | 8.566 | 8.566 | (1.117) | 81869 | 5.00000 | 5.36 |
| 62 m,p-Xylenes | 106 | 7.907 | 7.907 | (1.031) | 69325 | 10.0000 | 11.14 |
| 17 Methylene Chloride | 84 | 2.306 | 2.306 | (0.551) | 20180 | 5.00000 | 5.43 |
| 87 n-Butylbenzene | 91 | 9.999 | 9.999 | (1.034) | 57498 | 5.00000 | 5.08 |
| 73 n-Propylbenzene | 91 | 8.917 | 8.917 | (0.922) | 92937 | 5.00000 | 5.41 |
| 92 Naphthalene | 128 | 11.546 | 11.546 | (1.194) | 17063 | 5.00000 | 5.68 |
| 63 o-Xylene | 106 | 8.244 | 8.244 | (1.075) | 33646 | 5.00000 | 5.48 |
| 81 sec-Butylbenzene | 105 | 9.526 | 9.526 | (0.985) | 78149 | 5.00000 | 5.23 |
| 64 Styrene | 104 | 8.258 | 8.258 | (1.077) | 58650 | 5.00000 | 5.49 |
| 78 tert-Butylbenzene | 119 | 9.340 | 9.340 | (0.966) | 59074 | 5.00000 | 5.45 |
| 56 Tetrachloroethene | 164 | 6.933 | 6.933 | (0.904) | 20334 | 5.00000 | 5.66 |
| 50 Toluene | 91 | 6.446 | 6.446 | (0.840) | 80201 | 5.00000 | 5.53 |
| 20 trans-1,2-Dichloroethene | 96 | 2.535 | 2.535 | (0.606) | 18086 | 5.00000 | 5.35 |
| 51 trans-1,3-Dichloropropene | 75 | 6.682 | 6.682 | (1.344) | 28395 | 5.00000 | 5.67 |
| 38 Trichloroethene | 130 | 5.207 | 5.207 | (1.048) | 22280 | 5.00000 | 5.65 |
| 8 Trichlorofluoromethane | 101 | 1.561 | 1.561 | (0.373) | 33411 | 5.00000 | 5.24 |
| 5 Vinyl Chloride | 62 | 1.138 | 1.138 | (0.272) | 20691 | 5.00000 | 4.94(a) |

