LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 25

2025

Bate Stamp Numbers
1334820-1336161

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2025

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

VOLUME 25
2025

A. Title: Rpt - Draft Final Year 2 Annual Remedial Action Operation Report (August 2023 - July 2024), LHAAP-17 Burning Ground No.2/Flashing Area Group 2, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas

Author(s): PCI-Bhate JV
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality

Date: June 2, 2025

Bate Stamp: 1334820-1335382

B. Title: Rpt - Draft Final 2024 Remediation Action Operation Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas

Author(s): PCI-Bhate JV
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality

Date: June 27, 2025
Bate Stamp: 1335383-1335577

C. Title: Rpt - Draft Final 2024 Remedial Action Operation Report, LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas
Author(s): PCI-Bhate JV
Recipient: Environmental Protection Agency and Texas Commission on Environmental Quality

Date: August 27, 2025
Bate Stamp: 1335578-1336161

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
US ARMY ENVIRONMENTAL COMMAND
2455 REYNOLDS ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-7588

June 2, 2025

SUBJECT: Draft Final Year 2 Annual Remedial Action Operation Report (August 2023 - July 2024), LHAAP-17 Burning Ground No.2/Flashing Area Group 2, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, May 2025

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

Dear Mr. Follin,

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). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the draft version received on April 21, 2025, and the Texas Commission on Environmental Quality's (TCEQ) comments received on April 25, 2025. Tables of responses to the EPA and TCEQ comments on the draft version are included with this draft final document. In accordance with the Federal Facility Agreement, this draft final will be considered final after 30 days without further comment.

The document was prepared by the Military Munitions Group/TLI Solutions, Inc (MMG-TLI) Joint Venture on behalf of the Army as part of MMG-TLI's contract. We respectfully request Jonathan Tatman, MMG-TLI'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 (210) 793-7900, or by email at: kelly.u.norwood.civ@army.mil.

Sincerely,

Kelly Norwood, Geologist
ESM, West and Pacific Division
U.S. Army Environmental Command

Electronic copies furnished:
A. Palmie, TCEQ, Austin, TX
J. Reyes, USEPA Region 6, Dallas, TX
E. Duerkop, USFWS, Caddo Lake NWR, TX (1 CD)
C. Montoya USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
K. Russell, BRAC, Huntsville, AL
J. Tatman, MMG-TLI JV, Knoxville, TN
P. Srivastav, APTIM, Houston, TX
Z. Beck, Bhate, Lakewood, CO

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
US ARMY ENVIRONMENTAL COMMAND
2455 REYNOLDS ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-7588

June 2, 2025

SUBJECT: Draft Final Year 2 Annual Remedial Action Operation Report (August 2023 - July 2024), LHAAP-17 Burning Ground No.2/Flashing Area Group 2, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, May 2025

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

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). An electronic copy of this letter and download instructions for the electronic file have been sent via email. The document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the draft version received on April 21, 2025, and the Texas Commission on Environmental Quality's (TCEQ) comments received on April 25, 2025. Tables of responses to the EPA and TCEQ comments on the draft version are included with this draft final document. In accordance with the Federal Facility Agreement, this draft final will be considered final after 30 days without further comment.

The document was prepared by the Military Munitions Group/TLI Solutions, Inc (MMG-TLI) Joint Venture on behalf of the Army as part of MMG-TLI's contract. We respectfully request Jonathan Tatman, MMG-TLI'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 (210) 793-7900, or by email at: kelly.u.norwood.civ@army.mil.

Sincerely,

Kelly Norwood, Geologist
ESM, West and Pacific Division
U.S. Army Environmental Command

Electronic copies furnished:
B. Follin, USEPA Region 6, Dallas, TX
J. Reyes, USEPA Region 6, Dallas, TX
E. Duerkop, USFWS, Caddo Lake NWR, TX (1 CD)
C. Montoya USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
K. Russell, BRAC, Huntsville, AL
J. Tatman, MMG-TLI JV, Knoxville, TN
P. Srivastav, APTIM, Houston, TX
Z. Beck, Bhate, Lakewood, CO

Response to Comments on
Draft Year 2 Annual Remedial Action Operation Report (August 2023 – July 2024), LHAAP-17, Burning Ground No. 2
Flashing Area Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, March 2025

Document Date: March 14, 2025
Comment Date: April 21, 2025

Reviewers: Brian Follin - USEPA
Respondent: Aaron Williams - Army

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

Number	Section/Page	Paragraph/Line	Comment	C,D	Response	A,D
1	Section 1.1, p. 1-2	2nd paragraph, Last sentence	The soil excavation portion of the remedy is covered under a time critical removal action and is not within the scope of this document. Soil excavation is part of the remedial action as documented in the ROD and RD. The excavation was paused for the TCRA and should continue after the removal action is completed. Please correct this section accordingly.	C	Concur. The 2nd paragraph of page 1-2 (Section 1.1) will be revised to state: "The soil excavation portion of the remedy was paused due to discovery of munitions, which are being removed under a time critical removal action (TCRA). ."	
2	General	General	It should be mentioned in the document that the TCRA and RA are on hold and that once these actions are completed the GW extraction system can be addressed.	C	Concur. The following sentence will be added to Section 1.1: "Groundwater extraction will likely continue until the TCRA, which has been paused, has been completed."	
3	Section 2.1.1, p. 2-1	1st paragraph, 1st sentence	Should cite fig. 1-2 at the end of the sentence to inform the reader of the locations of wells 17WW02 and 17WW06 in relation to the site.	C	Concur. The text in Section 2.1.1 will be revised as requested.	
4	Tables 2-2 to 2-5	General comment	Strongly recommend including analytical results from the year 1 RA-O in tables containing analytical results (tables 2-2 to 2-5), as is done in other LHAAP reports.	C	Concur. Tables 2-2 through 2-5 will be combined with the historical data dating back to baseline concentrations.	

5	Section 2.3.3 and table 2-6	General comments	1) All quarterly groundwater-level measurements associated with this RA-O (year 2) and the prior RA-O (year 1) should be included in table 2-6 to facilitate characterization of intra- and inter-annual groundwater-level elevation changes and the effects of the extraction system across the site (also refer to comment #5). 2) A minimum of two potentiometric-surface maps should be constructed to characterize/evaluate seasonal changes in groundwater-flow directions at the site—one map for the time of year (quarterly sampling event) when groundwater-level elevations were at their highest, and the second map for the time of year (quarterly event) when groundwater levels were at their lowest.	C	Concur. Table 2-6 (now Table 2-3) will be revised to include all groundwater level measurements. Clarification. During Year 2, only one sitewide water level gauging event was completed in September 2023. As such, only one potentiometric surface map can be presented. A recommendation will be added to Section 4.2 for sitewide water level gauging to be completed semi-annually.	
6	Section 2.3.3, p. 2-2	1st paragraph, 3rd sentence	The description of the direction of groundwater flow at the site is not entirely accurate. Based on the potentiometric-surface map (fig. 2-4), the direction of groundwater flow varied across the site during September 2023, and included flow towards the northwest and west in the southern and central parts of the site, and towards the southwest in the northwestern part of the site. The GWTP report shows a different GW flow model in the Shallow area. Please rectify.	C	Concur. Groundwater flow direction varies slightly across the site and is heavily influenced by Harrison Bayou to the west of the site. The text will be revised as follows: “Across the central portion of the site, groundwater flows toward the northwest with the groundwater elevation highest in the southeastern portion of the site at 17WW08 (169.71 ft above mean sea level [amsl]) and lowest in the northwestern portion of the site at 17WW10 (168.05 ft amsl). While in the northwestern portion of the site near monitoring well 17WW11, groundwater flows to the west-southwest. In general, groundwater flow at Site LHAAP-17 is primarily influenced by Harrison Bayou which is located west of the site.”	

7	Section 2.3.3, p. 2-2	General comments	The report includes minimal discussion/description of the effect(s) of the extraction system on the shallow groundwater system at the site. Groundwater-level fluctuations observed at specific locations (individual wells) and spatially across the site (multiple wells) provide insight into how the shallow zone (or parts of the shallow zone) is responding to the early stages of groundwater extraction, including potential changes to groundwater-flow directions and groundwater elevations at the site (also refer to comments #3–4). This evaluation requires inclusion of all quarterly water-level measurements taken as part of this and the prior RA-O (year 1; also refer to comment #3) investigations. Hydrographs would be very helpful for visualizing groundwater-level elevation changes with time, and they could be used to help evaluate changes to groundwater-level elevations in response to increasing groundwater extraction volumes with time.	C	Concur. Quarterly groundwater elevation data collected for wells 17WW01, 17WW03, and 130 since September 2022 will be graphed to visually show elevation changes and will be included as Appendix E. Seasonal fluctuations are large enough that conclusions regarding drawdown due to the extraction system are not clearly evident. A recommendation will be added to Section 4.2, for placement of transducers in monitoring wells 17WW10, 17WW11, and 17WW19 to evaluate the effects of the groundwater extraction system across the site. Prior to restarting the system, transducers will be placed in monitoring wells 17WW10, 17WW11, and 17WW19 to record instantaneous and short-term elevation changes over 2 weeks after startup. Data collected will be discussed in the next annual report.	
8	Table 2-6	Notes section of table below main body of table	The abbreviation “bgs” (“below ground surface.”) is missing from the notes section of the table.	C	Concur. The acronym for below ground surface will be added to Table 2-6.	
9	Section 4.2/ P. 4-1		With the extended time while we wait for the RA and TCRA completion there is a going concern for off-site migration. I suggest adding additional sentry wells to the sampling plan to ensure that the high levels at 17WW06 are not migrating further. This is especially concerning due to the issues at the GWTP. The sampling plan should be discussed during the next call or separately as there are to many uncertainties about the contamination in this area of GW.	C	Concur. The Army agrees that additional discussion is necessary regarding the sampling plan. A new bullet has been added to Section 4.2 with the following recommendation: “Remove monitoring wells 130 and 17WW01 from the quarterly monitoring program and add monitoring wells 17WW10 and 17WW19 to the quarterly monitoring program, to better evaluate perchlorate concentrations downgradient of 17WW06.”	

This page intentionally left blank.

Response to Comments on
Draft Year 2 Annual Remedial Action Operation Report (August 2023 – July 2024), LHAAP-17, Burning Ground No. 2
Flashing Area Group 2, Longhorn Army Ammunition Plant, Karnack, Texas, March 2025

Document Date: March 14, 2025
Comment Date: April 25, 2025

Reviewers: April Palmie - TCEQ
Respondent: Aaron Williams - Army

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

Number	Section/Page	Comment	C,D	Response	A,D
1	General	To confirm the plume has not migrated, please add sampling for a few downgradient wells, at least once a year while the extraction continues	C	Concur. A new bullet has been added to Section 4.2 with the following recommendation: "Remove monitoring wells 130 and 17WW01 from the quarterly monitoring program and add monitoring wells 17WW10 and 17WW19 to the quarterly monitoring program, to better evaluate perchlorate concentrations downgradient of 17WW06."	
2	Acronyms and Page 1-2	Revise PCL to Protective concentration level	C	Concur. The text will be revised as requested.	
3	Figure 2-1a	Please add year 1 extraction volumes to make this figure cumulative	C	Concur. Figure 2-1 will be revised to include cumulative data from Year 1 through Year 2. As a result, Figure 2-1a will no longer be necessary.	
4	Table 2-1	Please add year 1 extraction volumes to make this figure cumulative	C	Concur. Figure 2-1 and Table 2-1 will include volumes from Year 1 through Year 2.	

Number	Section/Page	Comment	C,D	Response	A,D
5	Tables	Add cumulative analytical results table(s) to include baseline through current report data. Add a cumulative groundwater elevations table.	C	Concur. Table 2-1 will include Year 1 data so that the extraction volumes are cumulative. Tables 2-2 through 2-5 will be combined with the historical data dating back to baseline concentrations. In addition, the former Table 2-6 (groundwater elevations) will be revised to include all elevations dating back to August 2022 and renumbered to Table 2-3.	
6	Appendix A	Revise title to add photo log. Include adobe bookmark for photo log in Appendix A and revise the bookmark titles. Photo log bookmark is currently below Appendix D with long and not descriptive titles (Slide 1 etc.).	C	Concur. The title of Appendix A will be revised to: "Well Inspection Forms and Photographic Log". Appendix A will be bookmarked appropriately.	
7	Appendix B	Add adobe bookmarks for each sample event.	C	Concur. Bookmarks will be added into Appendix B for each sampling event within the Draft Final deliverable.	
8	Appendix D	Insert the lab reports so that the adobe bookmarks are included. See year 1 report for example.	C	Concur. The laboratory report will be inserted with the bookmarks in the Draft Final deliverable.	

DRAFT FINAL
YEAR 2 ANNUAL REMEDIAL ACTION OPERATION REPORT (AUGUST 2023 – JULY 2024)
LHAAP-17 BURNING GROUND NO.2/FLASHING AREA GROUP 2
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

May 2025

Prepared For:



U.S. Army Corps of Engineers
Tulsa District
1645 S 101 E Avenue
Tulsa, Oklahoma 74128-4609

Prepared By:

bhate

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

This page intentionally left blank.

TABLE OF CONTENTS

Acronyms and Abbreviations iii

1 Introduction 1-1

1.1 Site Description 1-1
1.2 Selected Remedy 1-2
1.3 Remedial Action Objectives 1-3
1.4 Conceptual Site Model 1-4
1.4.1 Site Geology 1-4
1.4.2 Hydrogeology and Surface Water Hydrology 1-4
1.4.3 Nature and Distribution of Contamination 1-5
1.4.4 Pathways 1-5
1.4.5 Receptors 1-5

2 Site Activities 2-1

2.1 Groundwater Extraction 2-1
2.1.1 Extraction System 2-1
2.1.2 Extraction Volumes 2-1
2.2 Well Inspections, Maintenance, and Repairs 2-2
2.3 Groundwater Monitoring for RA-O 2-2
2.3.1 Quarterly Performance Monitoring (September 2023 to June 2024) 2-2
2.3.2 Sampling Procedures and Analysis 2-2
2.3.3 Groundwater Elevation and Flow Direction 2-2
2.4 Groundwater Analytical Results 2-3
2.4.1 September 2023 Quarterly Performance Monitoring 2-3
2.4.2 December 2023 Quarterly Performance Monitoring 2-3
2.4.3 March 2024 Quarterly Performance Monitoring 2-3
2.4.4 June 2024 Quarterly Performance Monitoring 2-3

3 Evaluation of Extraction Effectiveness 3-1

4 Conclusions and Recommendations 4-1

4.1 Conclusions 4-1
4.2 Recommendations 4-1

5 References 5-1

Figures

Figure 1-1 Site Location Map
Figure 1-2 LHAAP-17 Site Map

Figure 2-1 Groundwater Extraction Volumes (August 2022 – July 2024) Monthly & Cumulative
Figure 2-2 September 2023 & December 2023 Groundwater Results
Figure 2-3 March 2024 & June 2024 Groundwater Results
Figure 2-4 Potentiometric Surface Map (September 2023)
Figure 3-1 LHAAP-17 Perchlorate Trend Chart

Tables

Table 1-1 Groundwater COCs for LHAAP-17
Table 2-1 Groundwater Extraction Volumes (August 2022 – July 2024)
Table 2-2 Groundwater Monitoring Analytical Results (June 2021 – June 2024)
Table 2-3 Groundwater Elevations (August 2022 - June 2024)

Appendices

Appendix A Well Inspection Forms and Photographic Log
Appendix B Groundwater Sample Collection Forms
Appendix C Quality Control Summary Reports
Appendix D Laboratory Data Packages
Appendix E Hydrographs

ACRONYMS AND ABBREVIATIONS

amsl	Above mean sea level
APTIM	APTIM Federal Services, LLC
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC(s)	Chemical(s) of concern
CSM	Conceptual site model
DCE	Dichloroethene
FBR	Fluidized Bed Reactor
FFA	Federal Facilities Agreement
ft	Feet (or foot)
GWTP	Groundwater Treatment Plant
J	Data qualifier denoting an estimated concentration
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LTM	Long-term monitoring
LUC(s)	Land Use Control(s)
µg/L	Micrograms per liter
MEC	Munitions and Explosives of Concern
MMG-TLI JV	Munitions Management Group -TLI Solutions Joint Venture
MNA	Monitored Natural Attenuation
NCP	National Contingency Plan
No.	Number
NPL	National Priorities List
PCL	Protective concentration level
Plexus	Plexus Scientific Corporation
QA/QC	Quality Assurance / Quality Control
RA	Remedial Action

RA-O	Remedial Action Operation
RAO(s)	Remedial Action Objective(s)
RAWP	Remedial Action Work Plan
ROD	Record of Decision
Shaw	Shaw Environmental, Inc.
TCEQ	Texas Commission on Environmental Quality
TCE	Trichloroethene
TCRA	Time Critical Removal Action
TNT	Trinitrotoluene
U	Data qualifier denoting an undetected result
UFP-QAPP	Uniform Federal Policy – Quality Assurance Project Plan
U.S.	United States
U.S. Army	U.S. Department of the Army
USACE	U.S. Army Corps of Engineers
USAEC	U.S. Army Environmental Command
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VC	Vinyl chloride
VOC(s)	Volatile Organic Compound(s)

1 INTRODUCTION

The United States (U.S.) Army Corps of Engineers (USACE), Tulsa District, contracted Munitions Management Group-TLI Solutions Joint Venture (MMG-TLI JV), to perform the remedial action (RA) at the former Longhorn Army Ammunition Plant (LHAAP) Burning Ground Number 2 (No. 2)/Flashing Area Group 2, Comprehensive Environmental Response, Compensation, and Liability Information System, U.S. Environmental Protection Agency (USEPA) Identification No. TX6213820529 (hereinafter LHAAP-17), Karnack, Texas (**Figure 1-1**). This Remedial Action Operation (RA[O]) report was prepared by Bhate Environmental Associates (Bhate) as a subcontractor to MMG-TLI JV. Remedial activities are required under the Record of Decision (ROD) issued for LHAAP-17 in 2016 (Shaw Environmental, Inc. [Shaw], August 2016). The Remedial Action Work Plan (RAWP) for LHAAP-17 was prepared in March 2019 in accordance with the ROD (Bhate/APTIM Federal Services LLC [APTIM], March 2019).

1.1 Site Description

LHAAP is approximately 14 miles northeast of Marshall, Texas and approximately 40 miles west of Shreveport, Louisiana (**Figure 1-1**). The installation occupies approximately 1,300 of its former 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The facility can be accessed via State Highways 43 and 134.

LHAAP was placed on the Superfund National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Department of the Army (U.S. Army), the USEPA, and the Texas Water Commission (now the Texas Commission on Environmental Quality [TCEQ]) entered a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §120 Federal Facility Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property. LHAAP has been under the administrative control of the Base Realignment and Closure Division of the Army since 2003 and is Defense Environmental Restoration Account funded. The majority of LHAAP has been transferred by the U.S. Army to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge (Shaw, August 2016). Administrative control of LHAAP is under the United States Army Environmental Command.

LHAAP-17, an NPL site, known as the Burning Ground No. 2/Flashing Area, is a 3.9-acre site located within a heavily wooded section in the southeastern portion of LHAAP (**Figure 1-2**). The site has two 185 feet by 305 feet cleared areas, separated by a gravel access road. The site is covered with grass and scattered brush, has been graded above the surrounding terrain, and is relatively flat. LHAAP-17 was used as a burning ground from 1959 through 1980 (Plexus Scientific Corporation [Plexus], February 2005). Bulk trinitrotoluene (TNT), photo flash powder, and reject material from Universal Match Corporation operations were burned at LHAAP-17. In 1959, the materials removed from the former TNT Production Area (LHAAP-29) and the former TNT Waste Disposal Plant (LHAAP-32) during demolition were burned and/or flashed at LHAAP-17. The site

was used as a flashing area to decontaminate recoverable metal byproducts until 1980, when it became inactive. Burning trenches were located around the inside perimeter of the previously fenced area and within the open area on the western boundary of the site. As each trench was filled with ash, it was covered, and a new trench was dug. The waste residues were reportedly removed from the trenches in 1984, and the site was allowed to revegetate (Jacobs Engineering Group, Inc. [Jacobs], April 2001).

The ROD identified groundwater chemicals of concern (COCs) for human health, as shown in **Table 1-1**. The remedy selected in the ROD included excavation and off-site disposal of soil, groundwater extraction, monitored natural attenuation (MNA), and land use controls (LUCs) to maintain the remedy and prohibit groundwater use until COC concentrations are reduced to levels supportive of unlimited use and unrestricted exposure. The soil excavation portion of the remedy was paused due to discovery of munitions, which are being removed under a time critical removal action (TCRA). Groundwater extraction will likely continue until the TCRA, which has been paused, has been completed.

The principal contaminant at LHAAP-17 is perchlorate which is found at the site at concentrations several orders of magnitude greater than the other COCs, which are various volatile organic compounds (VOCs). Therefore, the perchlorate concentrations are the main factor driving the current RA(s) at the site. The protective concentration level (PCL) for perchlorate is 17 micrograms per liter (µg/L).

1.2 Selected Remedy

Section 1.4 of the Final ROD (Shaw, August 2016) summarized the selected remedy as follows:

- Contaminated soil removal with off-site disposal to protect the hypothetical future maintenance worker and ecological receptors and to eliminate the soil-to-groundwater pathway.
- Extraction and treatment of groundwater until the trigger level of 20,000 µg/L of perchlorate is reached. The trigger level in this ROD is an interim cleanup level. Upon reaching the trigger level, the RA will transition from the initial measure of groundwater extraction to the primary remedy of MNA. Reduction of the perchlorate concentration to the trigger level is anticipated to expedite MNA.
  - If the 20,000 µg/L of perchlorate level is not reached after approximately 1.5 years, a contingency remedy of in situ bioremediation will be implemented to reduce the perchlorate levels more quickly so the conditions become amenable for trichloroethene (TCE) to attenuate naturally.
- MNA to confirm protection of human health and the environment by documenting that the contaminated groundwater remains localized with minimal migration and that contaminant concentrations are being reduced to cleanup levels.
  - Performance objectives will be evaluated after two years of MNA. During those two years, monitoring will be quarterly. If MNA is found to be ineffective, a contingency remedy to enhance MNA will be implemented. If MNA is found to be effective, it will

be continued, and long-term monitoring (LTM) will be semiannual for three years. In subsequent years, LTM will be annual until the next Five-Year Review, and annually thereafter until recommended otherwise by the Five-Year Review. The monitoring and reporting associated with this remedy will be used to track the effectiveness of MNA and will continue until recommended otherwise at the Five-Year Review.

- The LUC objectives include maintaining the integrity of any current or future remedial or monitoring systems and preventing the use of groundwater contaminated above cleanup levels as a potable water source. The groundwater treatment and MNA remedial components include a groundwater monitoring system that will be used to characterize the condition of the groundwater during the period the groundwater remedy is in place until the groundwater remediation goals are achieved, and to demonstrate achievement of the groundwater remediation goals when the groundwater remedy is complete. As a part of this groundwater remedy, the Army will maintain the remedial and monitoring systems associated with the groundwater remedies until these components of the remedy are no longer needed to achieve cleanup levels, and cleanup levels have been achieved. During the period of operation of the groundwater remedy, if any of the elements of the remedial and groundwater monitoring systems are damaged, destroyed, or become ineffective, they will be repaired or replaced with suitable components to assure that the remedial and groundwater monitoring systems are able to provide data of the quality necessary to determine the progress of and eventual completion of this component of the remedy. The actions to be taken to implement these LUC objectives and requirements will be provided through modifying the "Comprehensive Land Use Control (LUC) Management Plan, Former Longhorn Army Ammunition Plant, Karnack, Texas" and detailed in the LUC Remedial Design.
- The LUC for prohibition of groundwater use (except for monitoring and testing) shall be implemented and shall remain in place at the site until the COCs in soil and groundwater remaining at the site are reduced below levels that would support unlimited use and unrestricted exposure. The recordation notification for the site, to be filed with Harrison County, will include a description of the LUCs.
- The LUC restricting land use to nonresidential shall be implemented until it is demonstrated that surface and subsurface soil and groundwater COCs are at levels that allow for unlimited use and unrestricted exposure.
  - The LUC to maintain the integrity of any current or future remedial or monitoring systems will remain in place until the levels of COCs in groundwater are met.
- CERCLA Five Year Reviews until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.

1.3 Remedial Action Objectives

The remedial action objectives (RAOs) developed for LHAAP-17 and outlined in the Final ROD (Shaw, August 2016) are:

- Protection of human health by preventing human exposure to the contaminated groundwater and contaminated soil;
- Protection of human health by preventing further potential degradation of groundwater from contaminated soil;
- Protection of ecological receptors by preventing exposure to the contaminated soil;
- Protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water; and
- Return of groundwater to its potential beneficial uses as drinking water, wherever practicable.

The above RAOs recognize USEPA's policy to return all groundwater to beneficial uses, based on the non-binding programmatic expectation in the National Contingency Plan (NCP), and is consistent with the NCP regulations requiring the lead agency, the U.S. Army in this case, to establish RAOs specifying contaminants and media of concern, potential exposure pathways, and remediation goals.

1.4 Conceptual Site Model

The current full conceptual site model (CSM) for LHAAP-17 can be found in the Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP) (Bhate/APTIM, August 2021). Key points from the CSM are briefly described below.

1.4.1 Site Geology

The local geology consists of silty, clayey, and sandy units of the Wilcox Group. The uppermost unit consists predominantly of silty clay to clay extending to depths ranging from 5 to 30 feet (ft) below ground surface (bgs). Underlying this layer is a gray to light brown, fine grained silty sandy unit interbedded with silty clay to clay lenses. The clay layers act as an aquitard separating the shallow zone from the intermediate zone. A fine to medium grained sand layer uninterrupted by silty clay lenses has been described from 50 to 150 ft bgs, and it is underlain by a dense, dark gray clayey shale.

1.4.2 Hydrogeology and Surface Water Hydrology

The depth of the shallow groundwater zone generally ranges from approximately 6 to 35 ft bgs. The intermediate zone is less defined, but its depth has been measured to approximately 55 ft bgs. The deep groundwater zone extends to a depth of approximately 150 ft bgs. The predominant groundwater flow in the shallow and intermediate zones is generally to the northwest towards Harrison Bayou. Based on historical groundwater flows, the direction can vary more to the west or more to the north. Drainage ditches run along the eastern, western, and northern boundaries of the site that discharge to Harrison Bayou located approximately 1,500 ft to the northwest. Harrison Bayou discharges to Caddo Lake.

1.4.3 Nature and Distribution of Contamination

The primary source of contamination at LHAAP-17 is the release of perchlorate from historical activities. Groundwater contamination is found in both the shallow and intermediate zones. Shallow zone groundwater COCs are perchlorate and VOCs (dichloroethane, dichloroethene [DCE], TCE, and vinyl chloride [VC]). Intermediate zone groundwater COCs are TCE and its daughter products (DCE and VC).

1.4.4 Pathways

The primary pathway for contamination migration is through groundwater exiting the site and entering Harrison Bayou and Caddo Lake. This could lead to COC exposure by humans or ecological receptors via contact with contaminated groundwater or surface water, or through food chain pathways.

1.4.5 Receptors

Current security measures preclude unlimited public access to the site. Future land use for the site involves being added to the Caddo Lake National Wildlife Refuge. Potential human receptors include off-path Caddo Lake National Wildlife Refuge visitors and trespassers and environmental construction workers. Ecological receptors considered included: Deer Mouse, Short-Tailed Shrew, Red Fox, Townsend's Big-Eared Bat, Bank Swallow, Belted Kingfisher, American Woodcock, Red-Tailed Hawk, and Aquatic Life (benthic invertebrates). Both direct and indirect (food chain pathways) were considered for the ecological receptors.

This page intentionally left blank.

2 SITE ACTIVITIES

2.1 Groundwater Extraction

2.1.1 Extraction System

The groundwater extraction system at LHAAP-17 operates at two locations where the highest perchlorate concentrations were identified, 17WW02 and 17WW06 (**Figure 1-2**). The extraction system operates continuously and removes groundwater from the shallow alluvial aquifer, which is then treated to remove the perchlorate before being discharged to the bayou. The details on the startup and operation of the system can be found in the Interim Remedial Action Completion Report (MMG-TLI JV, October 2023). The RAWP for LHAAP-17 calls for the continuous operation of the extraction system for 18 months to achieve the performance objective of reducing the groundwater perchlorate concentrations to below 20,000 µg/L (Bhate/APTIM, March 2019). During the current reporting period, a Memorandum For Record was added to the Administrative Record for LHAAP-17 that extended the 18-month operational period for the extraction system until all parties agree on termination (U.S. Army Environmental Command [USAEC], May 2024).

2.1.2 Extraction Volumes

Groundwater extraction volumes were recorded during regular maintenance and monitoring events. Extraction volumes are measured via a totalizer located on the extraction system shed effluent pipeline. Between August 1, 2023, and July 31, 2024, a total of 437,839 gallons of contaminated groundwater was extracted from 17WW02 and 17WW06 and conveyed to the groundwater treatment plant (GWTP). The lifetime extraction volume at the end of the Year 2 RA-O reporting period was 1,064,687 gallons. The extraction volumes are presented in **Table 2-1** and **Figure 2-1**.

On January 12, 2024, the GWTP was winterized in preparation for a severe cold weather event. The winterization process included turning off the extraction wells, turning the pumps off, and placing the Fluidized Bed Reactor (FBR) into recycle mode. On January 19, 2024, the FBR was switched out of recycle mode, as normal temperatures conditions had returned. During February and most of March 2024, the GWTP remained offline due to various piping and air compressor repairs that were made in response to the January 2024 freeze event. On March 14-15, 2024, a storm event caused a large tree to fall on power lines resulting in power loss to the GWTP. Efforts to address the power outage were delayed by wet conditions. On March 28, 2024, the GWTP was restored to operational status. On March 31, 2024, a power glitch caused an outage, power was restored, and the FBR was switched to the normal operating mode. Although the extraction pumps were not pumping water for approximately 2 months during the Year 2 RA-O reporting period, the 18-month extraction period was extended to account for this downtime.

2.2 Well Inspections, Maintenance, and Repairs

During each sampling event, well inspections were conducted at monitoring wells 17WW01, 17WW03, and 130 to assess the physical condition of the well screens, casings, and surface seals. Well inspection forms were completed for each well and a photographic log is included as **Appendix A**. During the Year 2 RA-O inspections, there were no significant maintenance items observed impacting the integrity of the wells. However, the photo log shows that multiple wells needed fresh paint and new labels.

2.3 Groundwater Monitoring for RA-O

Groundwater monitoring for RA-O at LHAAP-17 was conducted to monitor the perchlorate concentration and areal distribution, assess the effectiveness of the selected remedy, and monitor the groundwater elevation and flow direction. This involved quarterly sampling in September 2023, December 2023, March 2024, and June 2024. The groundwater sample collection forms for each event are provided in **Appendix B**. The analytical results also included quality assurance/quality control (QA/QC) samples. The results of the QA/QC samples indicated that the analytical data were of acceptable quality and that the laboratory performed within the required QC limits. The full QC Summary Report is provided in **Appendix C**. The laboratory analytical data packages are presented in **Appendix D**.

2.3.1 Quarterly Performance Monitoring (September 2023 to June 2024)

The quarterly performance monitoring conducted in September 2023, December 2023, March 2024, and June 2024 involved sampling groundwater at 17WW01, 17WW02, 17WW03, 17WW06, and 130 to assess the effectiveness of the groundwater extraction for reducing perchlorate concentrations. The analytical results of the groundwater sampling are presented in **Table 2-2**. Quarterly events are illustrated on **Figure 2-2** and **Figure 2-3**.

2.3.2 Sampling Procedures and Analysis

Sampling was carried out in accordance with the UFP-QAPP and the RAWP. Each location was sampled using a bladder pump and disposable tubing. Prior to sampling, each well was gauged and purged. During purging of the wells, groundwater sample forms were used to record groundwater parameters including temperature, potential of Hydrogen, specific conductivity, dissolved oxygen, turbidity, and oxidation-reduction potential.

2.3.3 Groundwater Elevation and Flow Direction

A sitewide groundwater elevation measurement event was conducted on September 7, 2023, in conjunction with the quarterly groundwater sampling event. The groundwater elevation data for the September 2023 event (**Table 2-3**) was used to construct a shallow zone potentiometric surface map (**Figure 2-4**). Across the central portion of the site groundwater flows toward the northwest with the groundwater elevation highest in the southeastern portion of the site at 17WW08 (169.71 ft above mean sea level [amsl]) and lowest in the northwestern portion of the site at 17WW10 (168.05 ft amsl). While in the northwestern portion of the site near monitoring

well 17WW11, groundwater flows to the west-southwest. In general, groundwater flow at Site LHAAP-17 is influenced by Harrison Bayou which is located just west of the site.

2.4 Groundwater Analytical Results

The analytical results for the quarterly performance monitoring events are presented in **Table 2-2**.

2.4.1 September 2023 Quarterly Performance Monitoring

The analytical results of the September 7, 2023 (**Table 2-2**), quarterly performance monitoring event reported two locations with perchlorate concentrations that exceeded the PCL: 17WW02 at 6,040 µg/L (duplicate result), and 17WW06 at 71,800 µg/L. The perchlorate concentrations reported at 17WW01, 17WW03, and 130 were below the PCL at 0.398 µg/L, 0.219 µg/L, and 1.36 µg/L, respectively.

2.4.2 December 2023 Quarterly Performance Monitoring

The analytical results of the December 4, 2023 (**Table 2-2**), quarterly performance monitoring event reported two locations with perchlorate concentrations that exceeded the PCL: 17WW02 at 11,400 µg/L, and 17WW06 at 57,500 µg/L. The perchlorate concentration reported at 130 was below the PCL at 0.980 µg/L (duplicate result). The perchlorate concentration was reported as non-detect at 17WW01 and 17WW03.

2.4.3 March 2024 Quarterly Performance Monitoring

The analytical results of the March 3, 2024 (**Table 2-2**), quarterly performance monitoring event reported two locations with perchlorate concentrations that exceeded the PCL: 17WW02 at 5,470 µg/L (duplicate result), and 17WW06 at 51,100 µg/L. The perchlorate concentrations reported at 17WW03 and 130 were below the PCL at 0.916 J µg/L and 4.27 µg/L, respectively. The perchlorate concentration was reported as non-detect at 17WW01.

2.4.4 June 2024 Quarterly Performance Monitoring

The analytical results of the June 21, 2024 (**Table 2-2**), quarterly performance monitoring event reported one location with a perchlorate concentration that exceeded the PCL: 17WW06 at 4,670 µg/L. The perchlorate concentration at 17WW02 was reported below the PCL at 2.00 µg/L. The perchlorate concentration was reported as non-detect at 17WW01, 17WW03, and 130.

This page intentionally left blank.

3 EVALUATION OF EXTRACTION EFFECTIVENESS

Results of the performance monitoring showed an overall decreasing trend in the perchlorate concentrations over time, demonstrating that the system has been effective in reducing the contaminant levels (**Figure 3-1**).

During the previous reporting period, the perchlorate concentration at 17WW06 decreased following system startup on August 5, 2022, and an overall decreasing trend was observed. Increases in the perchlorate concentrations in February 2023 and June 2023 were observed to follow periods when the extraction was paused due to GWTP downtime in January 2023 and April 2023. During the previous reporting period, the perchlorate concentration at 17WW02 initially increased following startup of the extraction system, from 5,250 µg/L on April 8, 2022, to a high of 19,000 µg/L on October 7, 2022. The concentration then began to decrease in concert with 17WW06 following that sampling event.

During the current reporting period, the perchlorate concentration at 17WW06 decreased significantly from 71,800 µg/L in September 2023 to 4,670 µg/L in June 2024. The June 2024 value is well below the performance objective of 20,000 µg/L but remains above the PCL of 17 µg/L. 17WW06 is the sole sampling location that remains above the PCL. During the current reporting period, the perchlorate concentration at 17WW02 also exhibited an overall decreasing trend from 6,040 µg/L in September 2023 to 2.0 µg/L in June 2024.

During the current reporting period, the perchlorate concentrations at 17WW01, 17WW03, and 130 have remained below the PCL of 17 µg/L. The perchlorate concentrations were reported as not detected in June 2024 at each of these monitoring wells.

The system's effectiveness will continue to be evaluated through ongoing quarterly monitoring of the perchlorate groundwater concentrations.

This page intentionally left blank.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The groundwater monitoring data collected at LHAAP-17 during the Year 2 RA-O indicates that the extraction and treatment of perchlorate-contaminated groundwater has been effective in reducing groundwater perchlorate concentrations at all of the monitoring wells. The perchlorate concentrations at 17WW06 decreased significantly during the Year 2 RA-O and all wells are now below the performance objective of 20,000 µg/L, sitewide. The overall decreasing concentration trends at both extraction locations indicates that the system continues to be effective at reducing groundwater perchlorate concentrations.

4.2 Recommendations

Based on the Year 2 RA-O analytical results, historical data, and the Memorandum for Record (USAEC, May 2024), the following activities should be completed during the Year 3 RA-O:

- Groundwater extraction and treatment should continue at both extraction wells (17WW02 and 17WW06) until such time as all parties agree to termination.
- Quarterly performance monitoring should continue as per the RAWP, until such time as all parties agree to termination.
- Remove monitoring wells 130 and 17WW01 from the quarterly monitoring program and add monitoring wells 17WW10 and 17WW19 to the quarterly monitoring program, to better evaluate perchlorate concentrations downgradient of 17WW06.
- Sitewide water level gauging should be completed semi-annually.
- To evaluate the effects of the extraction system on the shallow aquifer system across the site, it is recommended to place transducers in monitoring wells 17WW10, 17WW12, and 17WW19.
- Well maintenance will include fresh paint and labels.

This page intentionally left blank.

5 REFERENCES

Bhate Environmental Associates, Inc. (Bhate)/ APTIM Federal Services LLC (APTIM). March 2019. *Draft Final Remedial Design and Remedial Action Work Plan, LHAAP-17 Burning Ground No. 2/Flashing Area Group 2, Longhorn Army Ammunition Plant, Karnack, Texas.*

Bhate/APTIM. August 2021. *Draft Final Uniform Federal Policy Quality Assurance Project Plan, LHAAP-17 Burning Ground No. 2/Flashing Area Group 2, Time Critical Removal Action for Munitions and Explosives of Concern (MEC), Longhorn Army Ammunition Plant, Karnack, Texas.*

Jacobs Engineering Group, Inc. (Jacobs). April 2001. *Final Remedial Investigation Report for the Group 2 Sites Remedial Investigation (Sites 12, 17, 18/24, 29, and 32) at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas*.

Plexus Scientific Corporation (Plexus). February 2005. *Final Environmental Site Assessment, Phase I and II Report, Production Areas, Longhorn Ammunition Plant, Karnack, Texas*.

Shaw Environmental Inc. (Shaw). August 2016. *Final Record of Decision, LHAAP-17 Burning Ground No. 2/Flashing Area Group 2, Longhorn Army Ammunition Plant, Karnack, Texas*.

U.S. Army Environmental Command (USAEC). May 2024. *Memorandum For Record.*

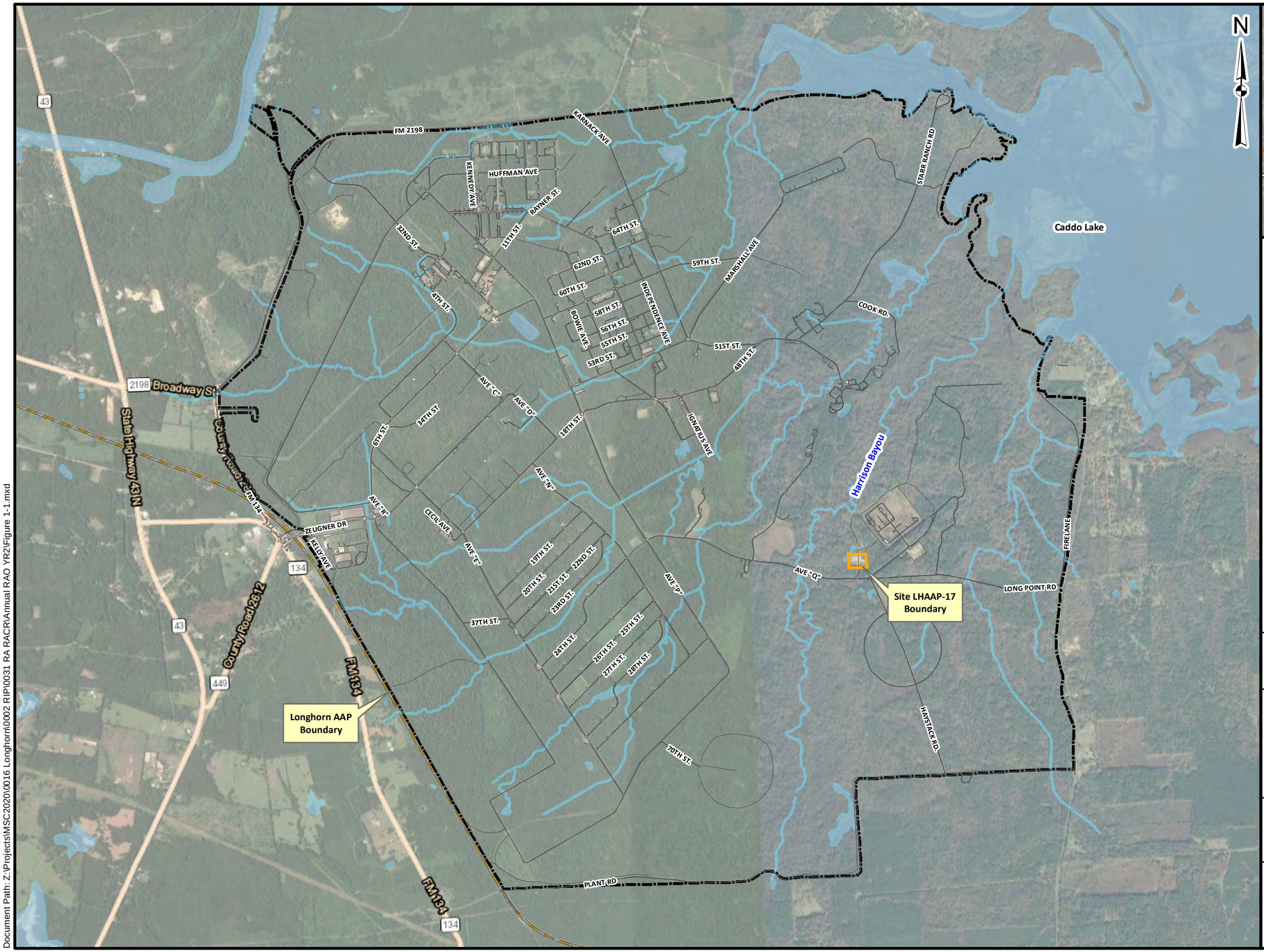
MMG-TLI JV. October 2023. *Draft Final Interim Remedial Action Completion Report, LHAAP-17 Burning Ground No.2/Flashing Area Group 2, Longhorn Army Ammunition Plan (LHAAP), Karnack Texas.*

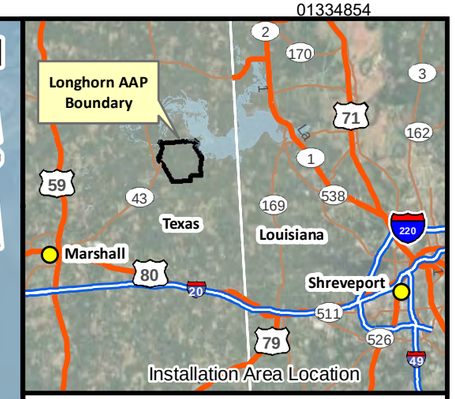
This page intentionally left blank.

FIGURES

This page intentionally left blank.

01334854





Legend

- Installation Boundary
- LHAAP-17 Boundary
- Road
- Stream

Longhorn Army Ammunition Plant
Karnack, Texas

Figure 1-1
Site Location Map

0 1,250 2,500 5,000 Feet

1 inch = 2,500 feet

Prepared By: MMG, TLI JOINT VENTURE

Map Date: 10/28/2024

Service Layer Credits: Google satellite imagery

Document Path: Z:\Projects\MSC2020\0016 Longhorn\0002 RIP\0031 RA RACR\Annual RAO YR2\Figure 1-1.mxd

01334855

17WW15
17WW20
17WW12
17WW11
17WW18
MW-19
17WW09
17WW10
17WW16
130
17WW02
17WW19
17WW06
SCUDDAY AVE
17WW13
17WW05
17WW17
17WW03
17WW01
17WW14
LHAAP-17
17WW04
Approximate Groundwater Flow Direction
17WW07
17WW08
18WW15
18WW14
Approximate Pump House Location
AVE "Q"
LONG POINT RD
C-07
Approximate Location of Overhead Electrical Lines
HAYSTACK RD.

N

Longhorn Army Ammunition Plant
Karnack
LHAAP-17
Installation Area Location

Legend

- 17WW02 Performance Monitoring Locations Highlighted
- Extraction Well
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- LHAAP-17 Boundary
- System Piping
- Effluent Line Piping
- Road
- Stream

Longhorn Army Ammunition Plant
Karnack, Texas

Figure 1-2
LHAAP-17 Site Map

0 50 100 200 Feet
1 inch = 100 feet

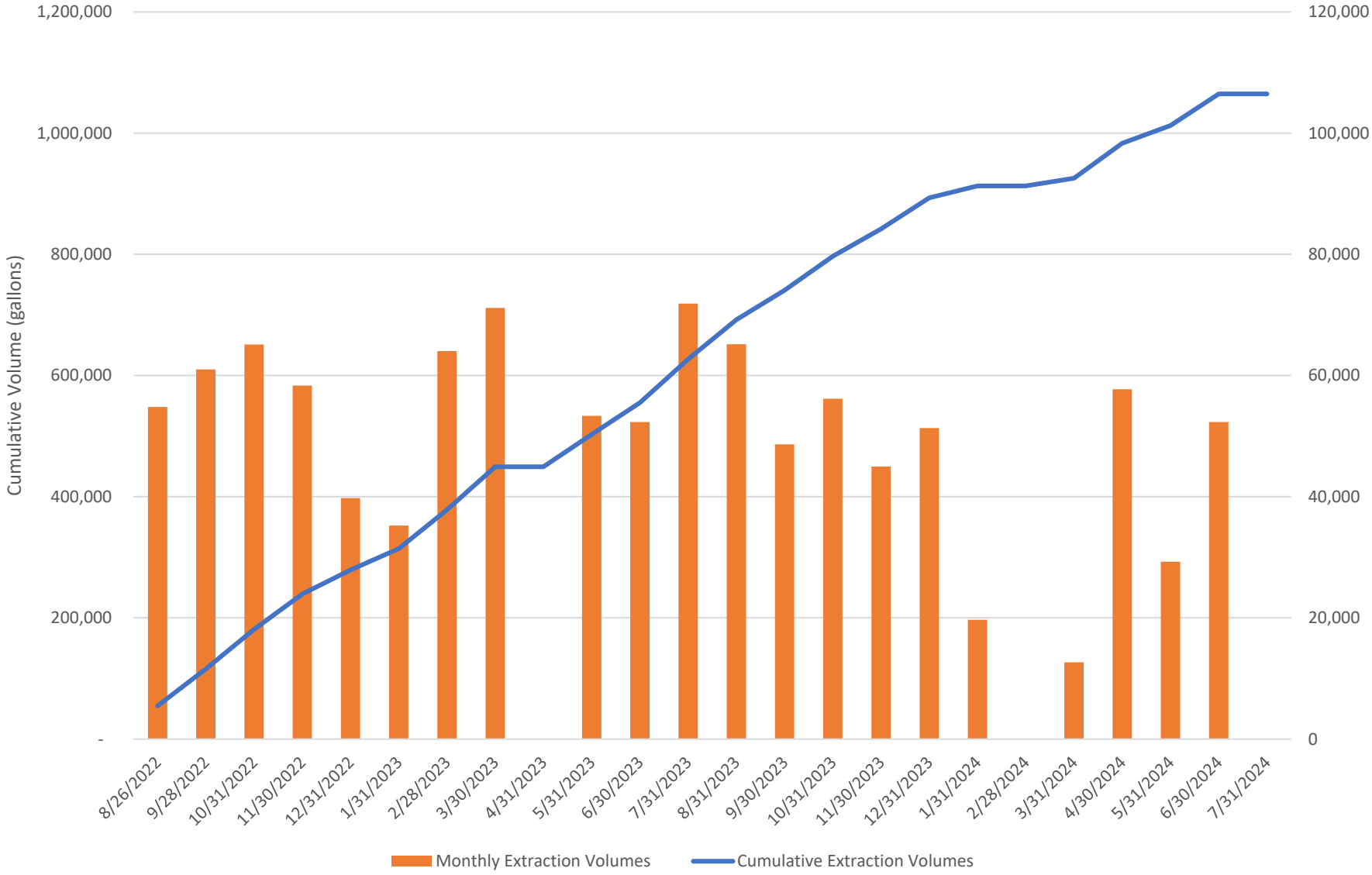
Prepared By: MMG, TLI JOINT VENTURE

Map Date: 10/28/2024

Service Layer Credits: Google satellite imagery

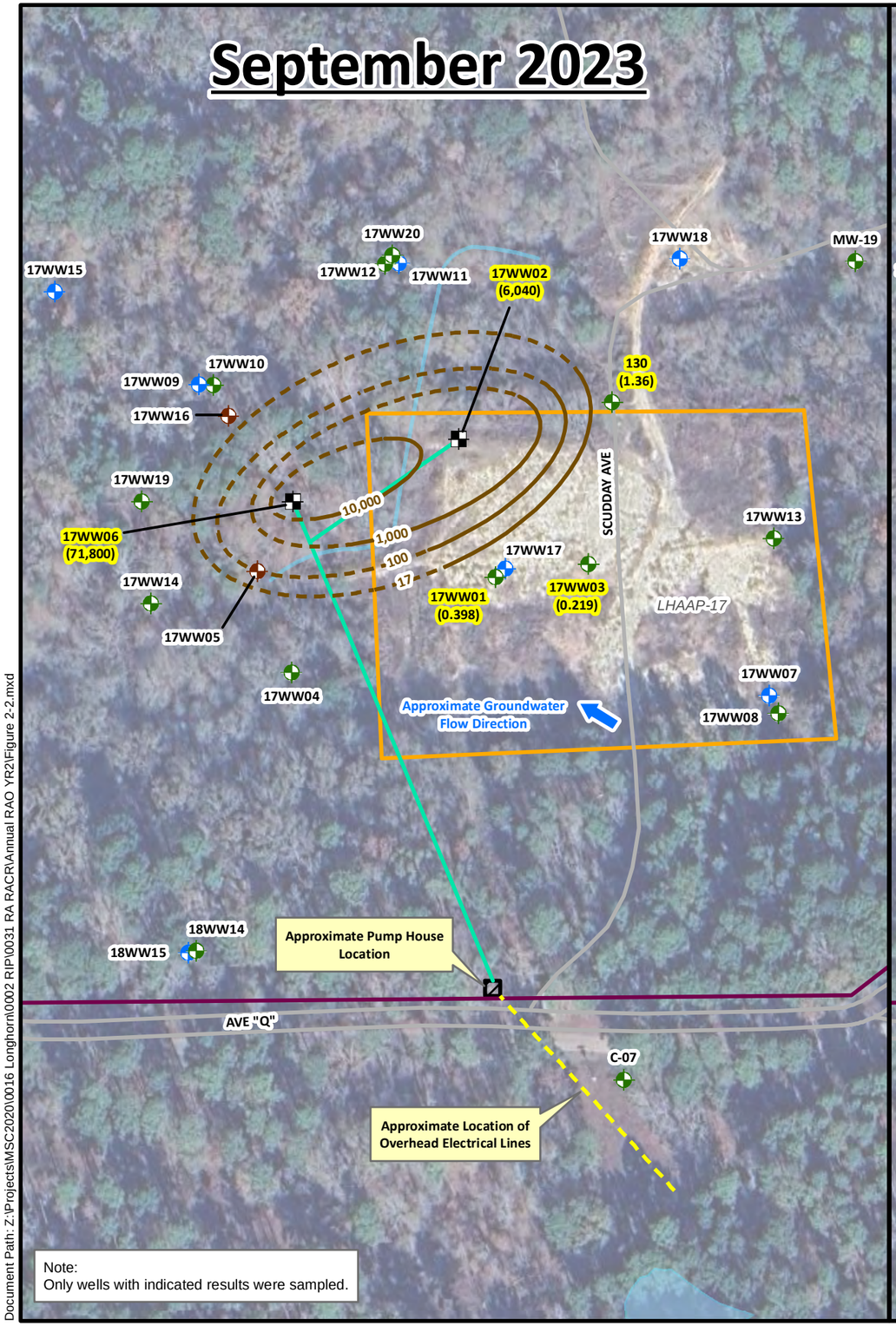
Document Path: Z:\Projects\MSC2020\0016 Longhorn\0002 RIP\0031 RA RACR\Annual RAO YR2\Figure 1-2.mxd

Figure 2-1
Groundwater Extraction Volumes (August 2022 - July 2024)



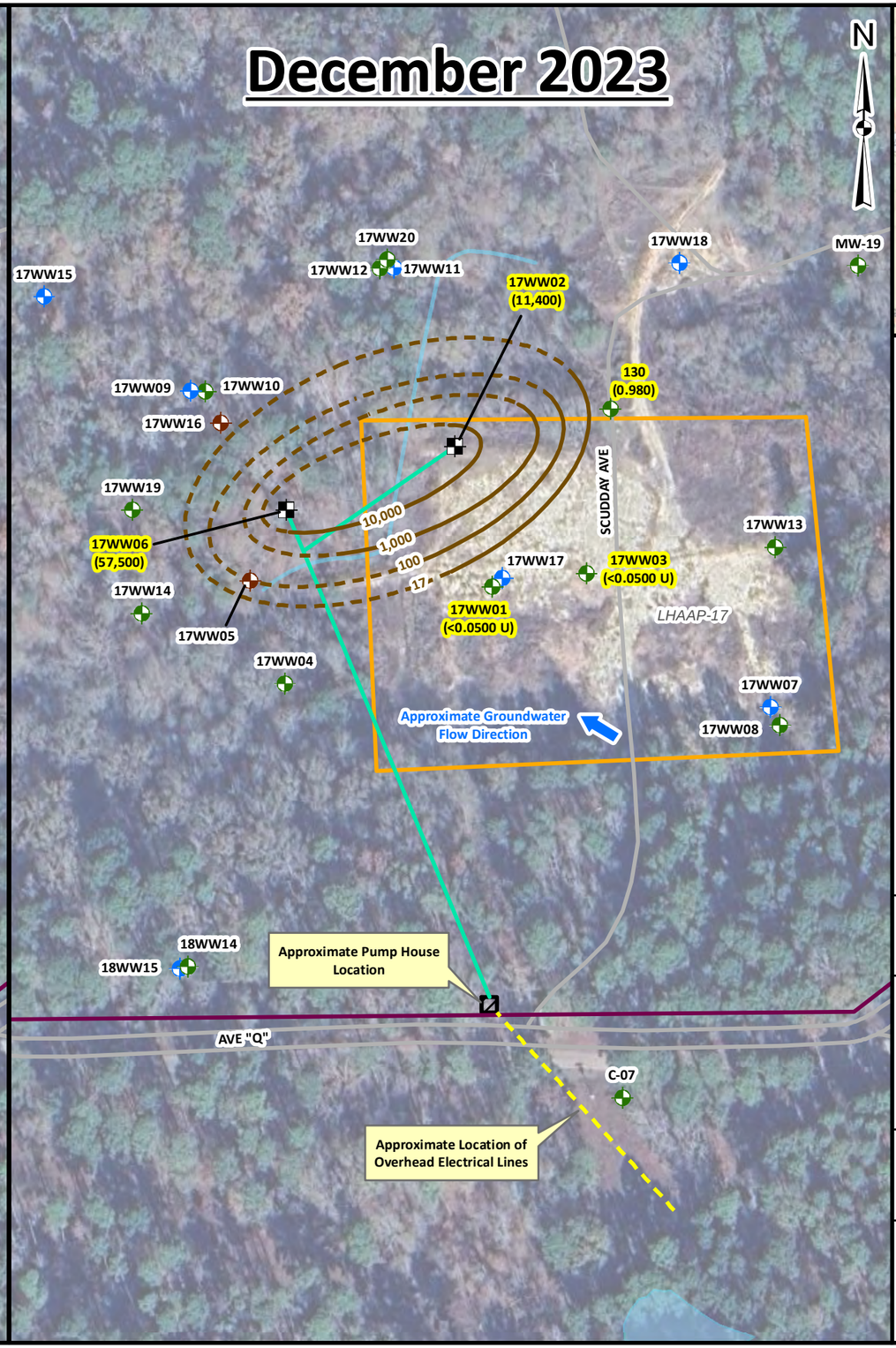
01334857

September 2023



Note:
Only wells with indicated results were sampled.

December 2023





Installation Area Location

Legend

- 17WW02 — Performance Monitoring Locations Highlighted
- Extraction Well
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- (57,500) — Perchlorate Concentration Reported in Micrograms per Liter (µg/L)
- 17 — Perchlorate Isoconcentration Contour (µg/L) (Dashed where Inferred)
- (U) — Not Detected
- LHAAP-17 Boundary
- System Piping
- Effluent Line Piping
- Road
- Stream

Longhorn Army Ammunition Plant
Karnack, Texas

Figure 2-2
September 2023 & December 2023
Groundwater Results

0 70 140 280 Feet

1 inch = 140 feet

Prepared By: MMG, TLI JOINT VENTURE

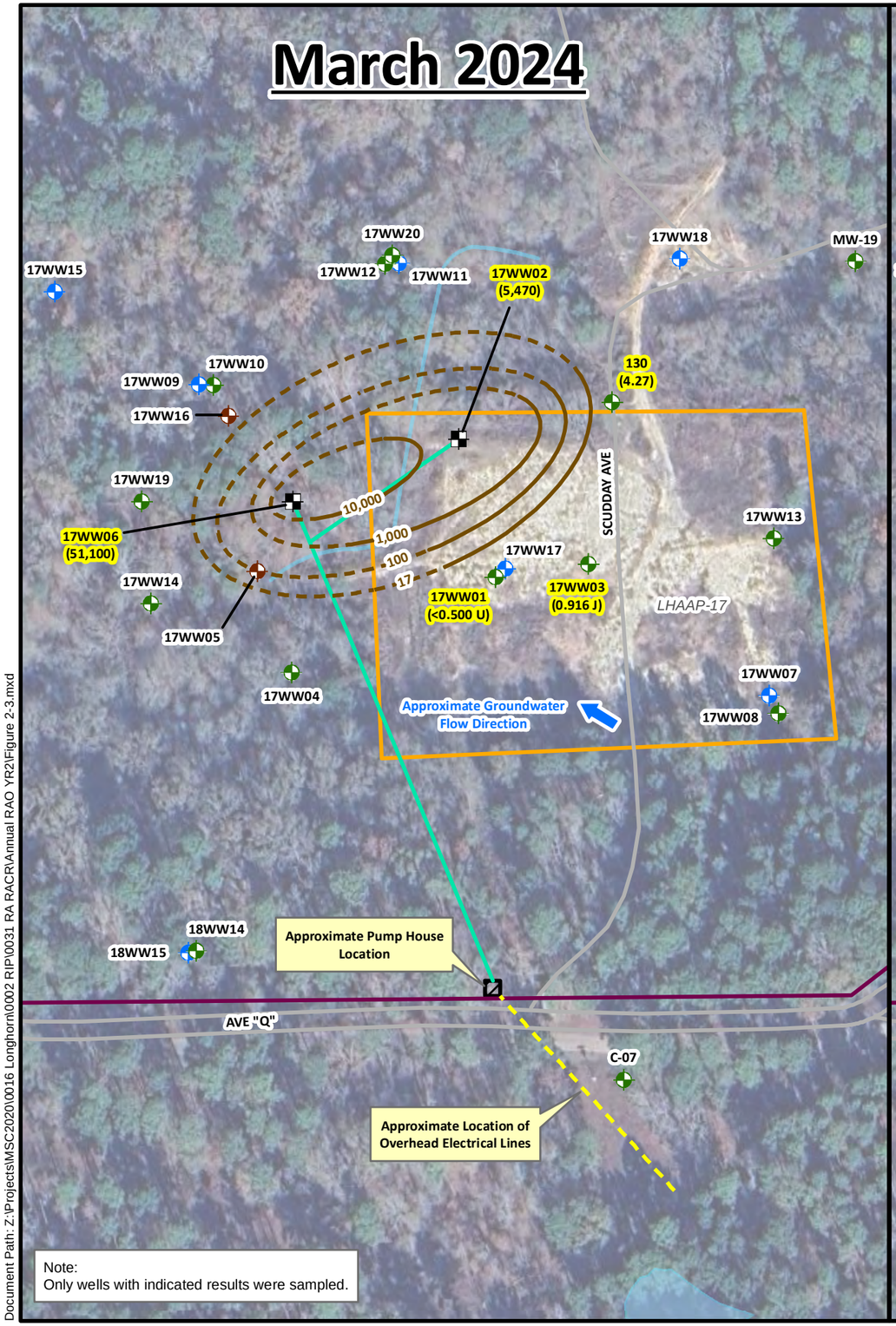
Map Date: 10/28/2024

Service Layer Credits: Google satellite imagery

Document Path: Z:\Projects\MSC2020\0016 Longhorn\0002 RIP\0031 RA RACR\Annual RAO YR2\Figure 2-2.mxd

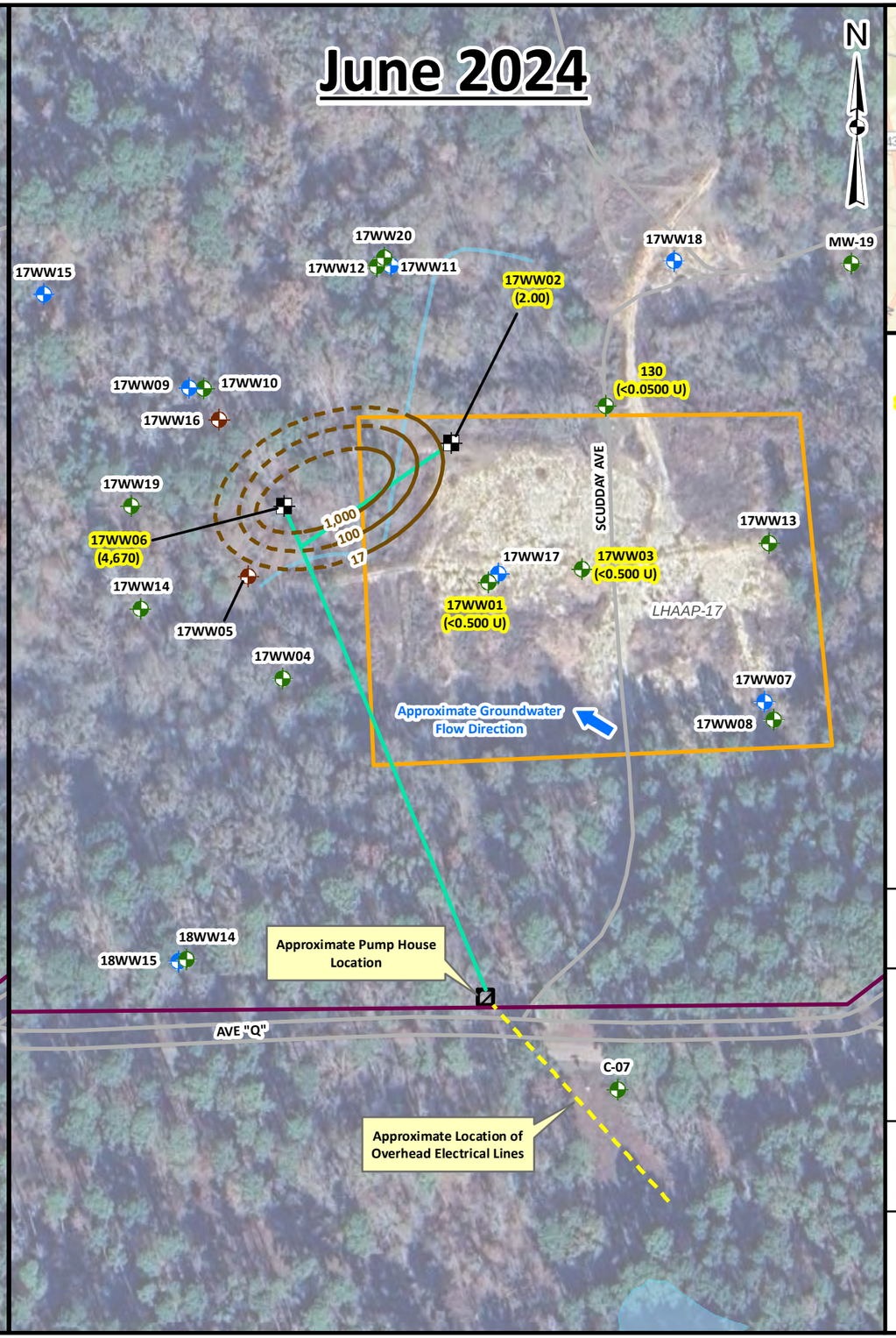
01334858

March 2024



Note:
Only wells with indicated results were sampled.

June 2024





Legend

- 17WW02 — Performance Monitoring Locations Highlighted
- Extraction Well
- Shallow Monitoring Well
- Intermediate Monitoring Well
- Deep Monitoring Well
- (4,670) — Perchlorate Concentration Reported in Micrograms per Liter (µg/L)
- 17 — Perchlorate Isoconcentration Contour (µg/L) (Dashed where Inferred)
- (J) — Estimated Concentration
- (U) — Not Detected
- LHAAP-17 Boundary
- System Piping
- Effluent Line Piping
- Road
- Stream

Longhorn Army Ammunition Plant
Karnack, Texas

Figure 2-3
March 2024 & June 2024
Groundwater Results

0 70 140 280 Feet

1 inch = 140 feet

Prepared By: MMG, TLI JOINT VENTURE

Map Date: 10/28/2024

Service Layer Credits: Google satellite imagery

Document Path: Z:\Projects\MSC2020\0016 Longhorn\0002 RIP\0031 RA RACR\Annual RAO YR2\Figure 2-3.mxd

01334859

17WW12 (169.15)
17WW20 (168.42)
169.00
17WW10 (168.05)
17WW19 (168.06)
17WW06 (NM)
17WW02 (NM)
130 (169.34)
SCUDDAY AVE
17WW13 (169.30)
17WW03 (169.13)
17WW01 (168.61)
LHAAP-17
168.50
17WW14 (168.53)
17WW04 (168.74)
17WW08 (169.71)
169.00
169.50
Approximate Pump House Location
Approximate Location of Overhead Electrical Lines
AVE "Q"
LONG POINT RD
HAYSTACK RD.
N



Installation Area Location

Legend

- Extraction Well
- Shallow Monitoring Well
- (169.30) Potentiometric Surface Elevation in Feet Above Mean Sea Level
- (NM) Not Measured
- Potentiometric Surface Contour
- Direction of Groundwater Flow
- LHAAP-17 Boundary
- System Piping
- Effluent Line Piping
- Road
- Stream

Longhorn Army Ammunition Plant
Karnack, Texas

Figure 2-4
Potentiometric Surface Map
(September 2023)

0 50 100 200 Feet
1 inch = 100 feet

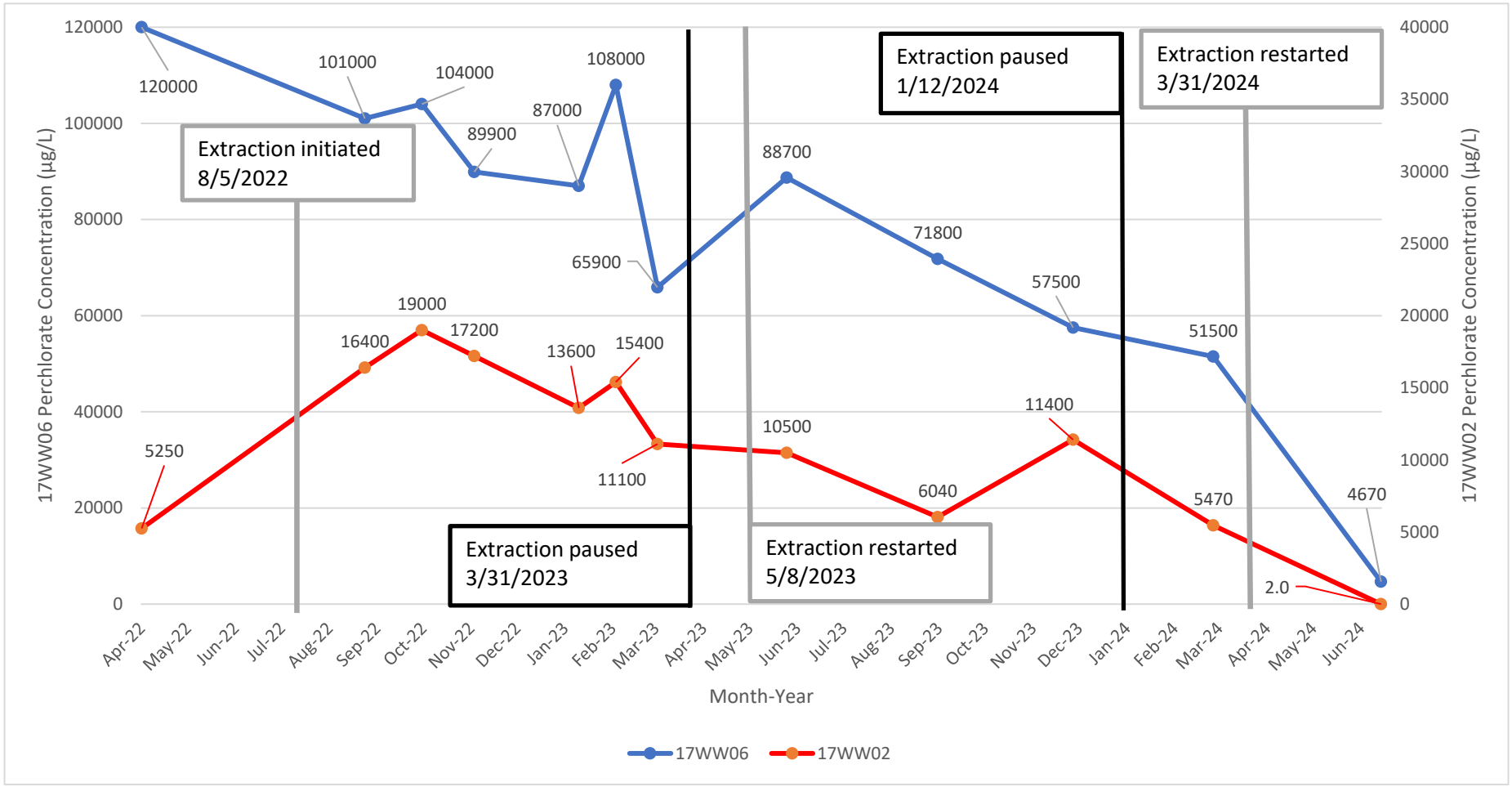
Prepared By: MMG TLI JOINT VENTURE

Map Date: 10/28/2024

Service Layer Credits: Google satellite imagery

Document Path: Z:\Projects\MSC2020\0016 Longhorn\0002 RIP\0031 RA RACR\Annual RAO YR2\Figure 2-4.mxd

Figure 3-1
LHAAP-17 Perchlorate Trend Chart



This page intentionally left blank.

TABLES

This page intentionally left blank.

Table 1-1
Groundwater COCs for LHAAP-17

Media	Chemicals of Concern (COCs)
Shallow Groundwater Zone	1,1-dichloroethene (DCE) 1,2-dichloroethane (DCA) cis-1,2-DCE trichloroethene (TCE) vinyl chloride (VC) perchlorate
Intermediate Groundwater Zone	cis-1,2-DCE TCE VC

Table 2-1
Groundwater Extraction Volumes (August 2022 – July 2024)
Year 2 Annual RA-O Report LHAAP-17 Burning Ground No.2/Flashing Area Group 2

Date	Monthly Totals (gallons)	RA-O Lifetime Cumulative Totals (gallons)
8/26/2022	54,782	54,782
9/28/2022	60,995	115,777
10/31/2022	65,107	180,884
11/30/2022	58,319	239,203
12/31/2022	39,763	278,966
1/31/2023	35,231	314,197
2/28/2023	64,007	378,204
3/30/2023	71,137	449,341
4/31/2023	0	449,341
5/31/2023	53,333	502,674
6/30/2023	52,321	554,995
7/31/2023	71,853	626,848
8/31/2023	65,142	691,990
9/30/2023	48,633	740,623
10/31/2023	56,156	796,779
11/30/2023	44,968	841,747
12/31/2023	51,310	893,057
1/31/2024	19,677	912,734
2/28/2024	0	912,734
3/31/2024	12,656	925,390
4/30/2024	57,718	983,108
5/31/2024	29,258	1,012,366
6/30/2024	52,321	1,064,687
7/31/2024	0	1,064,687

Notes:

Extraction volumes measured on totalizer located on the effluent piping from the system shed.

RA-O Lifetime Cumulative Totals includes August 5, 2022 through the end of this reporting period.

RA-O: Remedial Action Operation

Table 2-2
Perchlorate Groundwater Analytical Results (June 2021 - June 2024)
Year 2 Annual RA-O Report LHAAP-17 Burning Ground No.2/Flashing Area Group 2

				Perchlorate
			Reported Units	µg/L
			Remedation Goal	20,000
			PCL	17
Monitoring Well ID	**Field Sample ID**	**Sample Date**	**Field QC**	
130	130_040822	4/8/2022	N	**15**
	130_083122	8/31/2022	N	**0.0640 J**
	130_100722	10/7/2022	N	**0.0750 J**
	130_111022	11/10/2022	N	**0.463**
	130_011723	1/17/2023	N	**0.633**
	130_021023	2/10/2023	N	**1.79**
	130_030923_a	3/9/2023	FD	**1.36**
	130_060123	6/1/2023	N	**2.41**
	130_090723	9/7/2023	N	**1.36**
	130_120423	12/4/2023	N	**0.933**
	130_120423_a	12/4/2023	FD	**0.980**
	130_030424	3/3/2024	N	**4.270**
	130_062124	6/21/2024	N	< 0.0500 U
17WW01	17WW01_040822	4/8/2022	N	**239**
	17WW01_042122	4/21/2022	N	**46.8**
	17WW01_083122	8/31/2022	N	**1,740**
	17WW01_100722_a	10/7/2022	FD	**24.5**
	17WW01_111022	11/10/2022	N	**0.549**
	17WW01_011723	1/17/2023	N	< 0.0500 U
	17WW01_021023	2/10/2023	N	**0.0491 J**
	17WW01_030923	3/9/2023	N	**0.0332 J**
	17WW01_060123_a	6/1/2023	FD	**0.114 J**
	17WW01_090723	9/7/2023	N	**0.398**
	17WW01_120423	12/4/2023	N	< 0.0500 U
	17WW01_030424	3/3/2024	N	< 0.0500 U
	17WW01_062124	6/21/2024	N	< 0.500 U
	17WW01_062124_A	6/21/2024	FD	< 0.500 U
17WW02	17WW02_040822	4/8/2022	N	**5,250**
	17WW02_083122_a	8/31/2022	FD	**16,400**
	17WW02_100722	10/7/2022	N	**19,000**
	17WW02_111022	11/10/2022	N	**17,200**
	17WW02_011723	1/17/2023	N	**13,600**
	17WW02_021023	2/10/2023	N	**15,400**
	17WW02_030923	3/9/2023	N	**11,100**
	17WW02_060123	6/1/2023	N	**10,500**
	17WW02_090723	9/7/2023	N	**6,030**
	17WW02_090723_a	9/7/2023	FD	**6,040**
	17WW02_120423	12/4/2023	N	**11,400**
	17WW02_030424	3/3/2024	N	**4,600**
	17WW02_030424_a	3/3/2024	FD	**5,470**
	17WW02_062124	6/21/2024	N	**2.00**

Table 2-2
Perchlorate Groundwater Analytical Results (June 2021 - June 2024)
Year 2 Annual RA-O Report LHAAP-17 Burning Ground No.2/Flashing Area Group 2

				Perchlorate
			Reported Units	µg/L
			Remedation Goal	20,000
			PCL	17
Monitoring Well ID	**Field Sample ID**	**Sample Date**	**Field QC**	
17WW03	17WW03_040822	4/8/2022	N	**44.7**
	17WW03_083122	8/31/2022	N	**0.0694 J**
	17WW03_100722	10/7/2022	N	**0.0559 J**
	17WW03_111022_a	11/10/2022	FD	**0.0271 J**
	17WW03_011723_a	1/17/2023	FD	**0.0417 J**
	17WW03_021023	2/10/2023	N	**0.0674 J**
	17WW03_030923	3/9/2023	N	< 0.0500 U
	17WW03_060123	6/1/2023	N	**0.0414 J**
	17WW03_090723	9/7/2023	N	**0.219**
	17WW03_120423	12/4/2023	N	< 0.0500 U
	17WW03_030424	3/3/2024	N	**0.916 J**
	17WW03_062124	6/21/2024	N	< 0.500 U
17WW06	17WW06_063021	6/30/2021	N	**143,000**
	17WW06_040822	4/8/2022	N	**120,000**
	17WW06_083122	8/31/2022	N	**101,000**
	17WW06_100722	10/7/2022	N	**104,000**
	17WW06_111022	11/10/2022	N	**89,900**
	17WW06_011723	1/17/2023	N	**87,000**
	17WW06_021023	2/10/2023	N	**108,000**
	17WW06_030923	3/9/2023	N	**65,900**
	17WW06_060123	6/1/2023	N	**88,700**
	17WW06_090723	9/7/2023	N	**71,800**
	17WW06_120423	12/4/2023	N	**57,500**
	17WW06_030424	3/3/2024	N	**51,100**
	17WW06_062124	6/21/2024	N	**4,670**

Notes:
QC - Quality Control
ID - Identification
PCL – Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level
Bold values are detections
Highlighted results exceed the perchlorate PCL
Highlighted results exceed the remediation goal
µg/L - micrograms per liter
_a/_A - duplicate
FD - duplicate sample
N -normal sample
U - non-detect
J - estimated value between the method detection limit and limit of quantitation

Table 2-3
Groundwater Elevations (August 2022 - June 2024)
Year 2 Annual RA-O Report LHAAP-17 Burning Ground No.2/Flashing Area Group 2

Well Identification	Sample Date	Ground Elevation (feet amsl)	TOC Elevation (feet amsl)	TOC Height (feet above ground surface)	Depth to Water (feet btoc)	Depth to Water (feet bgs)	Groundwater Elevation (feet amsl)
17WW01	8/31/2022	176.62	179.01	2.39	10.00	7.61	169.01
	10/7/2022	176.62	179.01	2.39	10.52	8.13	168.49
	11/10/2022	176.62	179.01	2.39	10.65	8.26	168.36
	1/17/2023	176.62	179.01	2.39	10.02	7.63	168.99
	2/10/2023	176.62	179.01	2.39	9.29	6.90	169.72
	3/9/2023	176.62	179.01	2.39	9.23	6.84	169.78
	6/1/2023	176.62	179.01	2.39	8.12	5.73	170.89
	9/7/2024	176.62	179.01	2.39	10.40	8.01	168.61
	12/4/2024	176.62	179.01	2.39	10.63	8.24	168.38
	3/4/2024	176.62	179.01	2.39	8.71	6.32	170.30
	6/21/2024	176.62	179.01	2.39	7.41	5.02	171.60
17WW02	11/10/2022	174.34	177.21	2.87	NM	NM	NM
	2/10/2023	174.34	177.21	2.87	NM	NM	NM
	9/7/2024	174.34	177.21	2.87	NM	NM	NM
17WW03	8/31/2022	176.39	179.20	2.81	9.81	7.00	169.39
	10/7/2022	176.39	179.20	2.81	10.15	7.34	169.05
	11/10/2022	176.39	179.20	2.81	10.36	7.55	168.84
	1/17/2023	176.39	179.20	2.81	9.72	6.91	169.48
	2/10/2023	176.39	179.20	2.81	9.08	6.27	170.12
	3/9/2023	176.39	179.20	2.81	8.90	6.09	170.30
	6/1/2023	176.39	179.20	2.81	8.06	5.25	171.14
	9/7/2024	176.39	179.20	2.81	10.07	7.26	169.13
	12/4/2024	176.39	179.20	2.81	10.28	7.47	168.92
	3/4/2024	176.39	179.20	2.81	8.52	5.71	170.68
	6/21/2024	176.39	179.20	2.81	7.38	4.57	171.82
17WW04	11/10/2022	177.29	180.21	2.92	11.68	8.76	168.53
	2/10/2023	177.29	180.21	2.92	10.60	7.68	169.61
	9/7/2024	177.29	180.21	2.92	11.47	8.55	168.74
17WW05	11/10/2022	178.80	182.73	3.93	13.79	9.86	168.94
	2/10/2023	178.80	182.73	3.93	11.85	7.92	170.88
	9/7/2024	178.80	182.73	3.93	13.41	9.48	169.32
17WW06	11/10/2022	176.82	179.36	2.54	NM	NM	NM
	2/10/2023	176.82	179.36	2.54	NM	NM	NM
	9/7/2024	176.82	179.36	2.54	NM	NM	NM
17WW07	11/10/2022	176.78	179.68	2.90	10.56	7.66	169.12
	2/10/2023	176.78	179.68	2.90	9.21	6.31	170.47
	9/7/2024	176.78	179.68	2.90	10.22	7.32	169.46
17WW08	11/10/2022	176.76	179.94	3.18	10.43	7.25	169.51
	2/10/2023	176.76	179.94	3.18	9.49	6.31	170.45
	9/7/2024	176.76	179.94	3.18	10.23	6.31	169.71
17WW09	11/10/2022	178.40	181.43	3.03	12.78	9.75	168.65
	2/10/2023	178.40	181.43	3.03	10.20	7.17	171.23
	9/7/2024	178.40	181.43	3.03	12.55	7.17	168.88
17WW10	11/10/2022	178.38	181.55	3.17	14.18	11.01	167.37
	2/10/2023	178.38	181.55	3.17	13.97	10.80	167.58
	9/7/2024	178.38	181.55	3.17	13.50	10.80	168.05
17WW11	11/10/2022	177.51	180.95	3.44	12.86	9.42	168.09
	2/10/2023	177.51	180.95	3.44	7.15	3.71	173.80
	9/7/2024	177.51	180.95	3.44	12.81	3.71	168.14
17WW12	11/10/2022	177.04	180.32	3.28	11.48	8.20	168.84
	2/10/2023	177.04	180.32	3.28	9.33	6.05	170.99
	9/7/2024	177.04	180.32	3.28	11.17	6.05	169.15
17WW13	11/10/2022	175.90	179.14	3.24	10.05	6.81	169.09
	2/10/2023	175.90	179.14	3.24	9.05	5.81	170.09
	9/7/2024	175.90	179.14	3.24	9.84	5.81	169.30
17WW14	11/10/2022	178.83	181.90	3.07	13.68	10.61	168.22
	2/10/2023	178.83	181.90	3.07	13.12	10.05	168.78
	9/7/2024	178.83	181.90	3.07	13.37	10.05	168.53
17WW15	11/10/2022	180.33	182.61	2.28	14.40	12.12	168.21
	2/10/2023	180.33	182.61	2.28	11.22	8.94	171.39
	9/7/2024	180.33	182.61	2.28	14.01	8.94	168.60

Table 2-3
Groundwater Elevations (August 2022 - June 2024)
Year 2 Annual RA-O Report LHAAP-17 Burning Ground No.2/Flashing Area Group 2

Well Identification	Sample Date	Ground Elevation (feet amsl)	TOC Elevation (feet amsl)	TOC Height (feet above ground surface)	Depth to Water (feet btoc)	Depth to Water (feet bgs)	Groundwater Elevation (feet amsl)
17WW16	11/10/2022	178.99	181.13	2.14	12.50	10.36	168.63
	2/10/2023	178.99	181.13	2.14	10.27	8.13	170.86
	9/7/2024	178.99	181.13	2.14	12.02	8.13	169.11
17WW17	11/10/2022	176.23	178.81	2.58	10.32	7.74	168.49
	2/10/2023	176.23	178.81	2.58	8.47	5.89	170.34
	9/7/2024	176.23	178.81	2.58	10.00	5.89	168.81
17WW18	11/10/2022	176.03	178.68	2.65	10.08	7.43	168.60
	2/10/2023	176.03	178.68	2.65	8.50	5.85	170.18
	9/7/2024	176.03	178.68	2.65	10.05	5.85	168.63
17WW19	11/10/2022	176.63	180.08	3.45	12.45	9.00	167.63
	2/10/2023	176.63	180.08	3.45	11.70	8.25	168.38
	9/7/2024	176.63	180.08	3.45	12.02	8.25	168.06
17WW20	11/10/2022	177.13	180.02	2.89	12.00	9.11	168.02
	2/10/2023	177.13	180.02	2.89	9.83	6.94	170.19
	9/7/2024	177.13	180.02	2.89	11.60	6.94	168.42
130	8/31/2022	174.94	177.73	2.79	8.22	5.43	169.51
	10/7/2022	174.94	177.73	2.79	8.54	5.75	169.19
	11/10/2022	174.94	177.73	2.79	8.73	5.94	169.00
	1/17/2023	174.94	177.73	2.79	8.06	5.27	169.67
	2/10/2023	174.94	177.73	2.79	7.37	4.58	170.36
	3/9/2023	174.94	177.73	2.79	7.13	4.34	170.60
	6/1/2023	174.94	177.73	2.79	6.35	3.56	171.38
	9/7/2024	174.94	177.73	2.79	8.39	5.60	169.34
	12/4/2024	174.94	177.73	2.79	8.72	5.93	169.01
	3/4/2024	174.94	177.73	2.79	6.73	3.94	171.00
	6/21/2024	174.94	177.73	2.79	5.63	2.84	172.10

Notes:

amsl - above mean sea level

btoc - below top of casing

bgs - below ground surface

NM - Not Measured

TOC - top of casing

APPENDIX A
WELL INSPECTION FORMS AND PHOTOGRAPHIC LOG

This page intentionally left blank.

01334872

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC2020.0016.0002.0022
Client: Army
Site Name: 17
Well ID: 130
Inspection Date: 9/7/23
Well Completion Depth/ Measured Depth: 25.48
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

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) 2"
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:

01334873

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC2020.0016.0002.0022
Client: ARMY
Site Name: 17

Well ID: 17WW03
Inspection Date: 9/7/23
Well Completion Depth/ Measured Depth: 32.00
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

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:

01334874

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC2020.0016.0002.0022
Client: Army
Site Name: 17
Well ID: 17WW01
Inspection Date: 9/7/23
Well Completion Depth/ Measured Depth: 33.71
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

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:

01334875

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC2020.0016.0002.0022
Client: Army
Site Name: 17
Well ID: 17WW01
Inspection Date: 12/4/23
Well Completion Depth/ Measured Depth: 33.71
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:

01334876

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC2020.0016.0002.0022
Client: ARMY
Site Name: 17

Well ID: 17WW03
Inspection Date: 12/4/23
Well Completion Depth/ Measured Depth: 32.02
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 ☐ Broken ☐ Cracked
☐ 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:

01334877

WELL INSPECTION FORM

Job Name: ~~LHAAP~~ LHAAP
Job No.: MSC2020.0016.0002.0022
Client: Army
Site Name: 17
Well ID: 130
Inspection Date: 12/4/23
Well Completion Depth/ Measured Depth: 25.51
Inspector: Scott Beasinger

☒ 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): 2"
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:

01334878

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC 2020.0016.0002.0022
Client: Army
Site Name: 17
Well ID: 17WW01
Inspection Date: 3/4/24
Well Completion Depth/Measured Depth: 33.67
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

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:

01334879

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC 2020.0016.0002.0022
Client: ARmy
Site Name: 17

Well ID: 17WW03
Inspection Date: 3/4/24
Well Completion Depth/ Measured Depth: 32.02
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:

01334880

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: MSC2020.0016.0002.0022
Client: ARmy
Site Name: 17
Well ID: 130
Inspection Date: 3/4/24
Well Completion Depth/ Measured Depth: 25.50
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): 2"
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:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCI BH.0001
Client: ARMY
Site Name: 17
Well ID: 17WW01
Inspection Date: 6/21/24
Well Completion Depth/ Measured Depth: 33.73
Inspector: Scott Bassinger

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:

WELL INSPECTION FORM

Job Name: CHAAP
Job No.: UPCI BH. 000
Client: ARMY
Site Name: 17
Well ID: 17WW03
Inspection Date: 6/21/24
Well Completion Depth/ Measured Depth: 32.02
Inspector: Scott Buss. NBar

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 obstructions?
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:

01334883

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: Army
Site Name: 17
Well ID: 130
Inspection Date: 6/21/24
Well Completion Depth/ Measured Depth: 25.51
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): 2"
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:

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log September 2023



Photo 1: Monitoring well 17WW01 in need of fresh paint and a new label.



Photo 2: Monitoring well 17WW03 in need of fresh paint and a new label.

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log September 2023



Photo 3: Monitoring well 130 in need of fresh paint and a new label.

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log December 2023



Photo 1: Monitoring well 17WW01 in need of fresh paint and a new label.



Photo 2: Monitoring well 17WW03 in need of fresh paint and a new label.

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log December 2023



Photo 3: Monitoring well 130 in need of fresh paint and a new label.

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log March 2024



Photo 1: Monitoring well 17WW01 in need of fresh paint and a new label.



Photo 2: Monitoring well 17WW03 in need of fresh paint and a new label.

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log March 2024



Photo 3: Monitoring well 130 in need of fresh paint and a new label.

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log June 2024



Photo 1: Monitoring well 17WW01 in need of fresh paint and a new label.



Photo 2: Monitoring well 17WW03 in need of fresh paint and a new label.

Longhorn Army Ammunition Plant Site LHAAP-17 Photograph Log June 2024



Photo 3: Monitoring well 130 in need of fresh paint and a new label.

APPENDIX B
GROUNDWATER SAMPLE COLLECTION FORMS

This page intentionally left blank.

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334894

LOCATION	Site: LHAAP - 17	Location ID: 17WW01	Date: 9/7/23
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 10.40
	Total Well Depth (ft) (C): 33.71	Water Column Thickness (ft) (C-B):	2nd Depth to Water(pre-purge): 10.40
	Screened Interval: 13.80 - 33.80	Weather: CLEAR	Well Volume (gal) (A*(C-B)):
	Pump placement: 28.00	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
9/7/23	0830	10.47	0.13	100	23.85	4.88	5.14	0.62	37.7	51	
	0835	10.52	0.26	100	23.80	4.31	5.15	0.20	34.1	52	
	0840	10.55	0.39	100	23.78	4.22	5.15	0.04	30.7	50	
	0845	10.57	0.52	100	23.76	4.21	5.15	0.04	30.3	49	
	0850	10.59	0.65	100	23.74	4.20	5.14	0.03	29.6	48	
	0855	10.60	0.78	100	23.71	4.20	5.14	0.03	29.2	48	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: 17WW01-090723

Sample Time: 0855

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334895

LOCATION	Site: LHAAP - 17	Location ID: 17WW02	Date: 9/7/23
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA	Water Column Thickness (ft) (C-B): NA	2nd Depth to Water(pre-purge): NA
	Screened Interval: 15.00 - 25.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): NA
	Pump placement: 20.00	Well Condition: NAMDS PAINT	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
		WELL PUMPS CONTINUOUSLY									
		NO PURGING REQUIRED									

Colorimeter Results

Time	Analyte	Dilution	Result	Units

No. Containers/Volume/Type	Preserv.	Filter (Y/N)	Method	Parameter(s)
2 125ml PLASTIC	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW02_090723

Sample Time: 1155

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334896

LOCATION	Site: LHAAP - 17		Location ID: 17WW03		Date: 9/7/23
	Project Name: LHAAP		Project No./Phase: MSC2020.0016.0002.0022		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"		Unit Casing Volume (gal/lin ft) (A): 0.652		Initial Depth to Water (ft) (B): 10.07
	Total Well Depth (ft) (C): 32.00		Water Column Thickness (ft) (C-B): 21.93		2nd Depth to Water(pre-purge): 10.07
	Screened Interval: 22.00-32.00		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 14.30
	Pump placement: 27.00		Well Condition: WELDS PAINT		Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
9/7/23	0745	10.15	0.13	100	23.08	6.15	3.61	0.71	64.7	71	
	0750	10.21	0.26	100	22.95	5.90	3.66	0.24	59.3	64	
	0755	10.25	0.34	100	22.88	5.72	3.67	0.08	56.7	58	
	0800	10.27	0.52	100	22.84	5.71	3.67	0.08	56.4	57	
	0805	10.29	0.65	100	22.79	5.69	3.68	0.08	55.8	56	
	0810	10.30	0.78	100	22.75	5.68	3.68	0.07	55.3	56	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW03-090723 Sample Time: 0810

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334897

LOCATION	Site: LHAAP - 17		Location ID: 17WW06		Date: 9/7/23
	Project Name: LHAAP		Project No./Phase: MSC2020.0016.0002.0022		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"		Unit Casing Volume (gal/lin ft) (A): 0.652		Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA		Water Column Thickness (ft) (C-B): NA		2nd Depth to Water(pre-purge): NA
	Screened Interval: 14.00-24.00		Weather: CLEAR		Well Volume (gal) (A*(C-B)): NA
	Pump placement: 19.00		Well Condition: NAADS PAINT		Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
		Well Pumps Continously									
		NO PURGING Required									

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		3	125ml Plastic	NA	Y		Perchlorate

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW06-090723 Sample Time: 1205

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334898

LOCATION	Site: LHAAP - 17	Location ID: 130	Date: 9/7/23
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 8.39
	Total Well Depth (ft) (C): 25.48	Water Column Thickness (ft) (C-B): 17.09	2nd Depth to Water(pre-purge): 8.39
	Screened Interval: 10.57 - 25.57	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 2.73
	Pump placement: 18.07	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
9/7/23	0700	8.46	0.13	100	24.35	5.85	3.04	0.67	33.7	-26	
	0705	8.52	0.26	100	23.20	4.20	3.18	0.21	29.5	-6	
	0710	8.56	0.34	100	22.88	3.92	3.12	0.05	27.8	-5	
	0715	8.58	0.52	100	22.82	3.90	3.11	0.05	27.4	-4	
	0720	8.60	0.65	100	22.76	3.89	3.11	0.04	26.7	-4	
	0725	8.61	0.78	100	22.71	3.88	3.10	0.04	26.2	-4	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

No. Containers/Volume/Type

			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 130-090723

Sample Time: 0725

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334899

LOCATION	Site: LHAAP - 17		Location ID: 17WW01		Date: 12/4/23
	Project Name: LHAAP		Project No./Phase: MSC2020.0016.0002.0022		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"		Unit Casing Volume (gal/lin ft) (A): 0.652		Initial Depth to Water (ft) (B): 10.63
	Total Well Depth (ft) (C): 33.71		Water Column Thickness (ft) (C-B): 23.08		2nd Depth to Water(pre-purge): 10.63
	Screened Interval: 13.80 - 23.80		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 15.05
	Pump placement: 28.00		Well Condition: NEED PAINT		Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
12/4/23	0905	10.70	0.13	100	15.53	6.32	4.43	0.93	77.5	-3	
	0910	10.76	0.26	100	17.49	6.23	4.42	0.60	69.3	-16	
	0915	10.80	0.39	100	17.88	6.19	4.42	0.33	65.9	-20	
	0920	10.82	0.52	100	17.94	6.18	4.42	0.32	65.4	-20	
	0925	10.84	0.65	100	17.99	6.18	4.43	0.32	64.8	-21	
↓	0930	10.85	0.78	100	18.05	6.18	4.43	0.31	64.2	-21	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	3	125ml PLASTIC	NA	Y		PERCHLORATE

Sample ID: 17WW01-120423 Sample Time: 0930

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334900

LOCATION	Site: LHAAP - 17	Location ID: 17WW02	Date: 12/4/23
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA	Water Column Thickness (ft) (C-B): NA	2nd Depth to Water(pre-purge): NA
	Screened Interval: 15.00-25.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): NA
	Pump placement: 20.00	Well Condition: [redacted] NEEDS PAINT	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
		Well Pumps Continously									
		NO PURGING REQUIRED									

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml Plastic	NA	Y		Perchlorate

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW02_120423 Sample Time: 0940

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334901

LOCATION	Site: LHAAP - 17	Location ID: 17WW03	Date: 12/4/23
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 10.28
	Total Well Depth (ft) (C): 32.02	Water Column Thickness (ft) (C-B): 21.74	2nd Depth to Water(pre-purge): 10.28
	Screened Interval: 22.00 - 32.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 14.17
	Pump placement: 27.00	Well Condition: ~~GOOD~~ NEED PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
12/4/23	0820	10.35	0.13	100	14.15	7.24	3.65	0.87	60.7	-36	
↓	0825	10.40	0.26	100	16.53	6.45	3.56	0.49	57.0	-44	
	0830	10.44	0.39	100	16.89	6.34	3.52	0.26	55.8	-48	
	0835	10.46	0.52	100	16.95	6.33	3.52	0.25	55.3	-48	
	0840	10.48	0.65	100	17.01	6.32	3.52	0.25	54.6	-49	
↓	0845	10.50	0.78	100	17.07	6.32	3.52	0.24	54.1	-49	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml PLASTIC	HCL	N		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW03_120423 Sample Time: 0845

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334902

LOCATION	Site: LHAAP - 17	Location ID: 17WW06	Date: 12/4/23
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA	Water Column Thickness (ft) (C-B): NA	2nd Depth to Water(pre-purge): NA
	Screened Interval: 14.00-24.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): NA
	Pump placement: 19.00	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
			WELL PUMPS CONTINUOUSLY								
			NO PURGING REQUIRED								

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria										
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%							
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%							
	Cond	+/- 10%	ORP	+/- 10	Sample ID: 17WW06_120423				Sample Time: 0945		

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334903

LOCATION	Site: LHAAP - 17	Location ID: 130	Date: 12/4/23
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 8.72
	Total Well Depth (ft) (C): 25.51	Water Column Thickness (ft) (C-B): 16.79	2nd Depth to Water(pre-purge): 8.72
	Screened Interval: 10.57 - 25.57	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 2.69
	Pump placement: 18.07	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
12/4/23	0735	8.80	0.13	100	13.15	7.49	3.43	1.88	28.7	85	
↓	0740	8.86	0.26	100	14.39	7.07	3.35	1.73	25.9	60	
	0745	8.90	0.39	100	14.48	7.00	3.24	1.63	24.7	46	
	0750	8.92	0.52	100	14.54	6.99	3.23	1.61	24.3	45	
	0755	8.94	0.65	100	14.59	6.99	3.22	1.60	23.6	44	
↓	0800	8.95	0.78	100	14.64	6.99	3.22	1.59	23.2	43	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		2	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria									
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%						
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%						
	Cond	+/- 10%	ORP	+/- 10	Sample ID: 130-120423				Sample Time: 0800	

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 17	Location ID: 17WW01	Date: 3/4/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 8.71
	Total Well Depth (ft) (C): 33.67	Water Column Thickness (ft) (C-B): 24.96	2nd Depth to Water(pre-purge): 8.71
	Screened Interval: 13.80-33.80	Weather: CLOUDY	Well Volume (gal) (A*(C-B)): 16.27
	Pump placement: 28.00	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
3/4/24	0820	8.77	0.13	100	18.51	3.92	3.35	0.79	181	75	
	0825	8.82	0.26	100	18.72	3.83	3.35	0.42	172	80	
	0830	8.85	0.39	100	18.82	3.93	3.35	0.29	169	81	
	0835	8.88	0.52	100	18.86	3.94	3.35	0.28	167	81	
	0840	8.90	0.65	100	18.90	3.95	3.36	0.27	166	82	
↓	0845	8.92	0.78	100	18.94	3.95	3.36	0.27	165	82	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125ml Plastic	NA	Y		PERCHLORATE

Sample ID: 17WW01-030424 Sample Time: 0845

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334905

LOCATION	Site: LHAAP - 17	Location ID: 17WW02	Date: 3/4/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA	Water Column Thickness (ft) (C-B): NA	2nd Depth to Water(pre-purge): NA
	Screened Interval: 15.00 - 25.00	Weather: CLOUDY	Well Volume (gal) (A*(C-B)): NA
	Pump placement: 20.00	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)

PUMPS RUNS CONTINUOUSLY

NO PURGING REQUIRED

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		2	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria									
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%						
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%						
	Cond	+/- 10%	ORP	+/- 10	Sample ID: 17WW02-030424				Sample Time: 0855	

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334906

LOCATION	Site: LHAAP - 17	Location ID: 17WW03	Date: 3/4/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 8.52
	Total Well Depth (ft) (C): 32.02	Water Column Thickness (ft) (C-B): 23.50	2nd Depth to Water(pre-purge): 8.52
	Screened Interval: 22.00-32.00	Weather: CLOUDY	Well Volume (gal) (A*(C-B)): 15.32
	Pump placement: 27.00	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
3/4/24	0740	8.58	0.13	100	17.88	5.42	2.59	0.80	190	-19	
	0745	8.63	0.26	100	17.95	5.94	2.87	0.51	187	-48	
	0750	8.67	0.39	100	18.09	6.00	2.93	0.34	184	-58	
	0755	8.69	0.52	100	18.15	6.00	2.95	0.33	183	-59	
	0800	8.71	0.65	100	18.20	6.01	2.96	0.33	182	-60	
	0805	8.73	0.78	100	18.25	6.01	2.96	0.32	181	-60	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW03_030424 Sample Time: 0805

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 17	Location ID: 17WW06	Date: 3/4/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS, 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA	Water Column Thickness (ft) (C-B): NA	2nd Depth to Water(pre-purge): NA
	Screened Interval: 14.00 - 24.00	Weather: CLOUDY	Well Volume (gal) (A*(C-B)): NA
	Pump placement: 19.00	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
		WELL RUNS CONTINUOUSLY									
		NO PURGING REQUIRED									

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		3	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW06_030424 Sample Time: 0905

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

LOCATION	Site: LHAAP - 17	Location ID: 130	Date: 3/4/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 6.73
	Total Well Depth (ft) (C): 25.50	Water Column Thickness (ft) (C-B): 18.77	2nd Depth to Water(pre-purge): 6.73
	Screened Interval: 10.57 - 25.57	Weather: CLOUDY	Well Volume (gal) (A*(C-B)): 3.00
	Pump placement: 18.07	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
3/4/24	0700	6.80	0.13	100	18.58	5.75	0.660	1.37	75.5	193	
	0705	6.86	0.26	100	17.63	6.31	0.605	1.24	69.9	171	
	0710	6.90	0.39	100	17.57	6.65	0.605	1.17	67.8	155	
	0715	6.92	0.52	100	17.54	6.67	0.605	1.16	67.3	153	
	0720	6.94	0.65	100	17.50	6.69	0.604	1.15	66.6	151	
	0725	6.96	0.78	100	17.47	6.70	0.604	1.14	66.1	150	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125ml Plastic	NA	Y		PERCHLORATE

Sample ID: 130_030424 Sample Time: 0725

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

013349O9

LOCATION	Site: LHAAP - 17	Location ID: 17WW01	Date: 6/21/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 7.41
	Total Well Depth (ft) (C): 33.73	Water Column Thickness (ft) (C-B): 26.32	2nd Depth to Water(pre-purge): 7.41
	Screened Interval: 13.80 - 33.80	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 17.16
	Pump placement: 28.00	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
6/21/24	0825	7.47	0.13	100	22.38	6.80	3.32	0.83	99.7	-53	
	0830	7.52	0.26	100	22.04	6.50	3.29	0.34	91.3	-55	
	0835	7.55	0.39	100	21.69	6.45	3.30	0.15	87.4	-55	
	0840	7.58	0.52	100	21.64	6.44	3.30	0.15	86.5	-55	
	0845	7.60	0.65	100	21.58	6.44	3.31	0.14	85.8	-56	
	0850	7.62	0.78	100	21.53	6.44	3.31	0.14	85.2	-56	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		2	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria										
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%							
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%							
	Cond	+/- 10%	ORP	+/- 10	Sample ID: 17WW01_062124				Sample Time: 0850		

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334910

LOCATION	Site: LHAAP - 17	Location ID: 17WW02	Date: 6/21/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA	Water Column Thickness (ft) (C-B): NA	2nd Depth to Water(pre-purge): NA
	Screened Interval: 15.00-25.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): NA
	Pump placement: NA	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
		NO PUMPING REQUIRED									
		WELL PUMPS CONTINUOUSLY									

Colorimeter Results				
Time	Analyte	Dilution	Result	Units

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125 ml Plastic	NA	Y		PERCHLORATE

Sample ID: 17WW02-062124 Sample Time: 0900

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334911

LOCATION	Site: LHAAP - 17	Location ID: 17WW03	Date: 6/21/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 7.38
	Total Well Depth (ft) (C): 32.02	Water Column Thickness (ft) (C-B): 24.64	2nd Depth to Water(pre-purge): 7.38
	Screened Interval: 22.00 - 32.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 16.07
	Pump placement: 27.00	Well Condition: HEADS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
6/21/24	0745	7.45	0.13	100	21.73	5.90	1.87	0.70	177	-9	
	0750	7.51	0.26	100	21.31	6.21	3.15	0.27	159	-47	
	0755	7.55	0.39	100	21.12	6.39	3.25	0.20	150	-58	
	0800	7.57	0.52	100	21.06	6.41	3.26	0.19	148	-60	
	0805	7.59	0.65	100	21.00	6.43	3.27	0.19	147	-61	
	0810	7.61	0.78	100	20.96	6.44	3.27	0.19	146	-62	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		3	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW03_062124 Sample Time: [redacted] 0810

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334912

LOCATION	Site: LHAAP - 17	Location ID: 17WW06	Date: 6/21/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): NA
	Total Well Depth (ft) (C): NA	Water Column Thickness (ft) (C-B): NA	2nd Depth to Water(pre-purge): NA
	Screened Interval: 14.00 - 24.00	Weather: CLEAR	Well Volume (gal) (A*(C-B)): NA
	Pump placement: NA	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
			NO PUMPING REQUIRED								
			WELL PUMPS CONTINUOUSLY								

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 17WW06-062124 Sample Time: 0910

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01334913

LOCATION	Site: LHAAP - 17	Location ID: 130	Date: 6/21/24
	Project Name: LHAAP	Project No./Phase: MSC2020.0016.0002.0022	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 5.63
	Total Well Depth (ft) (C): 25.51	Water Column Thickness (ft) (C-B): 19.88	2nd Depth to Water(pre-purge): 5.63
	Screened Interval: 10.57 - 25.57	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 3.18
	Pump placement: 18.07	Well Condition: NEEDS PAINT	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
6/21/24	0705	5.70	0.13	100	23.11	7.14	0.206	0.79	551	52	
	0710	5.75	0.26	100	22.05	6.33	0.208	0.31	520	35	
	0715	5.79	0.39	100	21.48	5.85	0.218	0.25	513	39	
	0720	5.81	0.52	100	21.43	5.85	0.218	0.24	511	39	
	0725	5.83	0.65	100	21.37	5.84	0.218	0.23	509	40	
	0730	5.84	0.78	100	21.31	5.83	0.219	0.23	507	40	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 130_062124 Sample Time: 0730

APPENDIX C
QUALITY CONTROL SUMMARY REPORTS

This page intentionally left blank.

QUALITY CONTROL SUMMARY REPORT

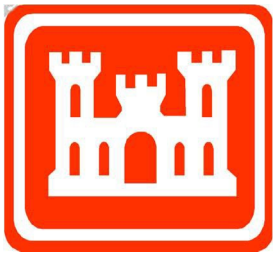
LHAAP 17

LONGHORN ARMY AMMUNITION PLANT

KARNACK, TEXAS

Prepared For:





U.S. Army Corps of Engineers

Prepared By:

bhate

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

September 2024

Table of Contents

1 INTRODUCTION 1
1.1 Intended Use of Data 1
1.2 Preservation and Holding Times 1
1.3 Calibrations 1
1.3.1 Continuing Calibration Verifications (CCV) 1
1.4 Blanks 1
1.5 Laboratory Control Sample(LCS)/Laboratory Control Sample Duplicate(LCSD) 2
1.6 Matrix Spike (MS)/Matrix Spike Duplicate Sample (MSD) 2
1.7 Internal Standards 2
1.8 Field Precision 2
2 DATA USABILITY SUMMARY 2

List of Tables

Table 1: Field Sample Identification and Laboratory Identification
Table 2: Qualified Analytical Data
Table 3: Completeness by Method

1 INTRODUCTION

Bhate reviewed four data packages from ALS Environmental, Houston, Texas. Water samples were collected September 7th and December 4th, 2023 and March 3rd and June 21st, 2024 from Site LHAAP 17 for quarterly perchlorate monitoring at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. Data were reviewed for conformance to the requirements of the following guidance documents: *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, November 2020) and the *Final Basewide Uniform Federal Policy (UFP) – Quality Assurance Project Plan (QAPP) Longhorn Army Ammunition Plant* (Bhate, May 2018).

1.1 Intended Use of Data

Analysis included:

- SW6850 – Perchlorate by LC/MS/MS

Table 1 lists the sample identification numbers (IDs) and their associated laboratory package.

Table 2 lists qualified results with the associated quality control parameter that was exceeded.

The following narrative is a brief synopsis of the quality control data.

1.2 Preservation and Holding Times

Sample identification data were evaluated for agreement with the chain-of-custody (COC). All samples were received in appropriate containers, within the proper temperature range, in good condition, and with the required signatures.

1.3 Calibrations

All analytes reported must be present in the initial and continuing calibration. The calibrations must meet the acceptance criteria specified in Worksheet 24 (Analytical Instrument Calibration) of the QAPP. All results reported must be within the calibration range. Samples were diluted, if necessary, to bring analyte responses within the calibration range.

All calibrations met the method criteria.

1.3.1 Continuing Calibration Verifications (CCV)

The continuing calibration verification (CCV) acceptance criteria are specified in Worksheet 24 of the project-specific QAPP. For perchlorate, the methods criteria are if the CCV is outside ±15% difference (%D) the lab will reanalyze all samples since last acceptable CCV; 20% for volatile organic compounds (VOCs) and explosives. If reanalysis cannot be performed, all results in all samples since last acceptable CCV are qualified J or UJ.

All CCVs were within the acceptance criteria.

1.4 Blanks

If the sample result for an associated sample was non-detect or less than 5X (10X for common laboratory contaminants) the analyte concentration in the blank, the corresponding sample result

for the analyte was qualified UB. Where the sample result for the affected analyte was greater than 5X (10X) the amount in the blank, no qualifier was applied.

No compounds were detected in the blanks.

1.5 Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

LCS/LCSD recoveries were evaluated using limits defined for each method in Worksheet 15 of the project-specific QAPP.

All LCS/LCSD recoveries were within the control limits.

1.6 Matrix Spike (MS)/Matrix Spike Duplicate Sample (MSD)

MS/MSD recoveries were evaluated using limits defined in Worksheet 15 of the project-specific QAPP. When sample results were greater than 4x the spike amount, control limits were not applicable and require no qualification. Furthermore, if MS/MSD analyses were performed on a batched (unrelated) sample no qualification was made to the sample data.

No quality control discrepancies were reported.

1.7 Internal Standards.

When the percent recovery for an internal standard in a sample is outside the laboratory limits, the associated sample is qualified for the analytes associated with the internal standard(s) outside of the acceptance criteria.

Internal standard recoveries were within the acceptance criteria.

1.8 Field Precision

Precision is the measure of variability of individual sample measurements. Evaluation of field duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD limits were set at <30% for groundwater matrices.

The RPDs were within control limits.

2 DATA USABILITY SUMMARY

The data are usable for the intended purposes of the project (see **Table 3**). The data quality objectives have been met for the project.

Table 1: Field Sample Identification and Laboratory Identification

Client Sample ID	Laboratory Package	SW6850
130_090723	E2300814-001	X
17WW03_090723	E2300814-002	X
17WW01_090723	E2300814-003	X
17WW02_090723	E2300814-004	X
17WW02_090723_a	E2300814-005	X
17WW06_090723	E2300814-006	X
130_120423	E2301147-001	X
130_120423_a	E2301147-002	X
17WW03_120423	E2301147-003	X
17WW01_120423	E2301147-004	X
17WW02_120423	E2301147-005	X
17WW06_120423	E2301147-006	X
130_030424	E2400216-001	X
17WW03_030424	E2400216-002	X
17WW01_030424	E2400216-003	X
17WW02_030424	E2400216-004	X
17WW02_030424_a	E2400216-005	X
17WW06_030424	E2400216-006	X
130_062124	HS24061405-01	X
17WW03_062124	HS24061405-02	X
17WW01_062124	HS24061405-03	X
17WW01_062124_A	HS24061405-04	X
17WW02_062124	HS24061405-05	X
17WW06_062124	HS24061405-06	X
The March samples were collected on the 3rd but the sample IDs list March 4th.		

T

Table 2: Qualified Analytical Data

Client Sample ID	Laboratory Package	Analyte Name	Data Validation Qualifier (µg/L)	Reason for Qualification
No data were flagged due to QC discrepancies				

Table 3: Completeness by Method

Method	No. of Rejected Results	% Completeness
SW6850	0	100
SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.		

APPENDIX D
LABORATORY DATA PACKAGES

This page intentionally left blank.

September 14, 2023 Service Request No:E2300814

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP / Site 17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory September 08, 2023
For your reference, these analyses have been assigned our service request number **E2300814.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

H Kelany

Hussam Kelany
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Bhate Environmental Associates, Inc.	**Service Request No.:**	E2300814
Project:	LHAAP / Site 17	**Date Received:**	09/08/23
Sample Matrix:	Ground Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six samples were received for analysis at ALS Environmental in Houston on 09/08/23.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2300447: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined on an unrelated sample in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: Bhate Environmental Associates, Inc. **Service Request:**E2300814

Project: LHAAP / Site 17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2300814-001	130_090723	9/7/2023	0725
E2300814-002	17WW03_090723	9/7/2023	0810
E2300814-003	17WW01_090723	9/7/2023	0855
E2300814-004	17WW02_090723	9/7/2023	1155
E2300814-005	17WW02_090723_a	9/7/2023	1155
E2300814-006	17WW06_090723	9/7/2023	1205

Service Request Summary

01334928

8 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-AirArch 1

Pressure Gas:

Folder #: **E2300814**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 09/08/23
Internal Due Date: 9/15/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2300814-001	130_090723	Ground Water	09/07/23 0725	**IV**
E2300814-002	17WW03_090723	Ground Water	09/07/23 0810	**IV**
E2300814-003	17WW01_090723	Ground Water	09/07/23 0855	**IV**
E2300814-004	17WW02_090723	Ground Water	09/07/23 1155	**IV**
E2300814-005	17WW02_090723_a	Ground Water	09/07/23 1155	**IV**
E2300814-006	17WW06_090723	Ground Water	09/07/23 1205	**IV**

Service Request Summary

01334929

8 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-AirArch 1

Pressure Gas:

Folder #: **E2300814**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 09/08/23
Internal Due Date: 9/15/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	1	ms/msd level IV due 9/22
Semivoa GCMS	ClO4 DOD/6850	5	level IV due 9/22

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of 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.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

Data Qualifiers

Lab Standard

M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.
S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793_2024	5/27/2024
Arkansas Department of Environmental Quality	88-00356	3/27/2024
California State Environmental Laboratory Accreditation Program	2919	4/30/2024
Department of Defense	L23-358	5/31/2025
Department of Defense	L22-90	3/31/2024
Florida Department of Health	E87611-38	6/30/2024
Illinois Environmental Protection Agency	2000322023-11	6/30/2024
Kansas Department of Health and Environment	E-10352 2023-2024	7/31/2024
Louisiana Department of Environmental Quality	03087-2023	6/30/2024
Louisiana Department of Health and Hospitals	LA028-2023	12/31/2023
Maine Department of Health and Human Services	2022017	6/5/2024
Maryland Department of the Environment	343-2023	6/30/2024
Michigan Depratment of Environmental Quality	9971-2023	4/30/2024
Minnesota Department of Health	2368363	12/31/2023
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2024
Nevada Division of Environmental Protection	TX026932024-1	7/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209423	4/24/2024
New Jersey Department of Environmental Protection	TX008-2024	6/30/2024
New York Department of Health	11707	3/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-011	5/15/2024
Pennsylvania Department of Environmental Protection	68-03441-017	6/30/2024
Perry Johnson Laboratory Accreditation	L22-91	3/31/2024
Tennessee Department of Environment and Concervation	TN04016-2023	4/30/2024
Texas Commision on Environmental Quality	T104704231-23-30	4/30/2024
Utah Department of Health Environmental Laboratory Certification	TX026932023-14	7/31/2024
Washington Department of Ecology	C819-22	11/14/2023

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1): ____

LIMS Number: ____

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	PERCHLORATE	Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
130_090723	07Sep2023	0725	-	N		WG	1	X				
17ww03_090723	07Sep2023	0810	-	N		WG	1	X				
17wwo1_090723	07Sep2023	0855	-	N		WG	1	X				
17wwo2_090723	07Sep2023	1155		N		WG	1	X				
17wwo2_090723_e	07Sep2023	1155		FD		WG	1	X				
17wwo6_090723	07Sep2023	1205	-	N		WG	1	X				
17wwo6_090723_ms	07Sep2023	1205	-	MS		WG	1	X				
17wwo6_090723_msD	07Sep2023	1205	-	SD		WG	1	X				
			-									
			-									
			-									

COMMENTS: Standard TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	9/7/23	1330	1.	9.8.23	0947
2.			2.		
3.			3.		