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

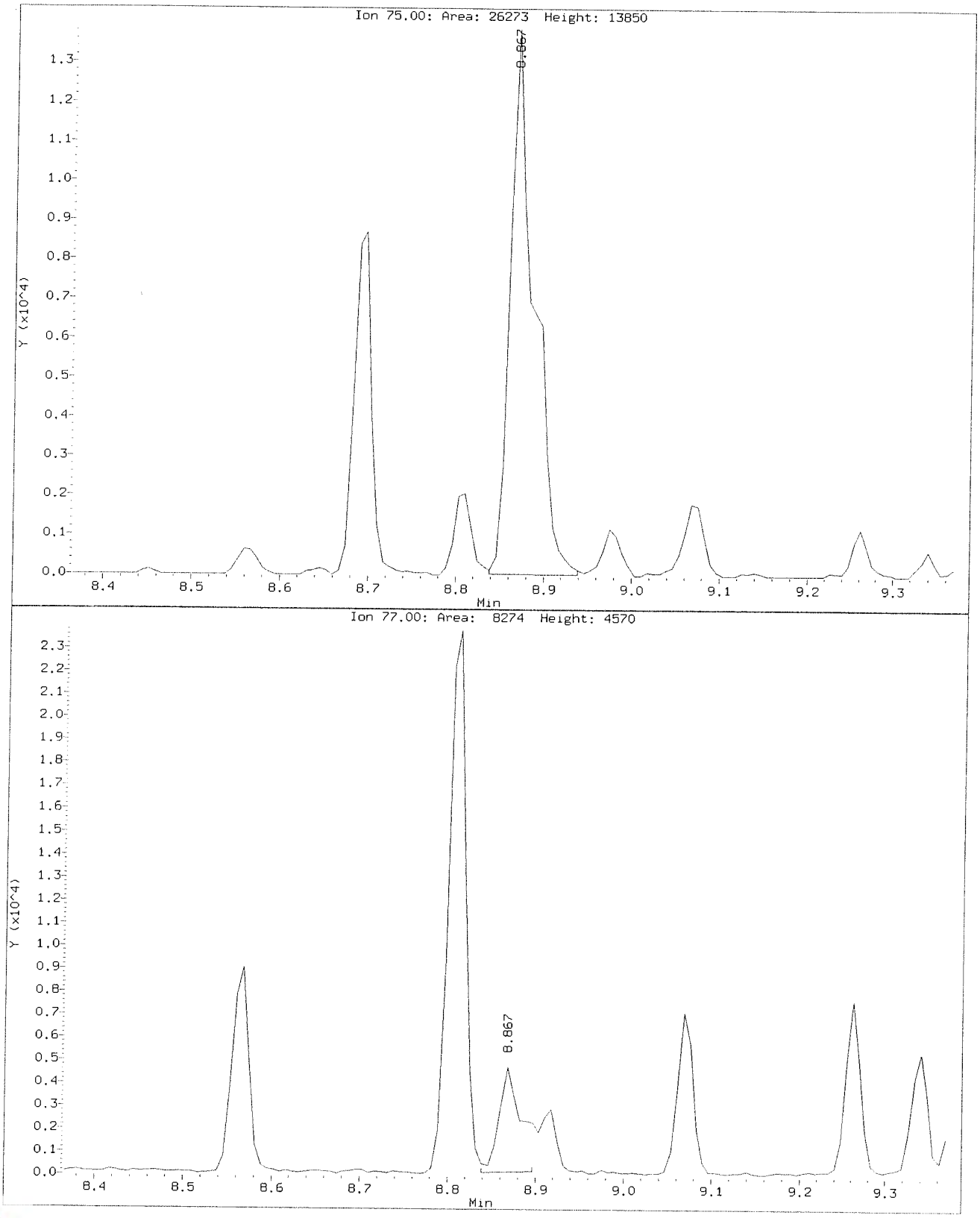



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111806.D
Date : 18-NOV-2019 15:47
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;5;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

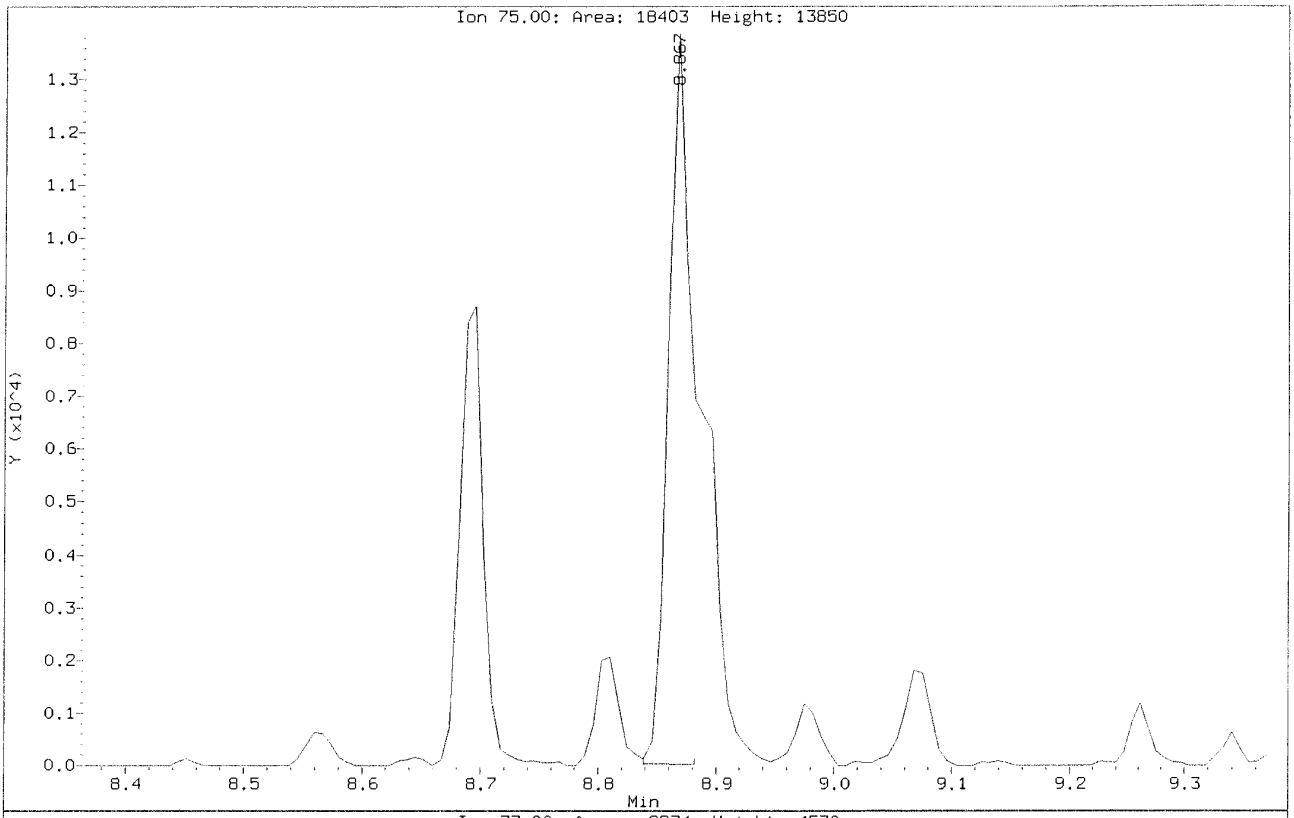
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111806.D
Injection Date: 18-NOV-2019 15:47
Instrument: voa6.i
Client Sample ID: VSTD005