SUSPECT REX 1.2°

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

ALS Environmental

Cooler Receipt Form

Project Chemist LL

Client/Project B

Thermometer ID 1231

Date/Time Received: 9-8-23 Initials: CJ

Date/Time Logged in: 9-8-23 Initials CJ

1. Method of delivery: ○ US Mail ⊗ Fed Ex ○ UPS ○ DHL ○ Courier ○ Client

2. Samples received in: ⊗ Cooler ○ Box ○ Envelope ○ Other

3. Were custody seals on coolers? ⊗ Yes ○ No

If yes, how many and where? 1-F

Were they intact? ⊗ Yes ○ No ○ N/A

Were they signed and dated? ⊗ Yes ○ No ○ N/A

4. Packing Material: ○ Inserts ⊗ Baggies ○ Bubble Wrap ○ Gel Packs ⊗ Wet Ice ○ Sleeves ○ Other

5. Foreign or Regulated Soil? ○ Yes ○ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
5300 5226 2844		9-8-23	0945	CJ	1.1	☒
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ⊗ Yes ○ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ⊗ Yes ○ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ⊗ Yes ○ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ⊗ Yes ○ No

10. Did sample labels and tags agree with custody documents? ⊗ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label:

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Preparation Information Benchsheet

01334939

Prep Run#: 426475 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** **Prep Date/Time:** 9/14/23 08:10

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2300814-001	130_090723	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2300814-002	17WW03_090723	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2300814-003	17WW01_090723	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2300814-004	17WW02_090723	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2300814-005	17WW02_090723_a	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2300814-006	17WW06_090723	.02	6850/ClO4 DOD			Ground Water	10mL	
7	E2300826-001	LH18/24-SP650_091223_BIX	.01	6850/ClO4 DOD			Water	10mL	
8	E2300826-002	LH18/24-SP650_091223_AIX	.01	6850/ClO4 DOD			Water	10mL	
9	E2300827-001	LH18/24-SP650_091223_AIX	.01	6850/ClO4 DOD			Water	10mL	
10	E2300828-001	LH18/24-SP140_091223	.01	6850/ClO4 DOD			Water	10mL	
11	EQ2300447-01	MB		6850/ClO4			Liquid	10mL	
12	EQ2300447-02	LCS		6850/ClO4			Liquid	10mL	
13	EQ2300447-03	DLCS		6850/ClO4			Liquid	10mL	
14	EQ2300447-04	17WW06_090723 MS	.02	6850/ClO4 DOD			Liquid	10mL	
15	EQ2300447-05	17WW06_090723 DMS	.02	6850/ClO4 DOD			Liquid	10mL	
16	K2310104-001	LGAC-INF-091123	.01	6850/ClO4			Water	10mL	
17	K2310104-002	LGAC-INT1-091123	.01	6850/ClO4			Water	10mL	
18	K2310104-003	LGAC-INT2-091123	.01	6850/ClO4			Water	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 230342 Logbook Ref: Perchlorate (1st Source) Expires On: 03/07/2024

EQ2300447-02	1.00µL	EQ2300447-02	1.00µL	EQ2300447-03	1.00µL	EQ2300447-03	1.00µL	EQ2300447-04	1.00µL	EQ2300447-05	1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 230372 Logbook Ref: Perchlorate Internal Standard Expires On: 04/30/2024

E2300814-001	100.00µL	E2300814-002	100.00µL	E2300814-003	100.00µL	E2300814-004	100.00µL	E2300814-005	100.00µL	E2300814-006	100.00µL
E2300826-001	100.00µL	E2300826-002	100.00µL	E2300827-001	100.00µL	E2300828-001	100.00µL	EQ2300447-01	100.00µL	EQ2300447-01	100.00µL
EQ2300447-02	100.00µL	EQ2300447-02	100.00µL	EQ2300447-03	100.00µL	EQ2300447-03	100.00µL	EQ2300447-04	100.00µL	EQ2300447-05	100.00µL
K2310104-001	100.00µL	K2310104-002	100.00µL	K2310104-003	100.00µL						

Preparation Materials

Water HPLC Grade	HPLC water 5/18/23CG (229315)	6850 Amber Glass screw vial	2mL Screw Top Vial (221894)	6850 0.45um syringe filters	6850 0.45 SYRING FILTER (229979)
6850 20mM amonium acetate in H2O	(230746)	6850 Luer-Lok Syringes	luer-lock syringes (228116)		

Preparation Information Benchsheet

01334940

Prep Run#: 426475 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/XMI **Prep Method:** **Prep Date/Time:** 9/14/23 08:10

Preparation Steps

Step: Preparation
Started: 9/14/23 08:10
Finished: 9/14/23 09:10
By: XMI
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 0725
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	130_090723	**Units:**	µg/L
Lab Code:	E2300814-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**1.36**		0.100	0.0500	0.0250	1	9/14/23	9/14/23 12:17	426475	817192	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 0810
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	17WW03_090723	**Units:**	µg/L
Lab Code:	E2300814-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.219**		0.100	0.0500	0.0250	1	9/14/23	9/14/23 12:22	426475	817192	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 0855
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	17WW01_090723	**Units:**	µg/L
Lab Code:	E2300814-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.398**		0.100	0.0500	0.0250	1	9/14/23	9/14/23 12:28	426475	817192	

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 1155
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	17WW02_090723	**Units:**	µg/L
Lab Code:	E2300814-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**6030**		50.0	25.0	12.5	500	9/14/23	9/14/23 12:33	426475	817192	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 1155
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	17WW02_090723_a	**Units:**	µg/L
Lab Code:	E2300814-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**6040**		50.0	25.0	12.5	500	9/14/23	9/14/23 12:39	426475	817192	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 1205
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	17WW06_090723	**Units:**	µg/L
Lab Code:	E2300814-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**71800**		500	250	125	5000	9/14/23	9/14/23 12:45	426475	817192	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2300447-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	9/14/23	9/14/23 10:51	426475	817192	

Accuracy & Precision

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300814
Project: LHAAP / Site 17 **Date Analyzed:** 9/14/23
Sample Matrix: Ground Water

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Units:** µg/L
Prep Method: **Basis:** NA

Extraction Lot: 426475

	Lab Control Sample EQ2300447-02			Duplicate Lab Control Sample EQ2300447-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.108	0.100	108	0.114	0.100	114	84 - 119	6	15

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

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

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300447-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.108**		0.100	0.0500	0.0250	1	9/14/23	9/14/23 11:26	426475	817192	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300447-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.114**		0.100	0.0500	0.0250	1	9/14/23	9/14/23 11:02	426475	817192	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/7/23
Sample Matrix:	Ground Water	**Date Received:**	9/8/23
		Date Analyzed:	9/14/23

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW06_090723	**Units:**	µg/L
Lab Code:	E2300814-006	**Basis:**	NA

Analytical Method: 6850

		17WW06_090723MS				17WW06_090723DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2300447-04				EQ2300447-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**		**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	71800	69600	0.100	-2226000#		69800	0.100	-1996000#		84 - 119	<1	15

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.

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 1205
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	17WW06_090723	**Units:**	µg/L
Lab Code:	EQ2300447-04	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**69600**		500	250	125	5000	9/14/23	9/14/23 12:50	426475	817192	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2300814
Project:	LHAAP / Site 17	**Date Collected:**	9/ 7/23 1205
Sample Matrix:	Ground Water	**Date Received:**	9/ 8/23
Sample Name:	17WW06_090723	**Units:**	µg/L
Lab Code:	EQ2300447-05	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**69800**		500	250	125	5000	9/14/23	9/14/23 12:56	426475	817192	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20230802

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: KN

ICAL Date: 8/2/2023
Cal. Std. xp: 03/07/2024
ICAL ID: EC2300012

Mobile Phases : **A:**20mM ammonium acetate in water 230388 **B:**Acetonitrile 229152

	Sample Name		File Name	Acquisition Method	Dilution	Comments	Date/Time
1	IB		2230802-001	Perchlorate6850c.lcm	1x		8/2/2023 13:05
2	IB		2230802-002	Perchlorate6850c.lcm	1x		8/2/2023 13:11
3	Perchlorate ICAL 1		2230802-003	Perchlorate6850c.lcm	1x	230373	8/2/2023 13:17
4	Perchlorate ICAL 2		2230802-004	Perchlorate6850c.lcm	1x	230375	8/2/2023 13:23
5	Perchlorate ICAL 3		2230802-005	Perchlorate6850c.lcm	1x	230376	8/2/2023 13:28
6	Perchlorate ICAL 4		2230802-006	Perchlorate6850c.lcm	1x	230377	8/2/2023 13:34
7	Perchlorate ICAL 5		2230802-007	Perchlorate6850c.lcm	1x	230378	8/2/2023 13:39
8	Perchlorate ICAL 6		2230802-008	Perchlorate6850c.lcm	1x	230379	8/2/2023 13:45
9	Perchlorate ICAL 7		2230802-009	Perchlorate6850c.lcm	1x	230380	8/2/2023 13:50
10	Perchlorate ICAL 8		2230802-010	Perchlorate6850c.lcm	1x	230381	8/2/2023 13:56
11	Perchlorate ICAL 9		2230802-011	Perchlorate6850c.lcm	1x	230382	8/2/2023 14:02
12	Perchlorate ICAL 10		2230802-012	Perchlorate6850c.lcm	1x	230383	8/2/2023 14:07
13	PerchlorateICV		2230802-013	Perchlorate6850c.lcm	1x	230385	8/2/2023 14:19

Initial Calibration - Detailed Report

Calibration ID: EC2300012 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2300012-01	Perchlorate ICAL 1	2230802-003	08/02/2023 13:17
02	EC2300012-02	Perchlorate ICAL 2	2230802-004	08/02/2023 13:23
03	EC2300012-03	Perchlorate ICAL 3	2230802-005	08/02/2023 13:28
04	EC2300012-04	Perchlorate ICAL 4	2230802-006	08/02/2023 13:34
05	EC2300012-05	Perchlorate ICAL 5	2230802-007	08/02/2023 13:39
06	EC2300012-06	Perchlorate ICAL 6	2230802-008	08/02/2023 13:45
07	EC2300012-07	Perchlorate ICAL 7	2230802-009	08/02/2023 13:50
08	EC2300012-08	Perchlorate ICAL 8	2230802-010	08/02/2023 13:56
09	EC2300012-09	Perchlorate ICAL 9	2230802-011	08/02/2023 14:02
10	EC2300012-10	Perchlorate ICAL 10	2230802-012	08/02/2023 14:07

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 2.086** **Average RF = 0.1475**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1428	02	0.5000	0.1421	03	0.7000	0.1457	04	1.0000	0.149
05	2.0000	0.1515	06	5.0000	0.1475	07	10.0000	0.1503	08	20.0000	0.1477
09	30.0000	0.1485	10	50.0000	0.1496						

Analyte

Perchlorate RSE = 2.09

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.0968	-3.2	02	0.5000	0.482	-3.6	03	0.7000	0.692	-1.2
04	1.0000	1.01	1.0	05	2.0000	2.05	2.7	06	5.0000	5.00	-0.0
07	10.0000	10.2	1.9	08	20.0000	20.0	0.2	09	30.0000	30.2	0.7
10	50.0000	50.7	1.4								

Initial Calibration Verification Summary Report

Calibration ID:	EC2300012	**Instrument ID:**	E-LCMS-01
Datafile ID:	2230802-013	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2300012-11	T	Average RF	10	10.670	ng/mL	6.7	<= 15

Insight Report

Printed at 8/3/2023 9:30:46 AM

Method File: I:\LCMS01\DATA\20230802\20230802ICAL.lcm
Project File: I:\LCMS01\DATA\20230802\no use\20230802ICAL.damlp

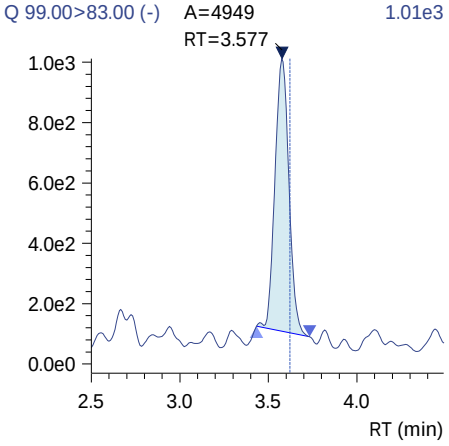
Perchlorate ICAL 1

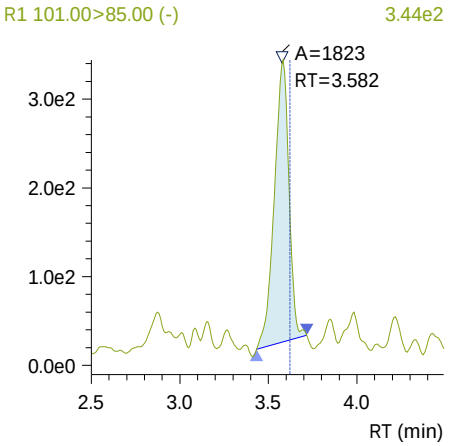
Sample ID: Perchlorate ICAL 1
Date Acquired: 8/2/2023 1:17:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-003.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.577	4949	346538	0.0968	ng/mL	101.00 >85.00	36.83	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.572	346538	346538	1.0000	ng/mL	----	----	

Perchlorate

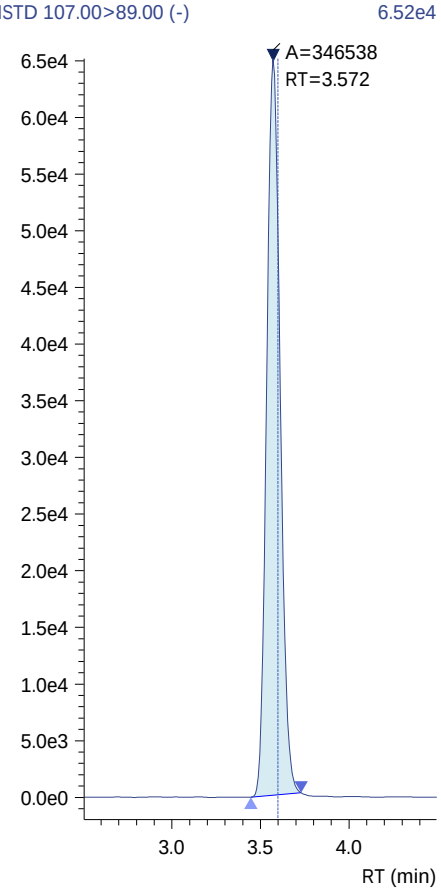
Conc 0.0968
R#1 36.83 (30.41)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

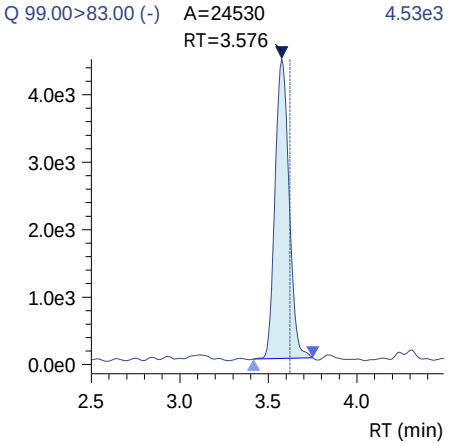
Perchlorate ICAL 2

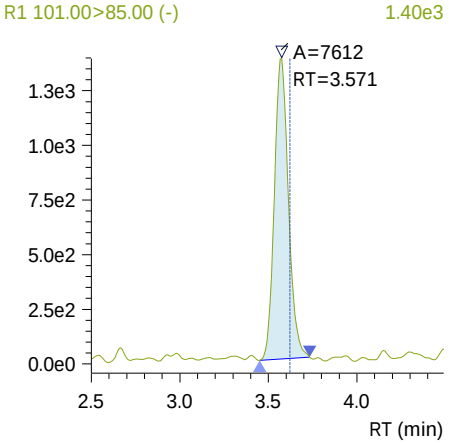
Sample ID: Perchlorate ICAL 2
Date Acquired: 8/2/2023 1:23:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-004.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.576	24530	345149	0.4820	ng/mL	101.00 >85.00	31.03	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.571	345149	345149	1.0000	ng/mL	----	----	

Perchlorate

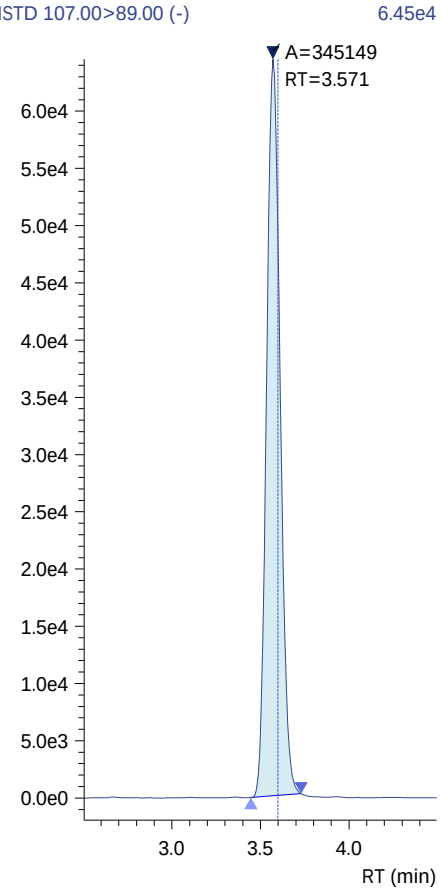
Conc 0.4820
R#1 31.03 (30.41)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

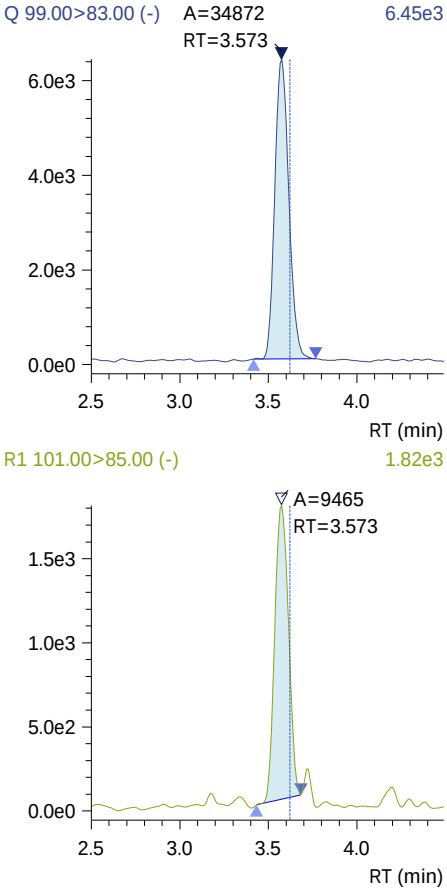
Perchlorate ICAL 3

Sample ID: Perchlorate ICAL 3
Date Acquired: 8/2/2023 1:28:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-005.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	34872	341974	0.6915	ng/mL	101.00 >85.00	27.14	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	341974	341974	1.0000	ng/mL	----	----	

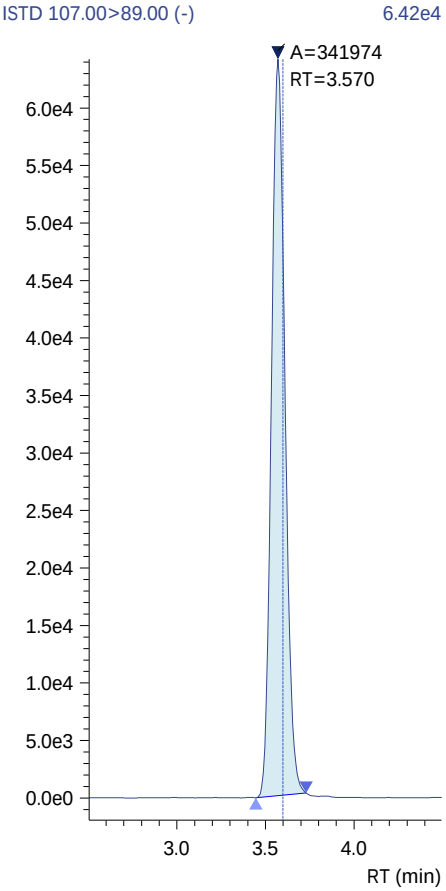
Perchlorate

Conc 0.6915
R#1 27.14 (30.41)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 4

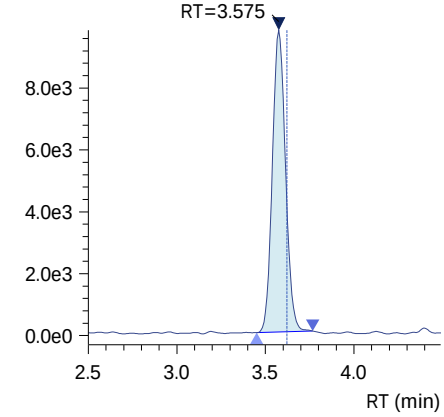
Sample ID: Perchlorate ICAL 4
Date Acquired: 8/2/2023 1:34:20 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-006.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.575	50483	338838	1.0104	ng/mL	101.00 >85.00	28.12	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	338838	338838	1.0000	ng/mL	----	----	

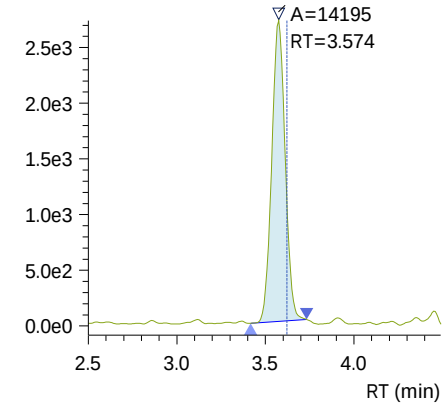
Perchlorate

Conc 1.0104
R#1 28.12 (30.41)

Q 99.00>83.00 (-) A=50483 RT=3.575 9.87e3



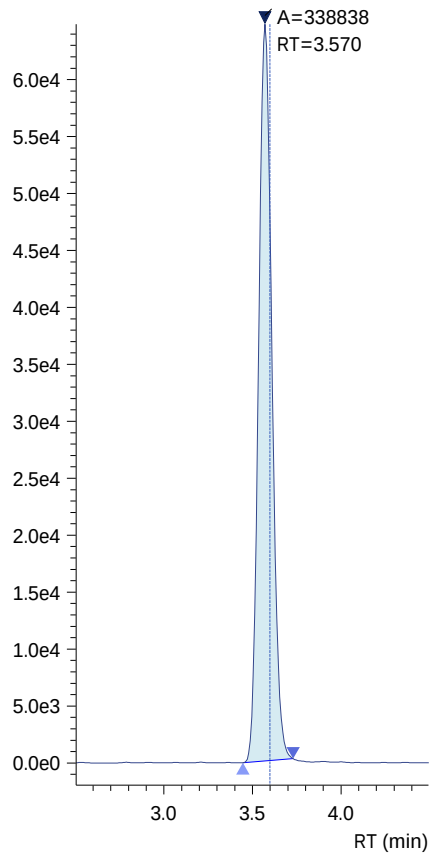
R1 101.00>85.00 (-) 2.74e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.49e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

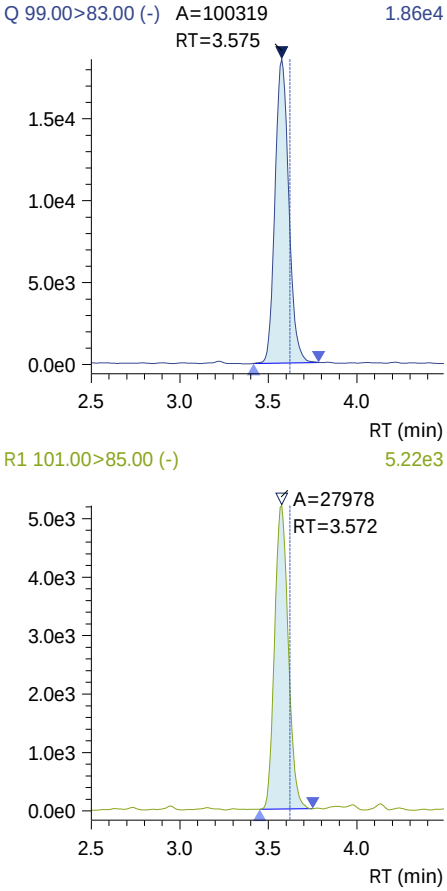
Perchlorate ICAL 5

Sample ID: Perchlorate ICAL 5
Date Acquired: 8/2/2023 1:39:51 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-007.lcd
Vial: 5 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.575	100319	331124	2.0545	ng/mL	101.00 >85.00	27.89	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	331124	331124	1.0000	ng/mL	----	----	

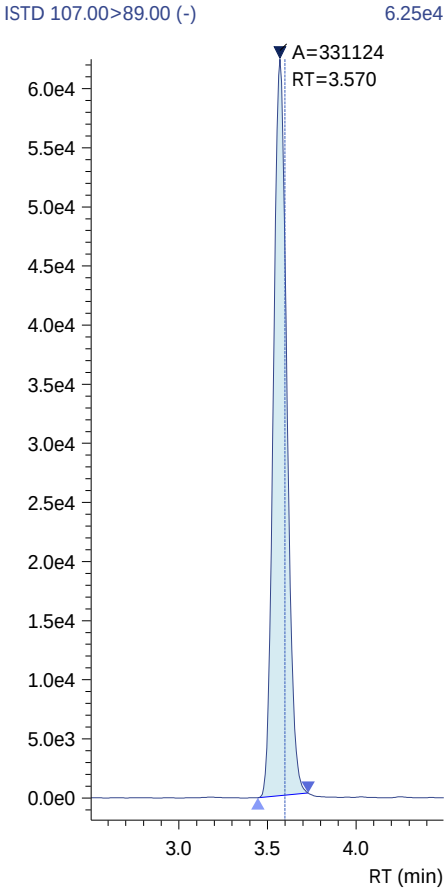
Perchlorate

Conc 2.0545
R#1 27.89 (30.41)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

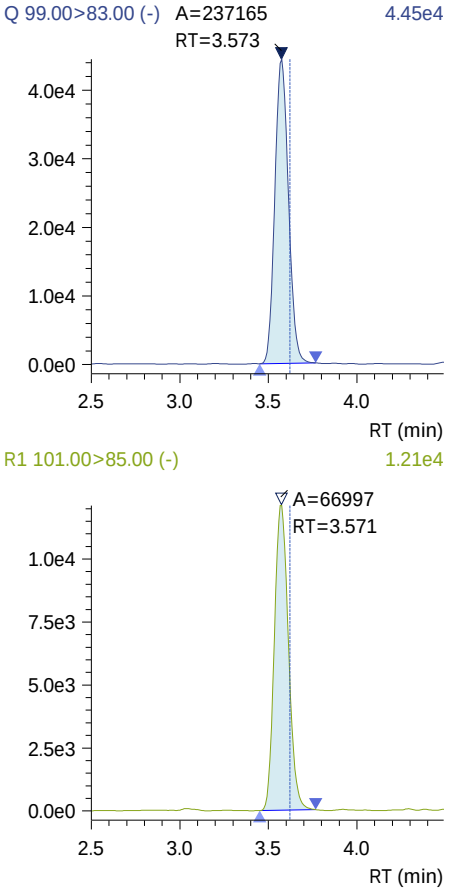
Perchlorate ICAL 6

Sample ID: Perchlorate ICAL 6
Date Acquired: 8/2/2023 1:45:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-008.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	237165	321666	5.0000	ng/mL	101.00 >85.00	28.25	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	321666	321666	1.0000	ng/mL	----	----	

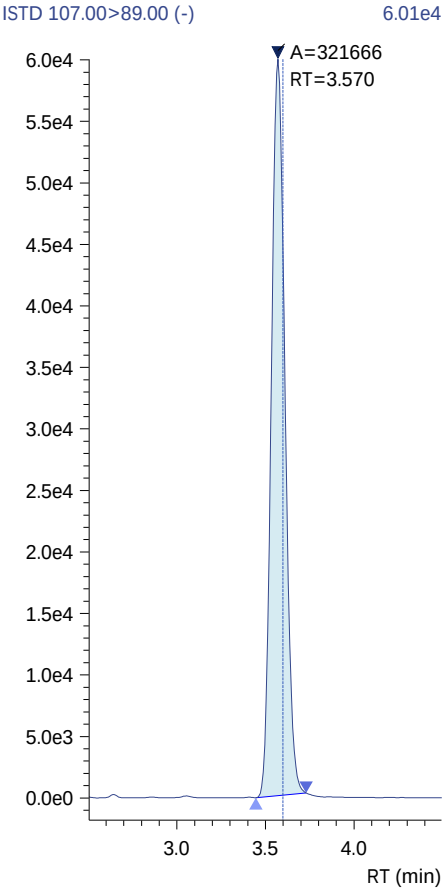
Perchlorate

Conc 5.0000
R#1 28.25 (30.41)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 7

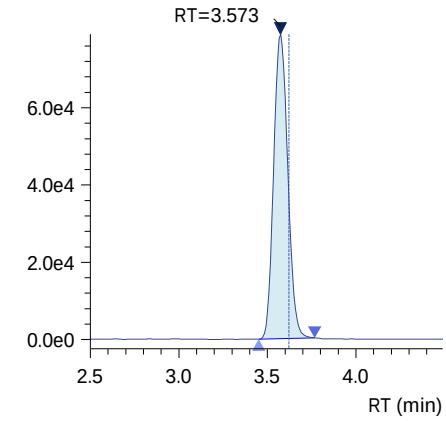
Sample ID: Perchlorate ICAL 7
Date Acquired: 8/2/2023 1:50:57 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-009.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	437614	291215	10.1905	ng/mL	101.00 >85.00	28.36	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.570	291215	291215	1.0000	ng/mL	----	----	

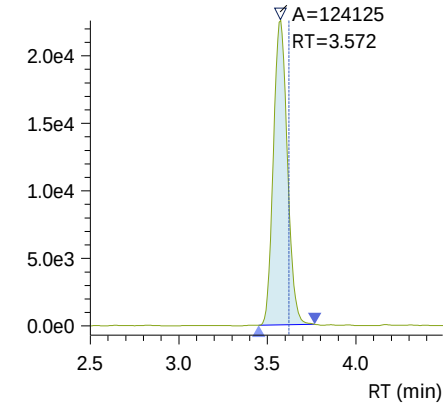
Perchlorate

Conc 10.1905
R#1 28.36 (30.41)

Q 99.00>83.00 (-) A=437614 7.90e4



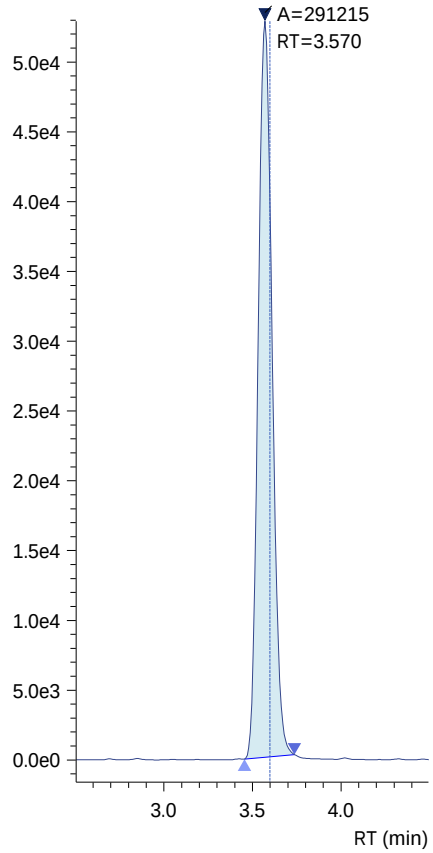
R1 101.00>85.00 (-) 2.26e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.29e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 8

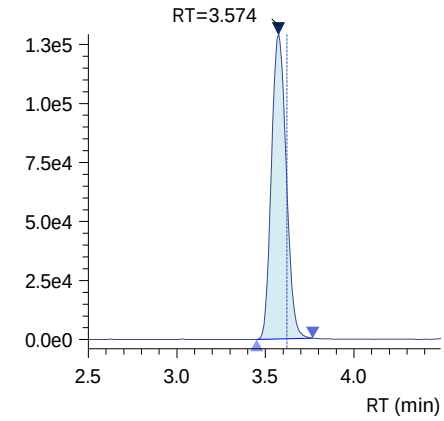
Sample ID: Perchlorate ICAL 8
Date Acquired: 8/2/2023 1:56:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-010.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.574	749856	253829	20.0336	ng/mL	101.00 >85.00	28.56	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.569	253829	253829	1.0000	ng/mL	----	----	

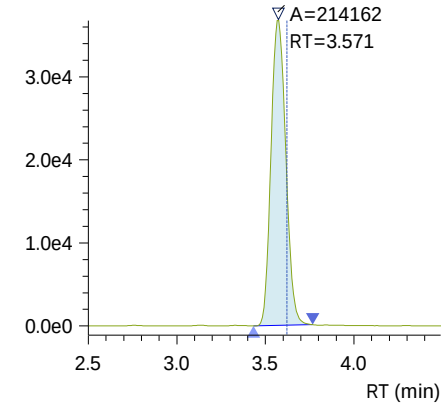
Perchlorate

Conc 20.0336
R#1 28.56 (30.41)

Q 99.00>83.00 (-) A=749856 1.29e5



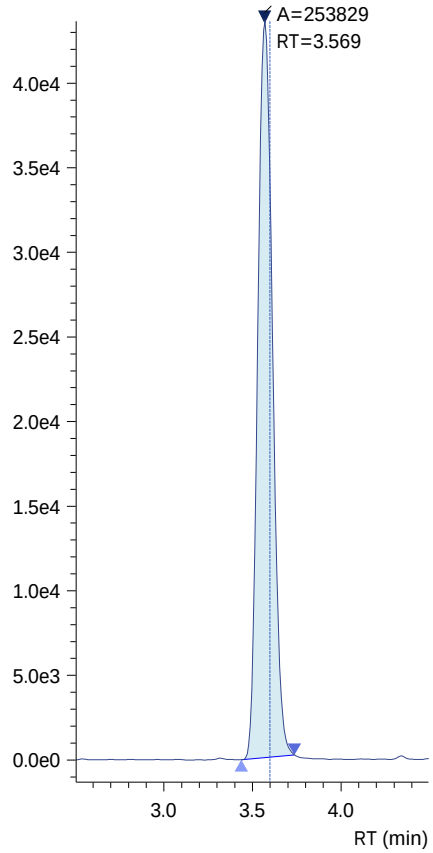
R1 101.00>85.00 (-) 3.68e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.37e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

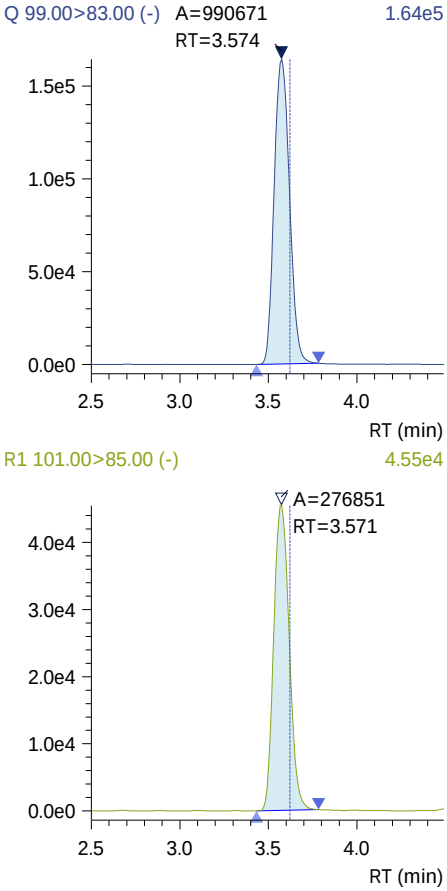
Perchlorate ICAL 9

Sample ID: Perchlorate ICAL 9
Date Acquired: 8/2/2023 2:02:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-011.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.574	990671	222379	30.2105	ng/mL	101.00 >85.00	27.95	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.568	222379	222379	1.0000	ng/mL	----	----	

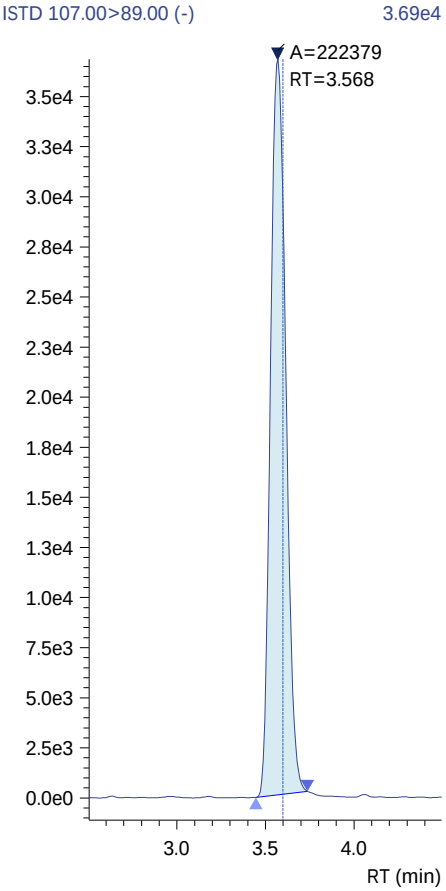
Perchlorate

Conc 30.2105
R#1 27.95 (30.41)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 10

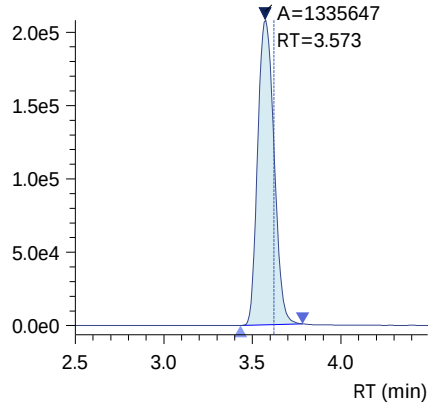
Sample ID: Perchlorate ICAL 10
Date Acquired: 8/2/2023 2:07:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-012.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	1335647	178573	50.72 20	ng/mL	101.00 >85.00	28.04	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.567	178573	178573	1.0000	ng/mL	----	----	

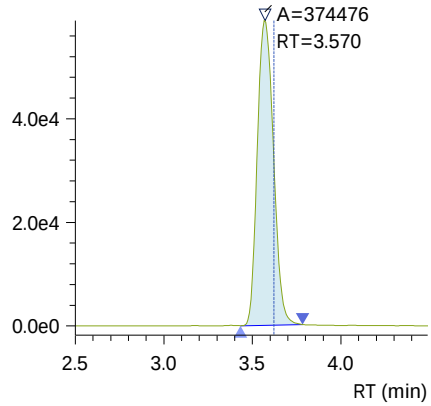
Perchlorate

Conc 50.7220
R#1 28.04 (30.41)

Q 99.00>83.00 (-) 2.08e5



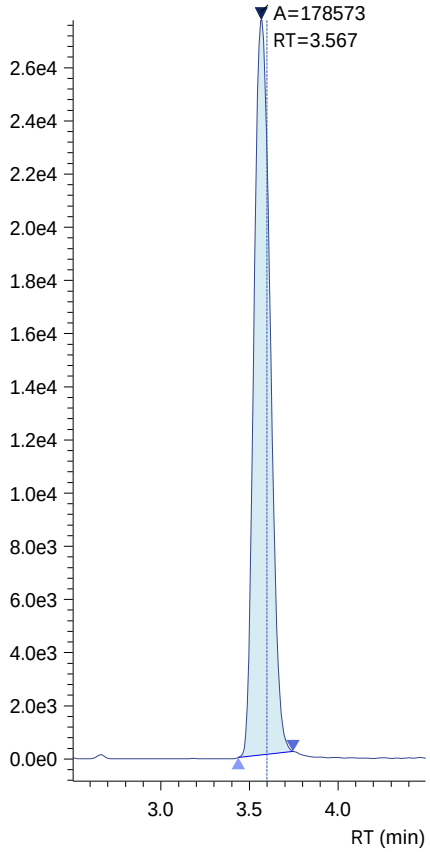
R1 101.00>85.00 (-) 5.90e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.78e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

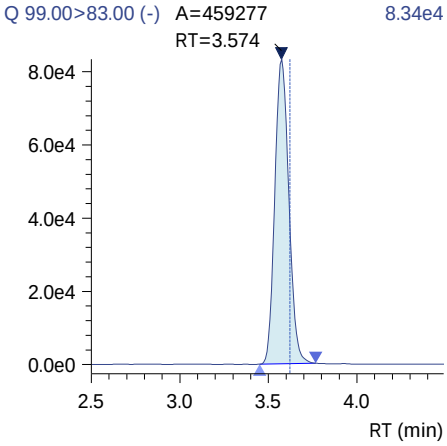
PerchlorateICV

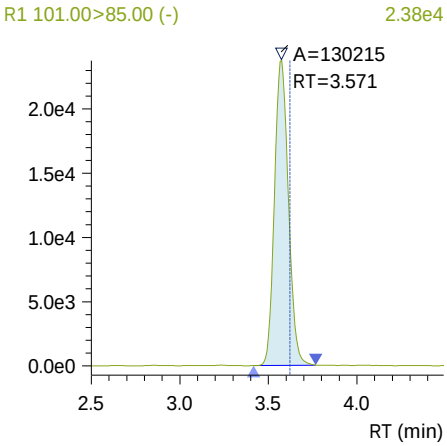
Sample ID: PerchlorateICV
Date Acquired: 8/2/2023 2:19:46 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-013.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.574	459277	291890	10.6703	ng/mL	101.00 >85.00	28.35	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.570	291890	291890	1.0000	ng/mL	----	----	

Perchlorate

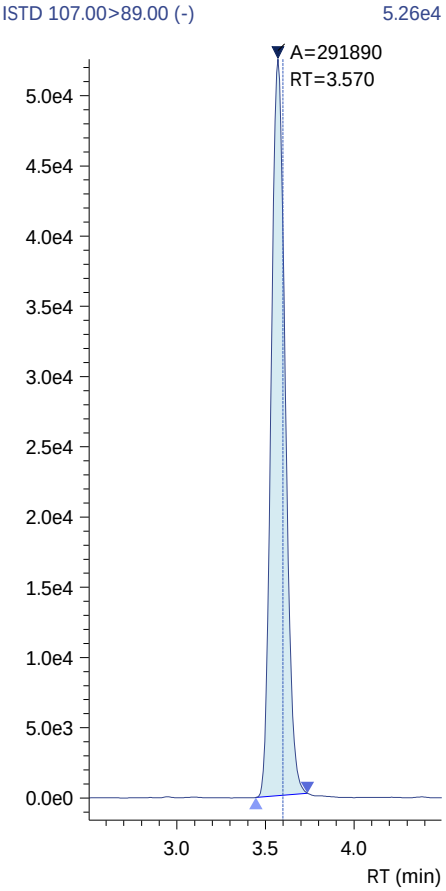
Conc 10.6703
R#1 28.35 (30.41)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20230914-817192

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: KN

ICAL Date: 8/2/2023
Cal. Std. xp: 02/02/2024
ICAL ID: EC2300012

Mobile Phases : **A:**20mM ammonium acetate in water 231240 **B:**Acetonitrile 229152

	Sample Name		File Name	Acquisition Method	Dilution	Comments	Date/Time
1	IB		2230914-001	Perchlorate6850c.lcm	1x		9/14/2023 9:58
2	LODV		2230914-002	Perchlorate6850c.lcm	1x	230386	9/14/2023 10:04
3	ICS		2230914-003	Perchlorate6850c.lcm	1x	32103051	9/14/2023 10:39
4	CCV		2230914-004	Perchlorate6850c.lcm	1x	230380	9/14/2023 10:44
5	EQ2300447-01		2230914-005	Perchlorate6850c.lcm	1x		9/14/2023 10:51
6	EQ2300447-03		2230914-007	Perchlorate6850c.lcm	1x		9/14/2023 11:02
7	EQ2300447-02		2230914-006	Perchlorate6850c.lcm	1x		9/14/2023 11:26
8	E2300826-001x5		2230914-008	Perchlorate6850c.lcm	5x		9/14/2023 11:32
9	E2300826-002		2230914-009	Perchlorate6850c.lcm	1x		9/14/2023 11:38
10	E2300827-001		2230914-010	Perchlorate6850c.lcm	1x		9/14/2023 11:43
11	E2300828-001x1k		2230914-011	Perchlorate6850c.lcm	1000x		9/14/2023 11:49
12	K2310104-001		2230914-012	Perchlorate6850c.lcm	1x		9/14/2023 11:54
13	K2310104-002		2230914-013	Perchlorate6850c.lcm	1x		9/14/2023 12:00
14	K2310104-003		2230914-014	Perchlorate6850c.lcm	1x		9/14/2023 12:05
15	CCV		2230914-015	Perchlorate6850c.lcm	1x	230380	9/14/2023 12:11
16	E2300814-001		2230914-016	Perchlorate6850c.lcm	1x		9/14/2023 12:17
17	E2300814-002		2230914-017	Perchlorate6850c.lcm	1x		9/14/2023 12:22
18	E2300814-003		2230914-018	Perchlorate6850c.lcm	1x		9/14/2023 12:28
19	E2300814-004x500		2230914-019	Perchlorate6850c.lcm	500x		9/14/2023 12:33
20	E2300814-005x500		2230914-020	Perchlorate6850c.lcm	500x		9/14/2023 12:39
21	E2300814-006x5k		2230914-021	Perchlorate6850c.lcm	5000x		9/14/2023 12:45
22	EQ2300447-04x5k		2230914-022	Perchlorate6850c.lcm	5000x		9/14/2023 12:50
23	EQ2300447-05x5k		2230914-023	Perchlorate6850c.lcm	5000x		9/14/2023 12:56
24	CCV		2230914-024	Perchlorate6850c.lcm	1x	230380	9/14/2023 13:07

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300814
Project: LHAAP / Site 17 **Date Analyzed:** 9/14/23 10:44

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20230914\2230914-004 **Lab Code:** EQ2300448-01
Instrument ID: E-LCMS-01 **Analysis Lot:** 817192
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300448-01	276,448	3.57
Method Blank	EQ2300447-01	329,992	3.57
Duplicate Lab Control Sample	EQ2300447-03	339,139	3.57
Lab Control Sample	EQ2300447-02	347,265	3.58

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300814
Project: LHAAP / Site 17 **Date Analyzed:** 9/14/23 12:11

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20230914\2230914-015 **Lab Code:** EQ2300448-02
Instrument ID: E-LCMS-01 **Analysis Lot:** 817192
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300448-02	292,197	3.57
130_090723	E2300814-001	361,520	3.58
17WW03_090723	E2300814-002	342,875	3.57
17WW01_090723	E2300814-003	336,453	3.58
17WW02_090723	E2300814-004	288,838	3.57
17WW02_090723_a	E2300814-005	289,281	3.57
17WW06_090723	E2300814-006	274,349	3.57
17WW06_090723MS	EQ2300447-04	279,194	3.57
17WW06_090723DMS	EQ2300447-05	278,397	3.57

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300814
Project: LHAAP / Site 17 **Date Analyzed:** 9/14/23 13:07

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20230914\2230914-024 **Lab Code:** EQ2300448-03
Instrument ID: E-LCMS-01 **Analysis Lot:** 817192
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300448-03	287,057	3.57

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300814
Project: LHAAP / Site 17 **Date Analyzed:** 9/14/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20230914\2230914-004 **Calibration ID:** EC2300012
Analysis Lot: 817192
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.76	0.1475	0.1440	-2.4	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300814
Project: LHAAP / Site 17 **Date Analyzed:** 9/14/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20230914\2230914-015 **Calibration ID:** EC2300012
Analysis Lot: 817192
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.88	0.1475	0.1457	-1.2	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2300814
Project: LHAAP / Site 17 **Date Analyzed:** 9/14/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20230914\2230914-024 **Calibration ID:** EC2300012
Analysis Lot: 817192
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.99	0.1475	0.1473	-0.1	NA	± 15 %	Average RF

Insight Report

Printed at 9/14/2023 1:26:53 PM

Method File: I:\LCMS01\DATA\20230914\20230914.lcm
Project File: I:\LCMS01\DATA\20230914\20230914.damlp

IB

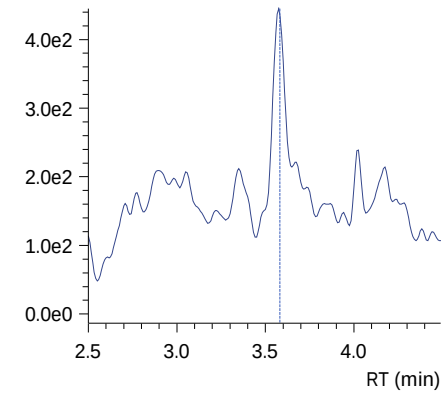
Sample ID: IB
Date Acquired: 9/14/2023 9:58:39 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-001.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	445314	----	ng/mL	101.00 >85.00	0.00	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.575	445314	445314	1.0000	ng/mL	----	----	

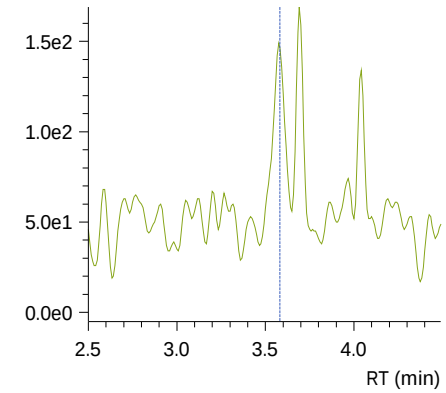
Perchlorate

Conc ----
R#1 0.00 (27.31)

Q 99.00>83.00 (-) 4.45e2



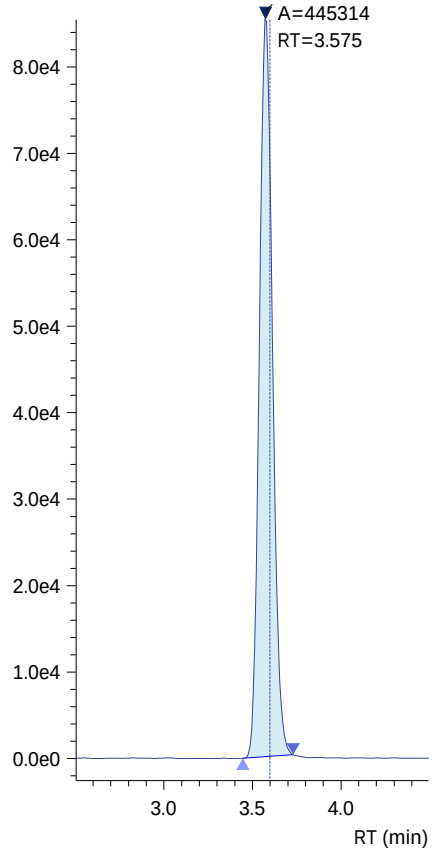
R1 101.00>85.00 (-) 1.69e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.55e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

LODV

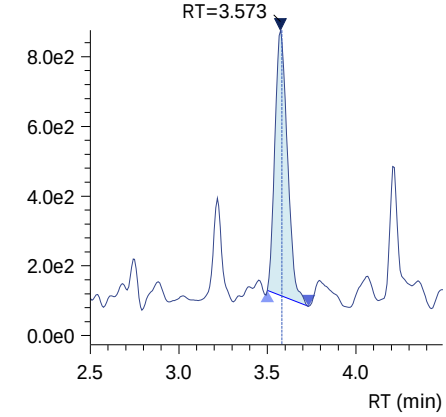
Sample ID: LODV
Date Acquired: 9/14/2023 10:04:17 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-002.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	3765	401553	0.0636	ng/mL	101.00 >85.00	30.30	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.574	4015 53	401553	1.0000	ng/mL	----	----	

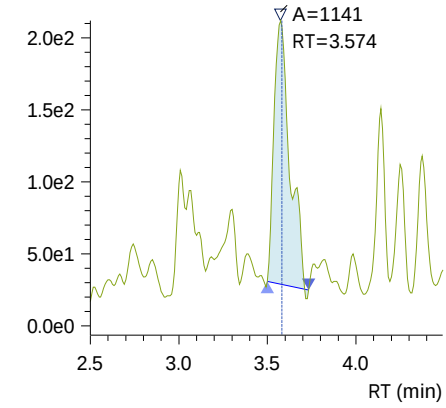
Perchlorate

Conc 0.0636
R#1 30.30 (27.31)

Q 99.00>83.00 (-) A=3765 RT=3.573 8.76e2



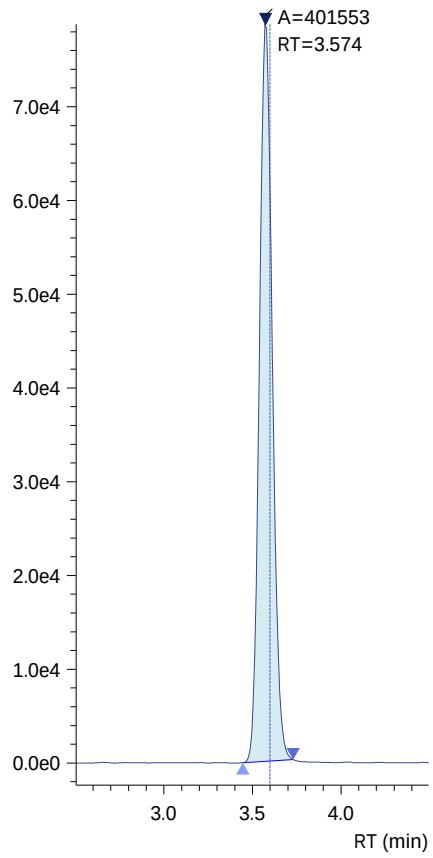
R1 101.00>85.00 (-) 2.12e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 7.88e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

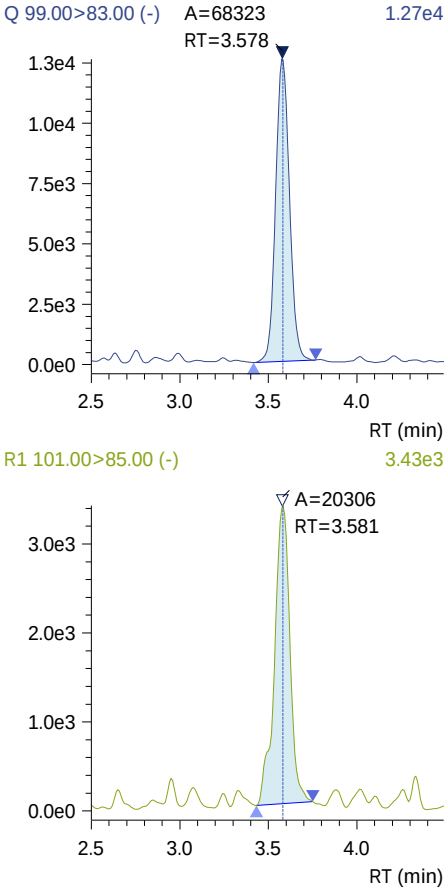
ICS

Sample ID: ICS
Date Acquired: 9/14/2023 10:39:02 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-003.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	68323	419340	1.1049	ng/mL	101.00 >85.00	29.72	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.575	4193 40	419340	1.0000	ng/mL	----	----	

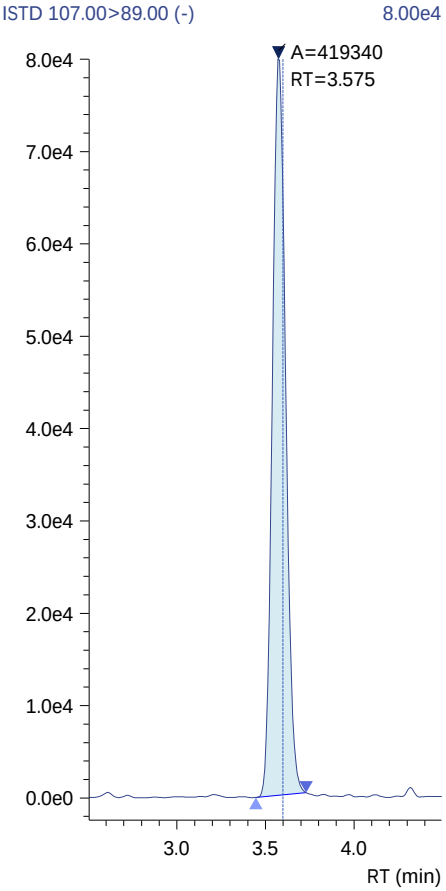
Perchlorate

Conc 1.1049
R#1 29.72 (27.31)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/14/2023 1:26:53 PM

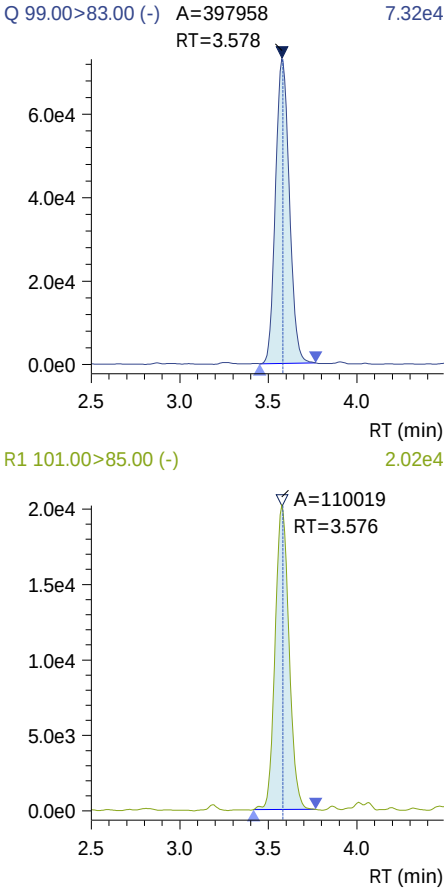
CCV

Sample ID: CCV
Date Acquired: 9/14/2023 10:44:37 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-004.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	397958	276448	9.7621	ng/mL	101.00 >85.00	27.65	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.574	276448	276448	1.0000	ng/mL	----	----	

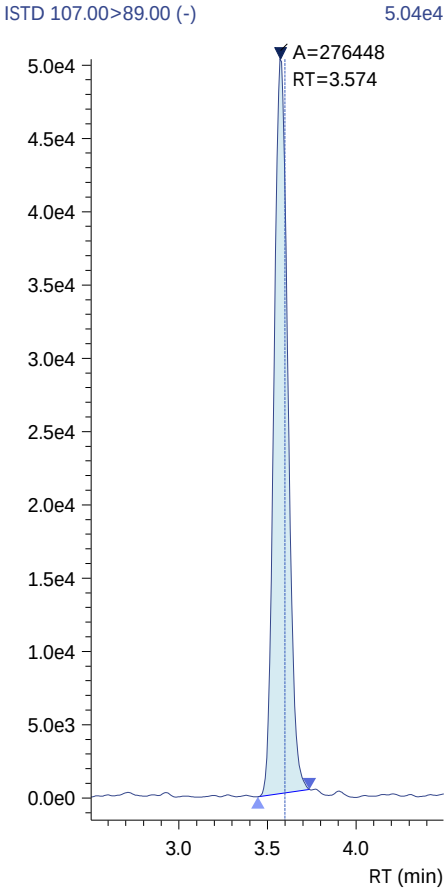
Perchlorate

Conc 9.7621
R#1 27.65 (27.31)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/14/2023 1:26:53 PM