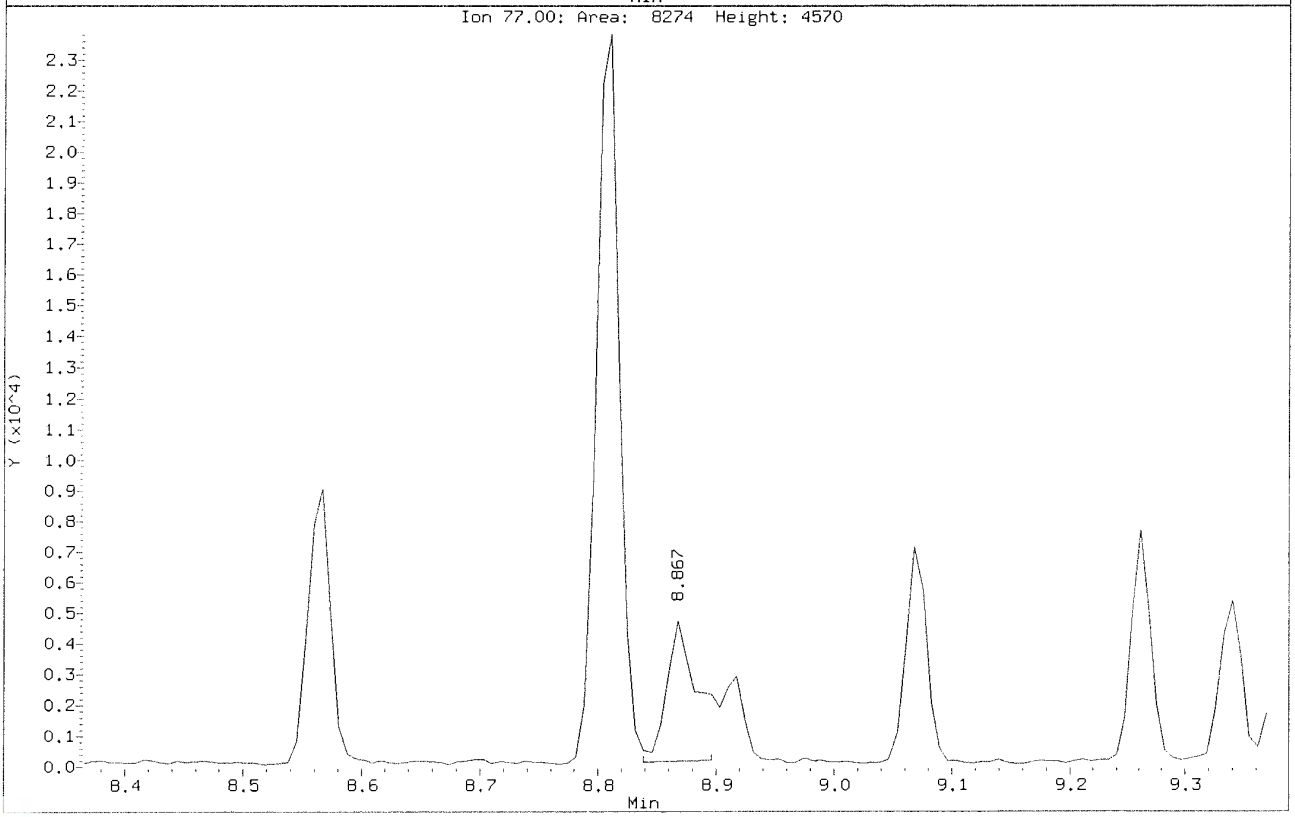
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111806.D
Injection Date: 18-NOV-2019 15:47
Instrument: voa6.i
Client Sample ID: VSTD005

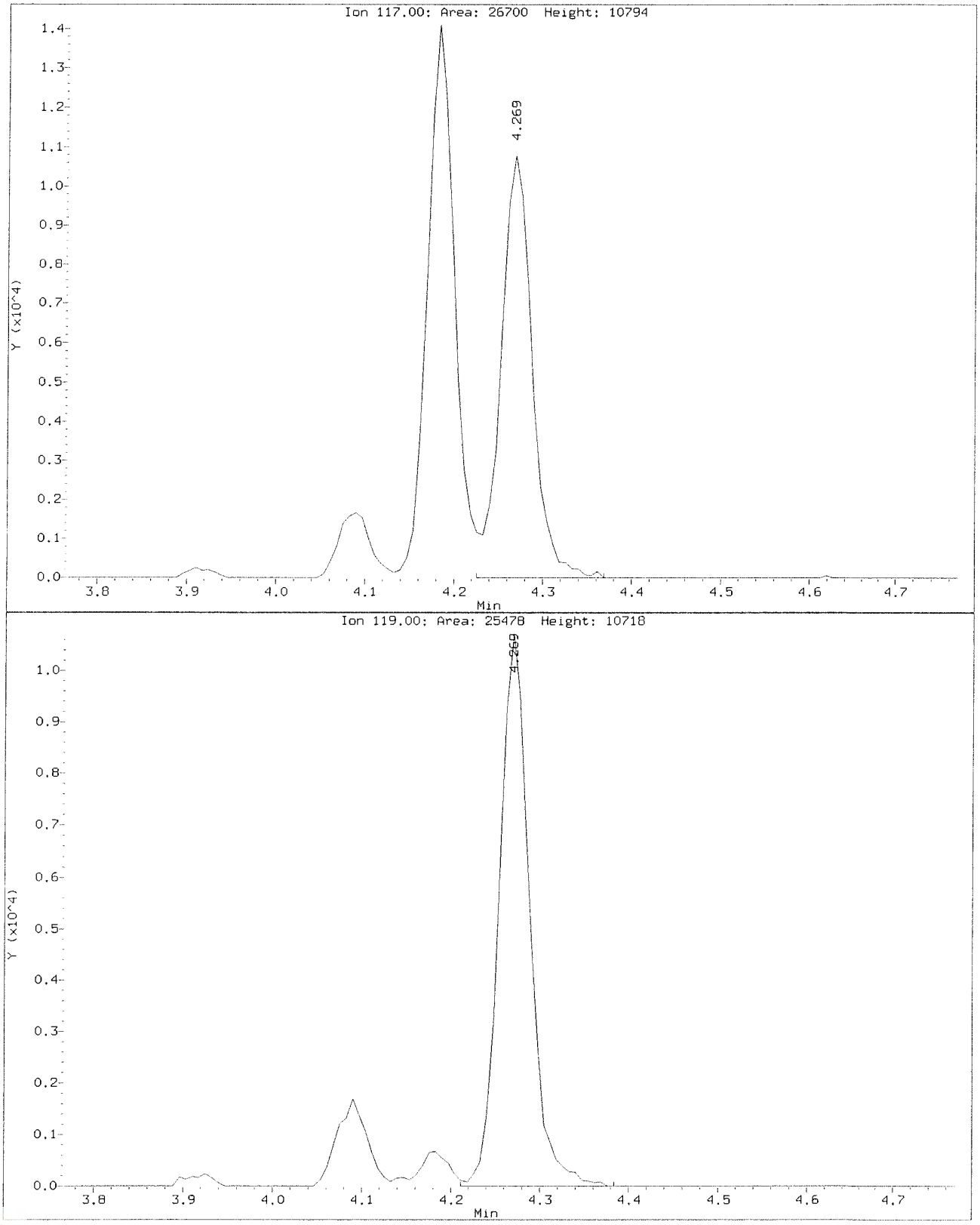
Compound: 1,2,3-Trichloropropane
CAS Number: 96-18-4