EQ2300447-01

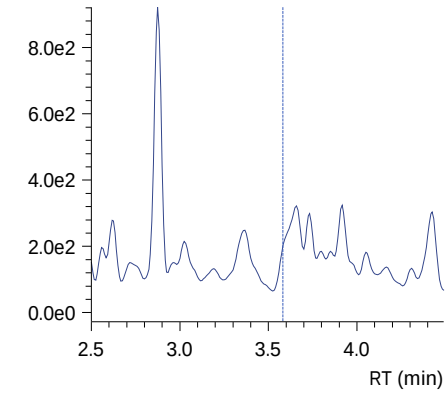
Sample ID: EQ2300447-01
Date Acquired: 9/14/2023 10:51:06 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-005.lcd
Vial: 22 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	329992	----	ng/mL	101.00 >85.00	0.00	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.573	329992	329992	1.0000	ng/mL	----	----	

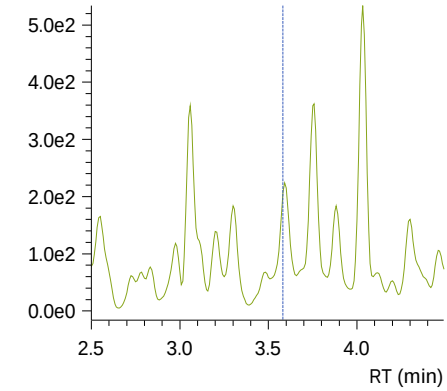
Perchlorate

Conc ----
R#1 0.00 (27.31)

Q 99.00>83.00 (-) 9.22e2



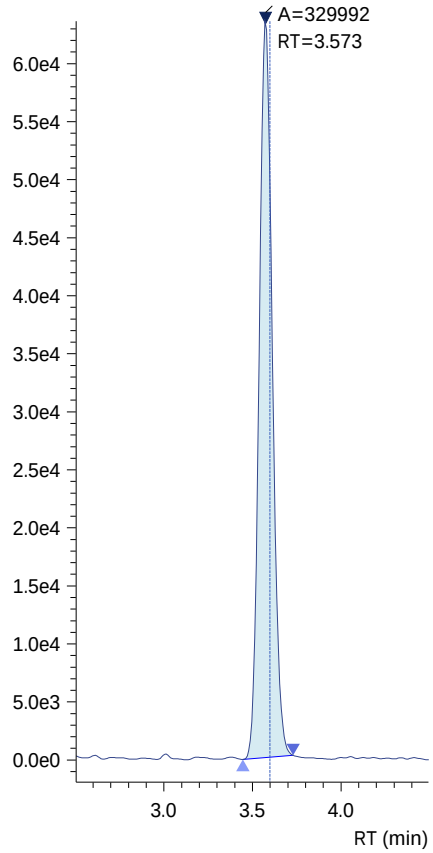
R1 101.00>85.00 (-) 5.34e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.37e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

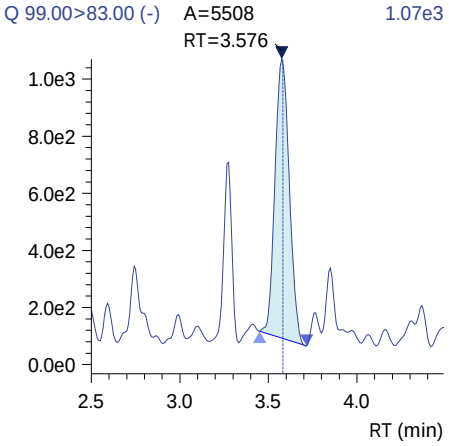
EQ2300447-02

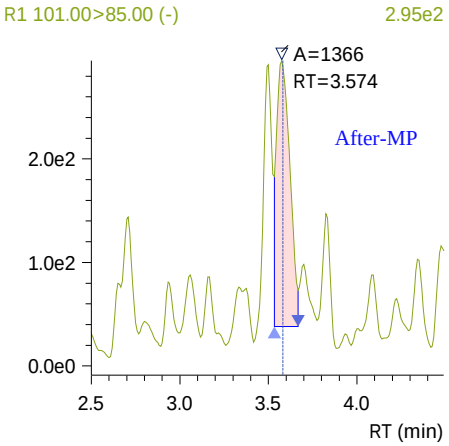
Sample ID: EQ2300447-02
Date Acquired: 9/14/2023 11:26:00 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-006.lcd
Vial: 23 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.576	5508	347265	0.1076	ng/mL	101.00 >85.00	24.80	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.575	3472 65	347265	1.0000	ng/mL	----	----	

Perchlorate

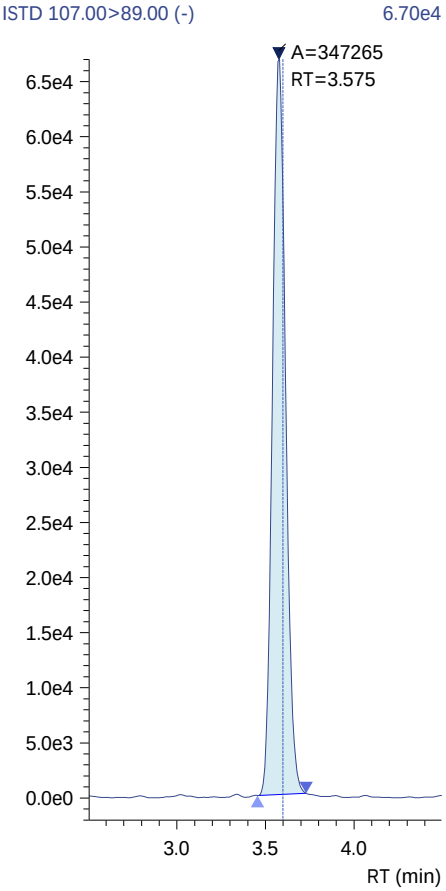
Conc 0.1076
R#1 24.80 (27.31)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/14/2023 1:27:41 PM

Method File: I:\LCMS01\DATA\20230914\20230914.lcm
Project File: I:\LCMS01\DATA\20230914\20230914.damlp

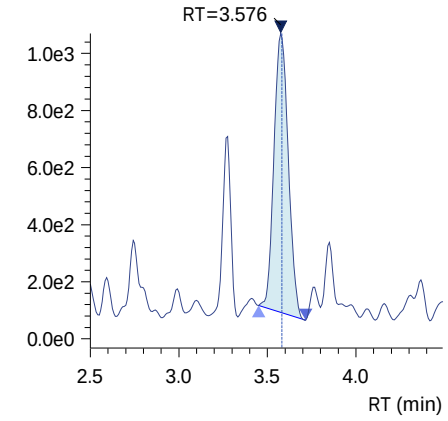
EQ2300447-02

Sample ID: EQ2300447-02
Date Acquired: 9/14/2023 11:26:00 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-006.lcd
Vial: 23 | Inj. Volume: 10.0000uL | Tray: 3

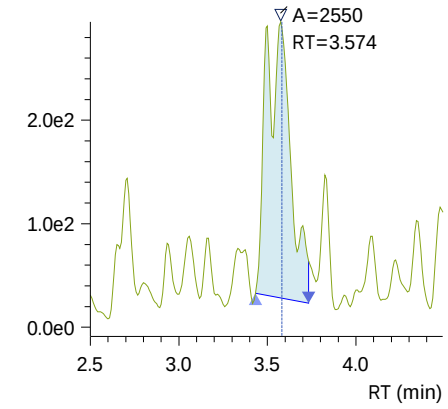
Perchlorate

Conc 0.1076
R#1 46.30 (27.31)

Q 99.00>83.00 (-) A=5508 1.07e3



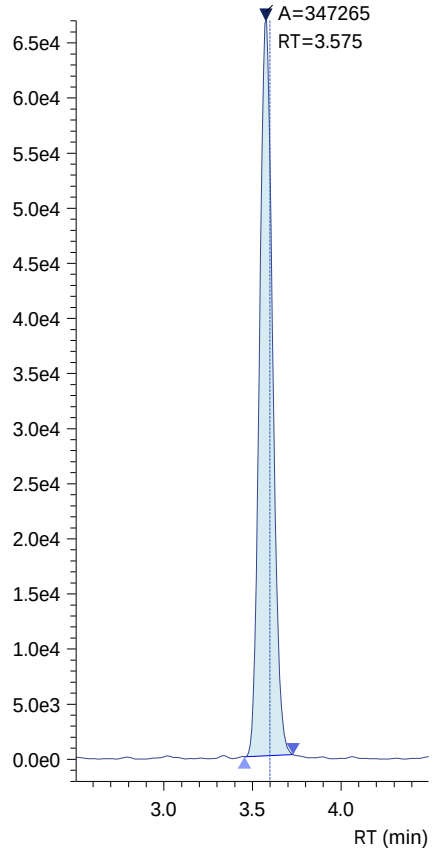
R1 101.00>85.00 (-) 2.95e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.70e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

EQ2300447-03

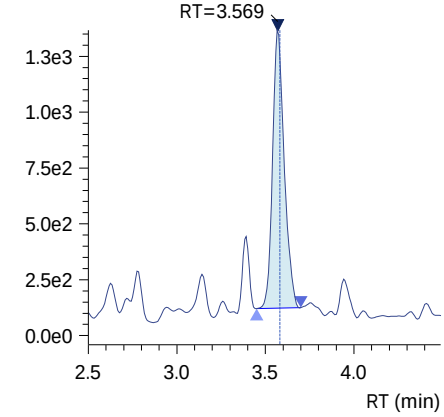
Sample ID: EQ2300447-03
Date Acquired: 9/14/2023 11:02:07 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-007.lcd
Vial: 24 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.569	5690	339139	0.1138	ng/mL	101.00 >85.00	28.86	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.574	3391 39	339139	1.0000	ng/mL	----	----	

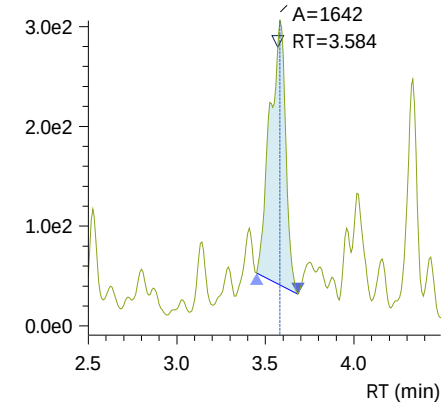
Perchlorate

Conc 0.1138
R#1 28.86 (27.31)

Q 99.00>83.00 (-) A=5690 RT=3.569 1.37e3



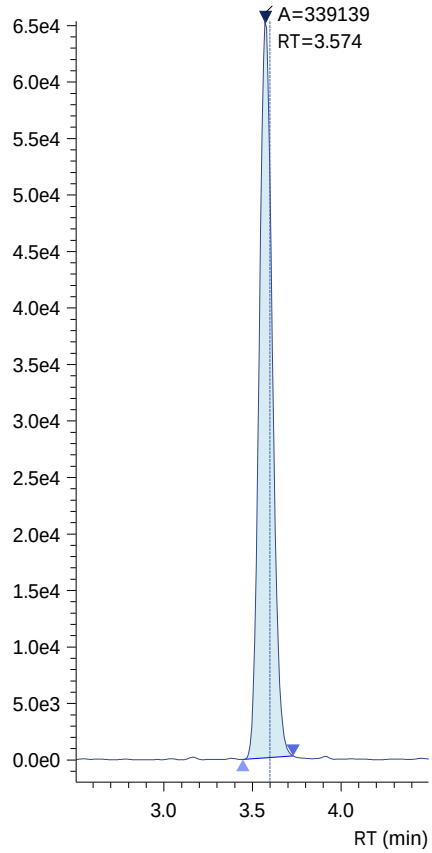
R1 101.00>85.00 (-) 3.06e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.54e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

CCV

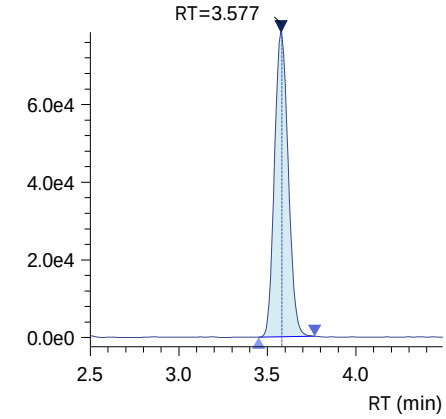
Sample ID: CCV
Date Acquired: 9/14/2023 12:11:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-015.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.577	425639	292197	9.8784	ng/mL	101.00 >85.00	27.50	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.573	292197	292197	1.0000	ng/mL	----	----	

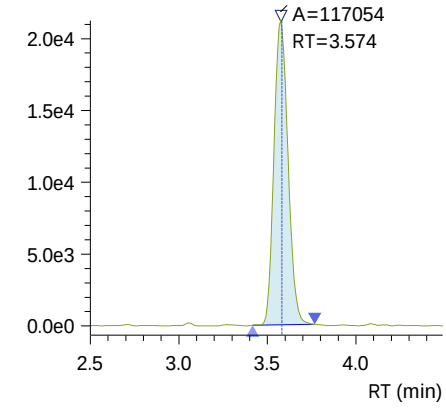
Perchlorate

Conc 9.8784
R#1 27.50 (27.31)

Q 99.00>83.00 (-) A=425639 RT=3.577 7.86e4



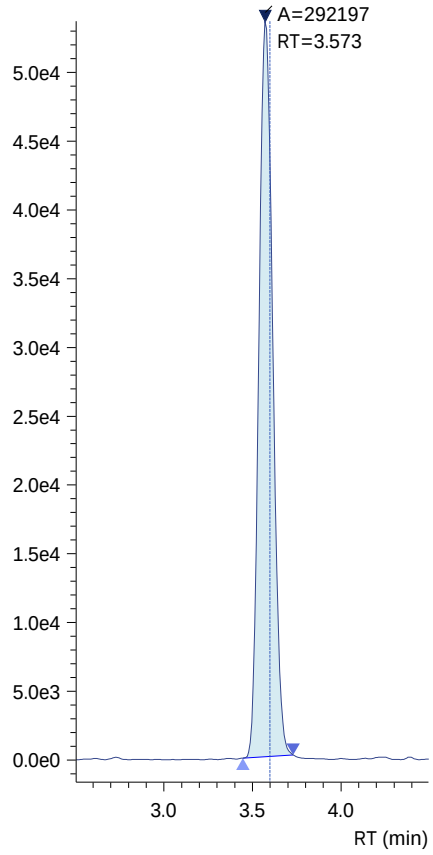
R1 101.00>85.00 (-) 2.13e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.37e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

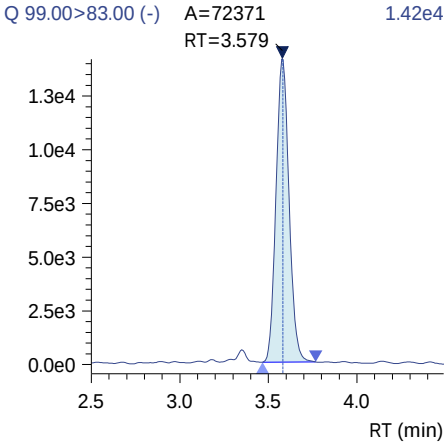
E2300814-001

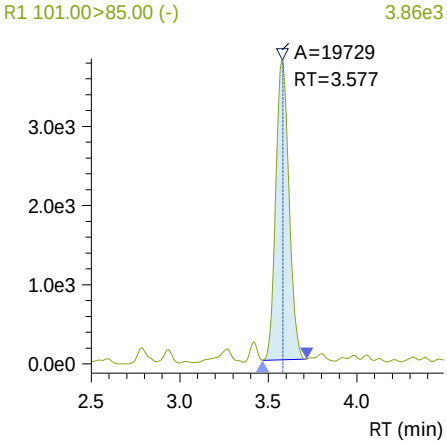
Sample ID: E2300814-001
Date Acquired: 9/14/2023 12:17:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-016.lcd
Vial: 32 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.579	72371	361520	1.3575	ng/mL	101.00 >85.00	27.26	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.575	3615 20	361520	1.0000	ng/mL	----	----	

Perchlorate

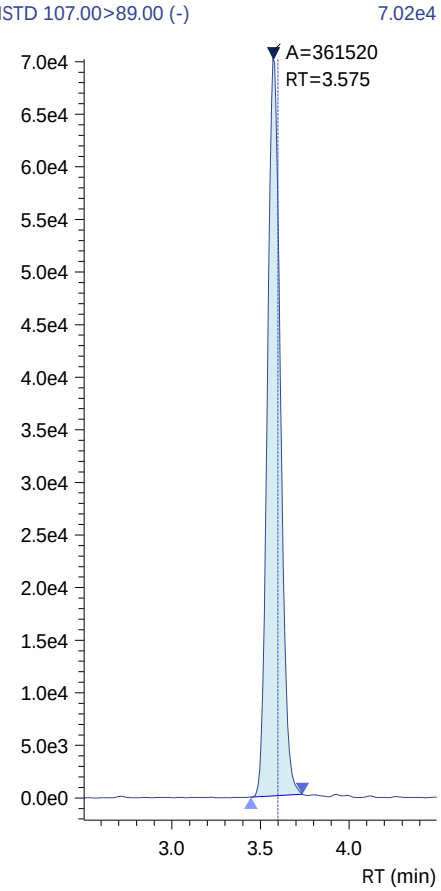
Conc 1.3575
R#1 27.26 (27.31)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/14/2023 1:26:53 PM

E2300814-002

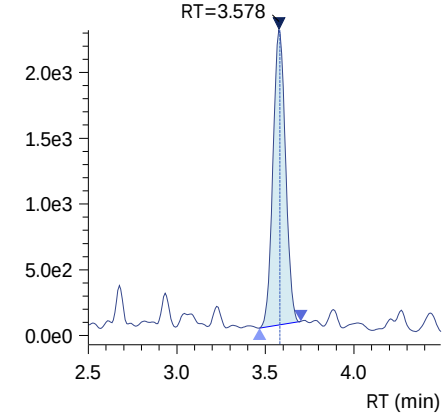
Sample ID: E2300814-002
Date Acquired: 9/14/2023 12:22:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-017.lcd
Vial: 33 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	11083	342875	0.2192	ng/mL	101.00 >85.00	28.96	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.574	3428 75	342875	1.0000	ng/mL	----	----	

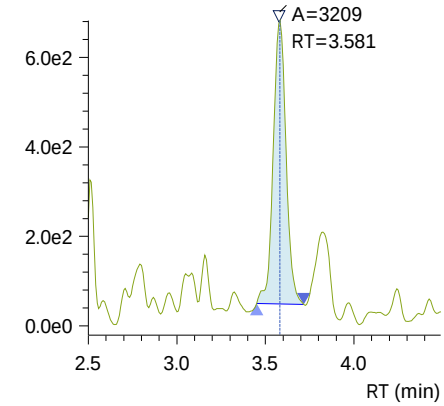
Perchlorate

Conc 0.2192
R#1 28.96 (27.31)

Q 99.00>83.00 (-) A=11083 RT=3.578 2.32e3



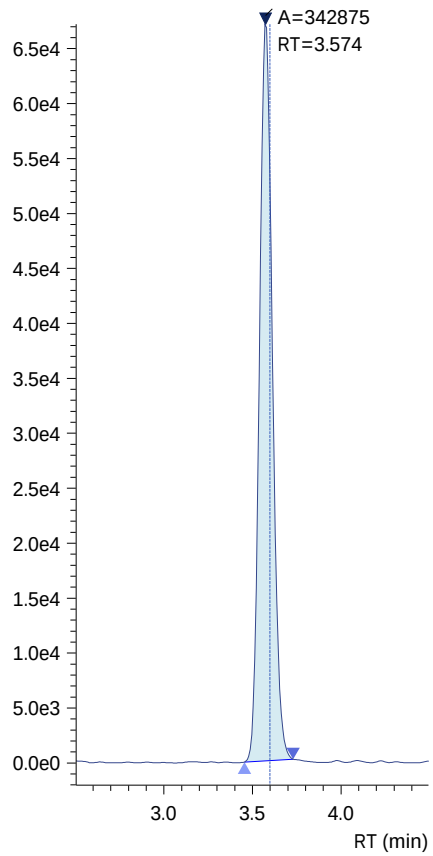
R1 101.00>85.00 (-) 6.82e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.72e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

E2300814-003

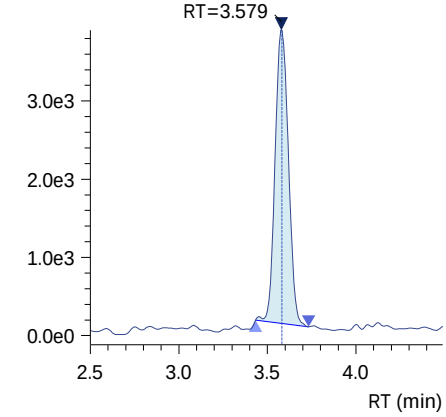
Sample ID: E2300814-003
Date Acquired: 9/14/2023 12:28:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-018.lcd
Vial: 34 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.579	19768	336453	0.3984	ng/mL	101.00 >85.00	28.68	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.575	3364 53	336453	1.0000	ng/mL	----	----	

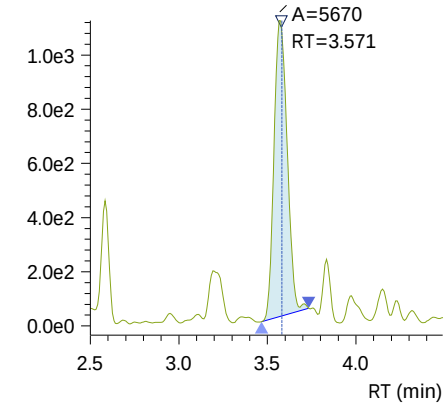
Perchlorate

Conc 0.3984
R#1 28.68 (27.31)

Q 99.00>83.00 (-) A=19768 3.91e3



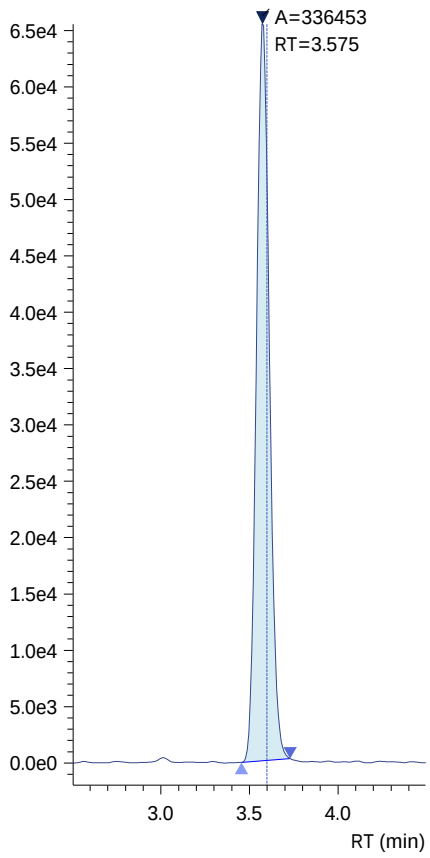
R1 101.00>85.00 (-) 1.13e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.56e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

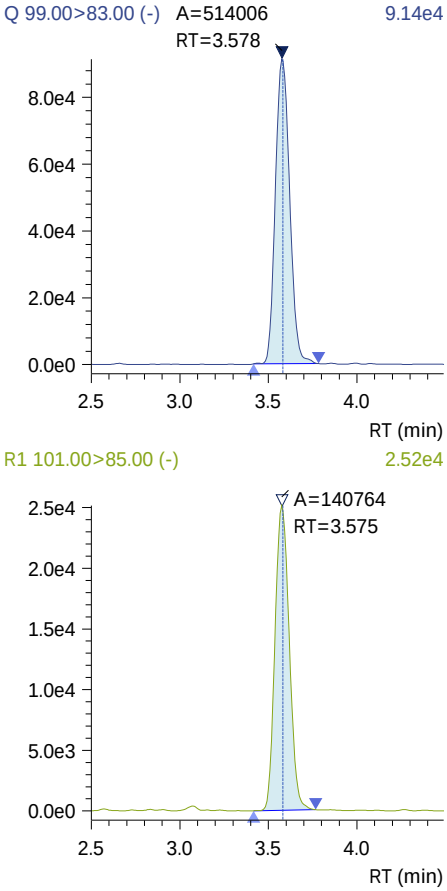
E2300814-004x500

Sample ID: E2300814-004
Date Acquired: 9/14/2023 12:33:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-019.lcd
Vial: 35 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	514006	288838	12.0680	ng/mL	101.00 >85.00	27.39	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.573	288838	288838	1.0000	ng/mL	----	----	

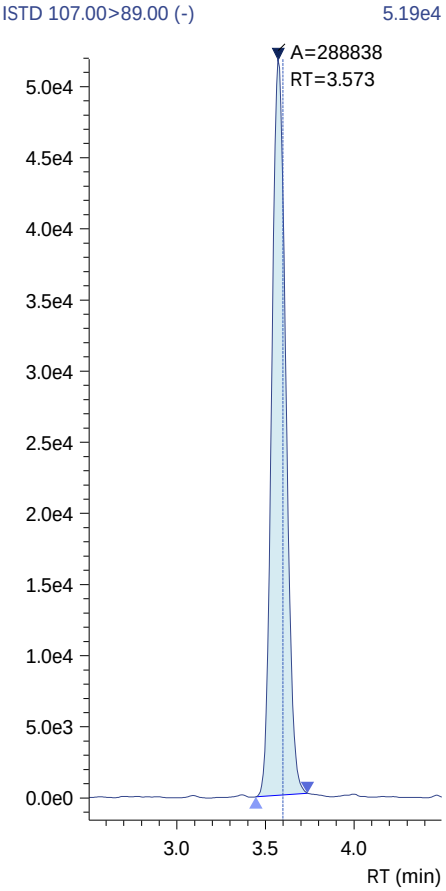
Perchlorate

Conc 12.0680
R#1 27.39 (27.31)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/14/2023 1:26:53 PM

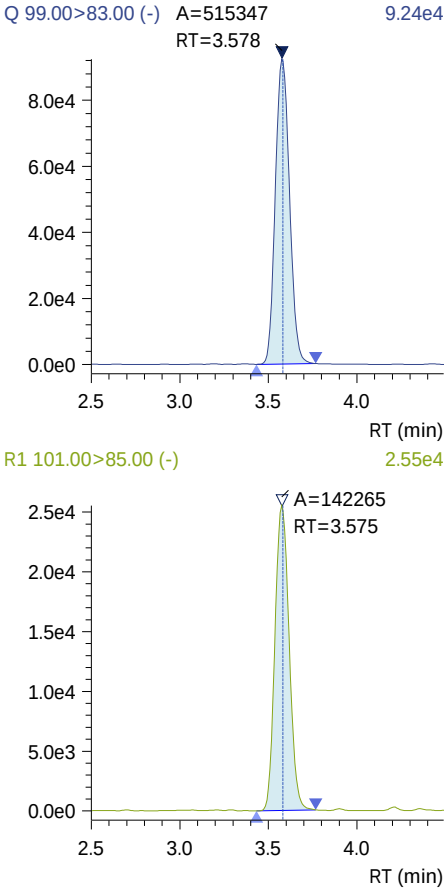
E2300814-005x500

Sample ID: E2300814-005
Date Acquired: 9/14/2023 12:39:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-020.lcd
Vial: 36 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	515347	289281	12.0809	ng/mL	101.00 >85.00	27.61	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.573	289281	289281	1.0000	ng/mL	----	----	

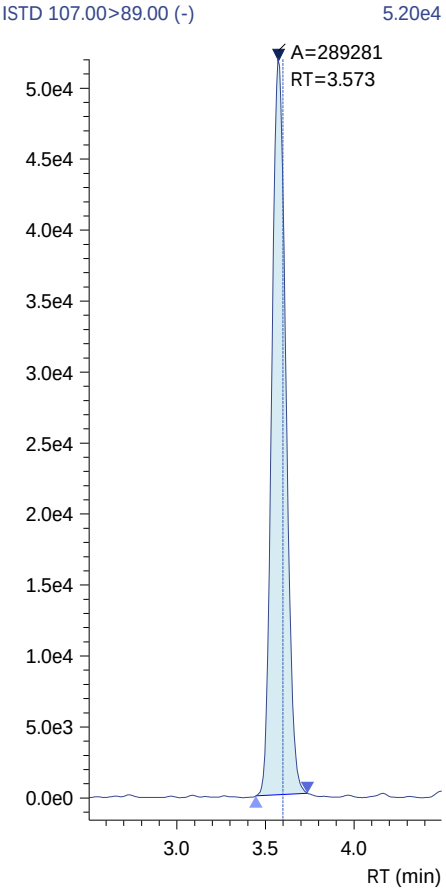
Perchlorate

Conc 12.0809
R#1 27.61 (27.31)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/14/2023 1:26:53 PM

E2300814-006x5k

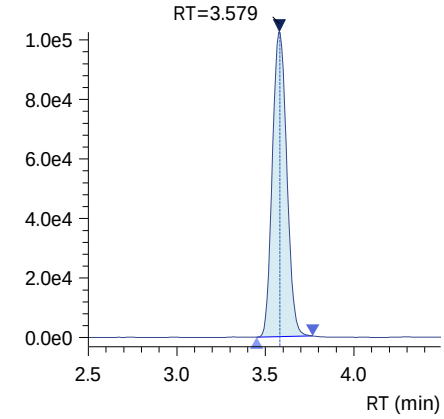
Sample ID: E2300814-006
Date Acquired: 9/14/2023 12:45:08 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-021.lcd
Vial: 37 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.579	581097	274349	14.3637	ng/mL	101.00 >85.00	27.36	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.574	274349	274349	1.0000	ng/mL	----	----	

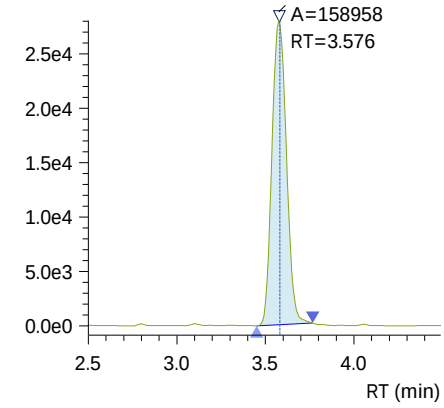
Perchlorate

Conc 14.3637
R#1 27.36 (27.31)

Q 99.00>83.00 (-) A=581097 RT=3.579 1.03e5



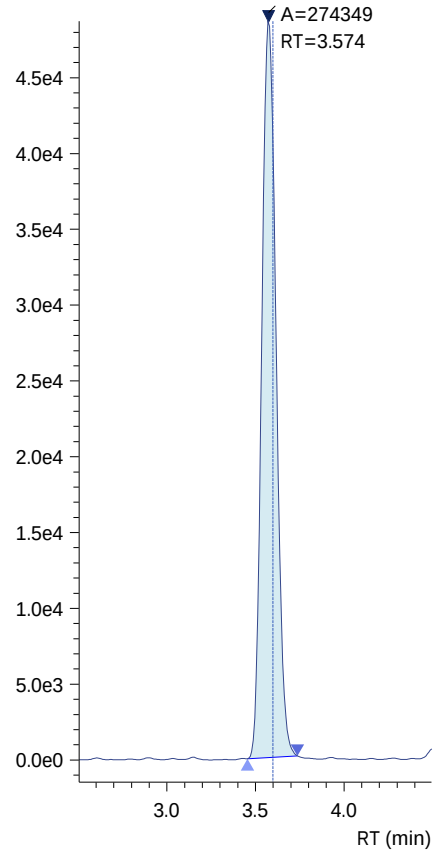
R1 101.00>85.00 (-) 2.81e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.87e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

EQ2300447-04x5k

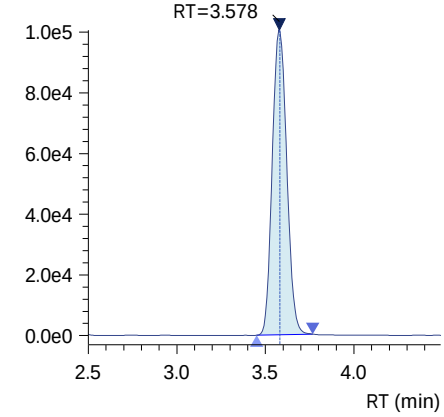
Sample ID: EQ2300447-04
Date Acquired: 9/14/2023 12:50:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-022.lcd
Vial: 38 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	573031	279194	13.9185	ng/mL	101.00 >85.00	27.83	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.573	279194	279194	1.0000	ng/mL	----	----	

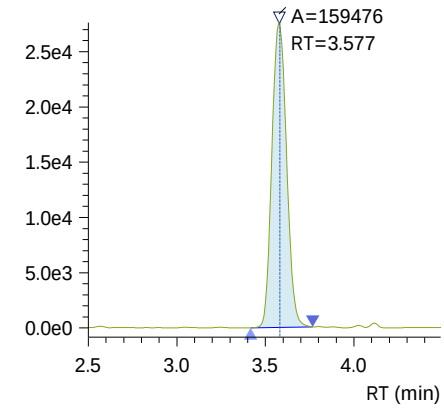
Perchlorate

Conc 13.9185
R#1 27.83 (27.31)

Q 99.00>83.00 (-) A=573031 RT=3.578 1.01e5



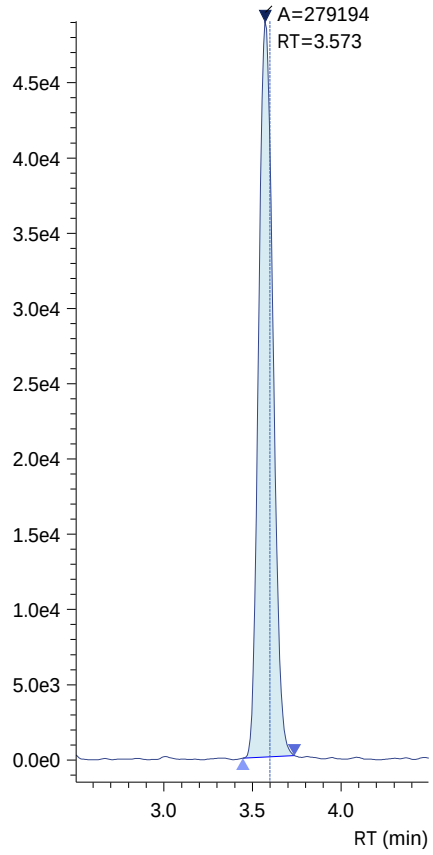
R1 101.00>85.00 (-) 2.76e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.91e4



Insight Report

Printed at 9/14/2023 1:26:53 PM

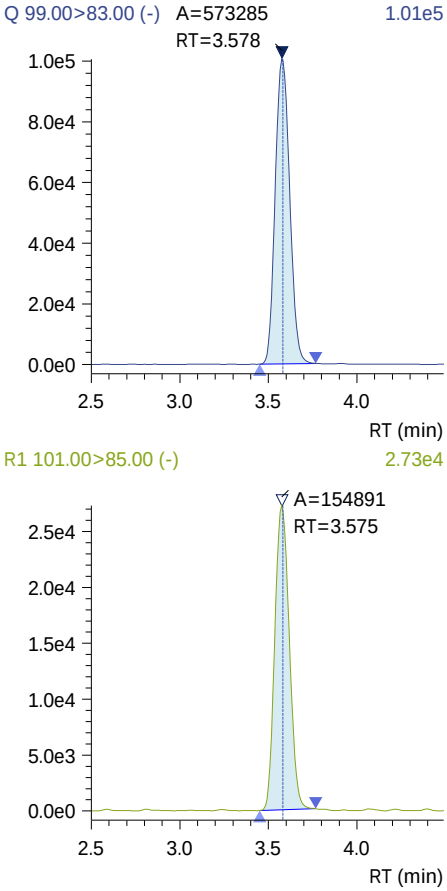
EQ2300447-05x5k

Sample ID: EQ2300447-05
Date Acquired: 9/14/2023 12:56:10 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-023.lcd
Vial: 39 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	573285	278397	13.9645	ng/mL	101.00 >85.00	27.02	19.12-35.51
Sodium Perchlorate-18O4_IS	Auto	3.573	278397	278397	1.0000	ng/mL	----	----	

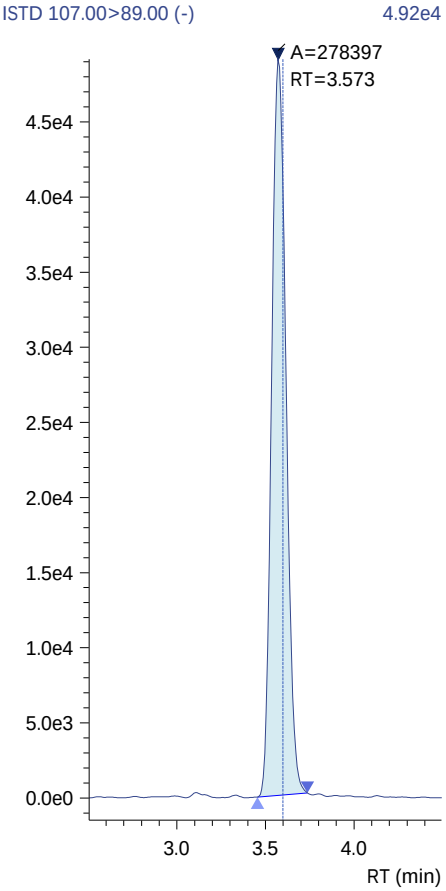
Perchlorate

Conc 13.9645
R#1 27.02 (27.31)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/14/2023 1:26:53 PM

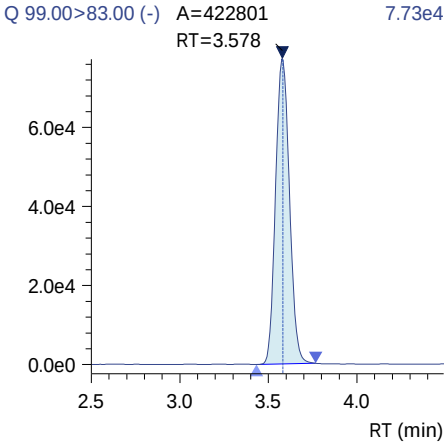
CCV

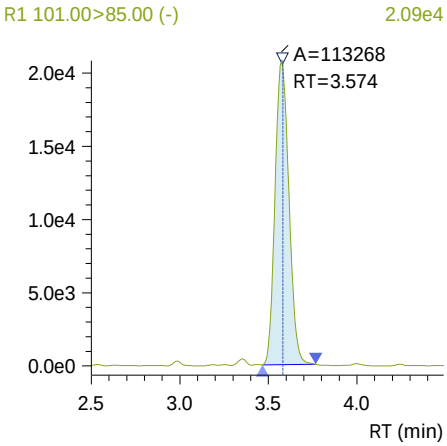
Sample ID: CCV
Date Acquired: 9/14/2023 1:07:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230914\2230914-024.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.578	422801	287057	9.9882	ng/mL	101.00 >85.00	26.79	19.12-35.51
Sodium Perchlorate-18O4 _IS	Auto	3.574	287057	287057	1.0000	ng/mL	----	----	

Perchlorate

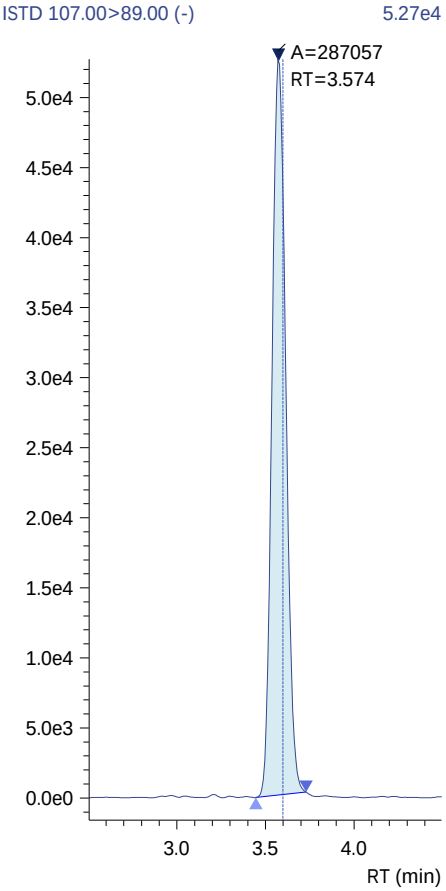
Conc 9.9882
R#1 26.79 (27.31)





Sodium Perchlorate-18O4_IS

Conc 1.0000



December 15, 2023 Service Request No:E2301147

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP / Site 17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory December 06, 2023
For your reference, these analyses have been assigned our service request number **E2301147.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

H Kelany

Hussam Kelany
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Bhate Environmental Associates, Inc.	**Service Request No.:**	E2301147
Project:	LHAAP / Site 17	**Date Received:**	12/06/23
Sample Matrix:	Ground Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six samples were received for analysis at ALS Environmental in Houston on 12/06/23.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2300602: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined on an unrelated sample in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: Bhate Environmental Associates, Inc. **Service Request:**E2301147

Project: LHAAP / Site 17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2301147-001	130_120423	12/4/2023	0800
E2301147-002	130_120423_a	12/4/2023	0800
E2301147-003	17WW03_120423	12/4/2023	0845
E2301147-004	17WW01_120423	12/4/2023	0930
E2301147-005	17WW02_120423	12/4/2023	0940
E2301147-006	17WW06_120423	12/4/2023	0945

Service Request Summary

Folder #: **E2301147**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 12/06/23
Internal Due Date: 12/18/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

01335002
8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Lab Samp No.	Client Samp No	Matrix	Collected	Semivoa GCMS ClO4 DOD/6850
E2301147-001	130_120423	Ground Water	12/04/23 0800	**IV**
E2301147-002	130_120423_a	Ground Water	12/04/23 0800	**IV**
E2301147-003	17WW03_120423	Ground Water	12/04/23 0845	**IV**
E2301147-004	17WW01_120423	Ground Water	12/04/23 0930	**IV**
E2301147-005	17WW02_120423	Ground Water	12/04/23 0940	**IV**
E2301147-006	17WW06_120423	Ground Water	12/04/23 0945	**IV**

Service Request Summary

Folder #: **E2301147**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP / Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 12/06/23
Internal Due Date: 12/18/2023
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: 2878
EDD: BASIC_WQC_CASNo_LOD

01335003
8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of 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.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

Data Qualifiers

Lab Standard

M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.
S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793_2024	5/27/2024
Arkansas Department of Environmental Quality	88-00356	3/27/2024
California State Environmental Laboratory Accreditation Program	2919	4/30/2024
Department of Defense	L22-90	3/31/2024
Department of Defense	L23-358	5/31/2025
Florida Department of Health	E87611-38	6/30/2024
Illinois Environmental Protection Agency	2000322023-11	6/30/2024
Kansas Department of Health and Environment	E-10352 2023-2024	7/31/2024
Louisiana Department of Environmental Quality	03087-2023	6/30/2024
Louisiana Department of Health and Hospitals	LA028-2023	12/31/2023
Maine Department of Health and Human Services	2022017	6/5/2024
Maryland Department of the Environment	343-2023	6/30/2024
Michigan Depratment of Environmental Quality	9971-2023	4/30/2024
Minnesota Department of Health	2368363	12/31/2023
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2024
Nevada Division of Environmental Protection	TX026932024-1	7/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209423	4/24/2024
New Jersey Department of Environmental Protection	TX008-2024	6/30/2024
New York Department of Health	11707	3/31/2024
Oklahoma Department of Environmental Quality	2023-140	8/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-011	5/15/2024
Pennsylvania Department of Environmental Protection	68-03441-017	6/30/2024
Perry Johnson Laboratory Accreditation	L22-91	3/31/2024
Tennessee Department of Environment and Concervation	TN04016-2023	4/30/2024
Texas Commision on Environmental Quality	T104704231-23-30	4/30/2024
Utah Department of Health Environmental Laboratory Certification	TX026932023-14	7/31/2024
Washington Department of Ecology	C819-23	11/14/2024

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1):

LIMS Number:

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	PERCHLORATE										Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
							Sample Analysis Requested (5)											Quality Assurance Samples (6)			
130_120423	04 Dec 2023	0800	-	N		WG	1	X													
130_120423_a	04 Dec 2023	0800	-	FD		WG	1	X													
17WW03_120423	04 Dec 2023	0845	-	N		WG	1	X													
17WW01_120423	04 Dec 2023	0930		N		WG	1	X													
17WW01_120423_MS	04 Dec 2023	0930		MS		WG	1	X													
17WW01_120423_MSD	04 Dec 2023	0930	-	SD		WG	1	X													
17WW02_120423	04 Dec 2023	0940	-	N		WG	1	X													
17WW06_120423	04 Dec 2023	0945	-	N		WG	1	X													
			-																		
			-																		
			-																		

COMMENTS: Standard TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. [signature]	12/5/23	1330	1. [signature]	12/6/23	09:50
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Blue: VOC - 1.5 - #31 clr. 0.1

10450 Stancliff Road, Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Client: bhate Date: Dec 06 2023 WO#:

Time Received: 0980 Received by: PS BO#: 93665

Matrices: Solid/Sludge (Water) Oil Wipes Hydrocarbon Liquid Other

Kit ID/Cooler ID	Trip Blank ID	Cooler Temp (C) Observed/Corrected	IR #	Temp BLK Present?
Blue	—	1.9 / 1.4	31	(Y) N
		/		Y N
		/		Y N
		/		Y N
		/		Y N

Delivery Method: (FedEx) UPS Greyhound (ALS) Client Other

Date/Time of Unpacking: DEC 07 2023 Unpacked by:

Shipping container/cooler in good condition?	(Yes)	No	Not Present
Custody seals intact on shipping container/cooler?	(Yes)	No	Not Present
Custody seals intact on sample bottles?	Yes	No	(Not Present)
Chain of Custody present?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of Custody - Sampler's name present?	Yes	(No)	
Chain of Custody agrees with sample labels?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
VOA/TX1005/1006 Solids in hermetically Sealed Vials:	Yes	No	(No VOA/TX1005/1006 Solid)
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	
Water - VOA vials have zero headspace?	Yes	No	(N/A) No VOA submitted
Non-VOA waters preserved with HCl, H2SO4, HNO3 are pH <2?			Yes No (N/A)
Waters preserved with NaOH/Ascorbic acid are pH>12?	Yes	No	(N/A)
pH adjusted?	Yes*	No	(N/A) *See Preservation Logbook

pH adjusted by: _____ **pH Paper Lot:** _____

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Preparation Information Benchsheet

01335013

Prep Run#: 431060 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GCRUZ **Prep Method:** **Prep Date/Time:** 12/8/23 08:13

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2301147-001	130_120423	.01	6850/ClO4 DOD			Ground Water	10mL	
2	E2301147-002	130_120423_a	.01	6850/ClO4 DOD			Ground Water	10mL	
3	E2301147-003	17WW03_120423	.01	6850/ClO4 DOD			Ground Water	10mL	
4	E2301147-004	17WW01_120423	.01	6850/ClO4 DOD			Ground Water	10mL	
5	E2301147-005	17WW02_120423	.01	6850/ClO4 DOD			Ground Water	10mL	
6	E2301147-006	17WW06_120423	.01	6850/ClO4 DOD			Ground Water	10mL	
7	E2301158-001	LH18/24-SP650_120523_AIX	.01	6850/ClO4 DOD			Water	10mL	
8	E2301159-001	LH18/24-SP650_120523_BIX	.01	6850/ClO4 DOD			Water	10mL	
9	E2301159-002	LH18/24-SP650_120523_AIX	.01	6850/ClO4 DOD			Water	10mL	
10	E2301160-001	LH18/24-SP140_120523	.01	6850/ClO4 DOD			Water	10mL	
11	EQ2300602-01	MB		6850/ClO4 DOD			Liquid	10mL	
12	EQ2300602-02	LCS		6850/ClO4 DOD			Liquid	10mL	
13	EQ2300602-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
14	EQ2300602-04	17WW01_120423 MS	.01	6850/ClO4 DOD			Liquid	10mL	
15	EQ2300602-05	17WW01_120423 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 230342 Logbook Ref: Perchlorate (1st Source) Expires On: 03/07/2024

EQ2300602-02 1.00µL EQ2300602-03 1.00µL EQ2300602-04 1.00µL EQ2300602-05 1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 230372 Logbook Ref: Perchlorate Internal Standard Expires On: 04/30/2024

E2301147-001 100.00µL E2301147-002 100.00µL E2301147-003 100.00µL E2301147-004 100.00µL E2301147-005 100.00µL E2301147-006 100.00µL
E2301158-001 100.00µL E2301159-001 100.00µL E2301159-002 100.00µL E2301160-001 100.00µL EQ2300602-01 100.00µL EQ2300602-02 100.00µL
EQ2300602-03 100.00µL EQ2300602-04 100.00µL EQ2300602-05 100.00µL

Preparation Materials

Water HPLC Grade — HPLC water cg10/23 (231867)
6850 Amber Glass screw vial — 2mL Screw Top Vial (221894)
6850 0.45um syringe filters — 6850 0.45 SYRING FILTER (229979)
6850 20mM amonium acetate in H2O — (232132)
6850 Luer-Lok Syringes — Luer Lok Syringes (231696)
30 ML CENTRIFUGE TUBE — 30mL Centrifuge Tube (228118)

Preparation Steps

Step: Preparation
Started: 12/8/23 08:13
Finished: 12/8/23 11:56
By: GCRUZ
Comments

Preparation Information Benchsheet

01335014

Prep Run#: 431060 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GCRUZ **Prep Method:** **Prep Date/Time:** 12/8/23 08:13

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0800
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	130_120423	**Units:**	µg/L
Lab Code:	E2301147-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.933**		0.100	0.0500	0.0250	1	12/ 8/23	12/13/23 14:39	431060	826754	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0800
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	130_120423_a	**Units:**	µg/L
Lab Code:	E2301147-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.980**		0.100	0.0500	0.0250	1	12/ 8/23	12/13/23 14:45	431060	826754	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0845
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	17WW03_120423	**Units:**	µg/L
Lab Code:	E2301147-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	12/ 8/23	12/13/23 14:50	431060	826754	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0930
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	17WW01_120423	**Units:**	µg/L
Lab Code:	E2301147-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	12/ 8/23	12/13/23 14:56	431060	826754	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0940
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	17WW02_120423	**Units:**	µg/L
Lab Code:	E2301147-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**11400**		50.0	25.0	12.5	500	12/ 8/23	12/13/23 15:12	431060	826754	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0945
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	17WW06_120423	**Units:**	µg/L
Lab Code:	E2301147-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**57500**		500	250	125	5000	12/ 8/23	12/13/23 17:04	431060	826754	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2300602-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	12/ 8/23	12/8/23 11:07	431060	826405	

Accuracy & Precision

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/ 8/23
Sample Matrix: Ground Water

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Units:** µg/L
Prep Method: Method **Basis:** NA

Extraction Lot: 431060

	Lab Control Sample EQ2300602-02			Duplicate Lab Control Sample EQ2300602-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.102	0.100	102	0.0949	0.100	95	84 - 119	7	15

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

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

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300602-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.102**		0.100	0.0500	0.0250	1	12/ 8/23	12/8/23 11:34	431060	826405	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	NA
Sample Matrix:	Ground Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2300602-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0949**	J	0.100	0.0500	0.0250	1	12/ 8/23	12/8/23 11:40	431060	826405	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/4/23
Sample Matrix:	Ground Water	**Date Received:**	12/6/23
		Date Analyzed:	12/13/23

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW01_120423	**Units:**	µg/L
Lab Code:	E2301147-004	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		17WW01_120423MS			17WW01_120423DMS					
		Matrix Spike			**Duplicate Matrix Spike**					
		EQ2300602-04			EQ2300602-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND	0.104	0.100	104	0.0920	0.100	92	84 - 119	12	15

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.

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0930
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	17WW01_120423	**Units:**	µg/L
Lab Code:	EQ2300602-04	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.104**		0.100	0.0500	0.0250	1	12/ 8/23	12/13/23 15:01	431060	826754	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Collected:**	12/ 4/23 0930
Sample Matrix:	Ground Water	**Date Received:**	12/ 6/23
Sample Name:	17WW01_120423	**Units:**	µg/L
Lab Code:	EQ2300602-05	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0920**	J	0.100	0.0500	0.0250	1	12/ 8/23	12/13/23 15:07	431060	826754	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20230802

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: KN

ICAL Date: 8/2/2023
Cal. Std. xp: 03/07/2024
ICAL ID: EC2300012

Mobile Phases : **A:**20mM ammonium acetate in water 230388 **B:**Acetonitrile 229152

	Sample Name		File Name	Acquisition Method	Dilution	Comments	Date/Time
1	IB		2230802-001	Perchlorate6850c.lcm	1x		8/2/2023 13:05
2	IB		2230802-002	Perchlorate6850c.lcm	1x		8/2/2023 13:11
3	Perchlorate ICAL 1		2230802-003	Perchlorate6850c.lcm	1x	230373	8/2/2023 13:17
4	Perchlorate ICAL 2		2230802-004	Perchlorate6850c.lcm	1x	230375	8/2/2023 13:23
5	Perchlorate ICAL 3		2230802-005	Perchlorate6850c.lcm	1x	230376	8/2/2023 13:28
6	Perchlorate ICAL 4		2230802-006	Perchlorate6850c.lcm	1x	230377	8/2/2023 13:34
7	Perchlorate ICAL 5		2230802-007	Perchlorate6850c.lcm	1x	230378	8/2/2023 13:39
8	Perchlorate ICAL 6		2230802-008	Perchlorate6850c.lcm	1x	230379	8/2/2023 13:45
9	Perchlorate ICAL 7		2230802-009	Perchlorate6850c.lcm	1x	230380	8/2/2023 13:50
10	Perchlorate ICAL 8		2230802-010	Perchlorate6850c.lcm	1x	230381	8/2/2023 13:56
11	Perchlorate ICAL 9		2230802-011	Perchlorate6850c.lcm	1x	230382	8/2/2023 14:02
12	Perchlorate ICAL 10		2230802-012	Perchlorate6850c.lcm	1x	230383	8/2/2023 14:07
13	PerchlorateICV		2230802-013	Perchlorate6850c.lcm	1x	230385	8/2/2023 14:19

Initial Calibration - Detailed Report

Calibration ID: EC2300012 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2300012-01	Perchlorate ICAL 1	2230802-003	08/02/2023 13:17
02	EC2300012-02	Perchlorate ICAL 2	2230802-004	08/02/2023 13:23
03	EC2300012-03	Perchlorate ICAL 3	2230802-005	08/02/2023 13:28
04	EC2300012-04	Perchlorate ICAL 4	2230802-006	08/02/2023 13:34
05	EC2300012-05	Perchlorate ICAL 5	2230802-007	08/02/2023 13:39
06	EC2300012-06	Perchlorate ICAL 6	2230802-008	08/02/2023 13:45
07	EC2300012-07	Perchlorate ICAL 7	2230802-009	08/02/2023 13:50
08	EC2300012-08	Perchlorate ICAL 8	2230802-010	08/02/2023 13:56
09	EC2300012-09	Perchlorate ICAL 9	2230802-011	08/02/2023 14:02
10	EC2300012-10	Perchlorate ICAL 10	2230802-012	08/02/2023 14:07

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 2.086** **Average RF = 0.1475**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1428	02	0.5000	0.1421	03	0.7000	0.1457	04	1.0000	0.149
05	2.0000	0.1515	06	5.0000	0.1475	07	10.0000	0.1503	08	20.0000	0.1477
09	30.0000	0.1485	10	50.0000	0.1496						

Analyte

Perchlorate RSE = 2.09

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.0968	-3.2	02	0.5000	0.482	-3.6	03	0.7000	0.692	-1.2
04	1.0000	1.01	1.0	05	2.0000	2.05	2.7	06	5.0000	5.00	-0.0
07	10.0000	10.2	1.9	08	20.0000	20.0	0.2	09	30.0000	30.2	0.7
10	50.0000	50.7	1.4								

Initial Calibration Verification Summary Report

Calibration ID:	EC2300012	**Instrument ID:**	E-LCMS-01
Datafile ID:	2230802-013	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2300012-11	T	Average RF	10	10.670	ng/mL	6.7	<= 15

Insight Report

Printed at 8/3/2023 9:30:46 AM

Method File: I:\LCMS01\DATA\20230802\20230802ICAL.lcm
Project File: I:\LCMS01\DATA\20230802\no use\20230802ICAL.damlp

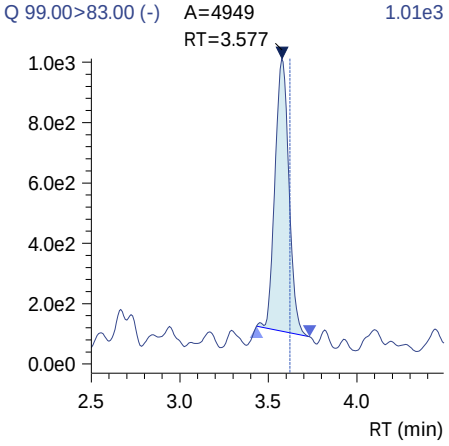
Perchlorate ICAL 1

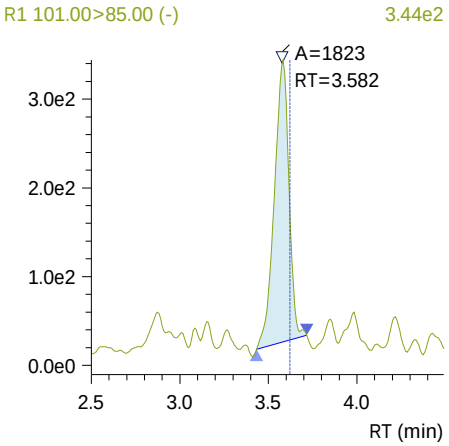
Sample ID: Perchlorate ICAL 1
Date Acquired: 8/2/2023 1:17:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-003.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.577	4949	346538	0.0968	ng/mL	101.00 >85.00	36.83	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.572	346538	346538	1.0000	ng/mL	----	----	

Perchlorate

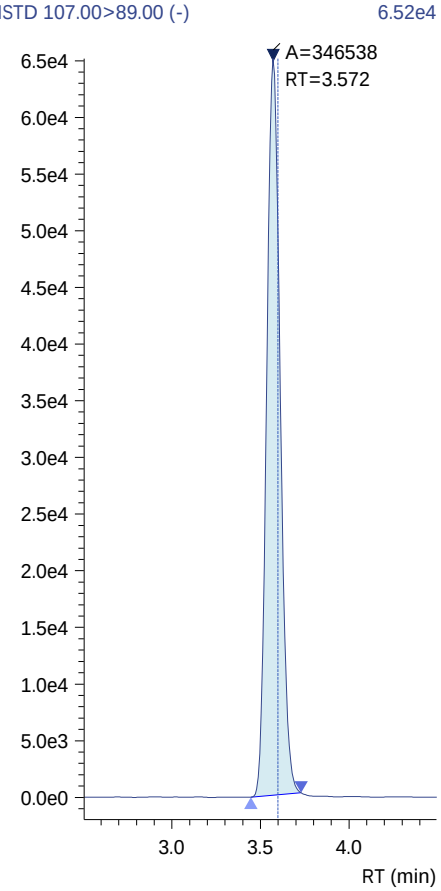
Conc 0.0968
R#1 36.83 (30.41)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 2

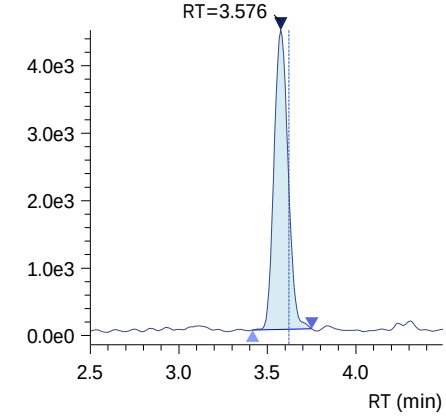
Sample ID: Perchlorate ICAL 2
Date Acquired: 8/2/2023 1:23:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-004.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.576	24530	345149	0.4820	ng/mL	101.00 >85.00	31.03	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.571	345149	345149	1.0000	ng/mL	----	----	

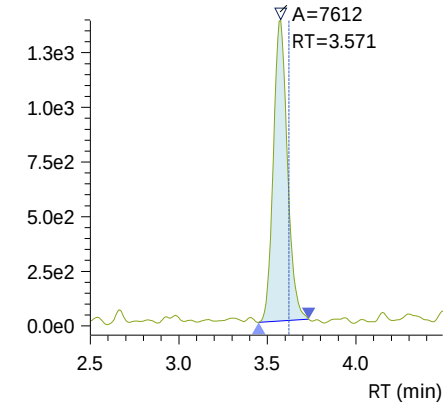
Perchlorate

Conc 0.4820
R#1 31.03 (30.41)

Q 99.00>83.00 (-) A=24530 RT=3.576 4.53e3



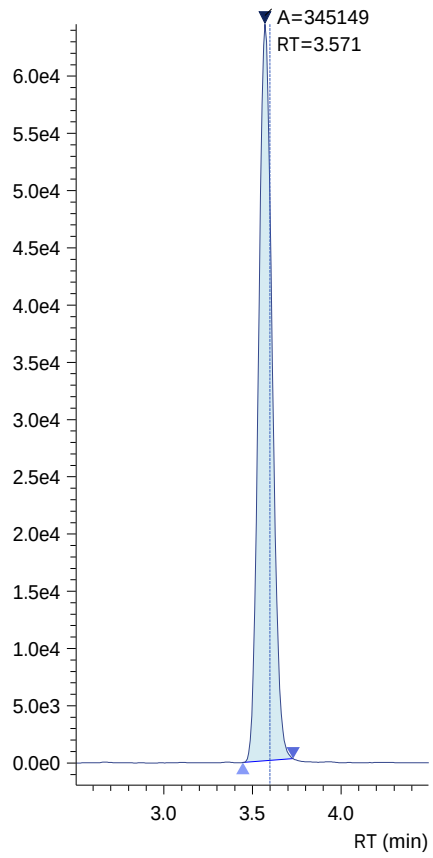
R1 101.00>85.00 (-) 1.40e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.45e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

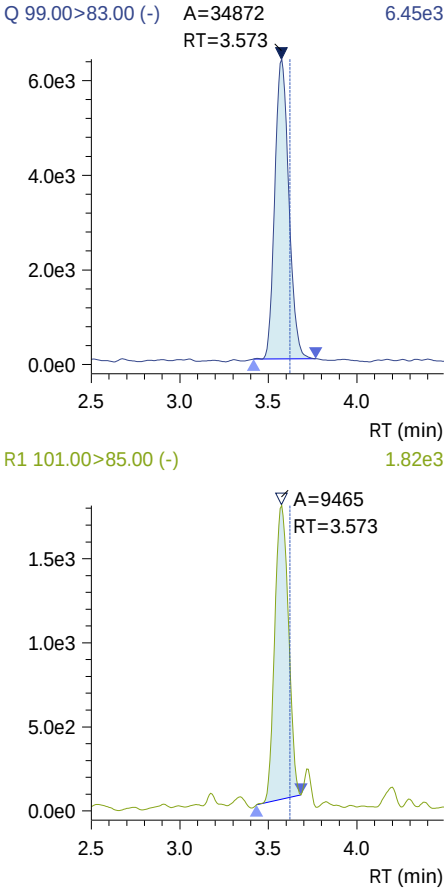
Perchlorate ICAL 3

Sample ID: Perchlorate ICAL 3
Date Acquired: 8/2/2023 1:28:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-005.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	34872	341974	0.6915	ng/mL	101.00 >85.00	27.14	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	341974	341974	1.0000	ng/mL	----	----	

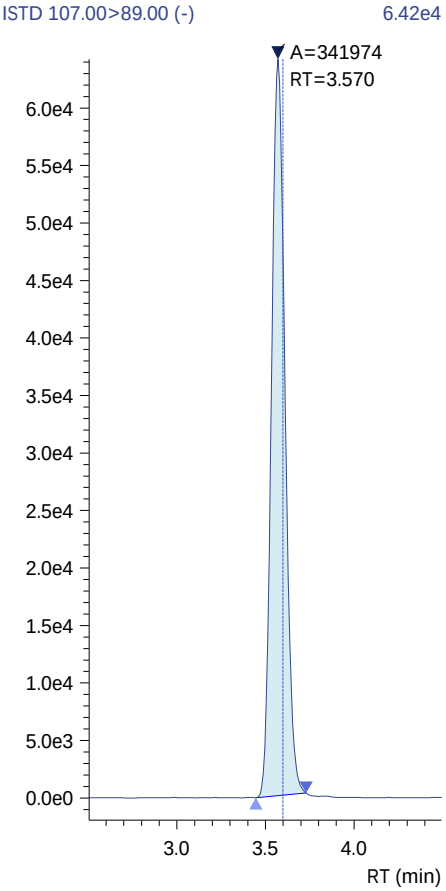
Perchlorate

Conc 0.6915
R#1 27.14 (30.41)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

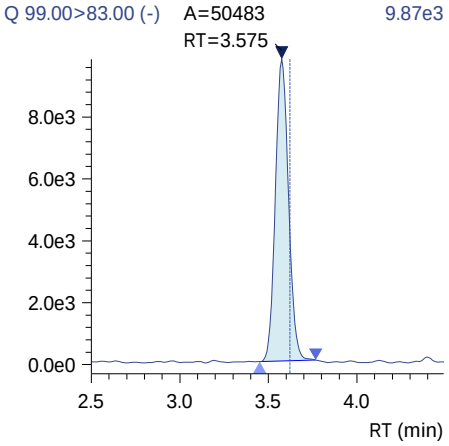
Perchlorate ICAL 4

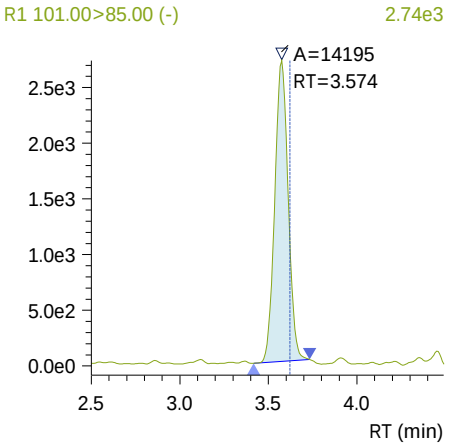
Sample ID: Perchlorate ICAL 4
Date Acquired: 8/2/2023 1:34:20 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-006.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.575	50483	338838	1.0104	ng/mL	101.00 >85.00	28.12	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	338838	338838	1.0000	ng/mL	----	----	

Perchlorate

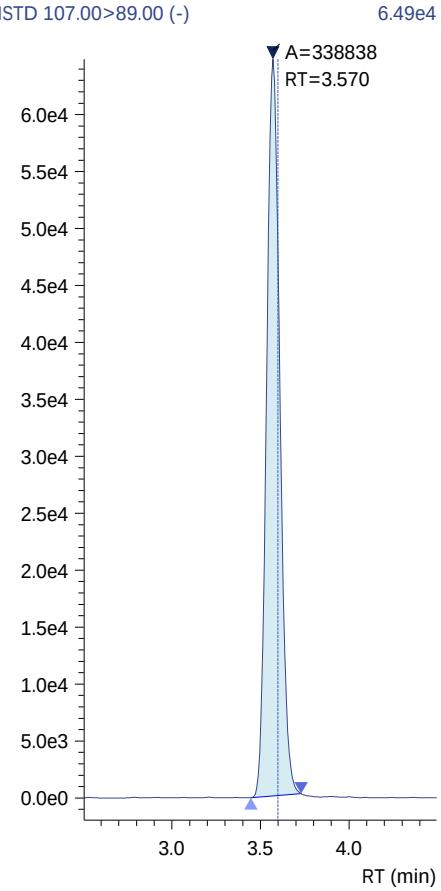
Conc 1.0104
R#1 28.12 (30.41)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

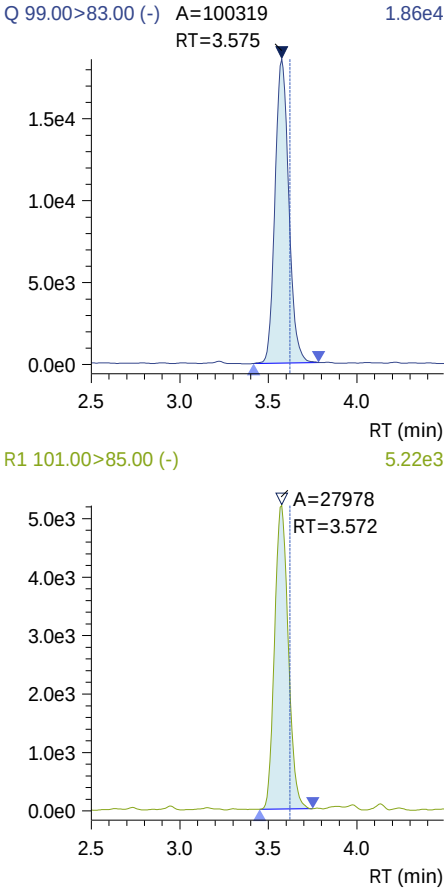
Perchlorate ICAL 5

Sample ID: Perchlorate ICAL 5
Date Acquired: 8/2/2023 1:39:51 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-007.lcd
Vial: 5 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.575	100319	331124	2.0545	ng/mL	101.00 >85.00	27.89	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	331124	331124	1.0000	ng/mL	----	----	

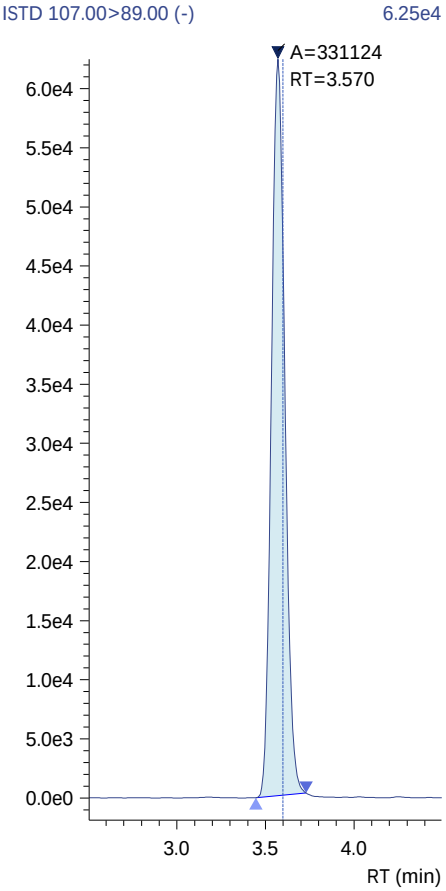
Perchlorate

Conc 2.0545
R#1 27.89 (30.41)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

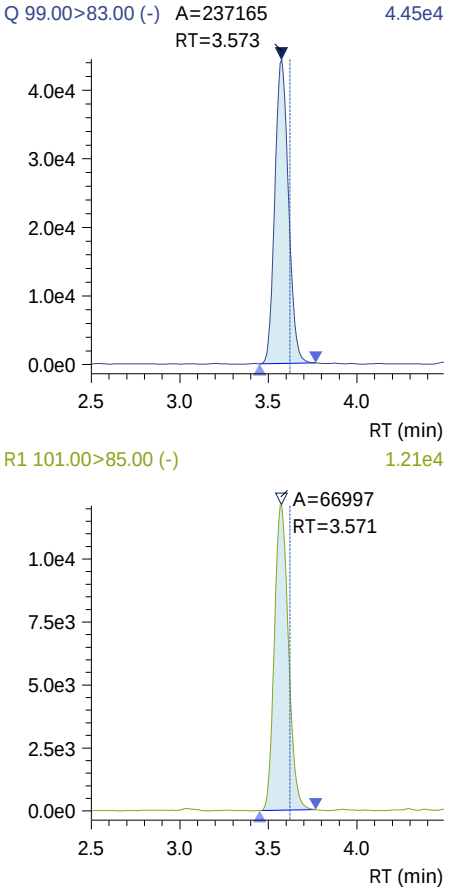
Perchlorate ICAL 6

Sample ID: Perchlorate ICAL 6
Date Acquired: 8/2/2023 1:45:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-008.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	237165	321666	5.0000	ng/mL	101.00 >85.00	28.25	21.29-39.54
Sodium Perchlorate-18O4 _IS	Auto	3.570	321666	321666	1.0000	ng/mL	----	----	

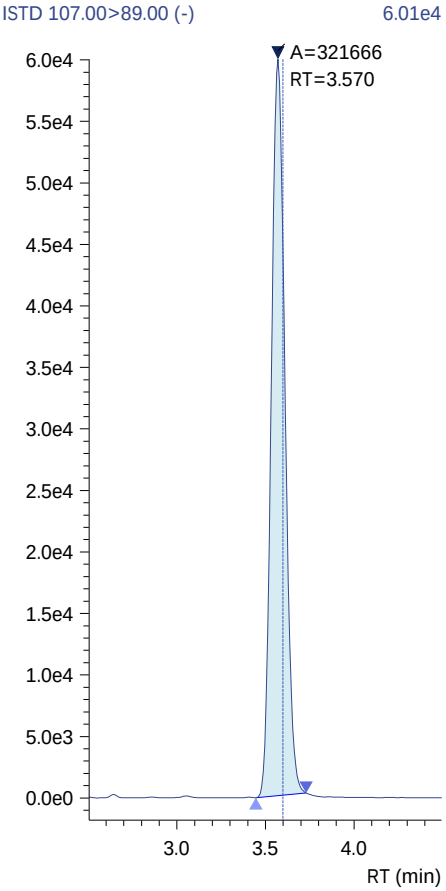
Perchlorate

Conc 5.0000
R#1 28.25 (30.41)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 7

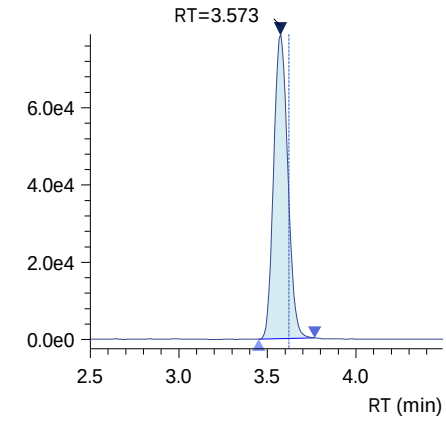
Sample ID: Perchlorate ICAL 7
Date Acquired: 8/2/2023 1:50:57 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-009.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	437614	291215	10.1905	ng/mL	101.00 >85.00	28.36	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.570	291215	291215	1.0000	ng/mL	----	----	

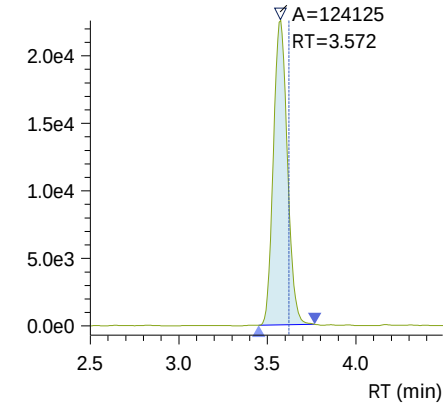
Perchlorate

Conc 10.1905
R#1 28.36 (30.41)

Q 99.00>83.00 (-) A=437614 7.90e4



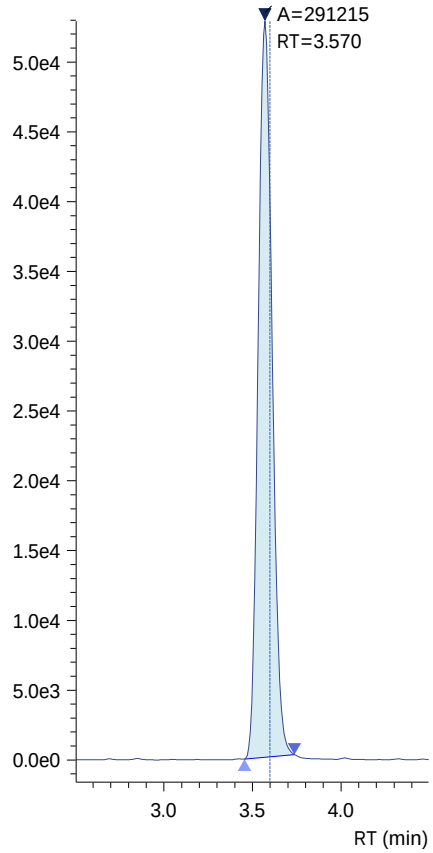
R1 101.00>85.00 (-) 2.26e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.29e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 8

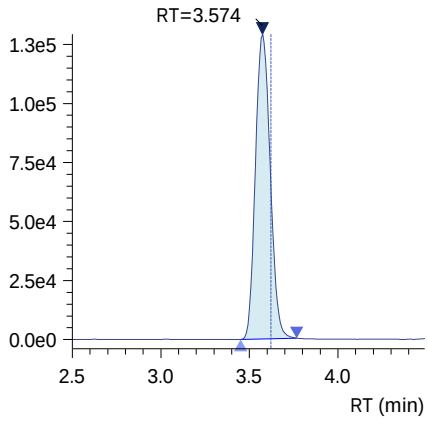
Sample ID: Perchlorate ICAL 8
Date Acquired: 8/2/2023 1:56:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-010.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.574	749856	253829	20.0336	ng/mL	101.00 >85.00	28.56	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.569	253829	253829	1.0000	ng/mL	----	----	

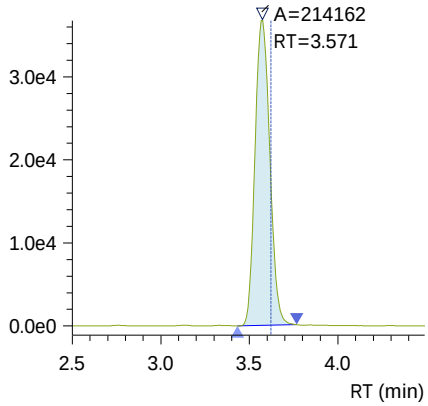
Perchlorate

Conc 20.0336
R#1 28.56 (30.41)

Q 99.00>83.00 (-) A=749856 1.29e5



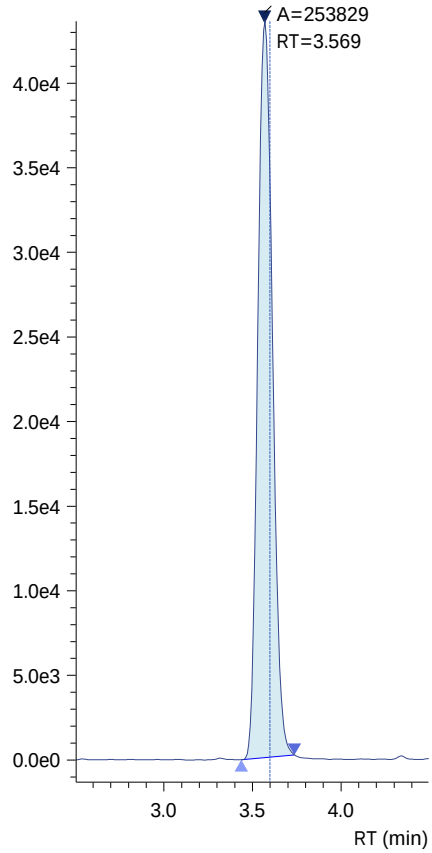
R1 101.00>85.00 (-) 3.68e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.37e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 9

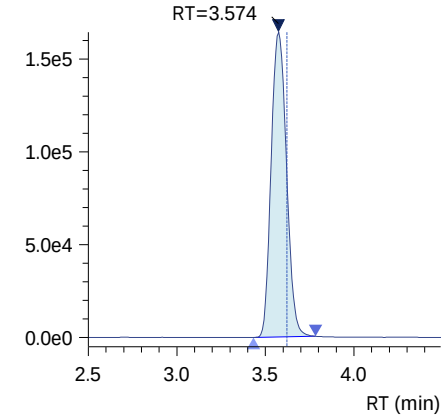
Sample ID: Perchlorate ICAL 9
Date Acquired: 8/2/2023 2:02:07 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-011.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.574	990671	222379	30.2105	ng/mL	101.00 >85.00	27.95	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.568	222379	222379	1.0000	ng/mL	----	----	

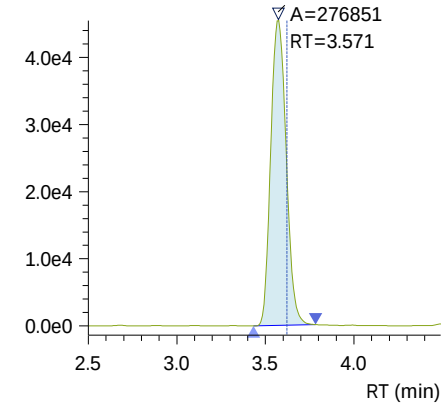
Perchlorate

Conc 30.2105
R#1 27.95 (30.41)

Q 99.00>83.00 (-) A=990671 1.64e5



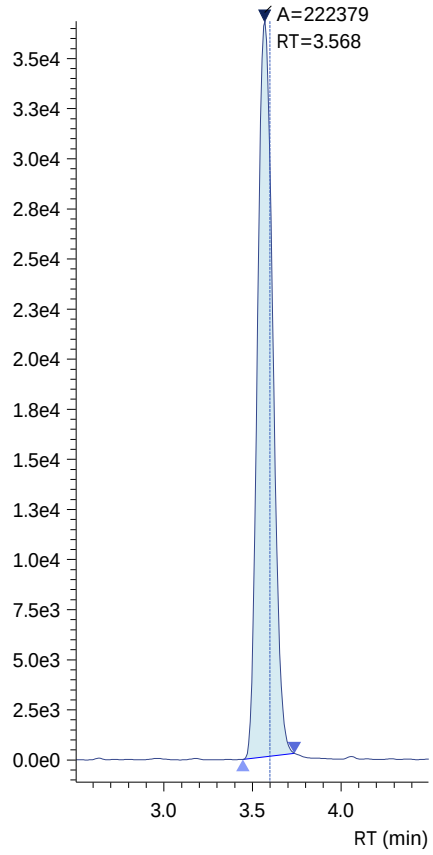
R1 101.00>85.00 (-) 4.55e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.69e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

Perchlorate ICAL 10

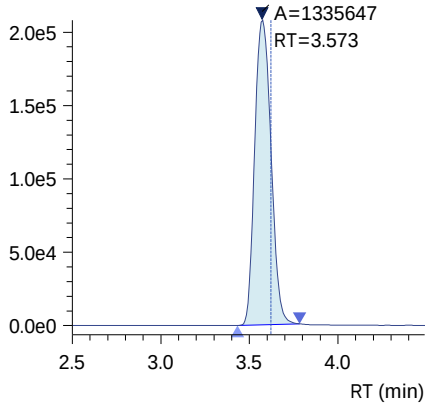
Sample ID: Perchlorate ICAL 10
Date Acquired: 8/2/2023 2:07:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-012.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.573	1335647	178573	50.72 20	ng/mL	101.00 >85.00	28.04	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.567	178573	178573	1.0000	ng/mL	----	----	

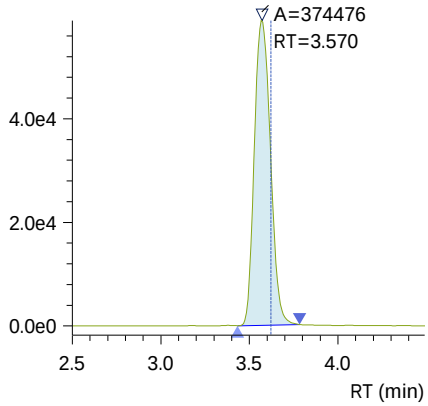
Perchlorate

Conc 50.7220
R#1 28.04 (30.41)

Q 99.00>83.00 (-) 2.08e5



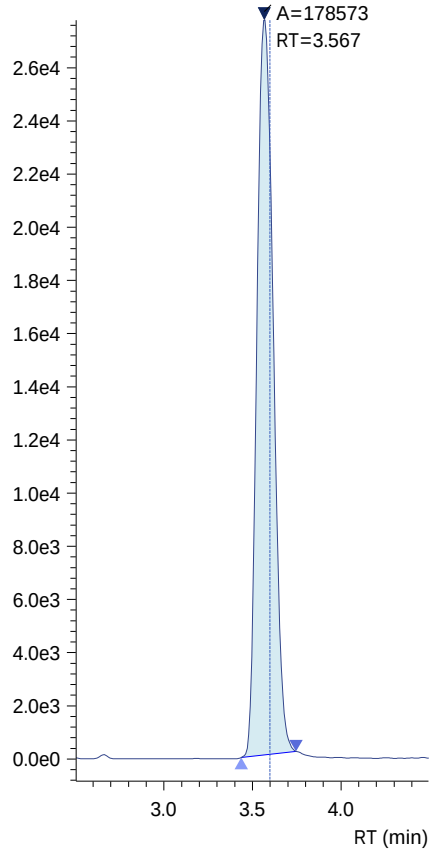
R1 101.00>85.00 (-) 5.90e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.78e4



Insight Report

Printed at 8/3/2023 9:30:46 AM

PerchlorateICV

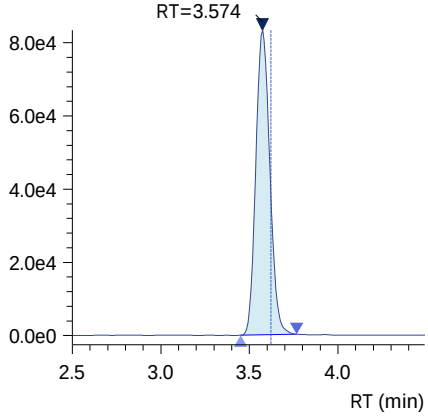
Sample ID: PerchlorateICV
Date Acquired: 8/2/2023 2:19:46 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20230802\2230802-013.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.574	459277	291890	10.6703	ng/mL	101.00 >85.00	28.35	21.29-39.54
Sodium Perchlorate-18O4_IS	Auto	3.570	291890	291890	1.0000	ng/mL	----	----	

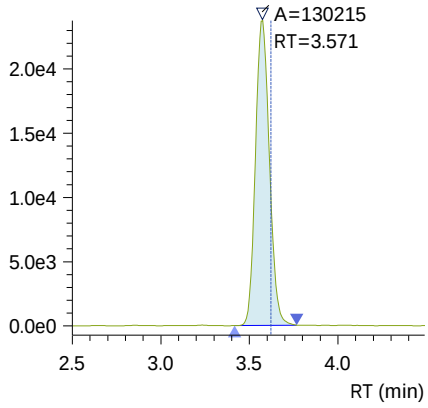
Perchlorate

Conc 10.6703
R#1 28.35 (30.41)

Q 99.00>83.00 (-) A=459277 RT=3.574 8.34e4



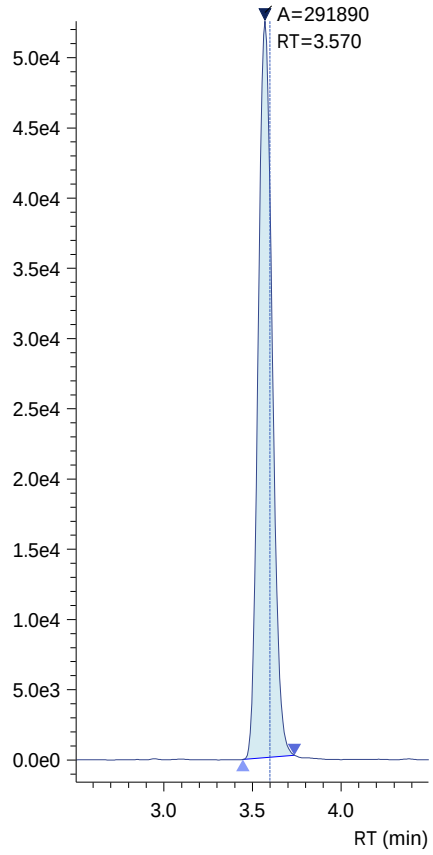
R1 101.00>85.00 (-) 2.38e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 5.26e4



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20231213-826754

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: KN

ICAL Date: 8/2/2023
Cal. Std. xp: 02/02/2024
ICAL ID: EC2300012

Mobile Phases : A:20mM ammonium acetate in water 231679 **B:**Acetonitrile 229152
LODV: 230386 **ICS:**32103051 **CCV:**230380

	File Name		Sample Name	Acquisition Method	Dilution	Comments	Date/Time
1	20231213-001		IB	Perchlorate6850c.lcm	1x		12/13/2023 9:23
2	20231213-002		IB	Perchlorate6850c.lcm	1x		12/13/2023 9:29
3	20231213-003		ICS	Perchlorate6850c.lcm	1x		12/13/2023 9:42
4	20231213-004		LODV	Perchlorate6850c.lcm	1x		12/13/2023 10:06
5	20231213-005		CCV	Perchlorate6850c.lcm	1x		12/13/2023 10:18
6	20231213-006		EQ2300607-01 MB	Perchlorate6850c.lcm	1x		12/13/2023 10:24
7	20231213-007		EQ2300607-02 LCS	Perchlorate6850c.lcm	1x		12/13/2023 10:29
8	20231213-008		EQ2300607-03 DLCS	Perchlorate6850c.lcm	1x		12/13/2023 10:35
9	20231213-009		EQ2300608-01 MB	Perchlorate6850c.lcm	1000x		12/13/2023 10:40
10	20231213-010		EQ2300608-02 LCS	Perchlorate6850c.lcm	1x		12/13/2023 10:46
11	20231213-011		EQ2300608-03 DLCS	Perchlorate6850c.lcm	1x		12/13/2023 10:52
12	20231213-012		E2301161-001	Perchlorate6850c.lcm	1x		12/13/2023 11:25
13	20231213-013		E2301161-002	Perchlorate6850c.lcm	1x		12/13/2023 11:30
14	20231213-014		E2301161-003	Perchlorate6850c.lcm	1x		12/13/2023 11:36
15	20231213-015		CCV	Perchlorate6850c.lcm	1x		12/13/2023 11:41
16	20231213-016		E2301165-001	Perchlorate6850c.lcm	1x	DNU-CONFIRM PEAK	12/13/2023 11:47
17	20231213-017		E2301165-002	Perchlorate6850c.lcm	1x		12/13/2023 11:52
18	20231213-018		E2301165-003	Perchlorate6850c.lcm	1x		12/13/2023 11:58
19	20231213-019		E2301165-004	Perchlorate6850c.lcm	1x		12/13/2023 12:03
20	20231213-020		E2301165-005	Perchlorate6850c.lcm	1x		12/13/2023 12:09
21	20231213-021		E2301165-006x5	Perchlorate6850c.lcm	5x		12/13/2023 12:15
22	20231213-022		E2301165-007x500	Perchlorate6850c.lcm	500x		12/13/2023 12:20
23	20231213-023		E2301165-008x5	Perchlorate6850c.lcm	5x		12/13/2023 12:26
24	20231213-024		E2301165-009x500	Perchlorate6850c.lcm	500x		12/13/2023 12:31
25	20231213-025		CCV	Perchlorate6850c.lcm	1x		12/13/2023 12:37
26	20231213-026		E2301166-001	Perchlorate6850c.lcm	1x		12/13/2023 12:42
27	20231213-027		E2301166-002x20	Perchlorate6850c.lcm	20x		12/13/2023 12:48
28	20231213-028		E2301166-003	Perchlorate6850c.lcm	1x		12/13/2023 12:53
29	20231213-029		E2301166-004	Perchlorate6850c.lcm	1x		12/13/2023 12:59
30	20231213-030		E2301166-005	Perchlorate6850c.lcm	1x		12/13/2023 13:04
31	20231213-031		E2301166-006	Perchlorate6850c.lcm	1x		12/13/2023 13:10
32	20231213-032		E2301166-007	Perchlorate6850c.lcm	1x		12/13/2023 13:15
33	20231213-033		E2301166-008x500	Perchlorate6850c.lcm	500x		12/13/2023 13:21
34	20231213-034		E2301166-009x500	Perchlorate6850c.lcm	500x		12/13/2023 13:26
35	20231213-035		CCV	Perchlorate6850c.lcm	1x		12/13/2023 13:32
36	20231213-036		E2301173-001	Perchlorate6850c.lcm	1x		12/13/2023 13:38
37	20231213-037		E2301173-002	Perchlorate6850c.lcm	1x		12/13/2023 13:43

20231213-826754

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: KN

ICAL Date: 8/2/2023
Cal. Std. xp: 02/02/2024
ICAL ID: EC2300012

Mobile Phases : A:20mM ammonium acetate in water 231679 **B:**Acetonitrile 229152
LODV: 230386 **ICS:**32103051 **CCV:**230380

	File Name		Sample Name	Acquisition Method	Dilution	Comments	Date/Time
38	20231213-038		E2301173-003x20	Perchlorate6850c.lcm	20x		12/13/2023 13:49
39	20231213-039		E2301173-004x500	Perchlorate6850c.lcm	500x		12/13/2023 13:54
40	20231213-040		E2301173-005	Perchlorate6850c.lcm	1x		12/13/2023 14:00
41	20231213-041		E2301173-006	Perchlorate6850c.lcm	1x		12/13/2023 14:05
42	20231213-042		E2301173-007	Perchlorate6850c.lcm	1x		12/13/2023 14:11
43	20231213-043		E2301173-008x500	Perchlorate6850c.lcm	500x		12/13/2023 14:16
44	20231213-044		CCV	Perchlorate6850c.lcm	1x		12/13/2023 14:34
45	20231213-045		E2301147-001	Perchlorate6850c.lcm	1x		12/13/2023 14:39
46	20231213-046		E2301147-002	Perchlorate6850c.lcm	1x		12/13/2023 14:45
47	20231213-047		E2301147-003	Perchlorate6850c.lcm	1x		12/13/2023 14:50
48	20231213-048		E2301147-004	Perchlorate6850c.lcm	1x		12/13/2023 14:56
49	20231213-049		EQ2300602-04	Perchlorate6850c.lcm	1x		12/13/2023 15:01
50	20231213-050		EQ2300602-05	Perchlorate6850c.lcm	1x		12/13/2023 15:07
51	20231213-051		E2301147-005x500	Perchlorate6850c.lcm	500x		12/13/2023 15:12
52	20231213-052		E2301147-006x1000	Perchlorate6850c.lcm	1000x	DNU-D	12/13/2023 15:18
53	20231213-053		CCV	Perchlorate6850c.lcm	1x		12/13/2023 15:23
54	20231213-054		E2301176-001x5k	Perchlorate6850c.lcm	5000x		12/13/2023 15:30
55	20231213-055		E2301176-002x50	Perchlorate6850c.lcm	50x		12/13/2023 15:36
56	20231213-056		E2301176-003x20	Perchlorate6850c.lcm	20x		12/13/2023 15:41
57	20231213-057		E2301176-004x1k	Perchlorate6850c.lcm	1000x	DNU-D	12/13/2023 15:47
58	20231213-058		E2301176-005x5k	Perchlorate6850c.lcm	5000x		12/13/2023 15:52
59	20231213-059		E2301176-006x5k	Perchlorate6850c.lcm	5000x		12/13/2023 15:58
60	20231213-060		E2301176-007x1k	Perchlorate6850c.lcm	1000x	DNU-D	12/13/2023 16:03
61	20231213-061		E2301176-008x500	Perchlorate6850c.lcm	500x	DNU-D	12/13/2023 16:09
62	20231213-062		E2301176-009x50	Perchlorate6850c.lcm	50x		12/13/2023 16:14
63	20231213-063		E2301176-010	Perchlorate6850c.lcm	1x		12/13/2023 16:20
64	20231213-064		CCV	Perchlorate6850c.lcm	1x		12/13/2023 16:25
65	20231213-065		E2301165-001	Perchlorate6850c.lcm	1x		12/13/2023 16:31
66	20231213-066		EQ2300614-01	Perchlorate6850c.lcm	1x		12/13/2023 16:36
67	20231213-067		EQ2300614-02	Perchlorate6850c.lcm	1x		12/13/2023 16:42
68	20231213-068		EQ2300614-03	Perchlorate6850c.lcm	1x		12/13/2023 16:47
69	20231213-069		E2301193-001	Perchlorate6850c.lcm	1x		12/13/2023 16:53
70	20231213-070		E2301193-002	Perchlorate6850c.lcm	1x		12/13/2023 16:59
71	20231213-071		E2301147-006x5K	Perchlorate6850c.lcm	5000x		12/13/2023 17:04
72	20231213-072		E2301176-004x5K	Perchlorate6850c.lcm	5000x		12/13/2023 17:10
73	20231213-073		E2301176-007x5K	Perchlorate6850c.lcm	5000x		12/13/2023 17:15
74	20231213-074		E2301176-008x5K	Perchlorate6850c.lcm	5000x		12/13/2023 17:21

20231213-826754

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: KN

ICAL Date: 8/2/2023
Cal. Std. xp: 02/02/2024
ICAL ID: EC2300012

Mobile Phases : **A:**20mM ammonium acetate in water 231679 **B:**Acetonitrile 229152
LODV: 230386 **ICS:**32103051 **CCV:**230380

	File Name		Sample Name	Acquisition Method	Dilution	Comments	Date/Time
75	20231213-075		CCV	Perchlorate6850c.lcm	1x		12/13/2023 17:37

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/8/23 10:57

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231208\20231208-004 **Lab Code:** EQ2300603-01
Instrument ID: E-LCMS-01 **Analysis Lot:** 826405
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300603-01	368,987	3.55
Method Blank	EQ2300602-01	370,797	3.54
Lab Control Sample	EQ2300602-02	358,031	3.54
Duplicate Lab Control Sample	EQ2300602-03	362,685	3.54

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/8/23 11:46

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231208\20231208-012 **Lab Code:** EQ2300603-02
Instrument ID: E-LCMS-01 **Analysis Lot:** 826405
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300603-02	361,920	3.54

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23 10:18

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231213\20231213-005 **Lab Code:** EQ2300613-01
Instrument ID: E-LCMS-01 **Analysis Lot:** 826754
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-01	215,921	3.54

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23 11:41

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231213\20231213-015 **Lab Code:** EQ2300613-02
Instrument ID: E-LCMS-01 **Analysis Lot:** 826754
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-02	247,457	3.53

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

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2301147
Project:	LHAAP / Site 17	**Date Analyzed:**	12/13/23 12:37

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20231213\20231213-025	**Lab Code:**	EQ2300613-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	826754
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-03	237,089	3.53

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23 13:32

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231213\20231213-035 **Lab Code:** EQ2300613-04
Instrument ID: E-LCMS-01 **Analysis Lot:** 826754
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-04	244,354	3.52

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23 14:34

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231213\20231213-044 **Lab Code:** EQ2300613-05
Instrument ID: E-LCMS-01 **Analysis Lot:** 826754
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-05	243,623	3.52
130_120423	E2301147-001	259,293	3.52
130_120423_a	E2301147-002	258,519	3.52
17WW03_120423	E2301147-003	251,889	3.52
17WW01_120423	E2301147-004	244,031	3.52
17WW01_120423MS	EQ2300602-04	235,413	3.52
17WW01_120423DMS	EQ2300602-05	224,651	3.52
17WW02_120423	E2301147-005	172,392	3.52

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23 15:23

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231213\20231213-053 **Lab Code:** EQ2300613-06
Instrument ID: E-LCMS-01 **Analysis Lot:** 826754
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-06	209,845	3.52

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23 16:25

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231213\20231213-064 **Lab Code:** EQ2300613-07
Instrument ID: E-LCMS-01 **Analysis Lot:** 826754
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-07	220,137	3.52
17WW06_120423	E2301147-006	217,365	3.52

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23 17:37

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20231213\20231213-075 **Lab Code:** EQ2300613-08
Instrument ID: E-LCMS-01 **Analysis Lot:** 826754
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	297,129	3.57
	Upper Limit ==>	445,694	5.57
	Lower Limit ==>	148,565	1.57
Associated Analyses			
Continuing Calibration Verification	EQ2300613-08	235,588	3.52

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/ 8/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231208\20231208-004 **Calibration ID:** EC2300012
Analysis Lot: 826405
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1475	0.1551	5.2	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/ 8/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231208\20231208-012 **Calibration ID:** EC2300012
Analysis Lot: 826405
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.6	0.1475	0.1566	6.2	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-005 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1475	0.1533	4.0	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-015 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1475	0.1551	5.2	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-025 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1475	0.1551	5.2	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-035 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1475	0.1578	7.0	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-044 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1475	0.1546	4.8	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-053 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.6	0.1475	0.1568	6.3	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-064 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1475	0.1573	6.6	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2301147
Project: LHAAP / Site 17 **Date Analyzed:** 12/13/23

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 8/2/23
File ID: I:\LCMS01\DATA\20231213\20231213-075 **Calibration ID:** EC2300012
Analysis Lot: 826754
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1475	0.1531	3.8	NA	± 15 %	Average RF

Insight Report

Printed at 12/14/2023 9:06:52 AM

Method File: I:\LCMS01\DATA\20231208\20231208.lcm
Project File: I:\LCMS01\DATA\20231208\20231208.damlp

IB

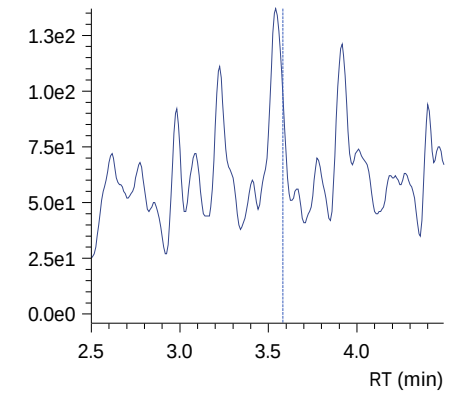
Sample ID: IB
Date Acquired: 12/8/2023 10:33:38 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-001.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	357377	----	ng/mL	101.00 >85.00	0.00	18.45-34.26
Sodium Perchlorate-18O4_IS	Auto	3.545	357377	357377	1.0000	ng/mL	----	----	

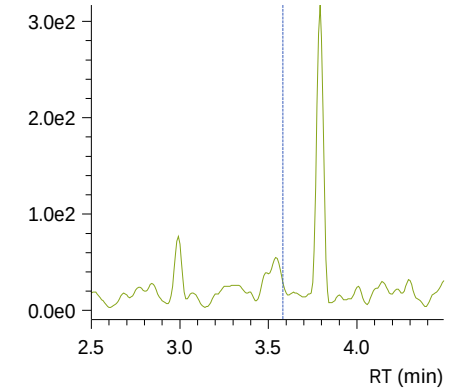
Perchlorate

Conc ----
R#1 0.00 (26.35)

Q 99.00>83.00 (-) 1.37e2



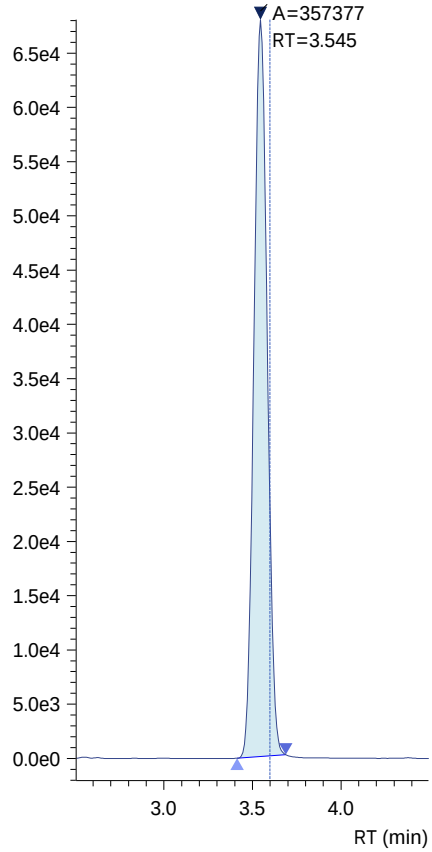
R1 101.00>85.00 (-) 3.17e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.81e4



Insight Report

Printed at 12/14/2023 9:06:52 AM

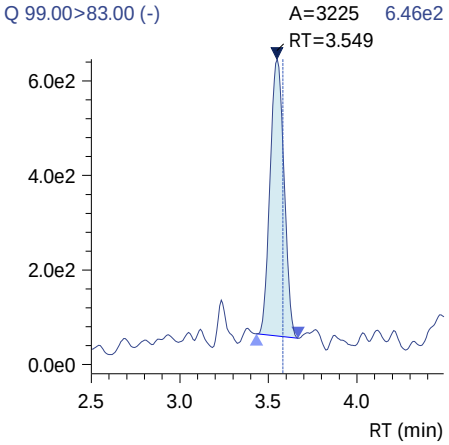
LODV

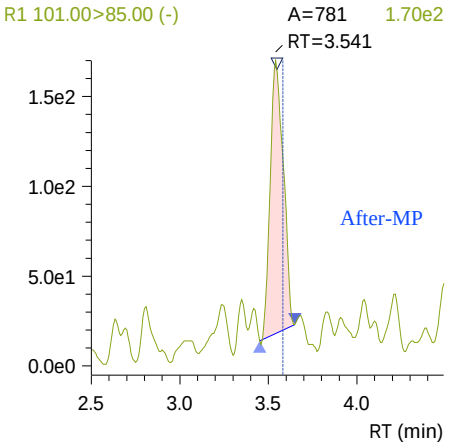
Sample ID: LODV
Date Acquired: 12/8/2023 10:39:49 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-002.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.549	3225	372260	0.0587	ng/mL	101.00 >85.00	24.23	18.45-34.26
Sodium Perchlorate-18O4 _IS	Auto	3.544	3722 60	372260	1.0000	ng/mL	----	----	

Perchlorate

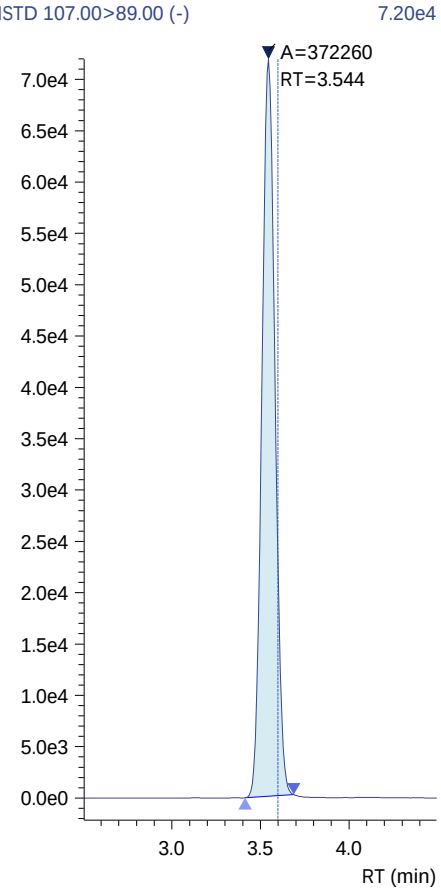
Conc 0.0587
R#1 24.23 (26.35)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 9:07:29 AM

Method File: I:\LCMS01\DATA\20231208\20231208.lcm
Project File: I:\LCMS01\DATA\20231208\20231208.damlp

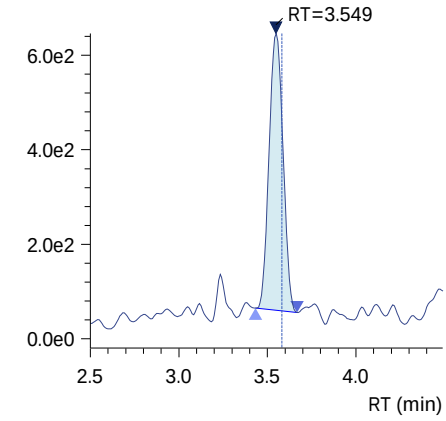
LODV

Sample ID: LODV
Date Acquired: 12/8/2023 10:39:49 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-002.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 0

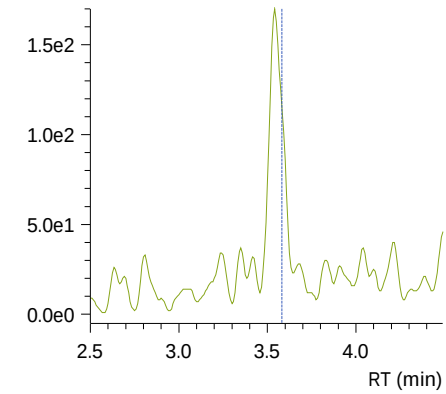
Perchlorate

Conc 0.0587
R#1 0.00 (26.35)

Q 99.00>83.00 (-) A=3225 6.46e2



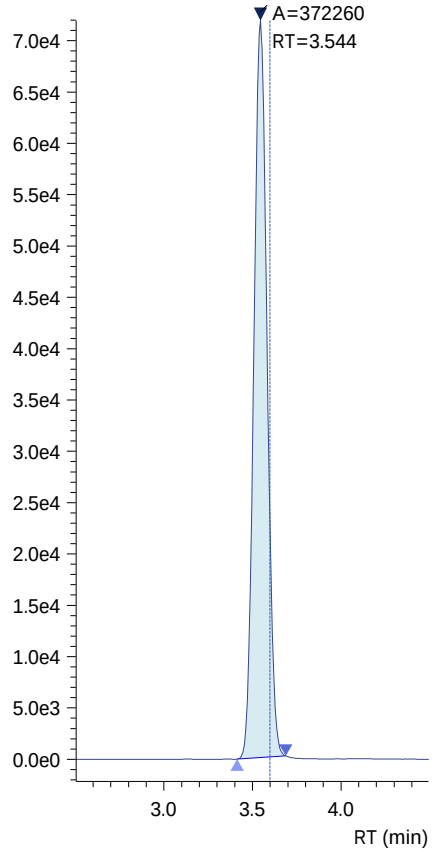
R1 101.00>85.00 (-) 1.70e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 7.20e4



Insight Report

Printed at 12/14/2023 9:06:52 AM

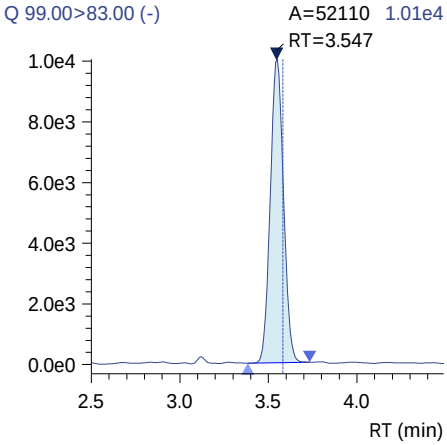
ICS

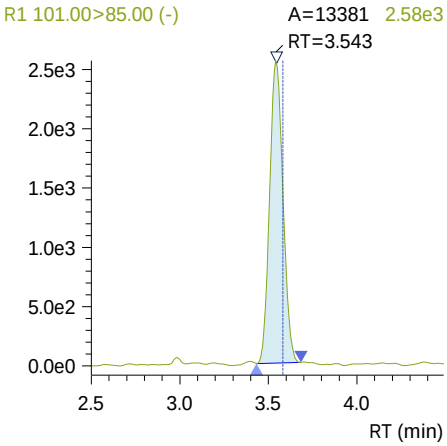
Sample ID: ICS
Date Acquired: 12/8/2023 10:48:15 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-003.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.547	52110	307372	1.1497	ng/mL	101.00 >85.00	25.68	18.45-34.26
Sodium Perchlorate-18O4 _IS	Auto	3.544	3073 72	307372	1.0000	ng/mL	----	----	

Perchlorate

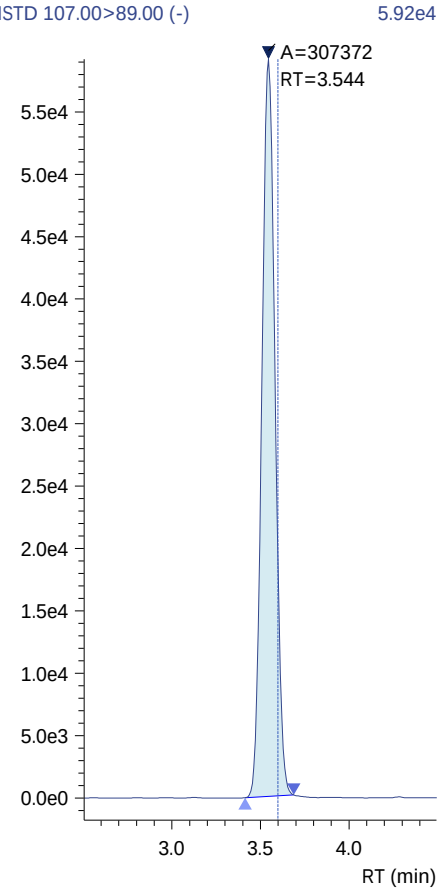
Conc 1.1497
R#1 25.68 (26.35)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 9:06:52 AM

CCV

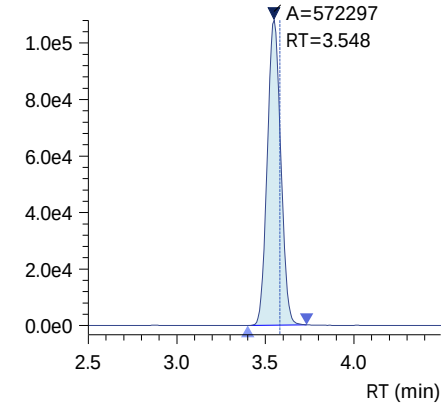
Sample ID: CCV
Date Acquired: 12/8/2023 10:57:03 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-004.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.548	572297	368987	10.5180	ng/mL	101.00 >85.00	26.72	18.45-34.26
Sodium Perchlorate-18O4_IS	Auto	3.545	368987	368987	1.0000	ng/mL	----	----	

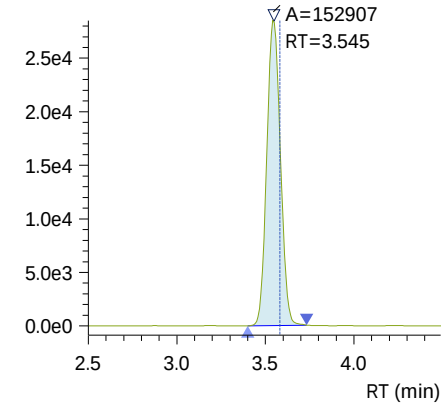
Perchlorate

Conc 10.5180
R#1 26.72 (26.35)

Q 99.00>83.00 (-) 1.08e5



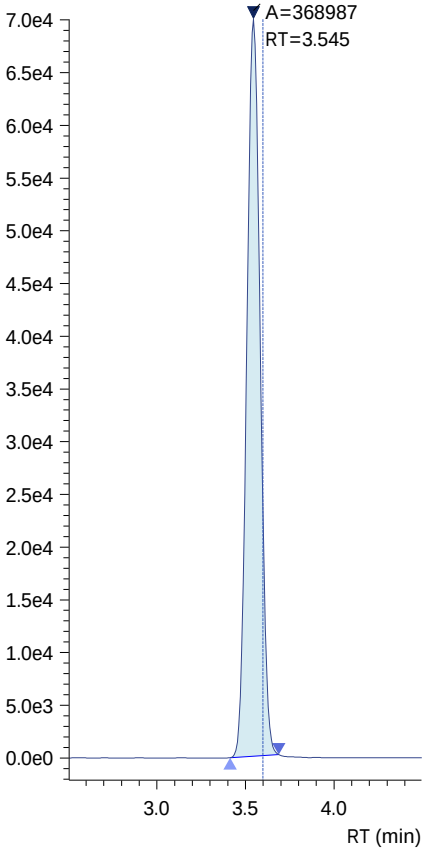
R1 101.00>85.00 (-) 2.85e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 7.01e4



Insight Report

Printed at 12/14/2023 9:06:52 AM

EQ2300602-01

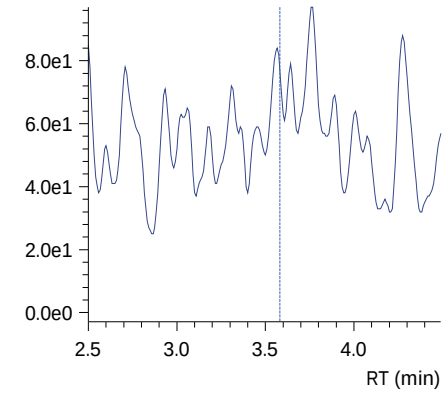
Sample ID: EQ2300602-01
Date Acquired: 12/8/2023 11:07:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-005.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	370797	----	ng/mL	101.00 >85.00	0.00	18.45-34.26
Sodium Perchlorate-18O4_IS	Auto	3.544	370797	370797	1.0000	ng/mL	----	----	

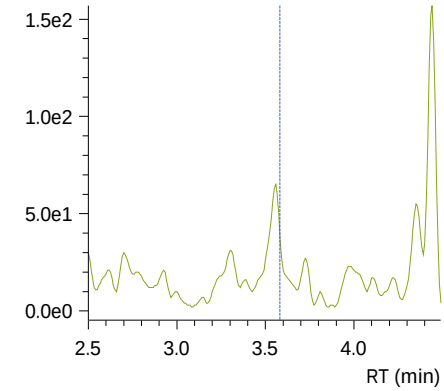
Perchlorate

Conc ----
R#1 0.00 (26.35)

Q 99.00>83.00 (-) 9.70e1



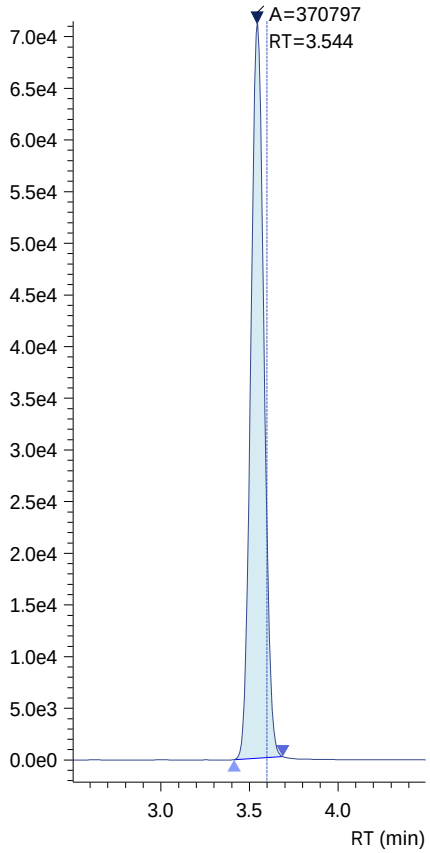
R1 101.00>85.00 (-) 1.57e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 7.15e4