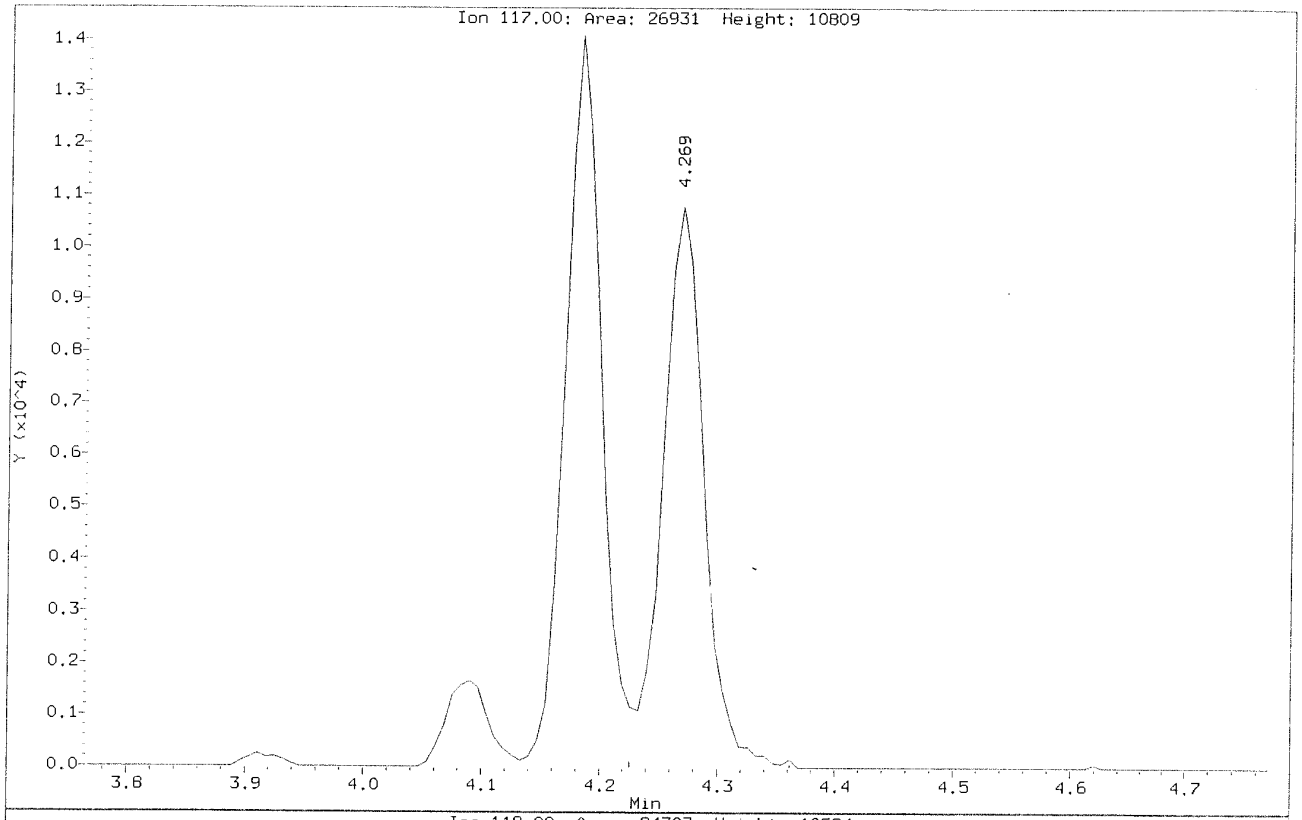
Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\BEFORE\X111806.D
Injection Date: 18-NOV-2019 15:47
Instrument: voa6.i
Client Sample ID: VSTD005