Insight Report

Printed at 12/14/2023 9:06:52 AM

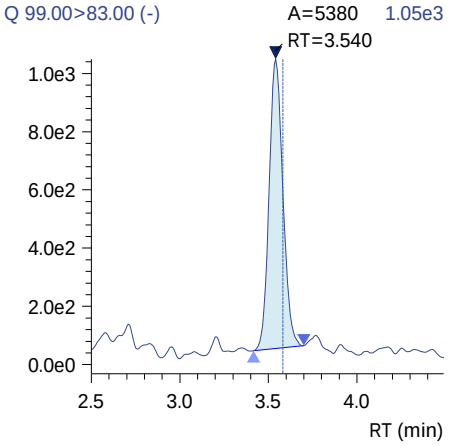
EQ2300602-02

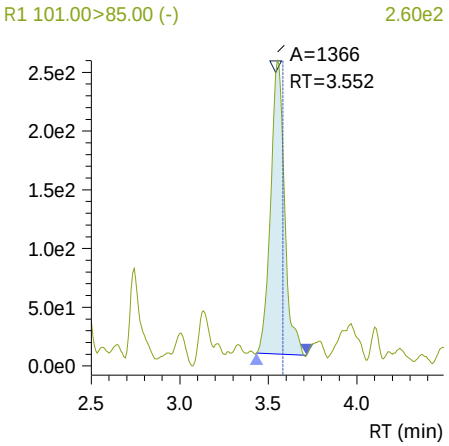
Sample ID: EQ2300602-02
Date Acquired: 12/8/2023 11:34:57 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-010.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.540	5380	358031	0.1019	ng/mL	101.00 >85.00	25.38	18.45-34.26
Sodium Perchlorate-18O4 _IS	Auto	3.541	3580 31	358031	1.0000	ng/mL	----	----	

Perchlorate

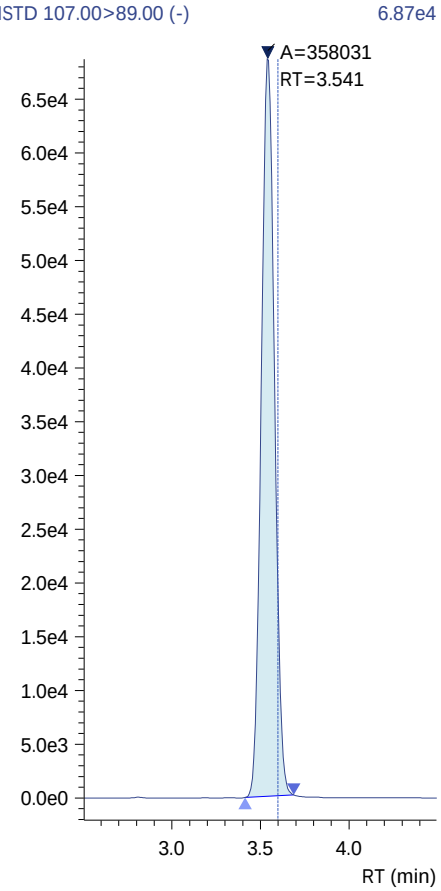
Conc 0.1019
R#1 25.38 (26.35)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 9:06:52 AM

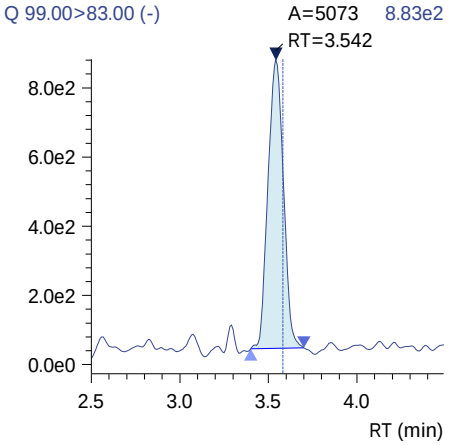
EQ2300602-03

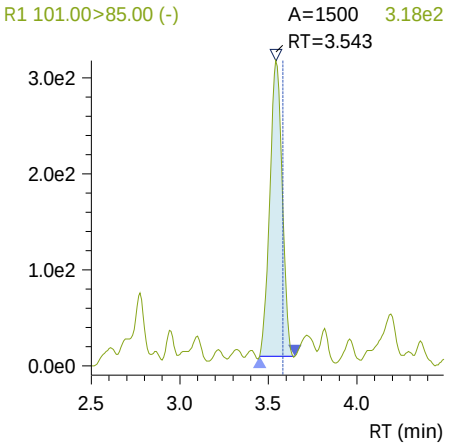
Sample ID: EQ2300602-03
Date Acquired: 12/8/2023 11:40:29 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-011.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.542	5073	362685	0.0949	ng/mL	101.00 >85.00	29.56	18.45-34.26
Sodium Perchlorate-18O4 _IS	Auto	3.541	3626 85	362685	1.0000	ng/mL	----	----	

Perchlorate

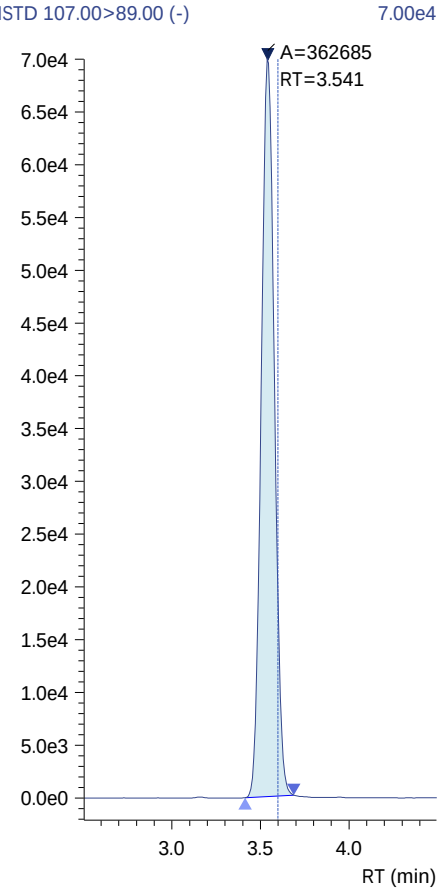
Conc 0.0949
R#1 29.56 (26.35)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 9:06:52 AM

CCV

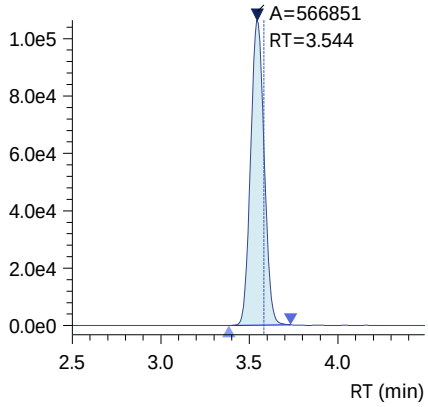
Sample ID: CCV
Date Acquired: 12/8/2023 11:46:02 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231208\20231208-012.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.544	566851	361920	10.6213	ng/mL	101.00 >85.00	25.98	18.45-34.26
Sodium Perchlorate-18O4_IS	Auto	3.541	361920	361920	1.0000	ng/mL	----	----	

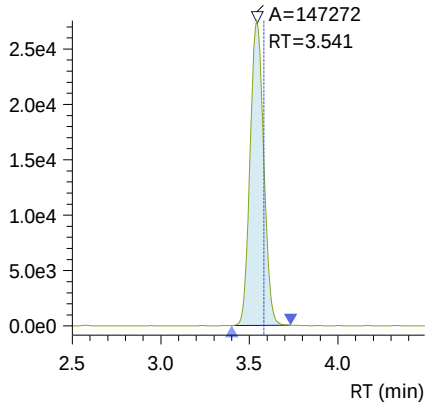
Perchlorate

Conc 10.6213
R#1 25.98 (26.35)

Q 99.00>83.00 (-) 1.06e5



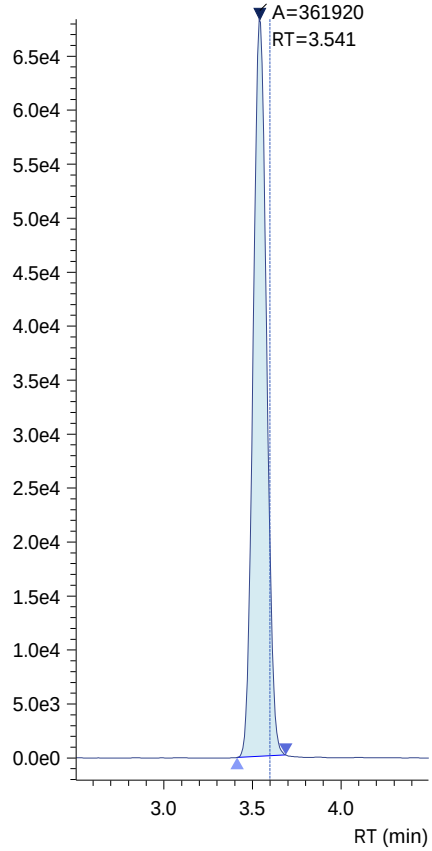
R1 101.00>85.00 (-) 2.76e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.84e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

CCV

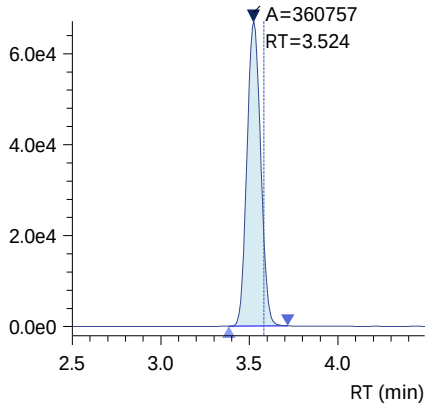
Sample ID: CCV
Date Acquired: 12/13/2023 5:37:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-075.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.524	360757	235588	10.3844	ng/mL	101.00 >85.00	27.32	18.64-34.61
Sodium Perchlorate-18O4_IS	Auto	3.520	235588	235588	1.0000	ng/mL	----	----	

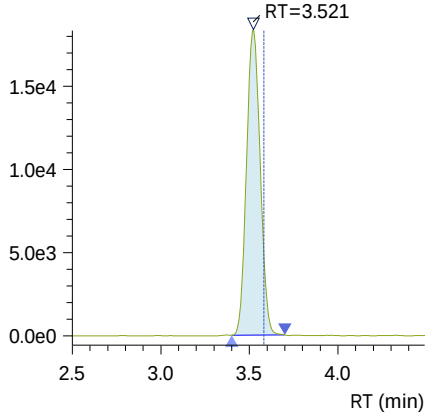
Perchlorate

Conc 10.3844
R#1 27.32 (26.63)

Q 99.00>83.00 (-) 6.72e4



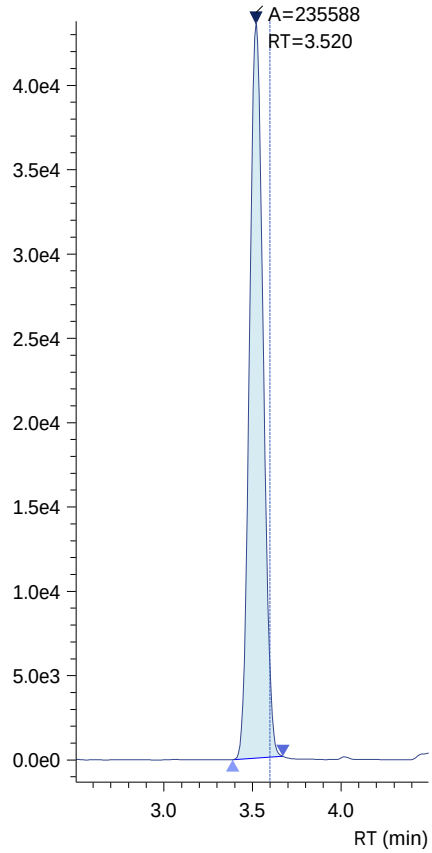
R1 101.00>85.00 (-) A=98554 1.83e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.38e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

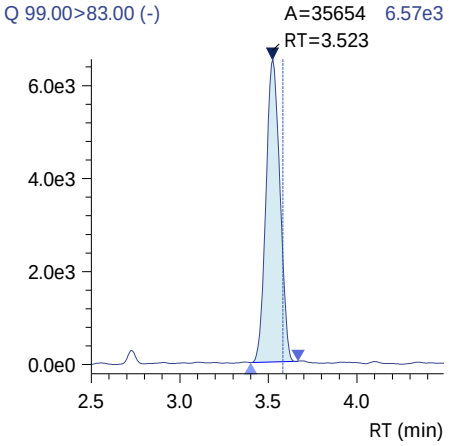
E2301147-001

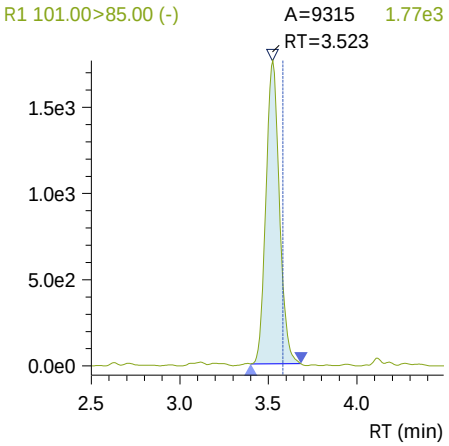
Sample ID: E2301147-001
Date Acquired: 12/13/2023 2:39:41 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-045.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.523	35654	259293	0.9325	ng/mL	101.00 >85.00	26.13	18.64-34.61
Sodium Perchlorate-18O4 _IS	Auto	3.521	2592 93	259293	1.0000	ng/mL	----	----	

Perchlorate

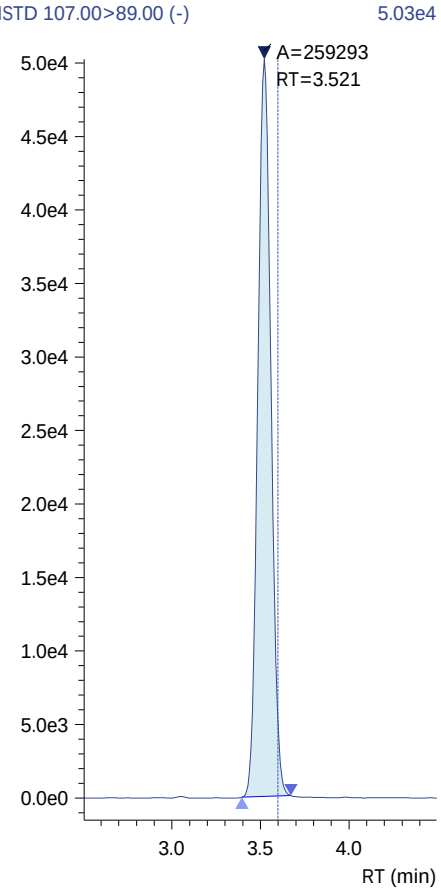
Conc 0.9325
R#1 26.13 (26.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 8:59:17 AM

E2301147-002

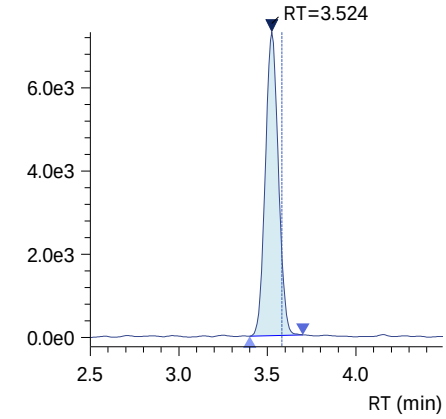
Sample ID: E2301147-002
Date Acquired: 12/13/2023 2:45:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-046.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.524	37372	258519	0.9803	ng/mL	101.00 >85.00	27.00	18.64-34.61
Sodium Perchlorate-18O4 _IS	Auto	3.521	2585 19	258519	1.0000	ng/mL	----	----	

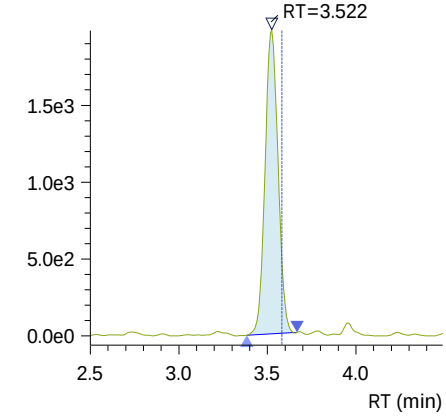
Perchlorate

Conc 0.9803
R#1 27.00 (26.63)

Q 99.00>83.00 (-) A=37372 7.33e3



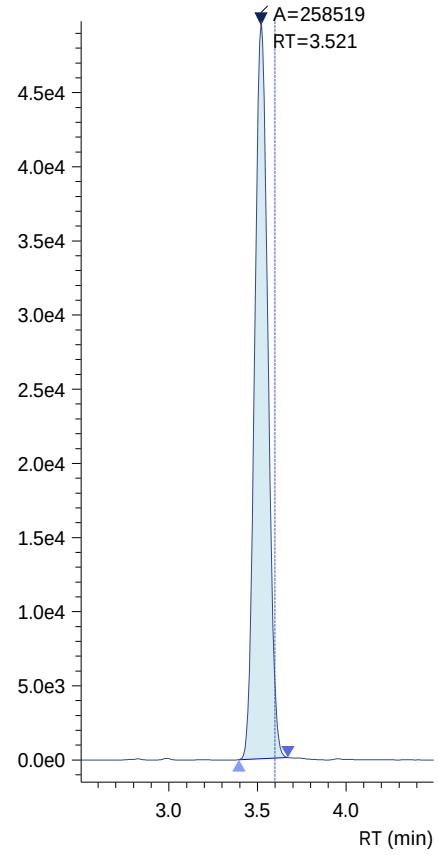
R1 101.00>85.00 (-) A=10091 1.99e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.98e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

E2301147-003

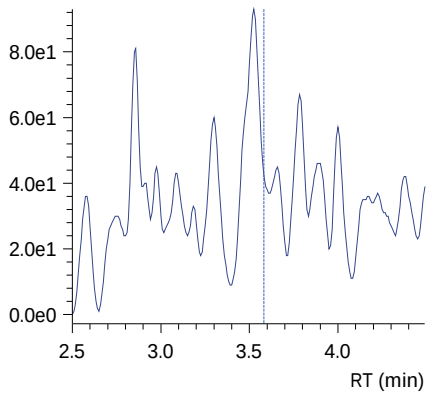
Sample ID: E2301147-003
Date Acquired: 12/13/2023 2:50:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-047.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	251889	----	ng/mL	101.00 >85.00	0.00	18.64-34.61
Sodium Perchlorate-18O4_IS	Auto	3.520	251889	251889	1.0000	ng/mL	----	----	

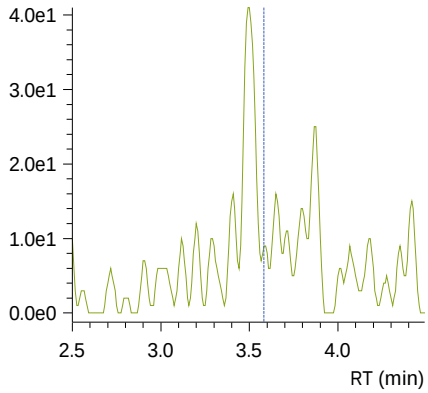
Perchlorate

Conc ----
R#1 0.00 (26.63)

Q 99.00>83.00 (-) 9.30e1



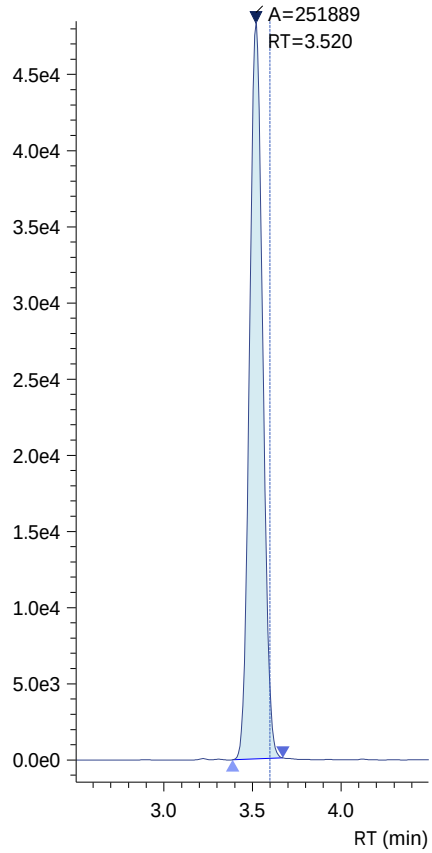
R1 101.00>85.00 (-) 4.10e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.85e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

E2301147-004

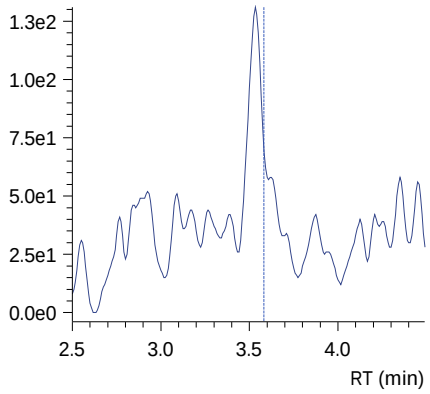
Sample ID: E2301147-004
Date Acquired: 12/13/2023 2:56:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-048.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	244031	----	ng/mL	101.00 >85.00	0.00	18.64-34.61
Sodium Perchlorate-18O4_IS	Auto	3.520	244031	244031	1.0000	ng/mL	----	----	

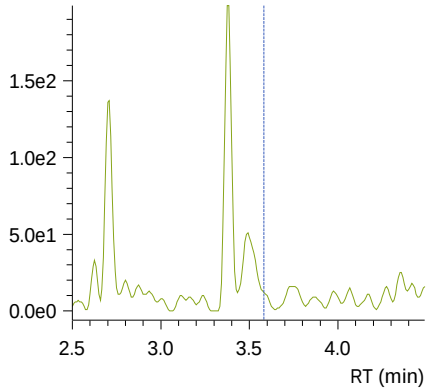
Perchlorate

Conc ----
R#1 0.00 (26.63)

Q 99.00>83.00 (-) 1.31e2



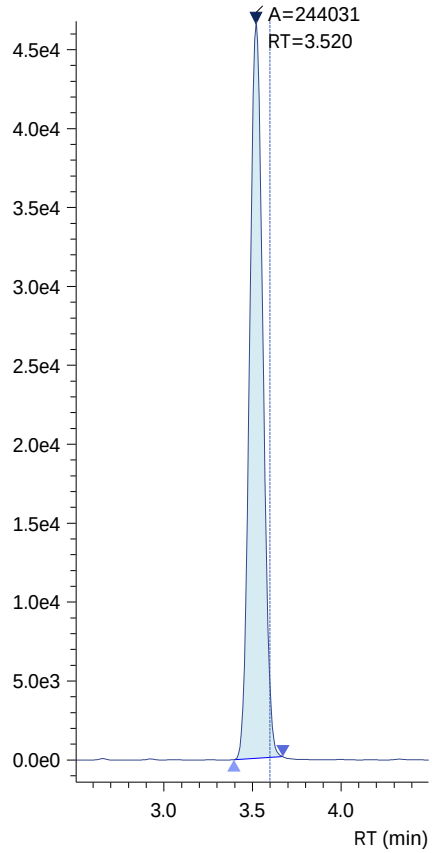
R1 101.00>85.00 (-) 1.99e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.68e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

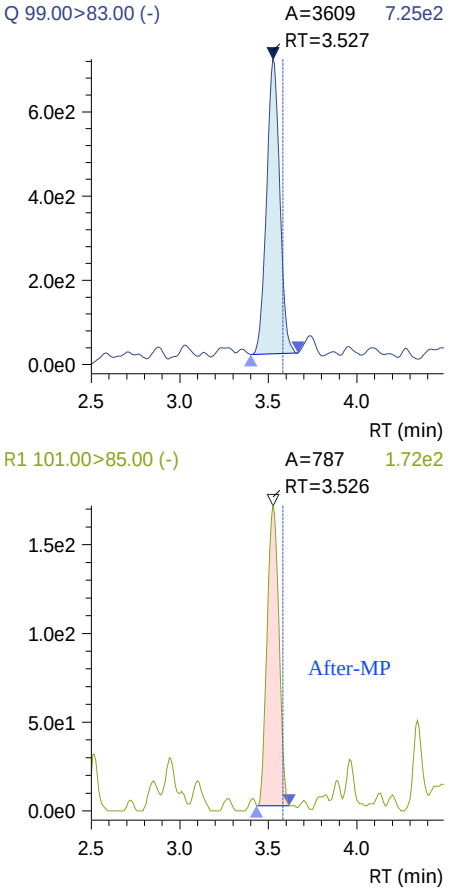
EQ2300602-04

Sample ID: EQ2300602-04
Date Acquired: 12/13/2023 3:01:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-049.lcd
Vial: 53 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.527	3609	235413	0.1040	ng/mL	101.00 >85.00	21.79	18.64-34.61
Sodium Perchlorate-18O4 _IS	Auto	3.520	2354 13	235413	1.0000	ng/mL	----	----	

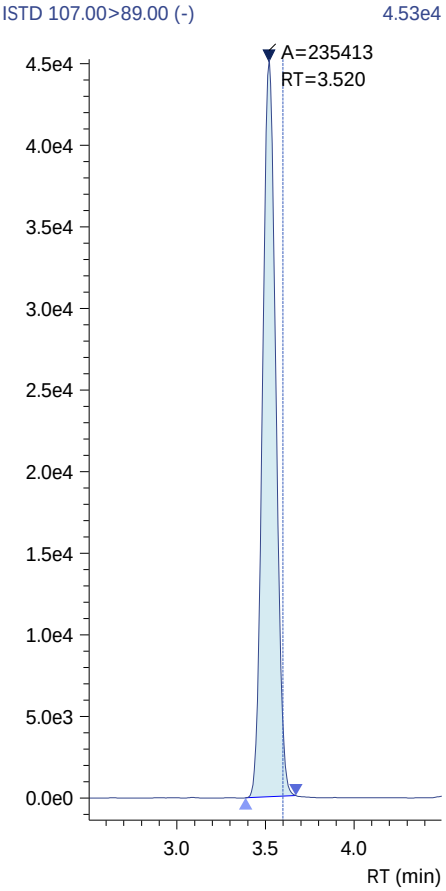
Perchlorate

Conc 0.1040
R#1 21.79 (26.63)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 9:02:15 AM

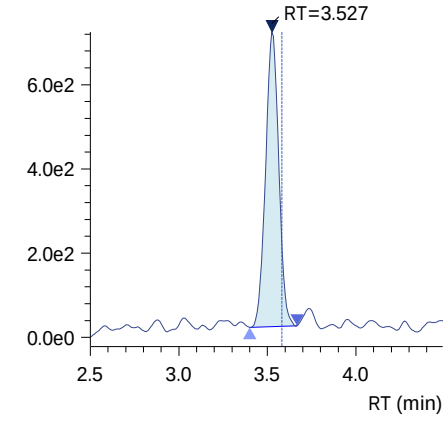
EQ2300602-04

Sample ID: EQ2300602-04
Date Acquired: 12/13/2023 3:01:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-049.lcd
Vial: 53 | Inj. Volume: 10.0000uL | Tray: 5

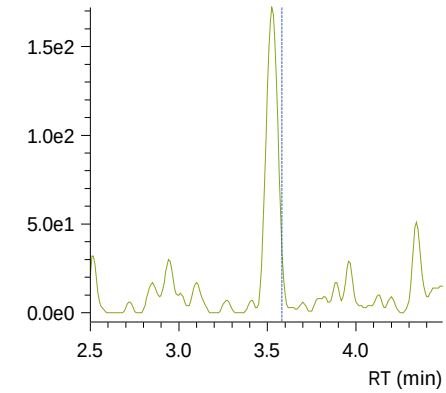
Perchlorate

Conc 0.1040
R#1 0.00 (26.63)

Q 99.00>83.00 (-) A=3609 7.25e2



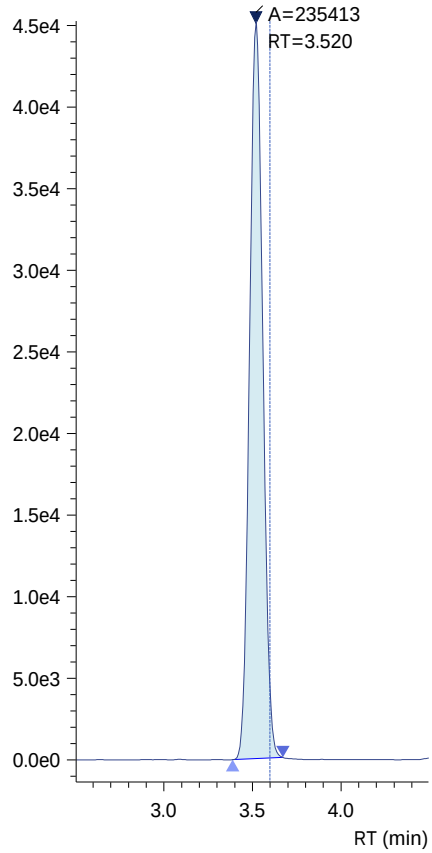
R1 101.00>85.00 (-) 1.72e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.53e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

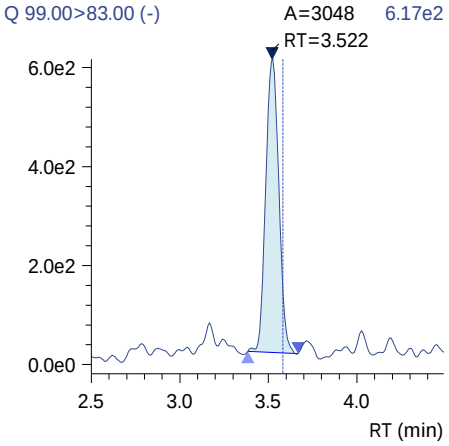
EQ2300602-05

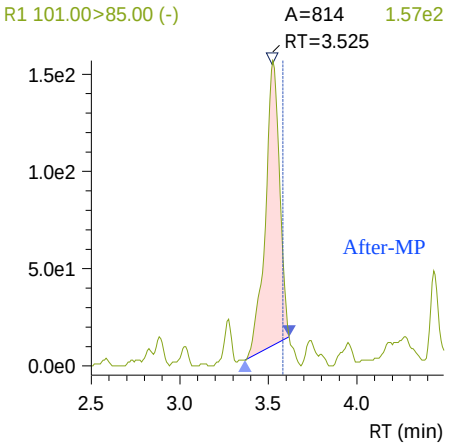
Sample ID: EQ2300602-05
Date Acquired: 12/13/2023 3:07:17 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-050.lcd
Vial: 54 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.522	3048	224651	0.0920	ng/mL	101.00 >85.00	26.70	18.64-34.61
Sodium Perchlorate-18O4 _IS	Auto	3.520	2246 51	224651	1.0000	ng/mL	----	----	

Perchlorate

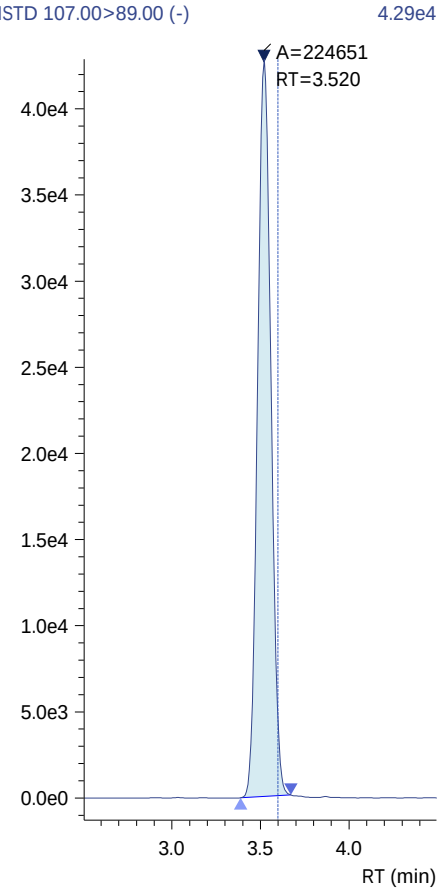
Conc 0.0920
R#1 26.70 (26.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 9:02:15 AM

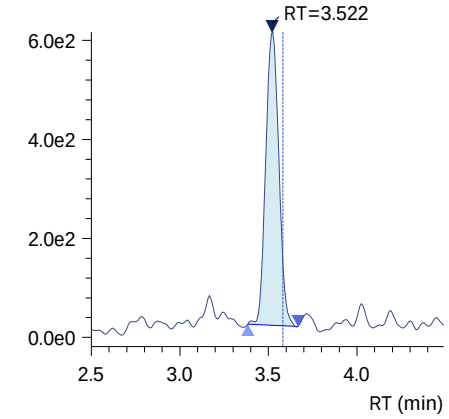
EQ2300602-05

Sample ID: EQ2300602-05
Date Acquired: 12/13/2023 3:07:17 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-050.lcd
Vial: 54 | Inj. Volume: 10.0000uL | Tray: 5

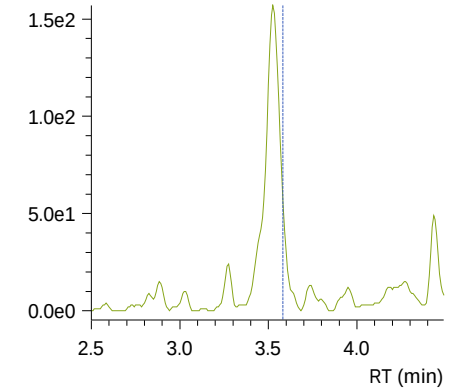
Perchlorate

Conc 0.0920
R#1 0.00 (26.63)

Q 99.00>83.00 (-) A=3048 6.17e2



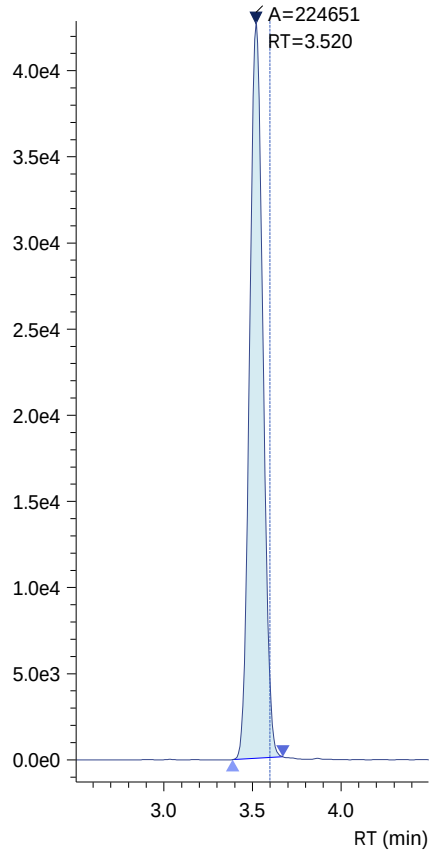
R1 101.00>85.00 (-) 1.57e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.29e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

E2301147-005x500

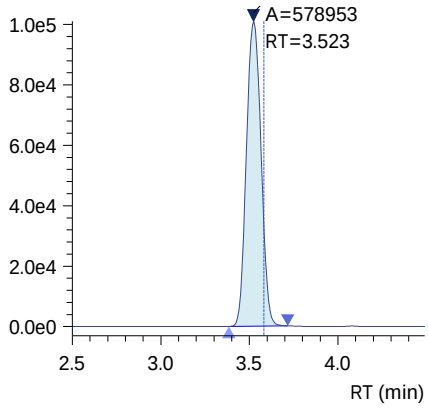
Sample ID: E2301147-005
Date Acquired: 12/13/2023 3:12:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-051.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.523	578953	172392	22.7744	ng/mL	101.00 >85.00	26.88	18.64-34.61
Sodium Perchlorate-18O4_IS	Auto	3.520	172392	172392	1.0000	ng/mL	----	----	

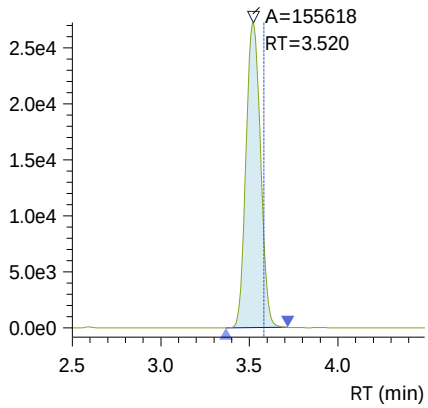
Perchlorate

Conc 22.7744
R#1 26.88 (26.63)

Q 99.00>83.00 (-) 1.01e5



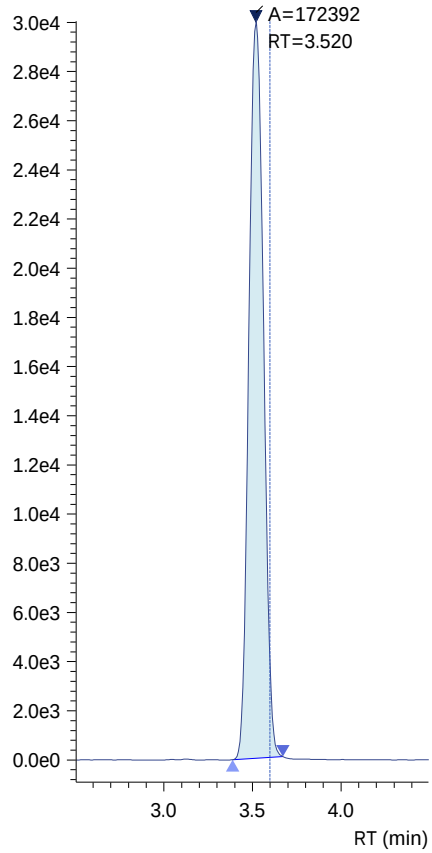
R1 101.00>85.00 (-) 2.72e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.00e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

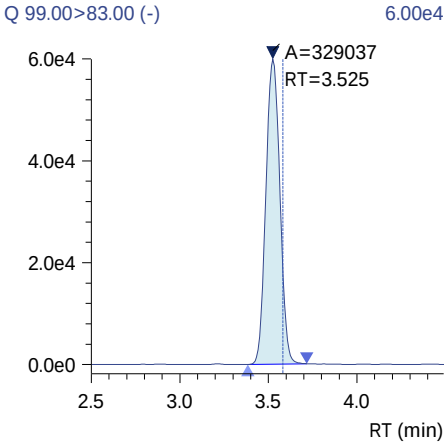
CCV

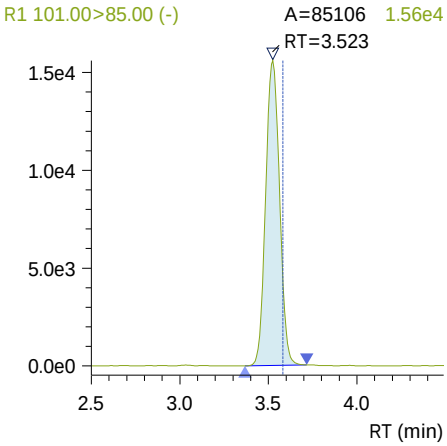
Sample ID: CCV
Date Acquired: 12/13/2023 3:23:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-053.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.525	329037	209845	10.6333	ng/mL	101.00 >85.00	25.87	18.64-34.61
Sodium Perchlorate-18O4_IS	Auto	3.521	209845	209845	1.0000	ng/mL	----	----	

Perchlorate

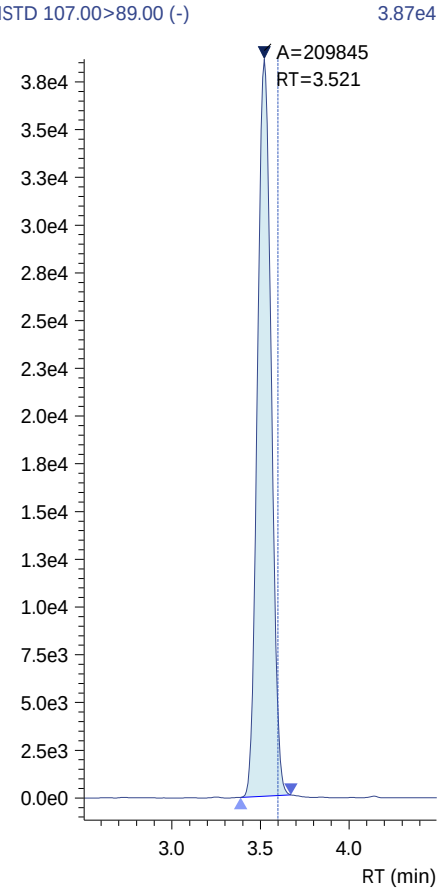
Conc 10.6333
R#1 25.87 (26.63)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 12/14/2023 8:59:17 AM

CCV

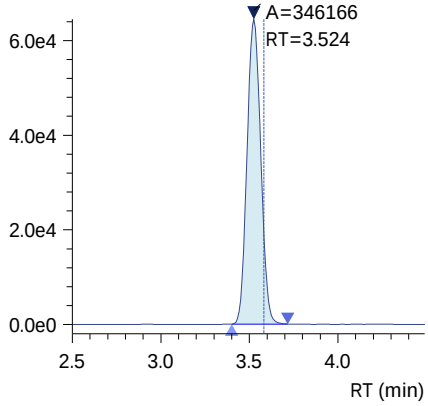
Sample ID: CCV
Date Acquired: 12/13/2023 4:25:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-064.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.524	346166	220137	10.6638	ng/mL	101.00 >85.00	26.36	18.64-34.61
Sodium Perchlorate-18O4_IS	Auto	3.521	220137	220137	1.0000	ng/mL	----	----	

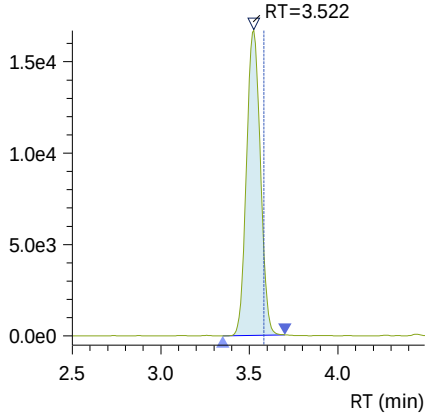
Perchlorate

Conc 10.6638
R#1 26.36 (26.63)

Q 99.00>83.00 (-) 6.45e4



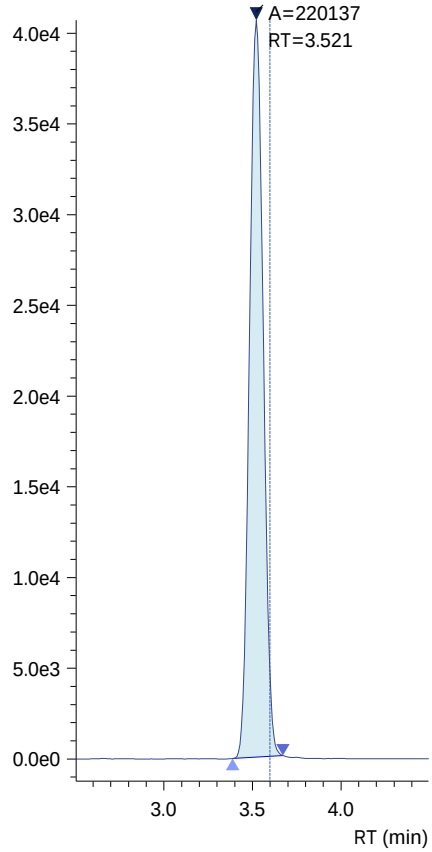
R1 101.00>85.00 (-) A=91247 1.67e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.07e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

E2301147-006x5K

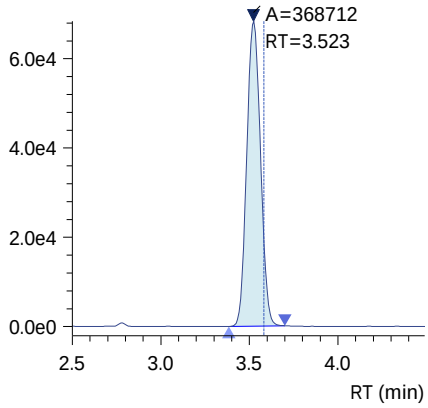
Sample ID: E2301147-006
Date Acquired: 12/13/2023 5:04:33 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-071.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 5

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.523	3687 12	217365	11.50 32	ng/mL	101.00 >85.00	26.83	18.64-34.61
Sodium Perchlorate-18O4 _IS	Auto	3.520	2173 65	217365	1.0000	ng/mL	----	----	

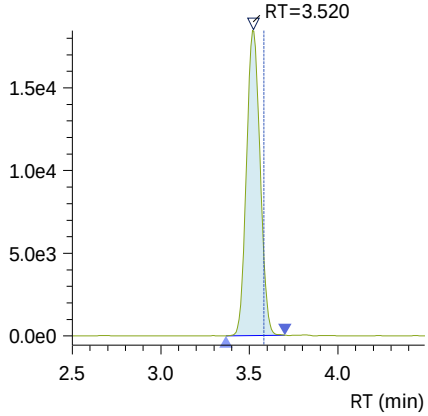
Perchlorate

Conc 11.5032
R#1 26.83 (26.63)

Q 99.00>83.00 (-) 6.84e4



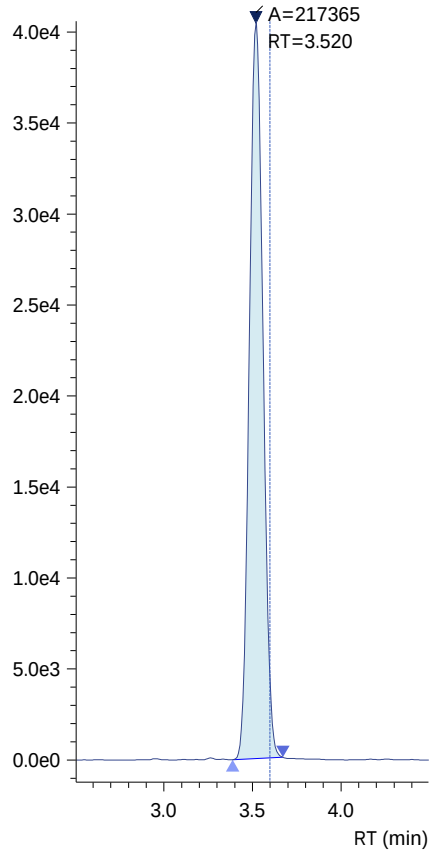
R1 101.00>85.00 (-) A=98908 1.85e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.06e4



Insight Report

Printed at 12/14/2023 8:59:17 AM

CCV

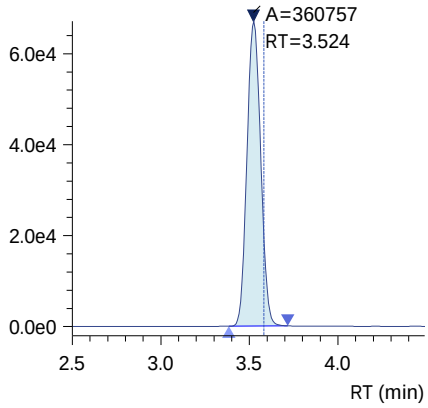
Sample ID: CCV
Date Acquired: 12/13/2023 5:37:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20231213\20231213-075.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.524	360757	235588	10.3844	ng/mL	101.00 >85.00	27.32	18.64-34.61
Sodium Perchlorate-18O4_IS	Auto	3.520	235588	235588	1.0000	ng/mL	----	----	

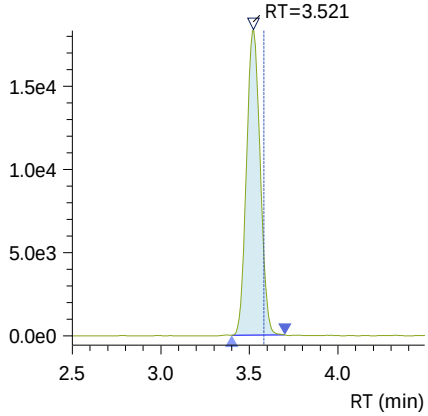
Perchlorate

Conc 10.3844
R#1 27.32 (26.63)

Q 99.00>83.00 (-) 6.72e4



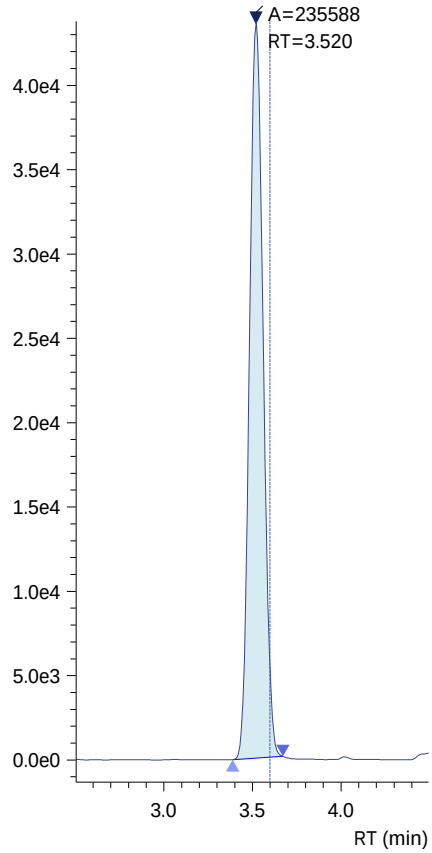
R1 101.00>85.00 (-) A=98554 1.83e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.38e4



March 19, 2024 Service Request No:E2400216

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP Site 17

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory March 05, 2024
For your reference, these analyses have been assigned our service request number **E2400216.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

H Kelany

Hussam Kelany
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Bhate Environmental Associates, Inc.	**Service Request No.:**	E2400216
Project:	LHAAP Site 17	**Date Received:**	03/05/24
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six samples were received for analysis at ALS Environmental in Houston on 003/05/24.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2400134: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined on an unrelated sample in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: Bhate Environmental Associates, Inc. **Service Request:**E2400216

Project: LHAAP Site 17

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2400216-001	130_030424	3/3/2024	0725
E2400216-002	17WW03_030424	3/3/2024	0805
E2400216-003	17WW01_030424	3/3/2024	0845
E2400216-004	17WW02_030424	3/3/2024	0855
E2400216-005	17WW02_030424_a	3/3/2024	0855
E2400216-006	17WW06_030424	3/3/2024	0905

Service Request Summary

01335096

8 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 9A

Pressure Gas:

Folder #: **E2400216**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP Site 17
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: JCORONADO2
Date Received: 03/05/24
Internal Due Date: 3/15/2024
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: BASIC_WQC_CASNo_LOD

Lab Samp No.	Client Samp No	Matrix	Collected	Semivoa GCMS ClO4 DOD/6850
E2400216-001	130_030424	Water	03/03/24 0725	**IV**
E2400216-002	17WW03_030424	Water	03/03/24 0805	**IV**
E2400216-003	17WW01_030424	Water	03/03/24 0845	**IV**
E2400216-004	17WW02_030424	Water	03/03/24 0855	**IV**
E2400216-005	17WW02_030424_a	Water	03/03/24 0855	**IV**
E2400216-006	17WW06_030424	Water	03/03/24 0905	**IV**

Service Request Summary

Folder #:	**E2400216**
Client Name:	Bhate Environmental Associates, Inc.
Project Name:	LHAAP Site 17
Project Number:	

Report To:	Marcia Olive Bhate Environmental Associates, Inc. 445 Union Blvd Lakewood, CO 80228 USA
Phone Number:	303-597-2450
Cell Number:	
Fax Number:	
E-mail:	molive@bhate.com

Project Chemist:	Hussam Kelany
Originating Lab:	HOUSTON
Logged By:	JCORONADO2
Date Received:	03/05/24
Internal Due Date:	3/15/2024
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	
EDD:	BASIC_WQC_CASNo_LOD

01335097

8 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 9A

Pressure Gas:

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of 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.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

Data Qualifiers

Lab Standard

M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.
S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793_2024	5/27/2024
Arkansas Department of Environmental Quality	88-00356	3/27/2024
California State Environmental Laboratory Accreditation Program	2919	4/30/2024
Department of Defense	L22-90	3/31/2024
Department of Defense	L23-358	5/31/2025
Florida Department of Health	E87611-38	6/30/2024
Illinois Environmental Protection Agency	2000322023-11	6/30/2024
Kansas Department of Health and Environment	E-10352 2023-2024	7/31/2024
Louisiana Department of Environmental Quality	03087-2023	6/30/2024
Louisiana Department of Health and Hospitals	LA028-2024	12/31/2024
Maine Department of Health and Human Services	2022017	6/5/2024
Maryland Department of the Environment	343-2023	6/30/2024
Michigan Depratment of Environmental Quality	9971-2023	4/30/2024
Minnesota Department of Health	2645386	12/31/2024
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2024
Nevada Division of Environmental Protection	TX026932024-1	7/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209423	4/24/2024
New Jersey Department of Environmental Protection	TX008-2024	6/30/2024
New York Department of Health	11707	3/31/2024
Oklahoma Department of Environmental Quality	2023-140	8/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-011	5/15/2024
Pennsylvania Department of Environmental Protection	68-03441-017	6/30/2024
Perry Johnson Laboratory Accreditation	L22-91	3/31/2024
Tennessee Department of Environment and Concervation	TN04016-2023	4/30/2024
Texas Commision on Environmental Quality	T104704231-23-30	4/30/2024
Utah Department of Health Environmental Laboratory Certification	TX026932023-14	7/31/2024
Washington Department of Ecology	C819-23	11/14/2024

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Project/Phase No: MSC2020.0016.0002.0022

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	PERCHLORATE									Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
							Sample Analysis Requested (5)										Quality Assurance Samples (6)			
130_030424	03 MAR 2024	0725	-	N		WG	1	X												
17WW03_030424	03 MAR 2024	0805	-	N		WG	1	X												
17WW01_030424	03 MAR 2024	0845	-	N		WG	1	X												
17WW02_030424	03 MAR 2024	0855		N		WG	1	X												
17WW02_030424_a	03 MAR 2024	0855		FD		WG	1	X												
17WW06_030424	03 MAR 2024	0905	-	N		WG	1	X												
17WW06_030424_MS	03 MAR 2024	0905	-	MS		WG	1	X												
17WW06_030424_MSD	03 MAR 2024	0905	-	SD		WG	1	X												
			-																	
			-																	
			-																	

COMMENTS: Standard TAT cooler # 51787 Temp 1.1 C 2-1 Seen 3/ CF-0.1

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	3/4/24	1430	1. GM	03/05/24	09:45
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number: ____

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Eq

E2400216 5
Bhate Environmental Associates, Inc.
LHAAP Site 17

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Preparation Information Benchsheet

01335106

Prep Run#: 435560 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 3/18/24 08:14

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2400216-001	130_030424	.01	6850/ClO4 DOD			Water	10mL	
2	E2400216-002	17WW03_030424	.01	6850/ClO4 DOD			Water	10mL	
3	E2400216-003	17WW01_030424	.01	6850/ClO4 DOD			Water	10mL	
4	E2400216-004	17WW02_030424	.01	6850/ClO4 DOD			Water	10mL	
5	E2400216-005	17WW02_030424_a	.01	6850/ClO4 DOD			Water	10mL	
6	E2400216-006	17WW06_030424	.02	6850/ClO4 DOD			Water	10mL	
7	E2400217-001	2403010944A WW-1-452	.01	6850/ClO4 DOD			Water	10mL	
8	E2400218-001	LGAC-INF-030424	.01	6850/ClO4 DOD			Water	10mL	
9	EQ2400134-01	MB		6850/ClO4 DOD			Liquid	10mL	
10	EQ2400134-02	LCS		6850/ClO4 DOD			Liquid	10mL	
11	EQ2400134-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
12	EQ2400134-04	ICS		6850/ClO4 DOD			Liquid	10mL	
13	EQ2400134-05	17WW06_030424 MS	.02	6850/ClO4 DOD			Liquid	10mL	
14	EQ2400134-06	17WW06_030424 DMS	.02	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock 2 Inventory ID 233555 Logbook Ref: Perchlorate INT. Stock2 Expires On: 08/05/2024

EQ2400134-02 10.00µL EQ2400134-03 10.00µL EQ2400134-04 10.00µL EQ2400134-05 10.00µL EQ2400134-06 10.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 233561 Logbook Ref: Perchlorate Internal Standard Expires On: 08/05/2024

E2400216-001 100.00µL E2400216-002 100.00µL E2400216-003 100.00µL E2400216-004 100.00µL E2400216-005 100.00µL E2400216-006 100.00µL
E2400217-001 100.00µL E2400218-001 100.00µL EQ2400134-01 100.00µL EQ2400134-02 100.00µL EQ2400134-03 100.00µL EQ2400134-04 100.00µL
EQ2400134-05 100.00µL EQ2400134-06 100.00µL

Name: Perchlorate Anion Spiking Soln. 25,000 ppm Inventory ID 233595 Logbook Ref: Expires On: 08/04/2024

EQ2400134-04 20.00µL

Preparation Materials

6850 0.45um syringe filters 6850 0.45 SYRING FILTER (229979) 6850 20mM amonium acetate in H2O (233412) 6850 Luer-Lok Syringes Luer-Lok Syringes (228117)

Preparation Information Benchsheet

01335107

Prep Run#: 435560 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 3/18/24 08:14

Preparation Steps

Step: Preparation
Started: 3/18/24 08:14
Finished: 3/18/24 09:39
By: JOSEL.JUAREZ
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0725
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	130_030424	**Units:**	µg/L
Lab Code:	E2400216-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**4.27**		0.100	0.0500	0.0250	1	3/18/24	3/18/24 13:30	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0805
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	17WW03_030424	**Units:**	µg/L
Lab Code:	E2400216-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.916**	J	1.00	0.500	0.250	10	3/18/24	3/18/24 14:13	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0845
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	17WW01_030424	**Units:**	µg/L
Lab Code:	E2400216-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	3/18/24	3/18/24 14:19	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0855
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	17WW02_030424	**Units:**	µg/L
Lab Code:	E2400216-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**4600**		100	50.0	25.0	1000	3/18/24	3/18/24 13:46	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0855
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	17WW02_030424_a	**Units:**	µg/L
Lab Code:	E2400216-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**5470**		100	50.0	25.0	1000	3/18/24	3/18/24 14:24	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0905
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	17WW06_030424	**Units:**	µg/L
Lab Code:	E2400216-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**51100**		1000	500	250	10000	3/18/24	3/18/24 14:30	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2400134-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	3/18/24	3/18/24 12:38	435560	835280	

Accuracy & Precision

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: Bhate Environmental Associates, Inc. **Service Request:** E2400216
Project: LHAAP Site 17 **Date Analyzed:** 3/18/24
Sample Matrix: Water

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Units:** µg/L
Prep Method: Method **Basis:** NA

Extraction Lot: 435560

	Lab Control Sample EQ2400134-02			Duplicate Lab Control Sample EQ2400134-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.104	0.100	104	0.101	0.100	101	84 - 119	2	15

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

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

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400134-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.104**		0.100	0.0500	0.0250	1	3/18/24	3/18/24 12:44	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400134-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.101**		0.100	0.0500	0.0250	1	3/18/24	3/18/24 12:49	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/3/24
Sample Matrix:	Water	**Date Received:**	3/5/24
		Date Analyzed:	3/18/24

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW06_030424	**Units:**	µg/L
Lab Code:	E2400216-006	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		17WW06_030424MS				17WW06_030424DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2400134-05				EQ2400134-06					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	51100	51900	0.100	765000 #	52200	0.100	1036000#	84 - 119	<1	15

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.

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0905
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	17WW06_030424	**Units:**	µg/L
Lab Code:	EQ2400134-05	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**51900**		1000	500	250	10000	3/18/24	3/18/24 15:33	435560	835280	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400216
Project:	LHAAP Site 17	**Date Collected:**	3/ 3/24 0905
Sample Matrix:	Water	**Date Received:**	3/ 5/24
Sample Name:	17WW06_030424	**Units:**	µg/L
Lab Code:	EQ2400134-06	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**52200**		1000	500	250	10000	3/18/24	3/18/24 15:40	435560	835280	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

832255

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: JLJ

ICAL Date: 2/13/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400004

Mobile Phases : A:20mM ammonium acetate in water 233412 **B:**Acetonitrile 233145
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
1	20240213-001	IB	Perchlorate6850c.lcm	1x		2/13/2024 9:34
2	20240213-002	Perchlorate ICAL 1	Perchlorate6850c.lcm	1x	233572	2/13/2024 9:40
3	20240213-003	Perchlorate ICAL 2	Perchlorate6850c.lcm	1x	233571	2/13/2024 9:45
4	20240213-004	Perchlorate ICAL 3	Perchlorate6850c.lcm	1x	233570	2/13/2024 9:51
5	20240213-005	Perchlorate ICAL 4	Perchlorate6850c.lcm	1x	233569	2/13/2024 9:56
6	20240213-006	Perchlorate ICAL 5	Perchlorate6850c.lcm	1x	233568	2/13/2024 10:02
7	20240213-007	Perchlorate ICAL 6	Perchlorate6850c.lcm	1x	233567	2/13/2024 10:08
8	20240213-008	Perchlorate ICAL 7	Perchlorate6850c.lcm	1x	233566	2/13/2024 10:13
9	20240213-009	Perchlorate ICAL 8	Perchlorate6850c.lcm	1x	233564	2/13/2024 10:19
10	20240213-010	Perchlorate ICAL 9	Perchlorate6850c.lcm	1x	233563	2/13/2024 10:24
11	20240213-011	Perchlorate ICAL 10	Perchlorate6850c.lcm	1x	233562	2/13/2024 10:30
12	20240213-012	PerchlorateICV	Perchlorate6850c.lcm	1x	230380	2/13/2024 10:35
13	20240213-013	IB	Perchlorate6850c.lcm	1x		2/13/2024 10:41
14	20240213-014	LODV	Perchlorate6850c.lcm	1x		2/13/2024 10:49
15	20240213-015	ICS	Perchlorate6850c.lcm	1x		2/13/2024 10:55
16	20240213-016	E2400101-001	Perchlorate6850c.lcm	1x		2/13/2024 11:18
17	20240213-017	E2400101-002	Perchlorate6850c.lcm	1x		2/13/2024 11:23
18	20240213-018	E2400101-003	Perchlorate6850c.lcm	1x		2/13/2024 11:29
19	20240213-019	E2400101-004	Perchlorate6850c.lcm	1x		2/13/2024 11:34
20	20240213-020	E2400101-005	Perchlorate6850c.lcm	1x		2/13/2024 11:40
21	20240213-021	E2400101-006	Perchlorate6850c.lcm	1x		2/13/2024 11:45
22	20240213-022	E2400101-007	Perchlorate6850c.lcm	1x		2/13/2024 11:51
23	20240213-023	E2400101-008	Perchlorate6850c.lcm	1x		2/13/2024 11:56
24	20240213-024	E2400101-009	Perchlorate6850c.lcm	1x		2/13/2024 12:02
25	20240213-025	E2400101-010	Perchlorate6850c.lcm	1x	DNU-IR-RI	2/13/2024 12:07
26	20240213-026	CCV	Perchlorate6850c.lcm	1x		2/13/2024 12:13
27	20240213-027	IB	Perchlorate6850c.lcm	1x		2/13/2024 12:18
28	20240213-028	E2400101-011	Perchlorate6850c.lcm	1x		2/13/2024 12:24
29	20240213-029	E2400101-012	Perchlorate6850c.lcm	1x		2/13/2024 12:29
30	20240213-030	E2400101-013	Perchlorate6850c.lcm	1x		2/13/2024 12:35
31	20240213-031	E2400112-001	Perchlorate6850c.lcm	1x		2/13/2024 12:40
32	20240213-032	IB	Perchlorate6850c.lcm	1x		2/13/2024 13:03
33	20240213-033	E2400112-002	Perchlorate6850c.lcm	1x	DNU-MATRIX INTERFERENCE	2/13/2024 13:09
34	20240213-034	E2400112-003	Perchlorate6850c.lcm	1x	DNU-MATRIX INTERFERENCE	2/13/2024 13:16
35	20240213-035	E2400112-004	Perchlorate6850c.lcm	1x	DNU-MATRIX INTERFERENCE	2/13/2024 13:22
36	20240213-036	E2400112-005	Perchlorate6850c.lcm	1x		2/13/2024 13:27
37	20240213-037	E2400112-006	Perchlorate6850c.lcm	1x	DNU-MATRIX INTERFERENCE	2/13/2024 13:33
38	20240213-038	E2400112-007x5	Perchlorate6850c.lcm	5x		2/13/2024 13:38
39	20240213-039	CCV	Perchlorate6850c.lcm	1x		2/13/2024 13:44
40	20240213-040	IB	Perchlorate6850c.lcm	1x		2/13/2024 13:49
41	20240213-041	E2400112-008	Perchlorate6850c.lcm	1x		2/13/2024 13:55

832255

Injection Log

LCMS01 -Shimadzu 8050

1st Review: XM
2nd Review: JLJ

ICAL Date: 2/13/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400004

Mobile Phases : A:20mM ammonium acetate in water 233412 **B:**Acetonitrile 233145
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
42	20240213-042	E2400101-010	Perchlorate6850c.lcm	1x		2/13/2024 14:00
43	20240213-043	E2400081-01 MB	Perchlorate6850c.lcm	1x		2/13/2024 14:06
44	20240213-044	E2400081-02 LCS	Perchlorate6850c.lcm	1x		2/13/2024 14:11
45	20240213-045	E2400081-03 DLCS	Perchlorate6850c.lcm	1x		2/13/2024 14:17
46	20240213-046	E2400081-06 ICS	Perchlorate6850c.lcm	1x		2/13/2024 14:22
47	20240213-047	E2400081-04 MS	Perchlorate6850c.lcm	1x		2/13/2024 14:28
48	20240213-048	E2400081-05 DMS	Perchlorate6850c.lcm	1x		2/13/2024 14:33
49	20240213-049	E2400112-004	Perchlorate6850c.lcm	1x		2/13/2024 14:39
50	20240213-050	CCV	Perchlorate6850c.lcm	1x		2/13/2024 14:45
51	20240213-051	IB	Perchlorate6850c.lcm	1x		2/13/2024 14:51
52	20240213-052	E2400112-006	Perchlorate6850c.lcm	1x		2/13/2024 14:58
53	20240213-053	E2400112-002X10	Perchlorate6850c.lcm	10x		2/13/2024 15:22
54	20240213-054	E2400112-003X10	Perchlorate6850c.lcm	10x		2/13/2024 15:27
55	20240213-055	CCV	Perchlorate6850c.lcm	1x		2/13/2024 15:33
56	20240213-056	IB	Perchlorate6850c.lcm	1x		2/13/2024 15:38

Initial Calibration - Detailed Report

Calibration ID: EC2400004 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2400004-01	Perchlorate ICAL 1	20240213-002	02/13/2024 09:40
02	EC2400004-02	Perchlorate ICAL 2	20240213-003	02/13/2024 09:45
03	EC2400004-03	Perchlorate ICAL 3	20240213-004	02/13/2024 09:51
04	EC2400004-04	Perchlorate ICAL 4	20240213-005	02/13/2024 09:56
05	EC2400004-05	Perchlorate ICAL 5	20240213-006	02/13/2024 10:02
06	EC2400004-06	Perchlorate ICAL 6	20240213-007	02/13/2024 10:08
07	EC2400004-07	Perchlorate ICAL 7	20240213-008	02/13/2024 10:13
08	EC2400004-08	Perchlorate ICAL 8	20240213-009	02/13/2024 10:19
09	EC2400004-09	Perchlorate ICAL 9	20240213-010	02/13/2024 10:24
10	EC2400004-10	Perchlorate ICAL 10	20240213-011	02/13/2024 10:30

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 1.405** **Average RF = 0.1578**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1593	02	0.5000	0.1567	03	0.7000	0.1554	04	1.0000	0.1575
05	2.0000	0.1534	06	5.0000	0.1574	07	10.0000	0.1595	08	20.0000	0.16
09	30.0000	0.1586	10	50.0000	0.1604						

Analyte

Perchlorate RSE = 1.41

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.101	0.9	02	0.5000	0.496	-0.7	03	0.7000	0.689	-1.5
04	1.0000	0.998	-0.2	05	2.0000	1.94	-2.8	06	5.0000	4.99	-0.2
07	10.0000	10.1	1.1	08	20.0000	20.3	1.4	09	30.0000	30.1	0.5
10	50.0000	50.8	1.6								

Initial Calibration Verification Summary Report

Calibration ID:	EC2400004	**Instrument ID:**	E-LCMS-01
Datafile ID:	20240213-012	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2400004-11	T	Average RF	10	9.980	ng/mL	-0.2	<= 15

Insight Report

Printed at 2/13/2024 3:53:21 PM

Method File: I:\LCMS01\DATA\20240213\ICAL 20240213.lcm
Project File: I:\LCMS01\DATA\20240213\20240213.damlp

IB

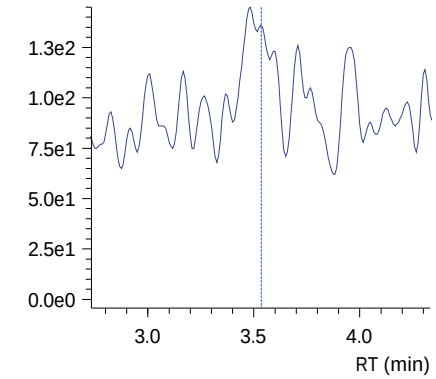
Sample ID: IB
Date Acquired: 2/13/2024 9:34:46 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-001.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	487658	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.529	487658	487658	1.0000	ng/mL	----	----	

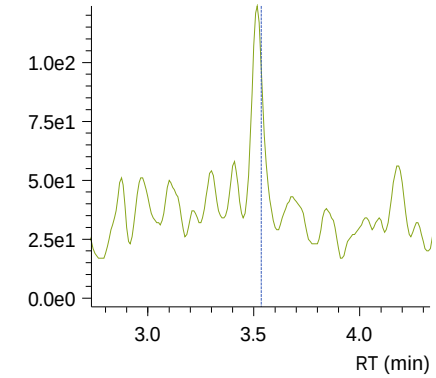
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 1.45e2



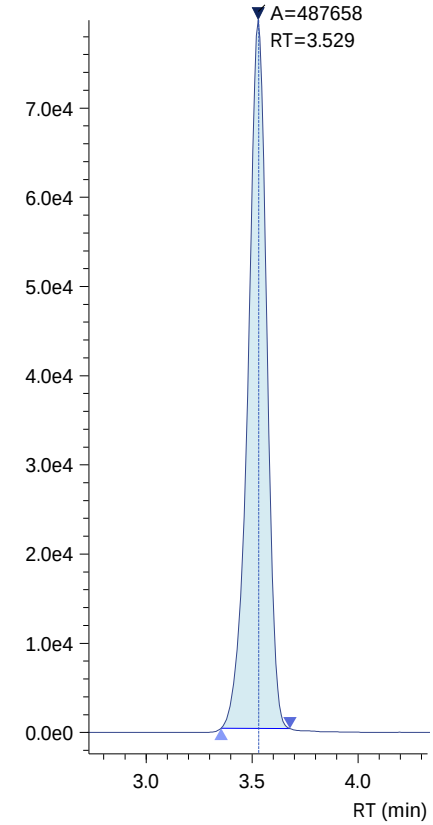
R1 101.00>85.00 (-) 1.24e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 7.99e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

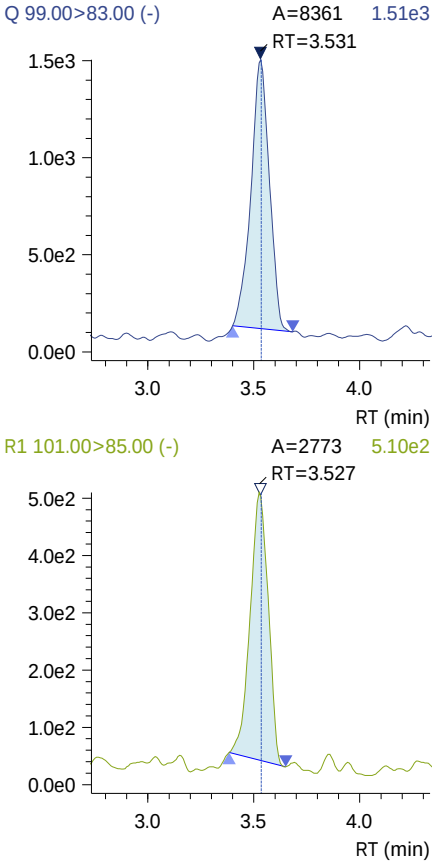
Perchlorate ICAL 1

Sample ID: Perchlorate ICAL 1
Date Acquired: 2/13/2024 9:40:17 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-002.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.531	8361	524837	0.1009	ng/mL	101.00 >85.00	33.17	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.529	524837	524837	1.0000	ng/mL	----	----	

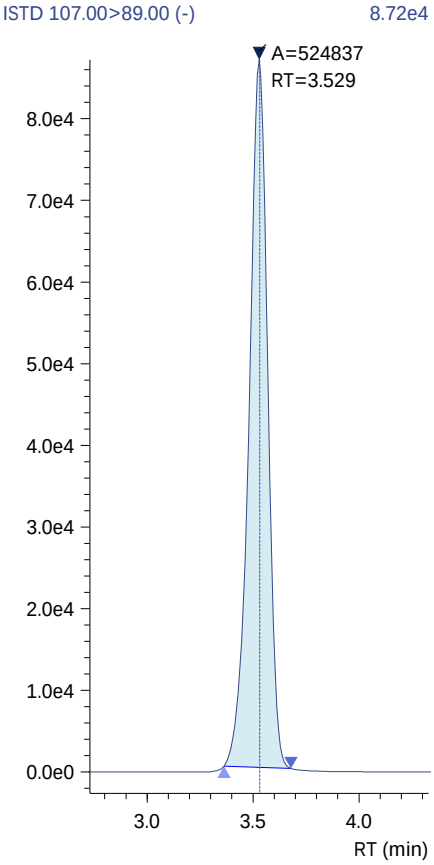
Perchlorate

Conc 0.1009
R#1 33.17 (34.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 2

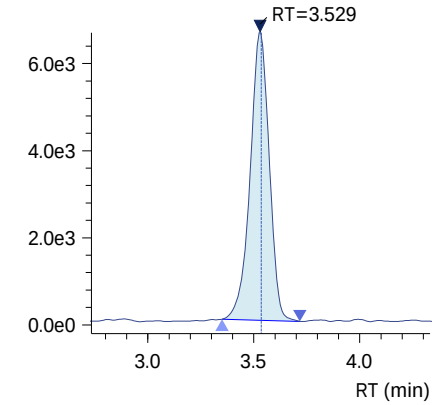
Sample ID: Perchlorate ICAL 2
Date Acquired: 2/13/2024 9:45:50 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-003.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	41323	527565	0.4963	ng/mL	101.00 >85.00	33.63	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.528	527565	527565	1.0000	ng/mL	----	----	

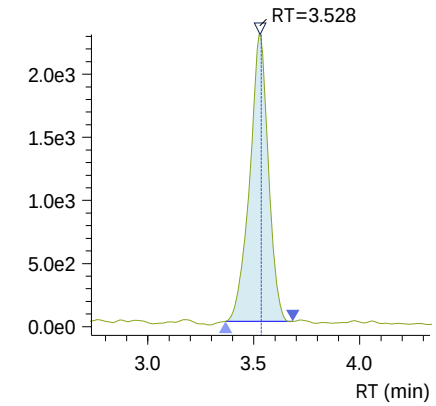
Perchlorate

Conc 0.4963
R#1 33.63 (34.10)

Q 99.00>83.00 (-) A=41323 6.71e3



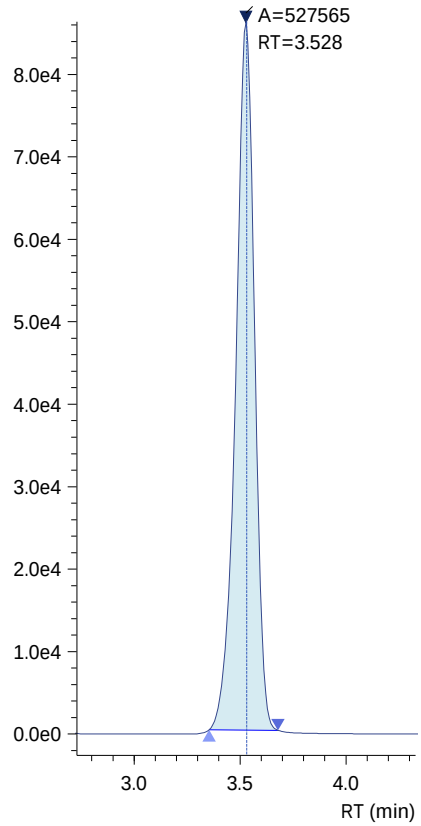
R1 101.00>85.00 (-) A=13897 2.32e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.64e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 3

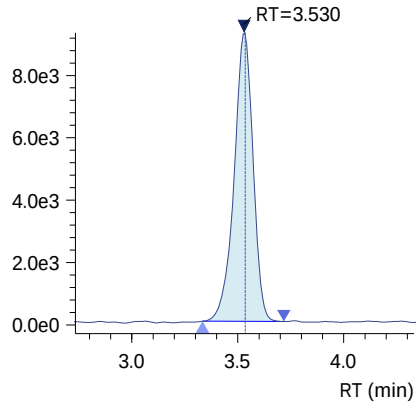
Sample ID: Perchlorate ICAL 3
Date Acquired: 2/13/2024 9:51:25 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-004.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.530	57419	527846	0.6893	ng/mL	101.00 >85.00	34.81	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.527	527846	527846	1.0000	ng/mL	----	----	

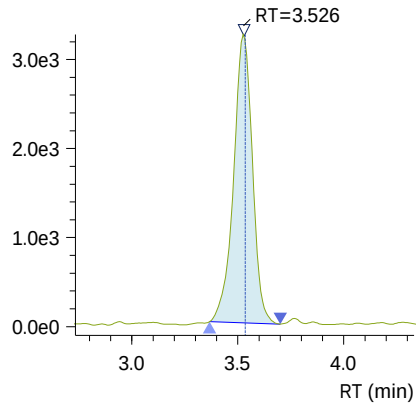
Perchlorate

Conc 0.6893
R#1 34.81 (34.10)

Q 99.00>83.00 (-) A=57419 9.37e3



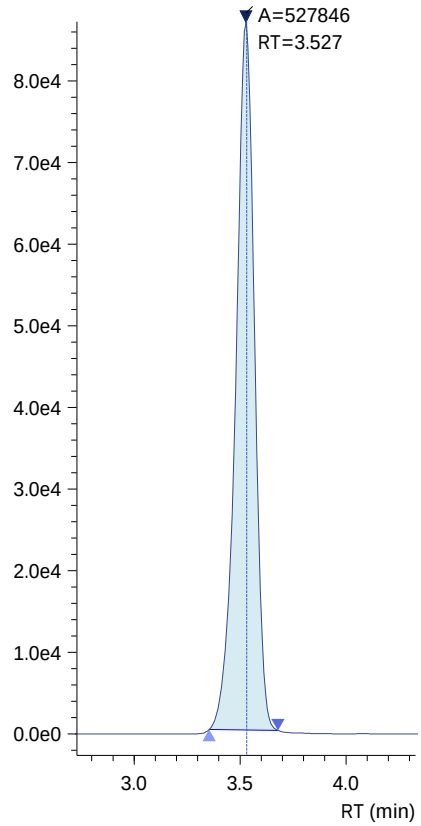
R1 101.00>85.00 (-) A=19986 3.28e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.73e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 4

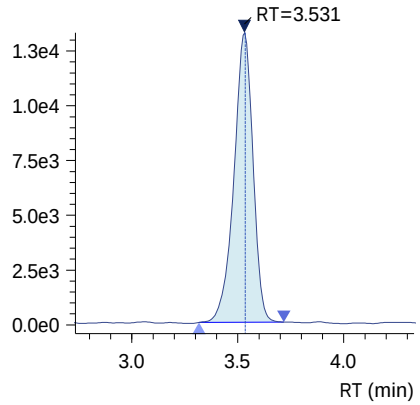
Sample ID: Perchlorate ICAL 4
Date Acquired: 2/13/2024 9:56:57 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-005.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.531	82369	523106	0.9977	ng/mL	101.00 >85.00	33.52	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.528	523106	523106	1.0000	ng/mL	----	----	

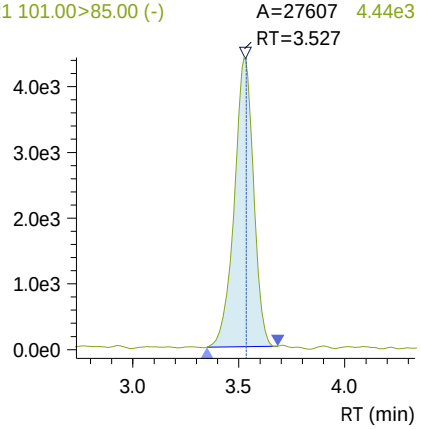
Perchlorate

Conc 0.9977
R#1 33.52 (34.10)

Q 99.00>83.00 (-) A=82369 1.33e4



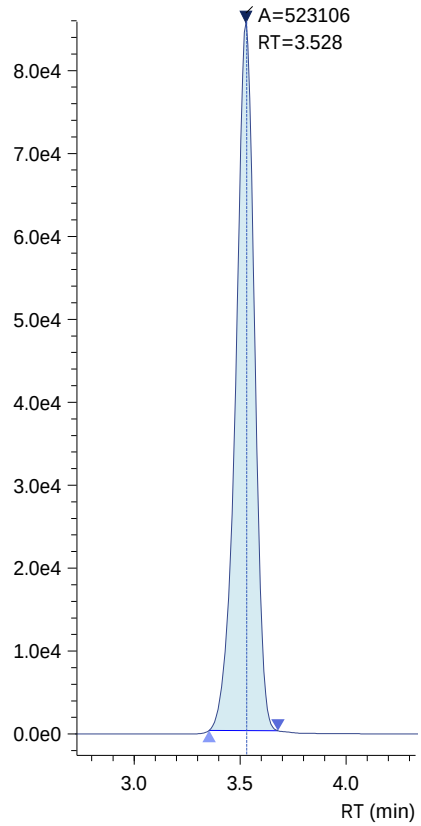
R1 101.00>85.00 (-) A=27607 4.44e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.59e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 5

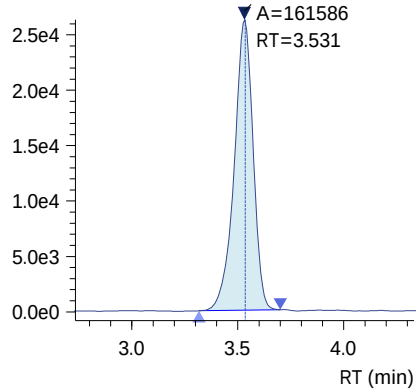
Sample ID: Perchlorate ICAL 5
Date Acquired: 2/13/2024 10:02:32 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-006.lcd
Vial: 5 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.531	161586	526634	1.9441	ng/mL	101.00 >85.00	34.10	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.529	526634	526634	1.0000	ng/mL	----	----	

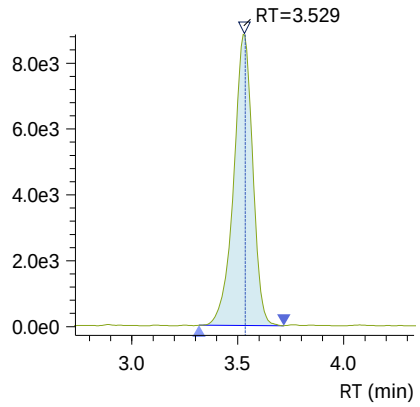
Perchlorate

Conc 1.9441
R#1 34.10 (34.10)

Q 99.00>83.00 (-) 2.64e4



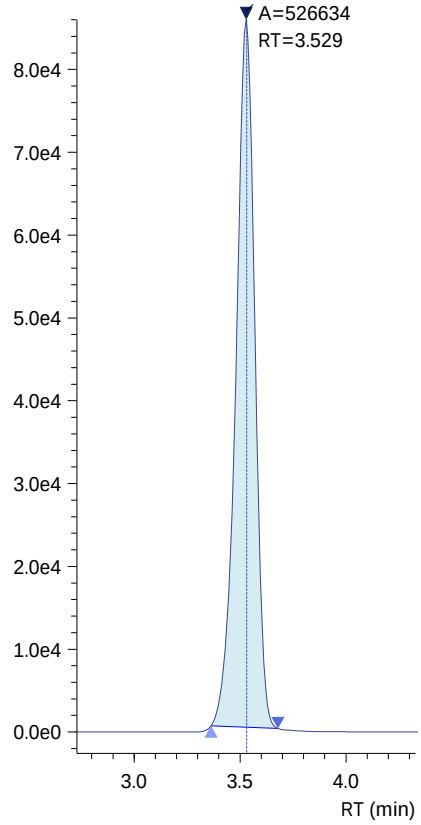
R1 101.00>85.00 (-) A=55098 8.87e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.60e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 6

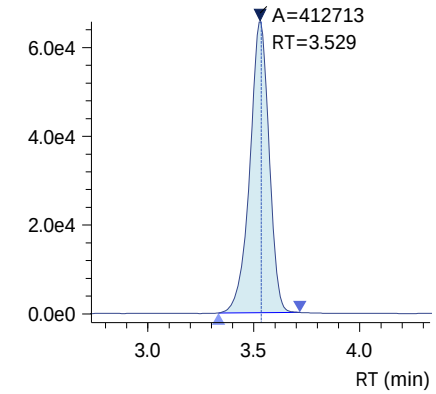
Sample ID: Perchlorate ICAL 6
Date Acquired: 2/13/2024 10:08:05 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-007.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	412713	524318	4.9876	ng/mL	101.00 >85.00	33.17	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.527	524318	524318	1.0000	ng/mL	----	----	

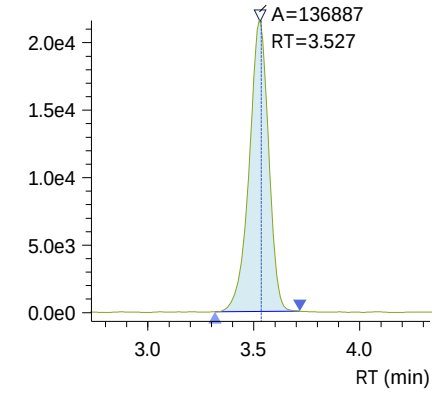
Perchlorate

Conc 4.9876
R#1 33.17 (34.10)

Q 99.00>83.00 (-) 6.58e4



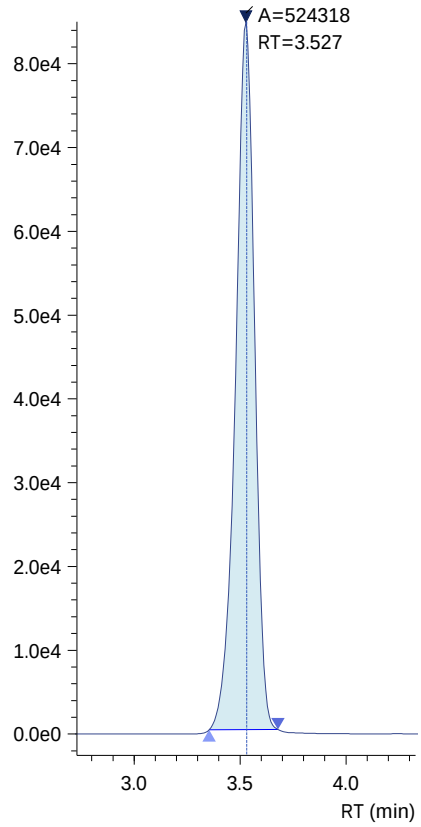
R1 101.00>85.00 (-) 2.16e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.50e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 7

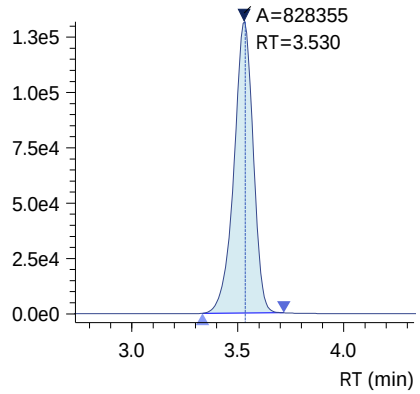
Sample ID: Perchlorate ICAL 7
Date Acquired: 2/13/2024 10:13:39 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-008.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.530	828355	519280	10.1076	ng/mL	101.00 >85.00	33.46	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.527	519280	519280	1.0000	ng/mL	----	----	

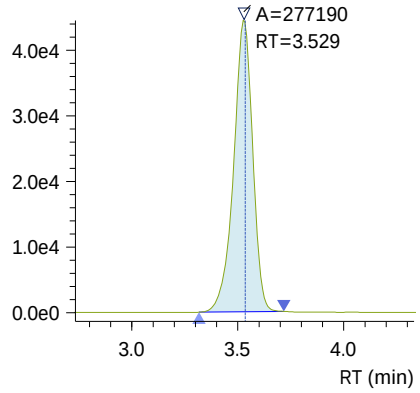
Perchlorate

Conc 10.1076
R#1 33.46 (34.10)

Q 99.00>83.00 (-) 1.32e5



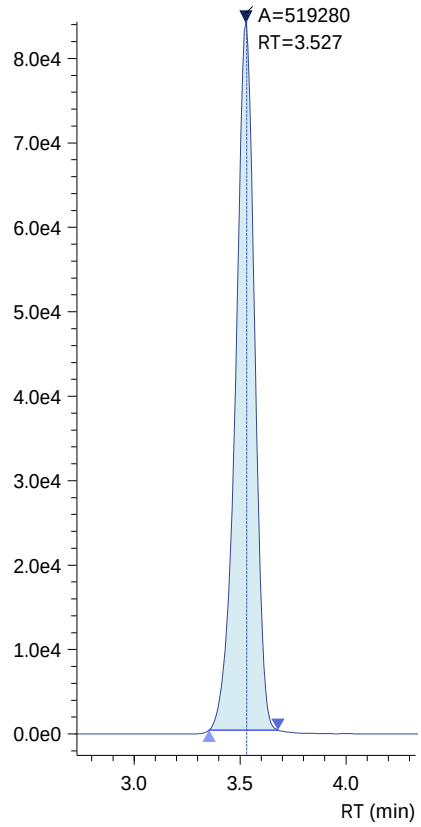
R1 101.00>85.00 (-) 4.45e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.44e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 8

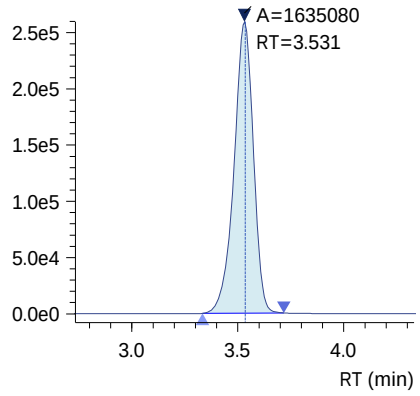
Sample ID: Perchlorate ICAL 8
Date Acquired: 2/13/2024 10:19:12 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-009.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.531	16350 80	510855	20.2 804	ng/mL	101.00 >85.00	32.92	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.527	510855	510855	1.0000	ng/mL	----	----	

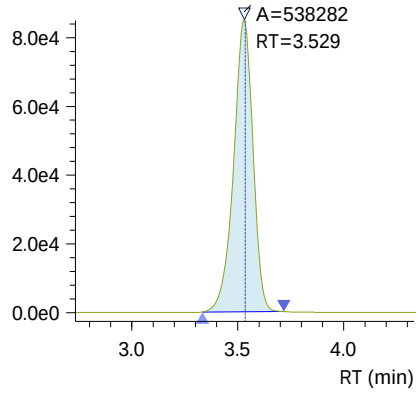
Perchlorate

Conc 20.2804
R#1 32.92 (34.10)

Q 99.00>83.00 (-) 2.60e5



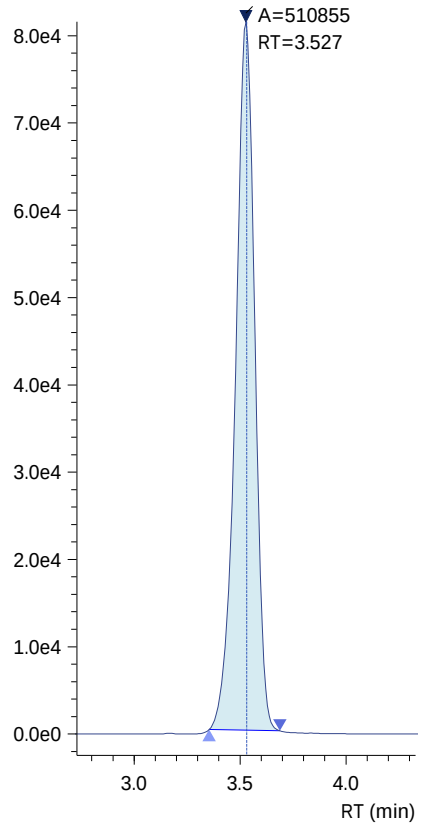
R1 101.00>85.00 (-) 8.50e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.16e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 9

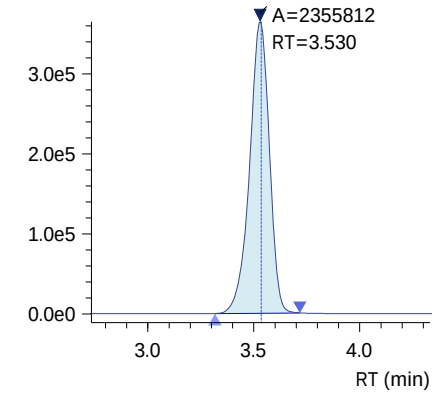
Sample ID: Perchlorate ICAL 9
Date Acquired: 2/13/2024 10:24:44 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-010.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.530	23558	495209	30.1	ng/mL	101.00	33.20	26.31
			12		430		>85.00		-43.47
Sodium Perchlorate -18O4_IS	Auto	3.527	495209	495209	1.0000	ng/mL	----	----	

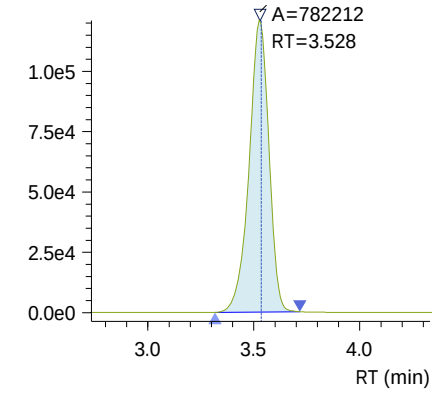
Perchlorate

Conc 30.1430
R#1 33.20 (34.10)

Q 99.00>83.00 (-) 3.65e5



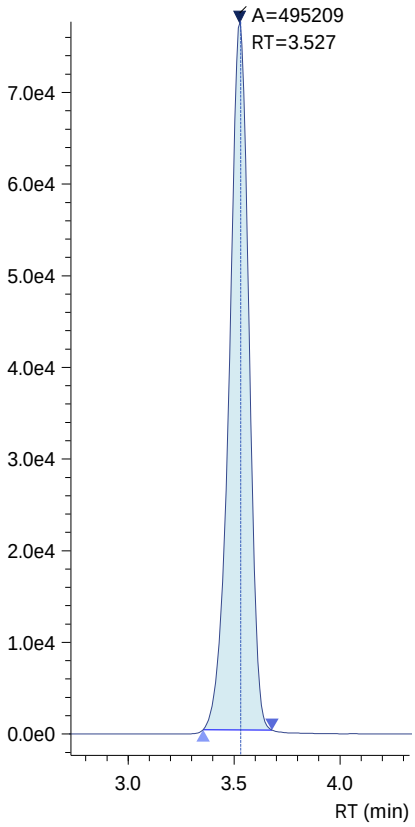
R1 101.00>85.00 (-) 1.21e5



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 7.77e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

Perchlorate ICAL 10

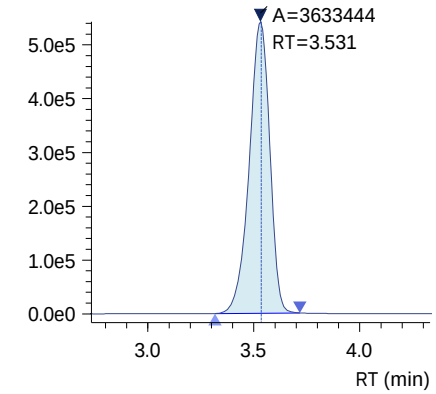
Sample ID: Perchlorate ICAL 10
Date Acquired: 2/13/2024 10:30:18 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-011.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.531	36334	452979	50.8	ng/mL	101.00	33.19	26.31
			44		246		>85.00		-43.47
Sodium Perchlorate -18O4_IS	Auto	3.528	452979	452979	1.0000	ng/mL	----	----	

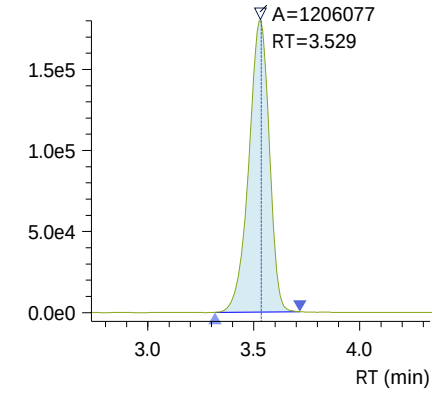
Perchlorate

Conc 50.8246
R#1 33.19 (34.10)

Q 99.00>83.00 (-) 5.43e5



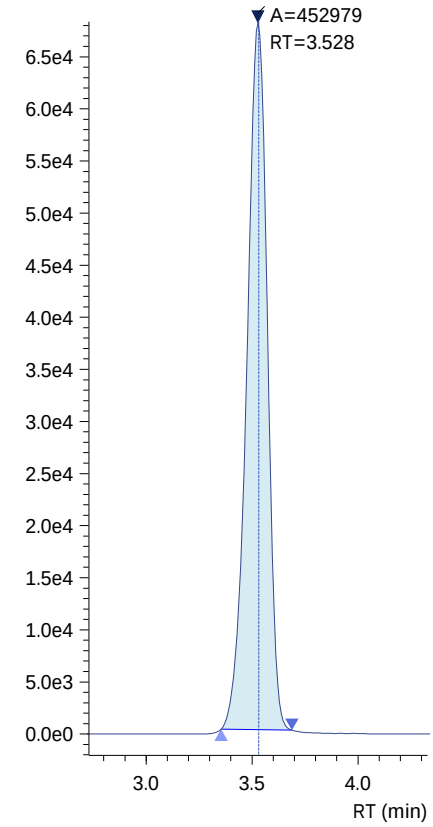
R1 101.00>85.00 (-) 1.80e5



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 6.84e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

PerchlorateICV

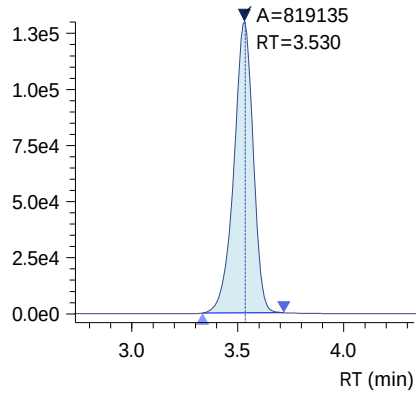
Sample ID: PerchlorateICV
Date Acquired: 2/13/2024 10:35:51 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-012.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.530	819135	520077	9.9798	ng/mL	101.00 >85.00	33.19	26.31 -43.47
Sodium Perchlorate -18O4_IS	Auto	3.527	520077	520077	1.0000	ng/mL	----	----	

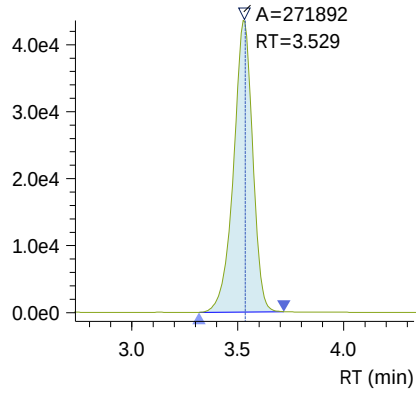
Perchlorate

Conc 9.9798
R#1 33.19 (34.10)

Q 99.00>83.00 (-) 1.30e5



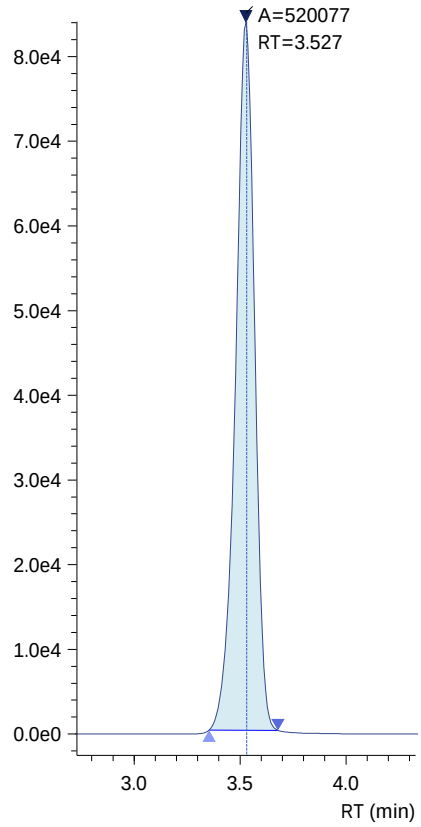
R1 101.00>85.00 (-) 4.36e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.41e4



Insight Report

Printed at 2/13/2024 3:53:21 PM

IB

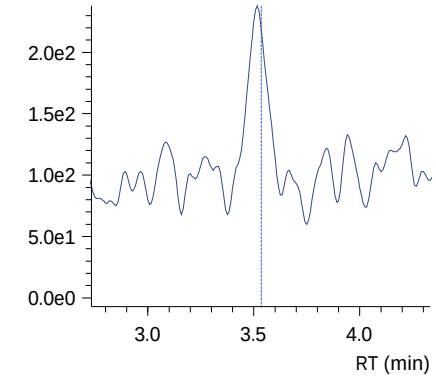
Sample ID: IB
Date Acquired: 2/13/2024 10:41:21 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240213\20240213-013.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	494605	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.527	494605	494605	1.0000	ng/mL	----	----	

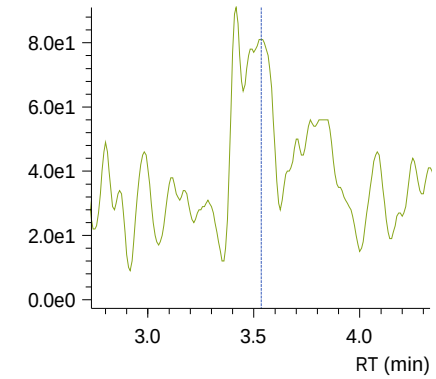
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 2.38e2



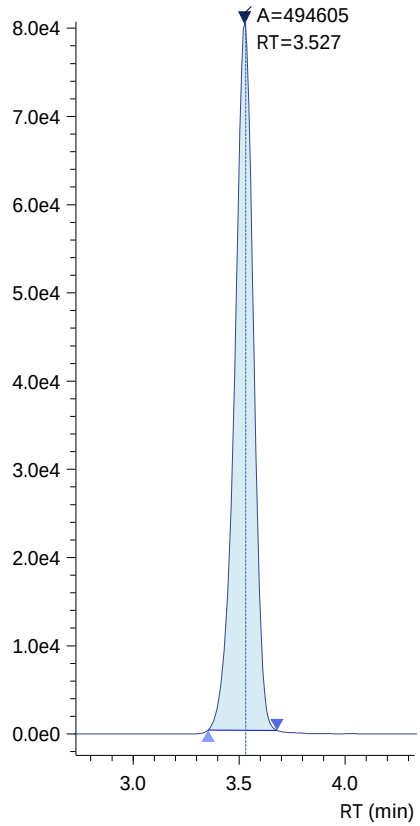
R1 101.00>85.00 (-) 9.10e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 8.07e4



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

835280

Injection Log

LCMS01 -Shimadzu 8050

1st Review: JLJ
2nd Review: GP

ICAL Date: 2/13/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400004

Mobile Phases : A:20mM ammonium acetate in water 233412 **B:**Acetonitrile 233145
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
1	20240318-001	IB	Perchlorate6850c.lcm	1x		3/18/2024 10:58
2	20240318-002	LODV	Perchlorate6850c.lcm	1x	DNU ISs	3/18/2024 11:04
3	20240318-003	ICS	Perchlorate6850c.lcm	1x		3/18/2024 11:09
4	20240318-004	CCV	Perchlorate6850c.lcm	1x		3/18/2024 11:15
5	20240318-005	IB	Perchlorate6850c.lcm	1x		3/18/2024 11:20
6	20240318-006	LODV	Perchlorate6850c.lcm	1x		3/18/2024 11:37
7	20240318-007	EQ2400134-01MB	Perchlorate6850c.lcm	1x		3/18/2024 12:38
8	20240318-008	EQ2400134-02LCS	Perchlorate6850c.lcm	1x		3/18/2024 12:44
9	20240318-009	EQ2400134-03DLCS	Perchlorate6850c.lcm	1x		3/18/2024 12:49
10	20240318-010	EQ2400134-04ICS	Perchlorate6850c.lcm	1x		3/18/2024 12:55
11	20240318-011	E2400217-001	Perchlorate6850c.lcm	1x	DNU ISs	3/18/2024 13:19
12	20240318-012	E2400218-001	Perchlorate6850c.lcm	1x		3/18/2024 13:24
13	20240318-013	E2400216-001	Perchlorate6850c.lcm	1x		3/18/2024 13:30
14	20240318-014	E2400216-002	Perchlorate6850c.lcm	1x	DNU ISs	3/18/2024 13:35
15	20240318-015	E2400216-003	Perchlorate6850c.lcm	1x	DNU ISs	3/18/2024 13:41
16	20240318-016	E2400216-004X1000	Perchlorate6850c.lcm	1000x		3/18/2024 13:46
17	20240318-017	CCV	Perchlorate6850c.lcm	1x		3/18/2024 13:52
18	20240318-018	IB	Perchlorate6850c.lcm	1x		3/18/2024 13:57
19	20240318-019	E2400217-001	Perchlorate6850c.lcm	1x		3/18/2024 14:08
20	20240318-020	E2400216-002 x10	Perchlorate6850c.lcm	10x		3/18/2024 14:13
21	20240318-021	E2400216-003 x10	Perchlorate6850c.lcm	10x		3/18/2024 14:19
22	20240318-022	E2400216-005X1000	Perchlorate6850c.lcm	1000x		3/18/2024 14:24
23	20240318-023	E2400216-006X1000	Perchlorate6850c.lcm	10000x		3/18/2024 14:30
24	20240318-024	EQ2400134-05MSX1	Perchlorate6850c.lcm	10000x		3/18/2024 15:33
25	20240318-025	EQ2400134-06MSX1	Perchlorate6850c.lcm	10000x		3/18/2024 15:40
26	20240318-026	CCV	Perchlorate6850c.lcm	1x		3/18/2024 15:45
27	20240318-027	IB	Perchlorate6850c.lcm	1x		3/18/2024 15:51

835280

Injection Log

LCMS01 -Shimadzu 8050

1st Review: JLJ
2nd Review: GP

ICAL Date: 2/13/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400004

Mobile Phases : A:20mM ammonium acetate in water 233412 **B:**Acetonitrile 233145
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time

Client: Bhate Environmental Associates, Inc. **Service Request:** E2400216
Project: LHAAP Site 17 **Date Analyzed:** 3/18/24 11:15

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240318\20240318-004 **Lab Code:** EQ2400140-01
Instrument ID: E-LCMS-01 **Analysis Lot:** 835280
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	513,263	3.53
	Upper Limit ==>	769,895	5.53
	Lower Limit ==>	256,632	1.53
Associated Analyses			
Continuing Calibration Verification	EQ2400140-01	277,858	3.53
Method Blank	EQ2400134-01	276,120	3.53
Lab Control Sample	EQ2400134-02	269,430	3.53
Duplicate Lab Control Sample	EQ2400134-03	282,774	3.53
130_030424	E2400216-001	304,403	3.53
17WW02_030424	E2400216-004	273,553	3.53

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2400216
Project: LHAAP Site 17 **Date Analyzed:** 3/18/24 13:52

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240318\20240318-017 **Lab Code:** EQ2400140-02
Instrument ID: E-LCMS-01 **Analysis Lot:** 835280
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	513,263	3.53
	Upper Limit ==>	769,895	5.53
	Lower Limit ==>	256,632	1.53
Associated Analyses			
Continuing Calibration Verification	EQ2400140-02	276,782	3.53
17WW03_030424	E2400216-002	278,595	3.53
17WW01_030424	E2400216-003	288,545	3.53
17WW02_030424_a	E2400216-005	270,299	3.53
17WW06_030424	E2400216-006	281,107	3.53
17WW06_030424MS	EQ2400134-05	273,942	3.53
17WW06_030424DMS	EQ2400134-06	271,558	3.53

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2400216
Project: LHAAP Site 17 **Date Analyzed:** 3/18/24 15:45

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240318\20240318-026 **Lab Code:** EQ2400140-03
Instrument ID: E-LCMS-01 **Analysis Lot:** 835280
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	513,263	3.53
	Upper Limit ==>	769,895	5.53
	Lower Limit ==>	256,632	1.53
Associated Analyses			
Continuing Calibration Verification	EQ2400140-03	266,489	3.53

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

Client: Bhate Environmental Associates, Inc. **Service Request:** E2400216
Project: LHAAP Site 17 **Date Analyzed:** 3/18/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 2/13/24
File ID: I:\LCMS01\DATA\20240318\20240318-004 **Calibration ID:** EC2400004
Analysis Lot: 835280
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.81	0.1578	0.1548	-1.9	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2400216
Project: LHAAP Site 17 **Date Analyzed:** 3/18/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 2/13/24
File ID: I:\LCMS01\DATA\20240318\20240318-017 **Calibration ID:** EC2400004
Analysis Lot: 835280
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1578	0.1584	0.4	NA	± 15 %	Average RF

Client: Bhate Environmental Associates, Inc. **Service Request:** E2400216
Project: LHAAP Site 17 **Date Analyzed:** 3/18/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 2/13/24
File ID: I:\LCMS01\DATA\20240318\20240318-026 **Calibration ID:** EC2400004
Analysis Lot: 835280
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.2	0.1578	0.1605	1.7	NA	± 15 %	Average RF

Insight Report

Printed at 3/19/2024 11:52:59 AM

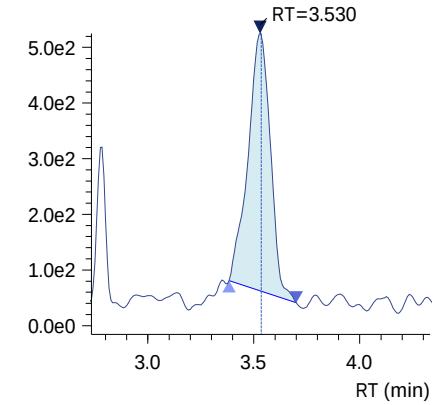
EQ2400134-04ICS

Sample ID: EQ2400134-04ICS
Date Acquired: 3/18/2024 12:55:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-010.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 3

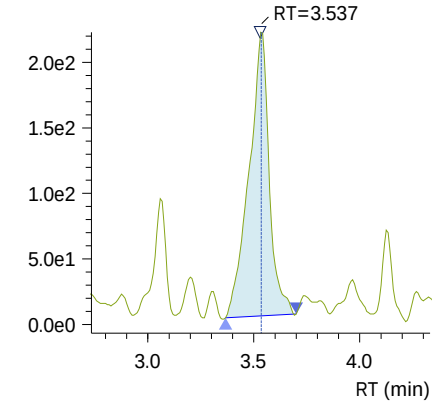
Perchlorate

Conc 0.0790
R#1 42.29 (34.10)

Q 99.00>83.00 (-) A=3390 5.25e2



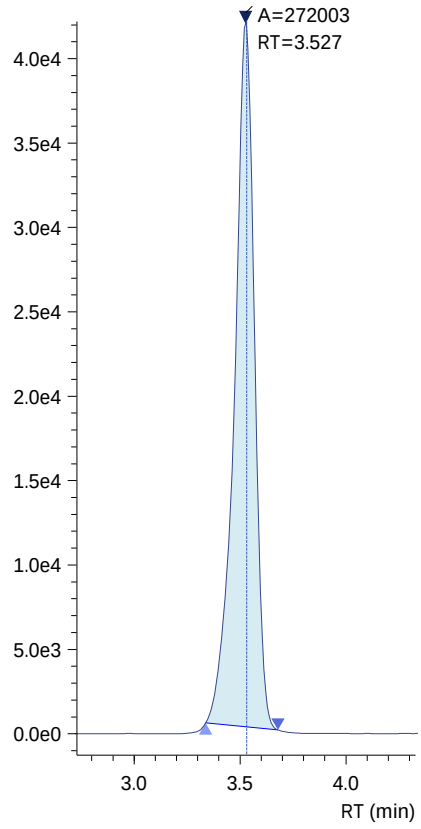
R1 101.00>85.00 (-) A=1434 2.23e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.22e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

Method File: I:\LCMS01\DATA\20240318\20240318.lcm
Project File: I:\LCMS01\DATA\20240318\20240318.damlp

IB

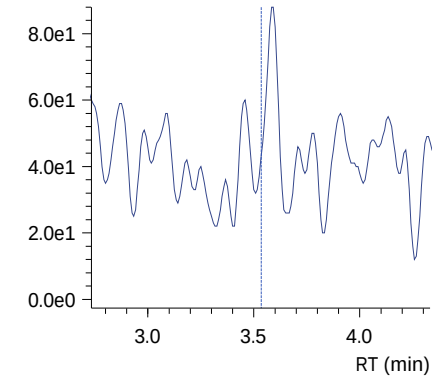
Sample ID: IB
Date Acquired: 3/18/2024 10:58:33 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-001.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	258324	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.531	258324	258324	1.0000	ng/mL	----	----	

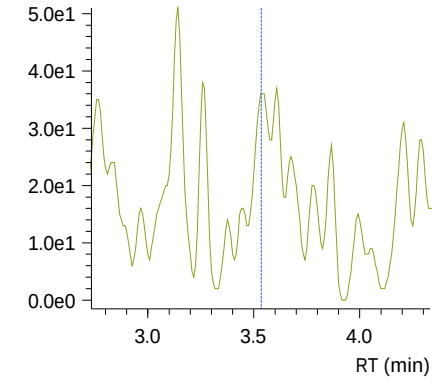
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 8.80e1



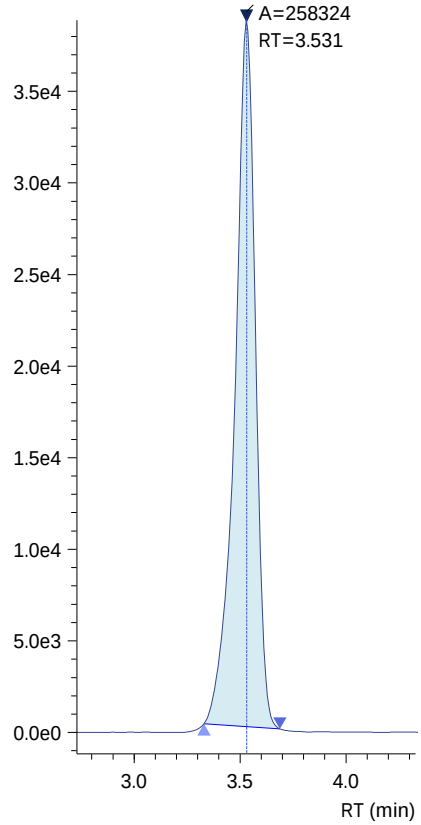
R1 101.00>85.00 (-) 5.10e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.89e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

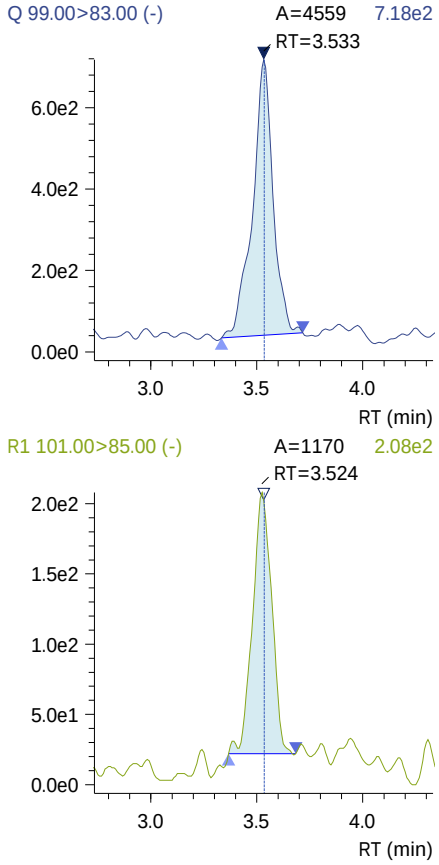
ICS

Sample ID: ICS
Date Acquired: 3/18/2024 11:09:40 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-003.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.533	4559	279504	0.1034	ng/mL	101.00 >85.00	25.66	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.530	279504	279504	1.0000	ng/mL	----	----	