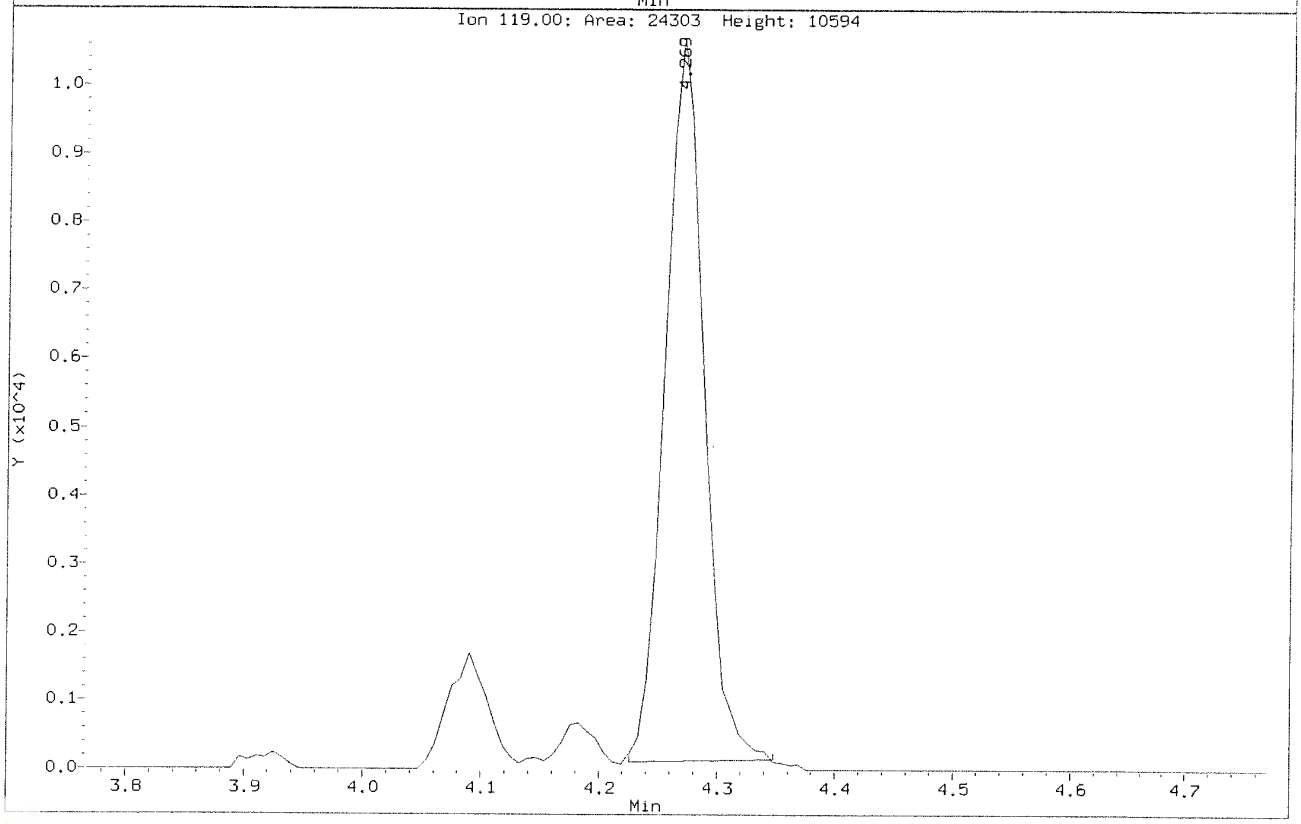
Compound: Carbon Tetrachloride
CAS Number: 56-23-5



Data File: \\nahstws005\Target\chem\voa6.i\X191118.b\X111806.D
Injection Date: 18-NOV-2019 15:47
Instrument: voa6.i
Client Sample ID: VSTD005

Compound: Carbon Tetrachloride
CAS Number: 56-23-5



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Data file : \\nahstws005\Target\chem\voa6.i\X191118.b\X111807.D
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Inj Date  : 18-NOV-2019 16:11
Operator  : PC  Inst ID: voa6.i
Smp Info  : VSTD020;VSTD020;1;6;
Misc Info : HS18090001;WATER;0;1;
Comment   :
Method    : \\nahstws005\Target\chem\voa6.i\X191118.b\8260W.m
Meth Date : 06-Dec-2019 19:56 voa6.i  Quant Type: ISTD
Cal Date  : 18-NOV-2019 15:47  Cal File: X111806.D
Als bottle: 8  Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE  Compound Sublist: CBIHOUSTONDOD.sub
Target Version:  4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

| Name | Value | Description |
|---|---|---|
| DF | 1.000 | Dilution Factor |
| Uf | 5.000 | ng unit correction factor |
| Vo | 5.000 | sample purged |
| Cpnd Variable | | Local Compound Variable |

| Compounds | QUANT SIG MASS | RT | EXP RT | REL RT | RESPONSE | AMOUNTS CAL-AMT ( ug/l) | AMOUNTS ON-COL ( ug/l) |
|---|---|---|---|---|---|---|---|
| * 1 Pentafluorobenzene | 168 | 4.182 | 4.182 | (1.000) | 411693 | 50.0000 | |
| * 36 1,4-Difluorobenzene | 114 | 4.970 | 4.970 | (1.000) | 563792 | 50.0000 | |
| * 47 Chlorobenzene-d5 | 117 | 7.671 | 7.671 | (1.000) | 515046 | 50.0000 | |
| * 70 1,4-Dichlorobenzene-d4 | 152 | 9.662 | 9.662 | (1.000) | 278890 | 50.0000 | |
| $ 35 1,2-Dichloroethane-d4 | 65 | 4.476 | 4.476 | (1.070) | 75813 | 20.0000 | 20.02 |
| $ 69 4-Bromofluorobenzene | 95 | 8.688 | 8.688 | (1.133) | 94194 | 20.0000 | 19.91 |
| $ 30 Dibromofluoromethane | 113 | 4.103 | 4.103 | (0.981) | 75094 | 20.0000 | 20.28 |
| $ 48 Toluene-d8 | 98 | 6.388 | 6.388 | (0.833) | 260273 | 20.0000 | 19.17 |
| 60 1,1,1,2-Tetrachloroethane | 131 | 7.778 | 7.778 | (1.014) | 73347 | 20.0000 | 19.62 |
| 31 1,1,1-Trichloroethane | 97 | 4.089 | 4.089 | (0.978) | 105363 | 20.0000 | 18.97 |
| 68 1,1,2,2-Tetrachloroethane | 83 | 8.838 | 8.838 | (0.915) | 75821 | 20.0000 | 19.33 |
| 138 Freon TF | 101 | 1.919 | 1.919 | (0.459) | 62543 | 20.0000 | 17.44 |
| 53 1,1,2-Trichloroethane | 83 | 6.840 | 6.840 | (0.892) | 52184 | 20.0000 | 19.38 |
| 22 1,1-Dichloroethane | 63 | 2.921 | 2.921 | (0.699) | 113669 | 20.0000 | 18.97 |
| 11 1,1-Dichloroethene | 96 | 1.919 | 1.919 | (0.459) | 64160 | 20.0000 | 18.38 |
| 32 1,1-Dichloropropene | 75 | 4.282 | 4.282 | (0.862) | 84000 | 20.0000 | 18.47 |
| 93 1,2,3-Trichlorobenzene | 180 | 11.746 | 11.746 | (1.216) | 21856 | 20.0000 | 20.64 |
| 71 1,2,3-Trichloropropane | 75 | 8.867 | 8.867 | (0.918) | 64689 | 20.0000 | 19.46(M) |
| 90 1,2,4-Trichlorobenzene | 180 | 11.338 | 11.338 | (1.173) | 46623 | 20.0000 | 19.84 |
| 79 1,2,4-Trimethylbenzene | 105 | 9.382 | 9.382 | (0.971) | 254992 | 20.0000 | 19.26 |
| 89 1,2-Dibromo-3-Chloropropane | 155 | 10.657 | 10.657 | (1.103) | 8805 | 20.0000 | 20.13 |
| 57 1,2-Dibromoethane | 107 | 7.262 | 7.262 | (0.947) | 71738 | 20.0000 | 19.85 |