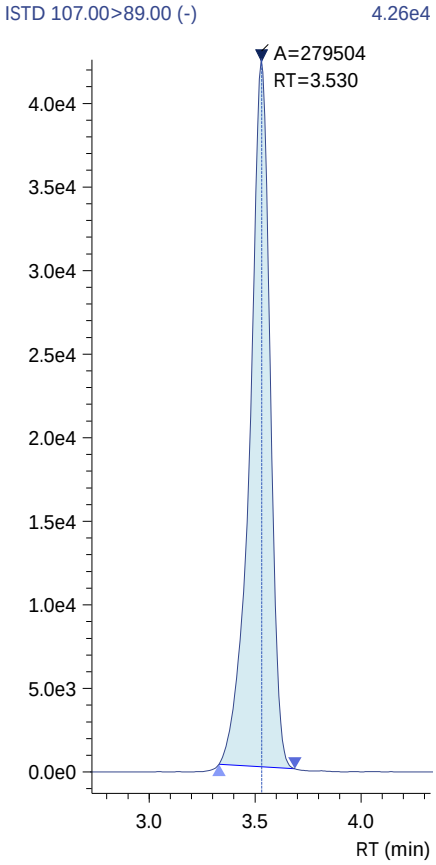
Perchlorate

Conc 0.1034
R#1 25.66 (34.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/19/2024 11:47:00 AM

CCV

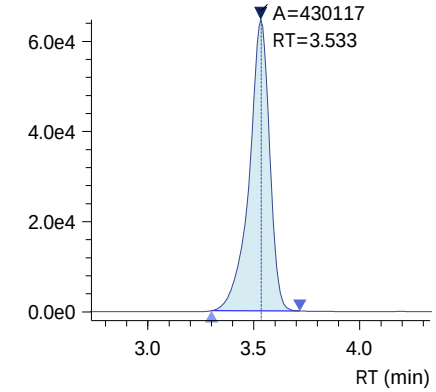
Sample ID: CCV
Date Acquired: 3/18/2024 11:15:14 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-004.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.533	430117	277858	9.8084	ng/mL	101.00 >85.00	32.57	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.530	277858	277858	1.0000	ng/mL	----	----	

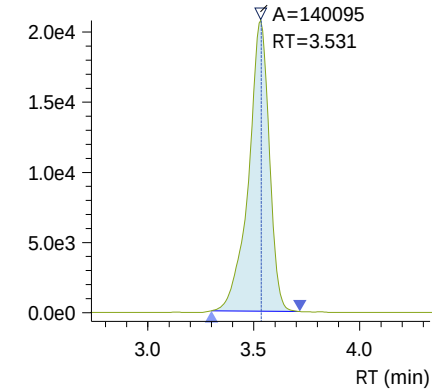
Perchlorate

Conc 9.8084
R#1 32.57 (34.10)

Q 99.00>83.00 (-) 6.48e4



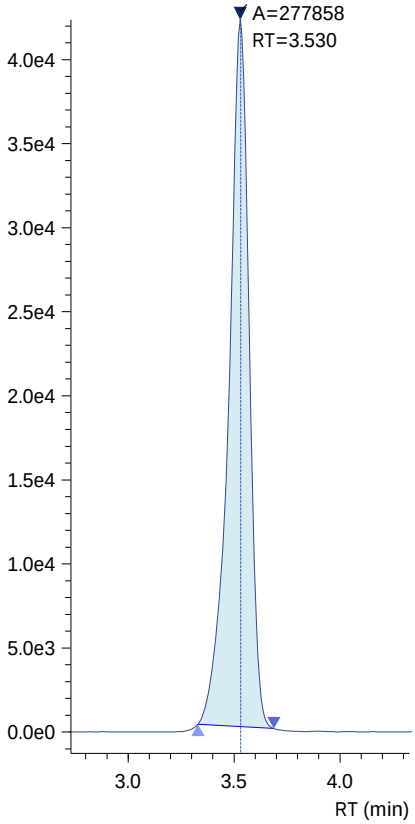
R1 101.00>85.00 (-) 2.08e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.24e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

IB

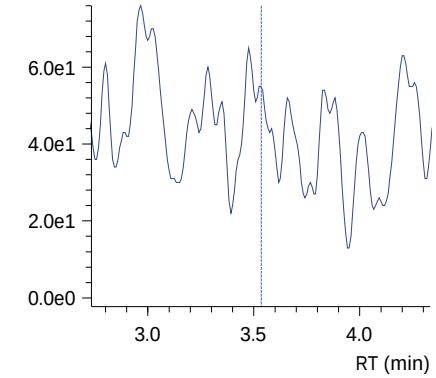
Sample ID: IB
Date Acquired: 3/18/2024 11:20:44 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-005.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	263814	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.530	263814	263814	1.0000	ng/mL	----	----	

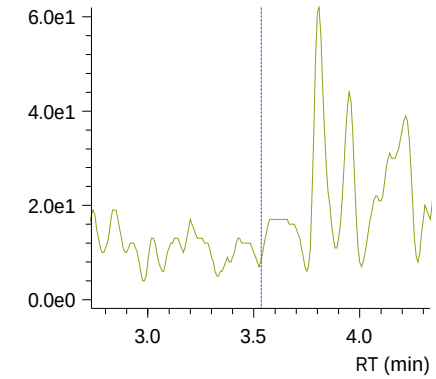
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 7.60e1



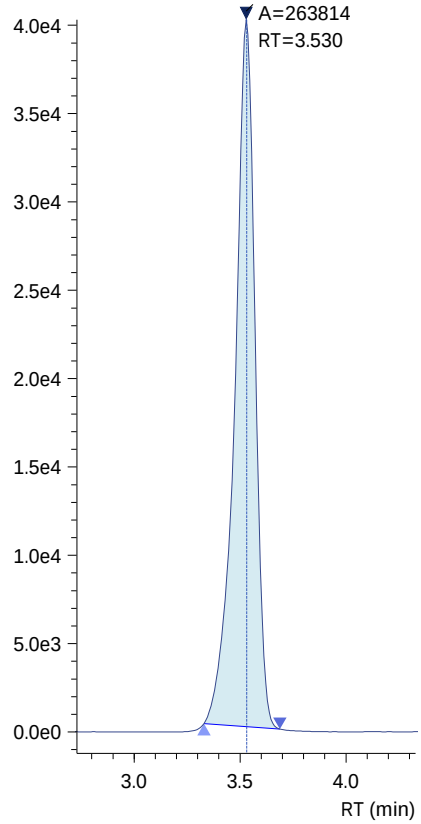
R1 101.00>85.00 (-) 6.20e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.03e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

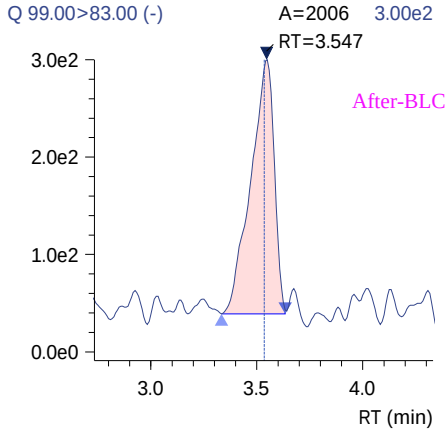
LODV

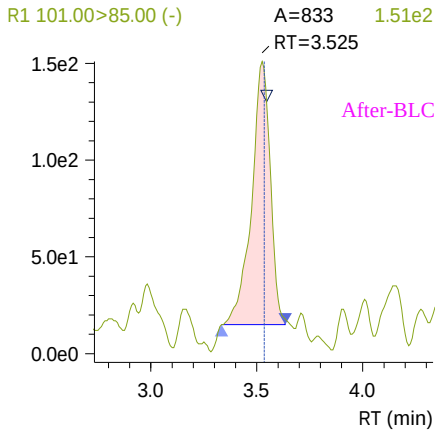
Sample ID: LODV
Date Acquired: 3/18/2024 11:37:25 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-006.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.547	2006	259370	0.0490	ng/mL	101.00 >85.00	41.51	26.31 -43.47
Sodium Perchlorate-18O4_IS	M	3.530	2593 70	259370	1.0000	ng/mL	----	----	

Perchlorate

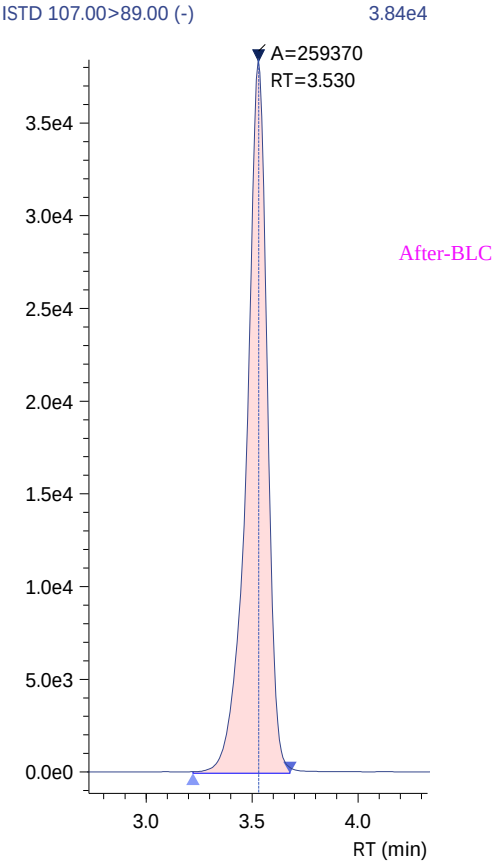
Conc 0.0490
R#1 41.51 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/19/2024 11:52:59 AM

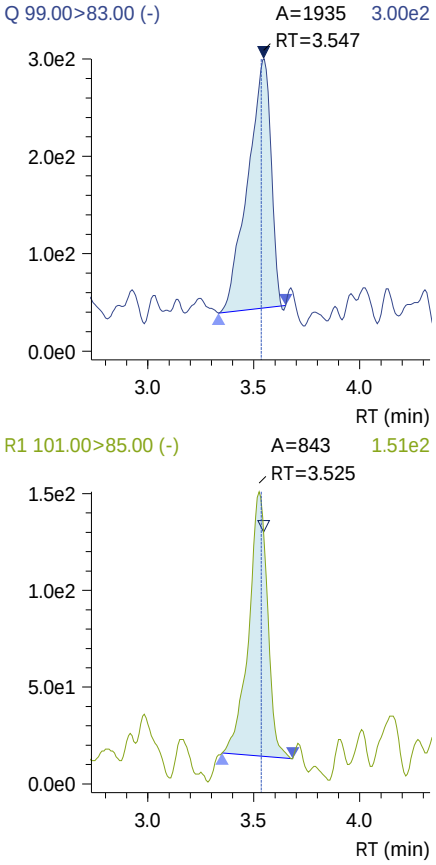
Method File: I:\LCMS01\DATA\20240318\20240318.lcm
Project File: I:\LCMS01\DATA\20240318\20240318.damlp

LODV

Sample ID: LODV
Date Acquired: 3/18/2024 11:37:25 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-006.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 1

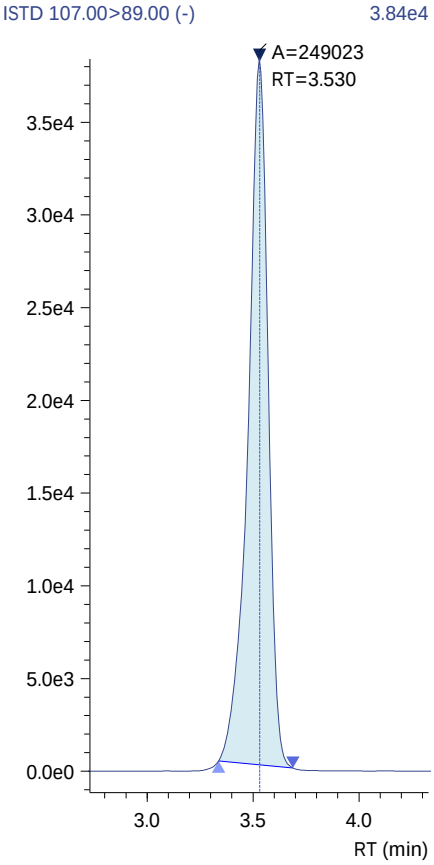
Perchlorate

Conc 0.0492
R#1 43.56 (34.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/19/2024 11:47:00 AM

EQ2400134-01MB

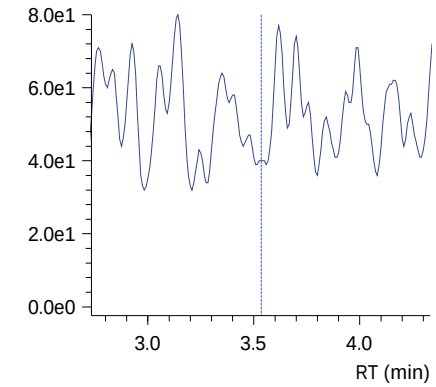
Sample ID: EQ2400134-01MB
Date Acquired: 3/18/2024 12:38:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-007.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	276120	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.529	276120	276120	1.0000	ng/mL	----	----	

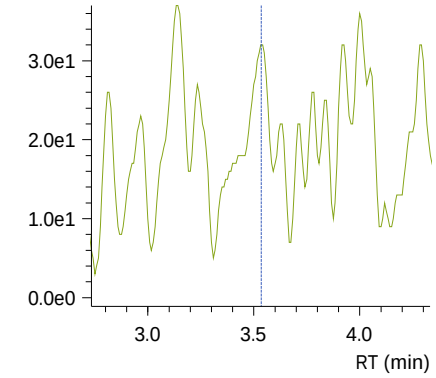
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 8.00e1



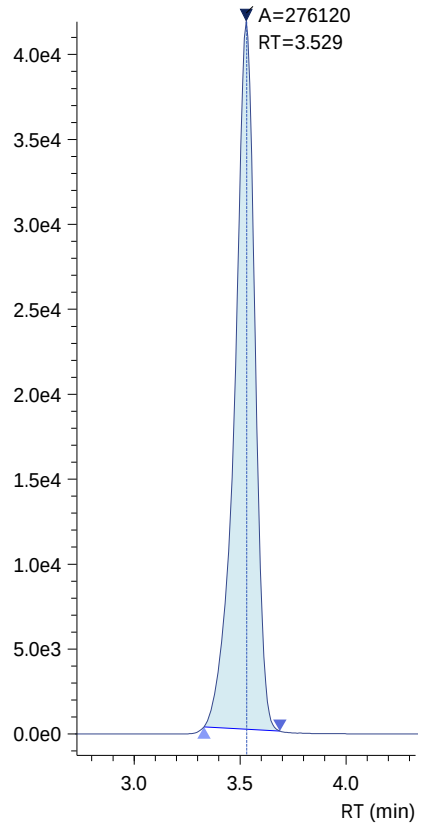
R1 101.00>85.00 (-) 3.70e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.19e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

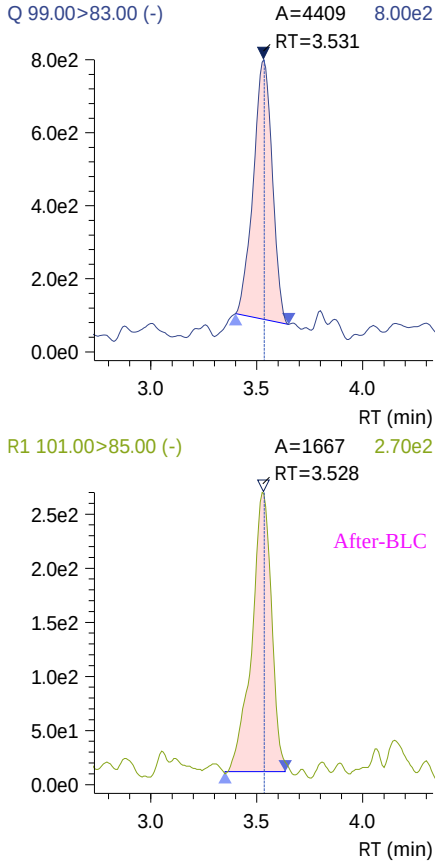
EQ2400134-02LCS

Sample ID: EQ2400134-02LCS
Date Acquired: 3/18/2024 12:44:08 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-008.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI	3.531	4409	269430	0.1037	ng/mL	101.00 >85.00	37.80	26.31 -43.47
Sodium Perchlorate-18O4 _IS	Auto	3.528	269430	269430	1.0000	ng/mL	----	----	

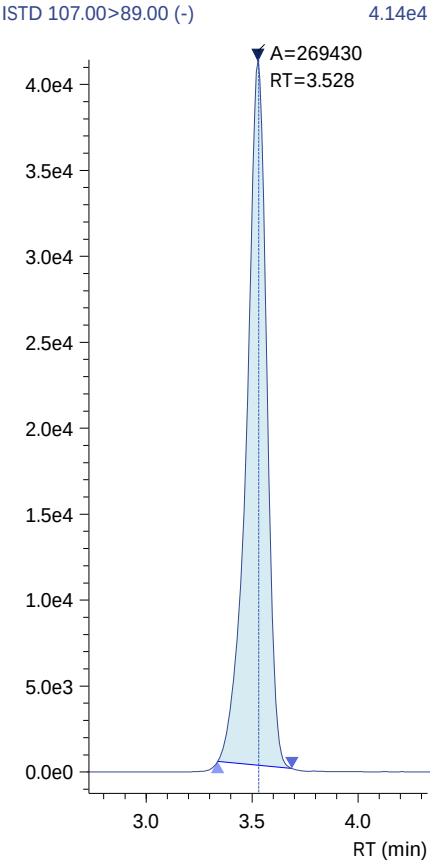
Perchlorate

Conc 0.1037
R#1 37.80 (34.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/19/2024 11:52:59 AM

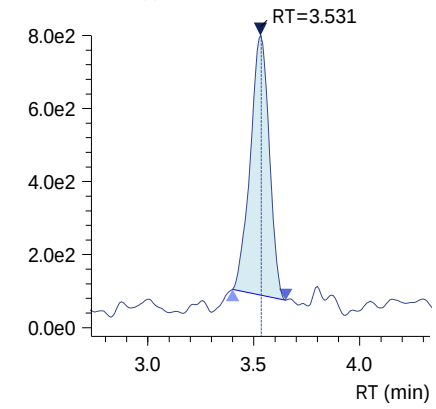
EQ2400134-02LCS

Sample ID: EQ2400134-02LCS
Date Acquired: 3/18/2024 12:44:08 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-008.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 3

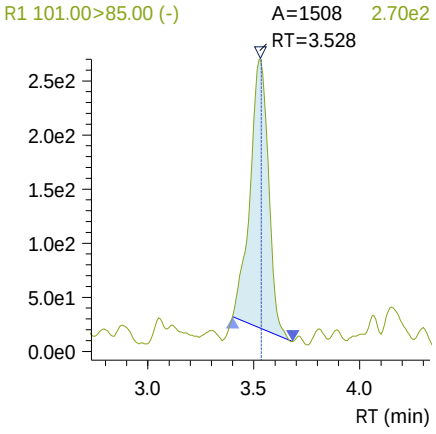
Perchlorate

Conc 0.1037
R#1 34.20 (34.10)

Q 99.00>83.00 (-) A=4409 8.00e2



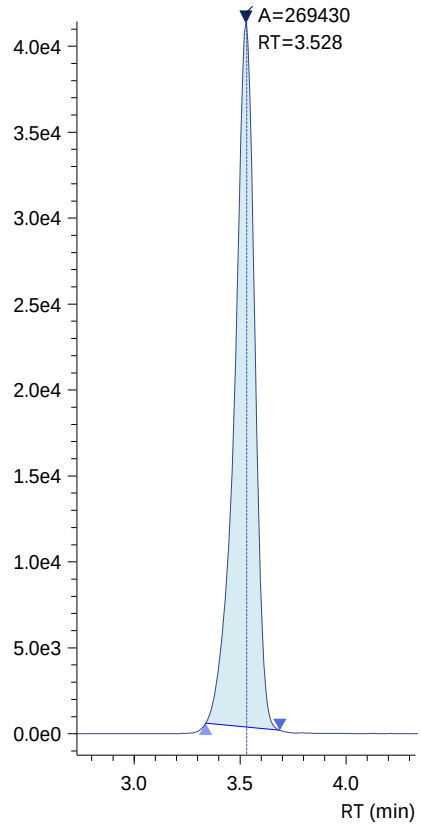
R1 101.00>85.00 (-) A=1508 2.70e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.14e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

EQ2400134-03DLCS

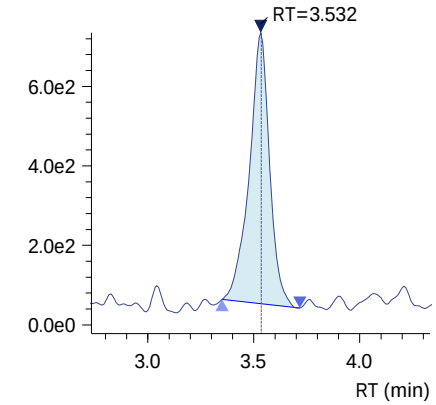
Sample ID: EQ2400134-03DLCS
Date Acquired: 3/18/2024 12:49:43 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-009.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.532	4526	282774	0.1014	ng/mL	101.00 >85.00	35.20	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.528	2827 74	282774	1.0000	ng/mL	----	----	

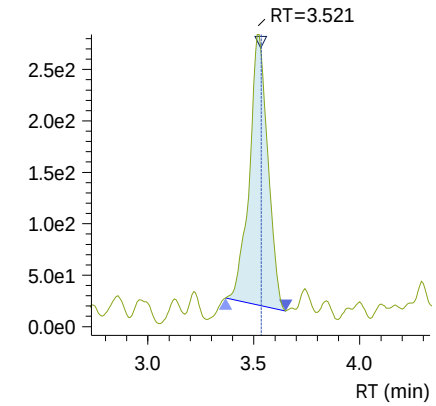
Perchlorate

Conc 0.1014
R#1 35.20 (34.10)

Q 99.00>83.00 (-) A=4526 7.35e2



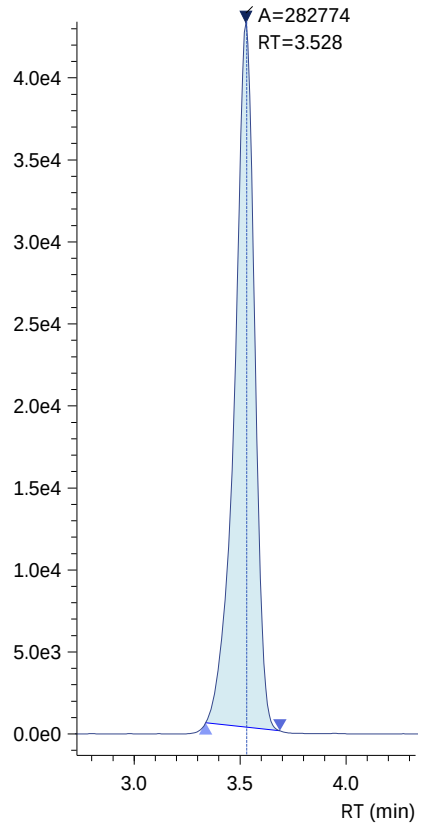
R1 101.00>85.00 (-) A=1593 2.84e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.34e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

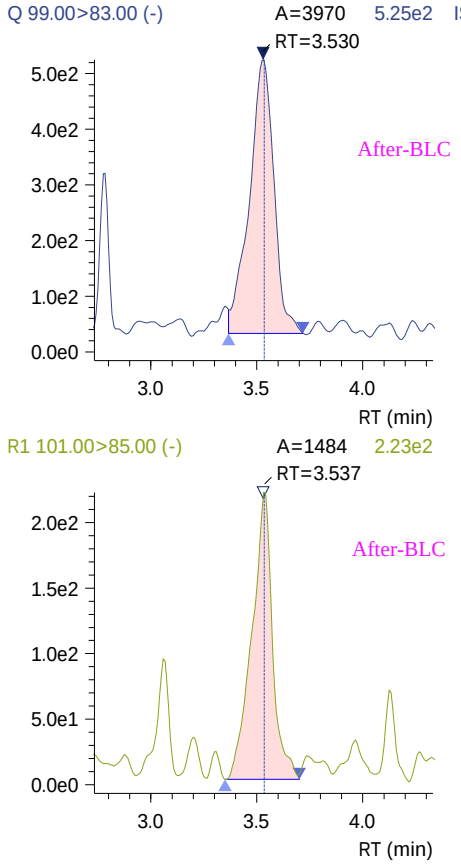
EQ2400134-04ICS

Sample ID: EQ2400134-04ICS
Date Acquired: 3/18/2024 12:55:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-010.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.530	3970	272003	0.0925	ng/mL	101.00 >85.00	37.38	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.527	272003	272003	1.0000	ng/mL	----	----	

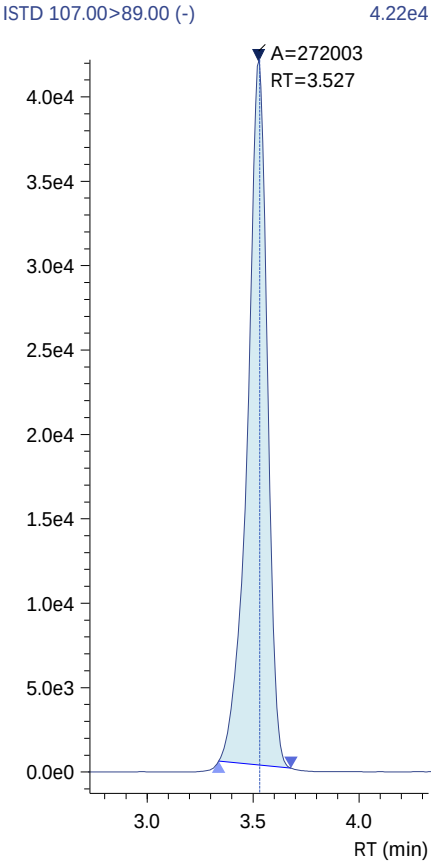
Perchlorate

Conc 0.0925
R#1 37.38 (34.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/19/2024 11:47:00 AM

CCV

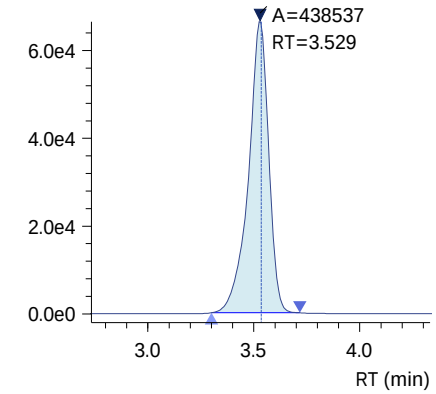
Sample ID: CCV
Date Acquired: 3/18/2024 1:52:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-017.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	4385 37	276782	10.0 393	ng/mL	101.00 >85.00	32.48	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.525	2767 82	276782	1.0000	ng/mL	----	----	

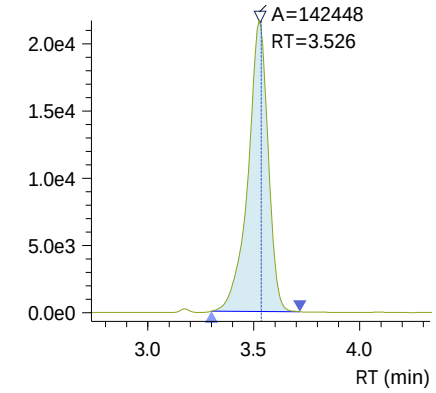
Perchlorate

Conc 10.0393
R#1 32.48 (34.10)

Q 99.00>83.00 (-) 6.66e4



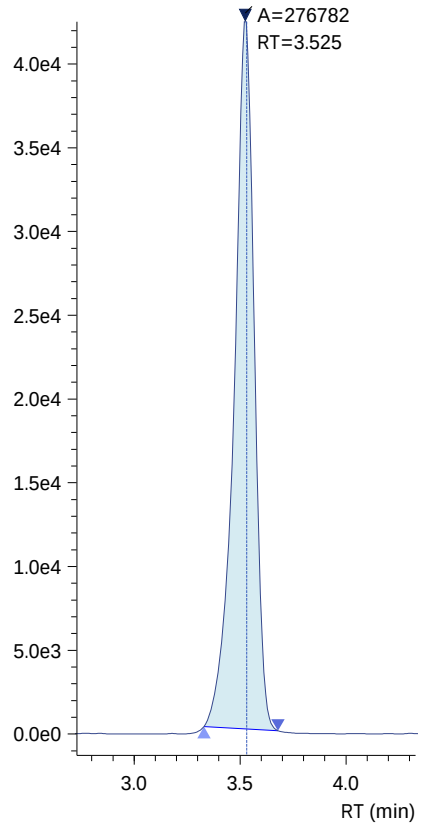
R1 101.00>85.00 (-) 2.17e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.25e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

IB

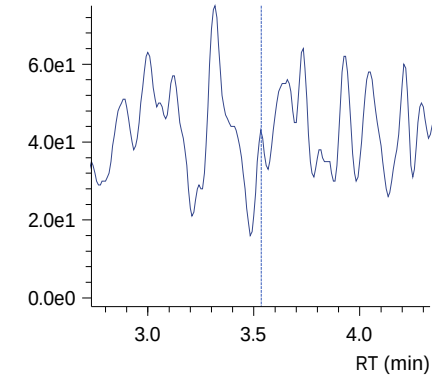
Sample ID: IB
Date Acquired: 3/18/2024 1:57:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-018.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	257234	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.526	257234	257234	1.0000	ng/mL	----	----	

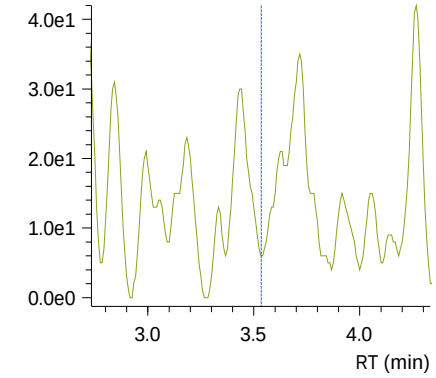
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 7.50e1



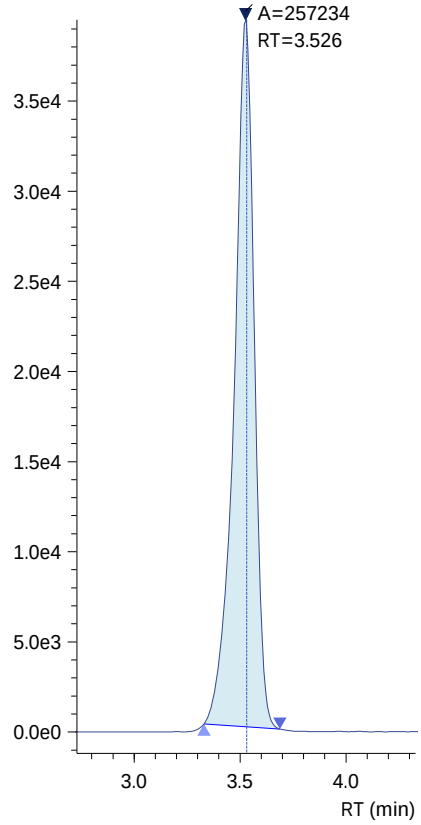
R1 101.00>85.00 (-) 4.20e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.95e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

CCV

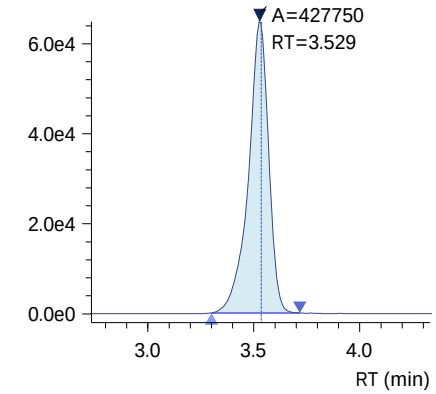
Sample ID: CCV
Date Acquired: 3/18/2024 3:45:43 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-026.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	427750	266489	10.1706	ng/mL	101.00	32.81	26.31
							>85.00		-43.47
Sodium Perchlorate-18O4_IS	Auto	3.526	266489	266489	1.0000	ng/mL	----	----	

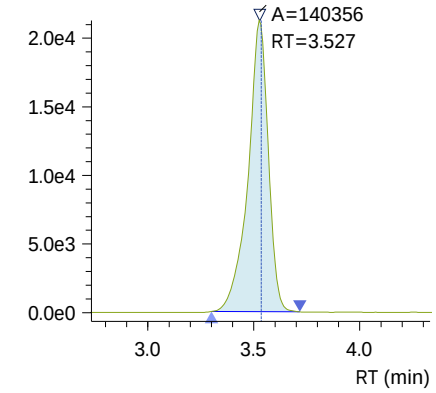
Perchlorate

Conc 10.1706
R#1 32.81 (34.10)

Q 99.00>83.00 (-) 6.49e4



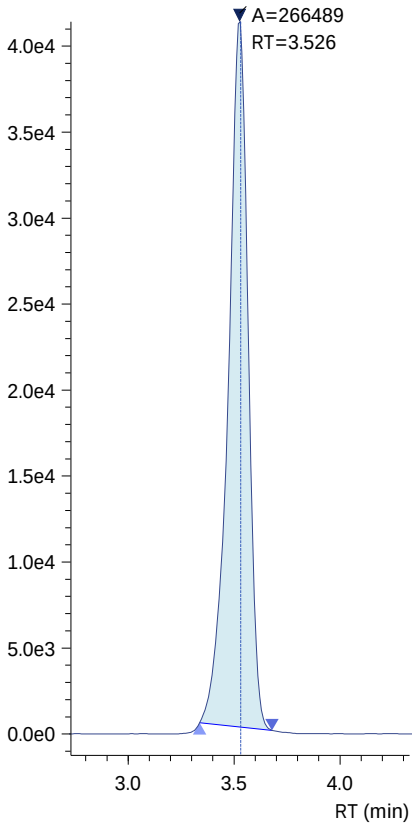
R1 101.00>85.00 (-) 2.13e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.14e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

IB

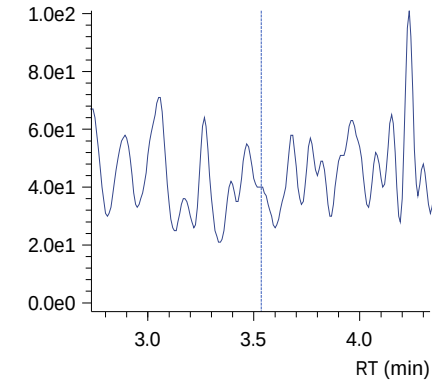
Sample ID: IB
Date Acquired: 3/18/2024 3:51:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-027.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	259499	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	M	3.524	259499	259499	1.0000	ng/mL	----	----	

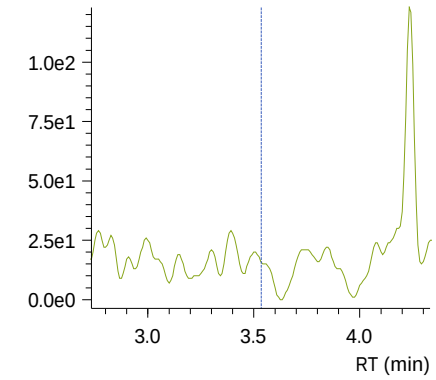
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 1.01e2



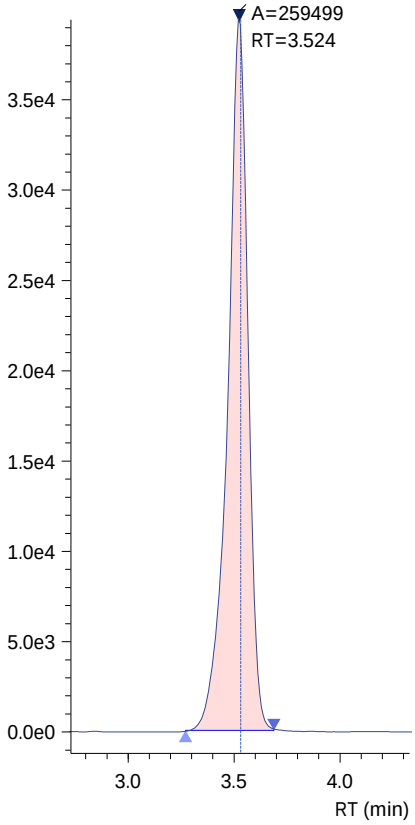
R1 101.00>85.00 (-) 1.23e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.94e4



After-BLC

Insight Report

Printed at 3/19/2024 11:52:59 AM

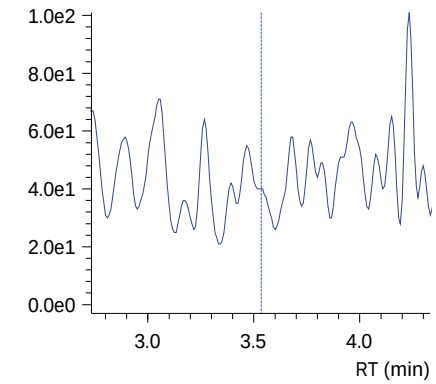
IB

Sample ID: IB
Date Acquired: 3/18/2024 3:51:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-027.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

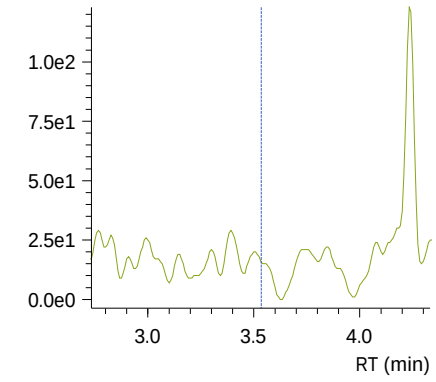
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 1.01e2



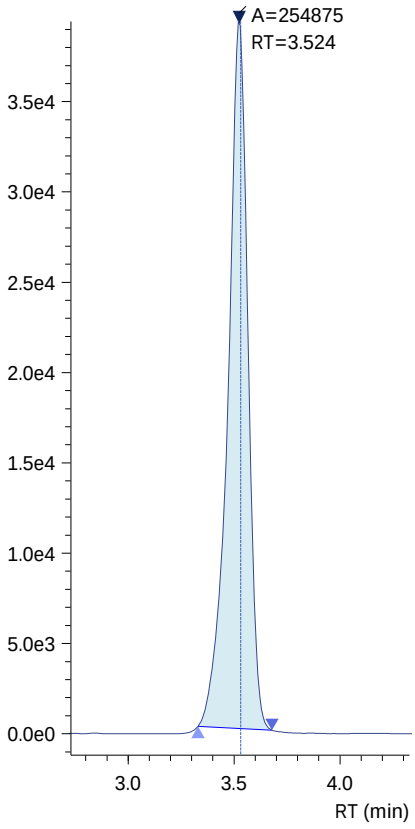
R1 101.00>85.00 (-) 1.23e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.94e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

E2400216-001

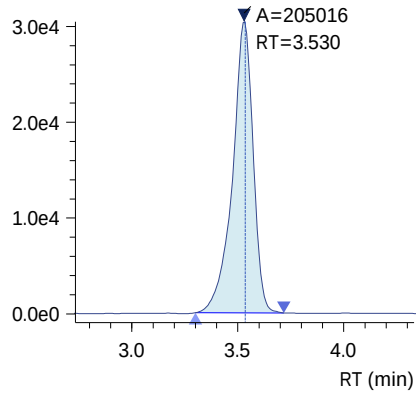
Sample ID: E2400216-001
Date Acquired: 3/18/2024 1:30:17 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-013.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.530	205016	304403	4.2675	ng/mL	101.00 >85.00	32.83	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.526	304403	304403	1.0000	ng/mL	----	----	

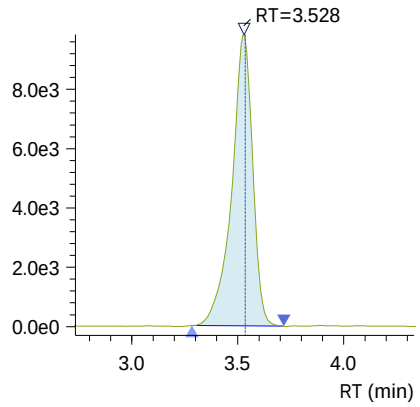
Perchlorate

Conc 4.2675
R#1 32.83 (34.10)

Q 99.00>83.00 (-) 3.05e4



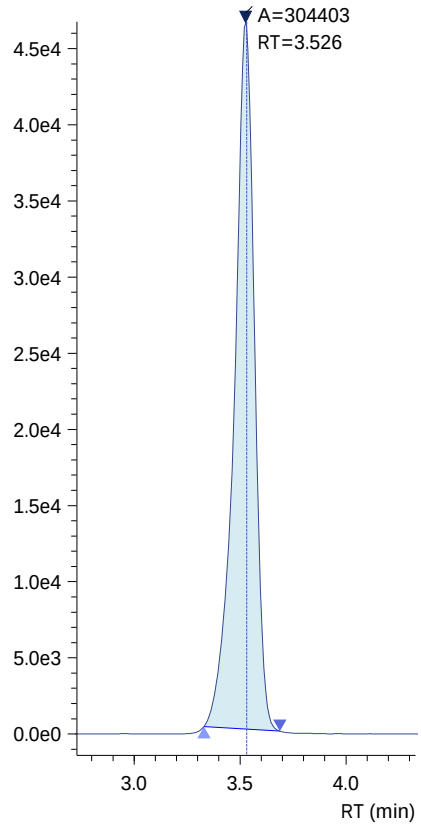
R1 101.00>85.00 (-) A=67310 9.85e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.68e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

E2400216-004X1000

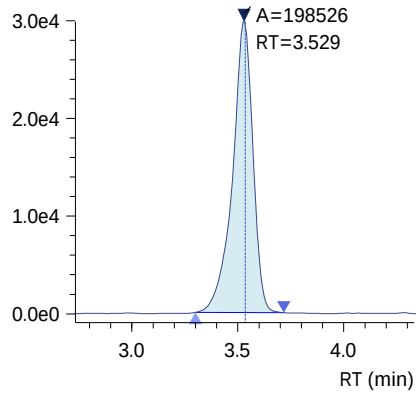
Sample ID: E2400216-004
Date Acquired: 3/18/2024 1:46:54 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-016.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	1985 26	273553	4.5984	ng/mL	101.00 >85.00	33.51	26.31 -43.47
Sodium Perchlorate-18O4_IS	M	3.526	2735 53	273553	1.0000	ng/mL	----	----	

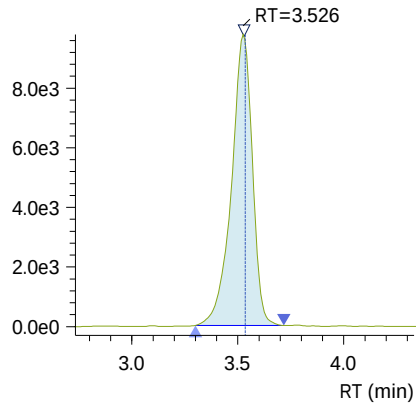
Perchlorate

Conc 4.5984
R#1 33.51 (34.10)

Q 99.00>83.00 (-) 2.99e4



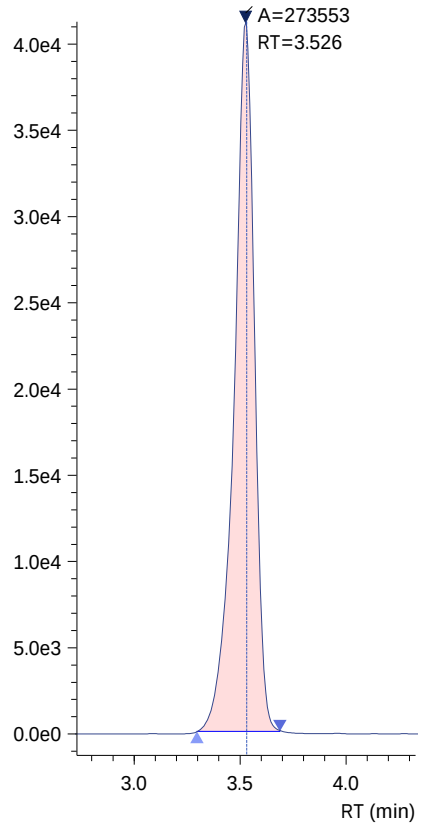
R1 101.00>85.00 (-) A=66533 9.80e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.13e4



After-BLC

Insight Report

Printed at 3/19/2024 11:52:59 AM

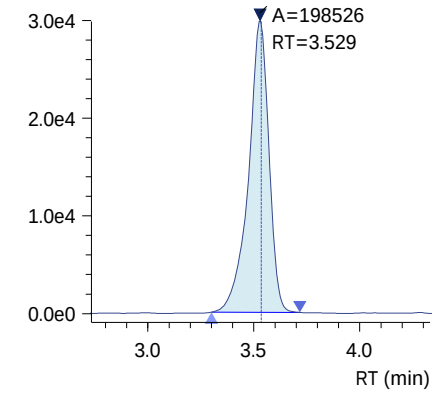
E2400216-004X1000

Sample ID: E2400216-004
Date Acquired: 3/18/2024 1:46:54 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-016.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 3

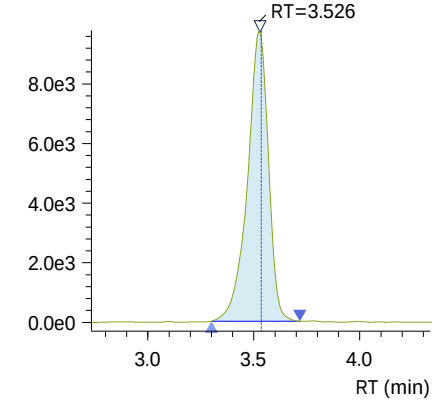
Perchlorate

Conc 4.7039
R#1 33.51 (34.10)

Q 99.00>83.00 (-) 2.99e4



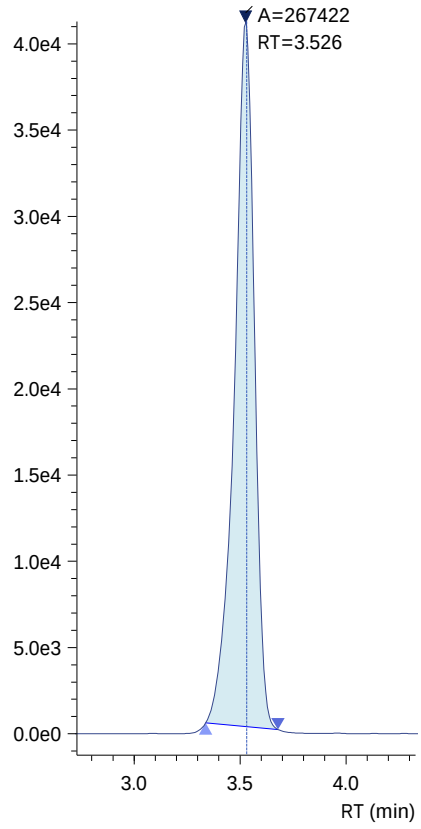
R1 101.00>85.00 (-) A=66533 9.80e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.13e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

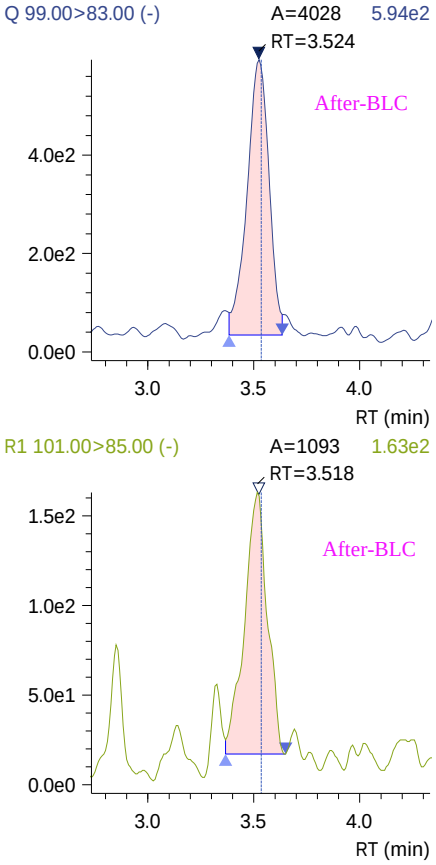
E2400216-002 x10

Sample ID: E2400216-002
Date Acquired: 3/18/2024 2:13:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-020.lcd
Vial: 15 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.524	4028	278595	0.0916	ng/mL	101.00 >85.00	27.14	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.526	278595	278595	1.0000	ng/mL	----	----	

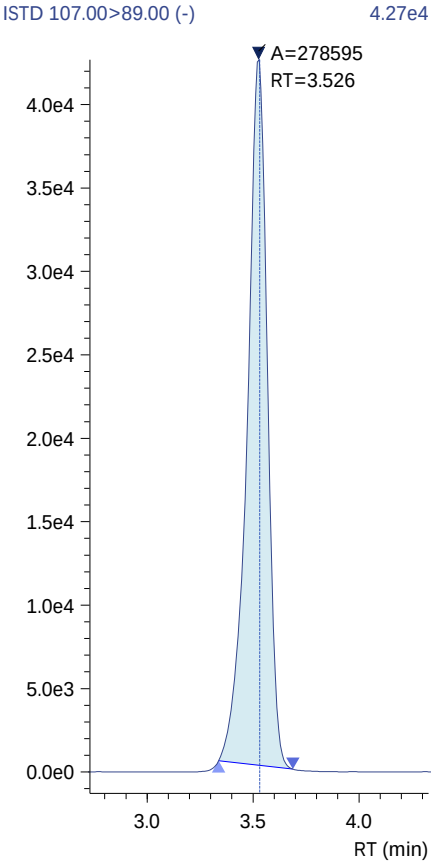
Perchlorate

Conc 0.0916
R#1 27.14 (34.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 3/19/2024 11:52:59 AM

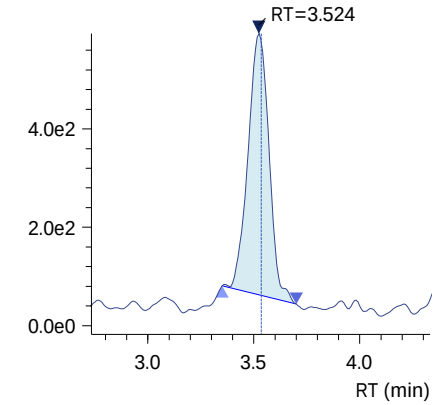
E2400216-002 x10

Sample ID: E2400216-002
Date Acquired: 3/18/2024 2:13:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-020.lcd
Vial: 15 | Inj. Volume: 10.0000uL | Tray: 3

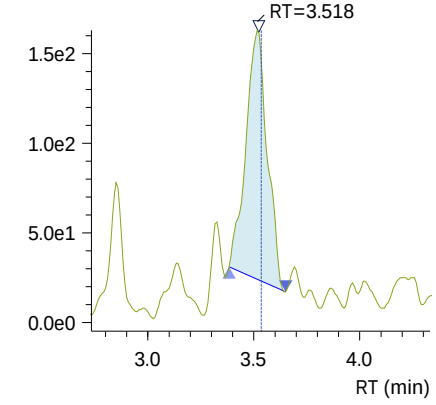
Perchlorate

Conc 0.0828
R#1 26.66 (34.10)

Q 99.00>83.00 (-) A=3641 5.94e2



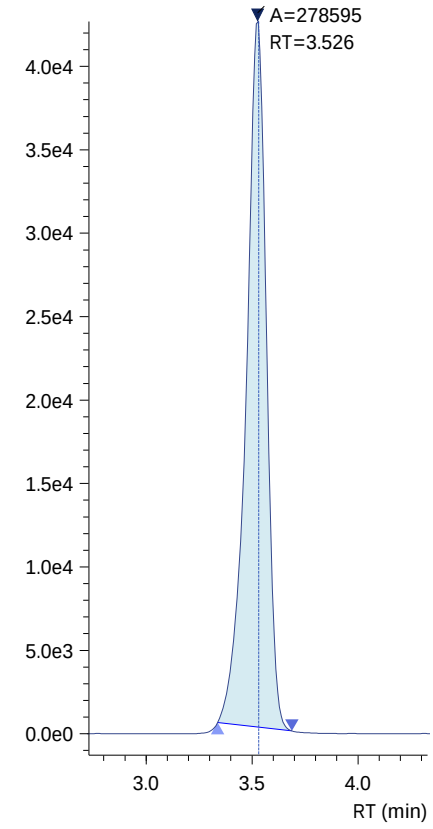
R1 101.00>85.00 (-) A=971 1.63e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.27e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

E2400216-003 x10

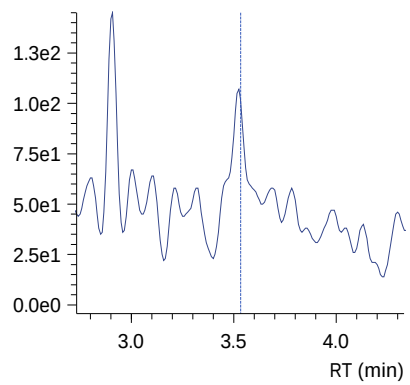
Sample ID: E2400216-003
Date Acquired: 3/18/2024 2:19:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-021.lcd
Vial: 16 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	288545	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.526	288545	288545	1.0000	ng/mL	----	----	

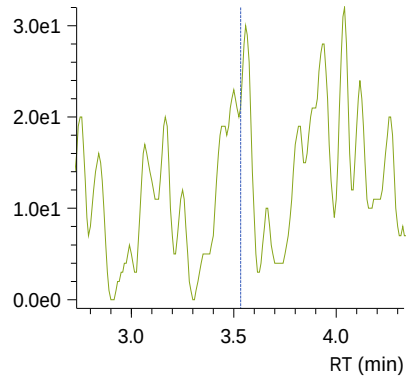
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 1.45e2



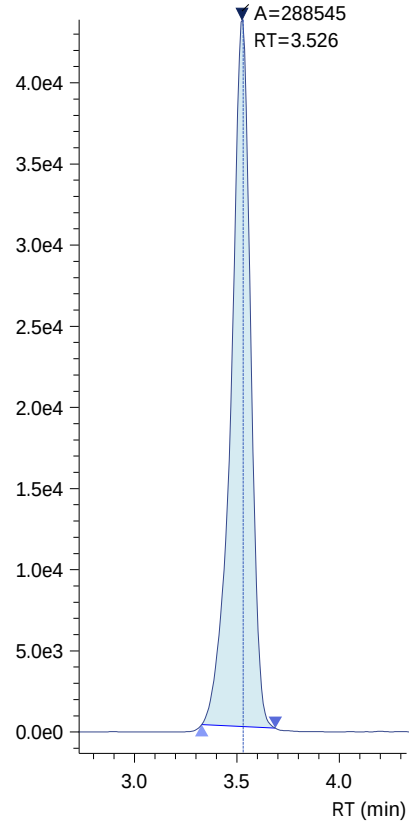
R1 101.00>85.00 (-) 3.20e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.39e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

E2400216-005X1000

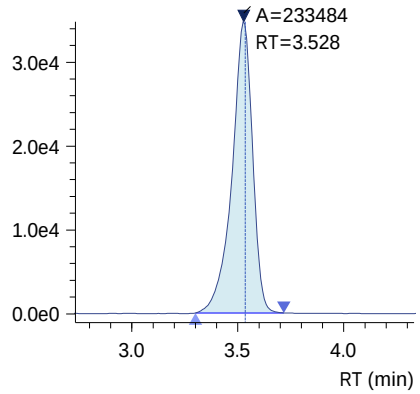
Sample ID: E2400216-005
Date Acquired: 3/18/2024 2:24:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-022.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.528	233484	270299	5.4733	ng/mL	101.00 >85.00	33.13	26.31 -43.47
Sodium Perchlorate-18O4_IS	M	3.525	270299	270299	1.0000	ng/mL	----	----	

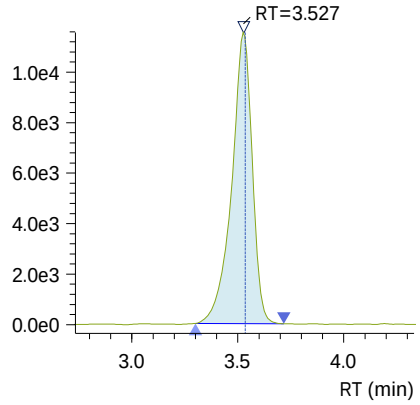
Perchlorate

Conc 5.4733
R#1 33.13 (34.10)

Q 99.00>83.00 (-) 3.48e4



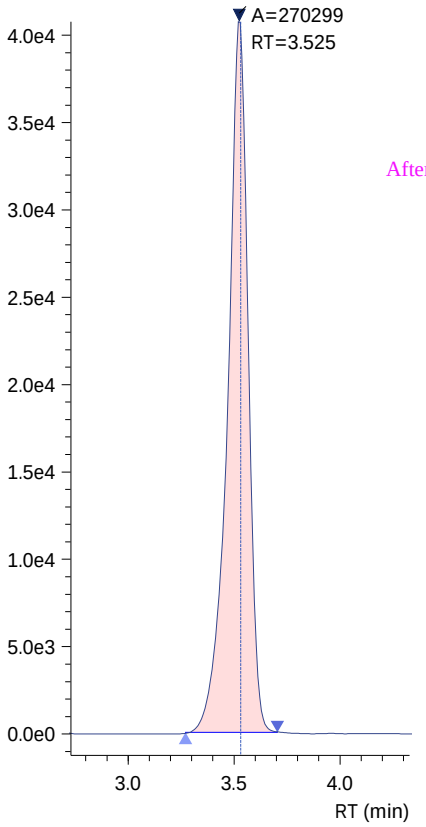
R1 101.00>85.00 (-) A=77347 1.16e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.08e4



After-BLC

Insight Report

Printed at 3/19/2024 11:52:59 AM

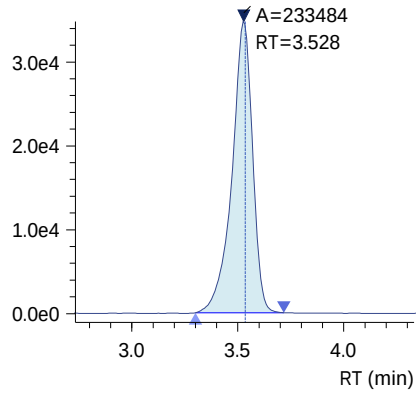
E2400216-005X1000

Sample ID: E2400216-005
Date Acquired: 3/18/2024 2:24:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-022.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 3

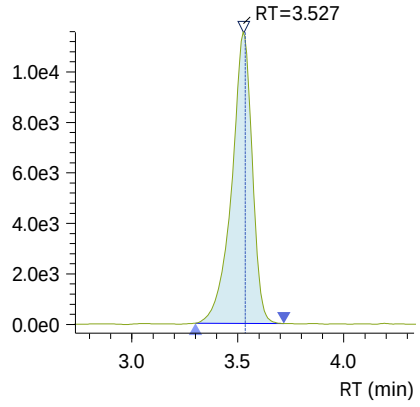
Perchlorate

Conc 5.5796
R#1 33.13 (34.10)

Q 99.00>83.00 (-) 3.48e4



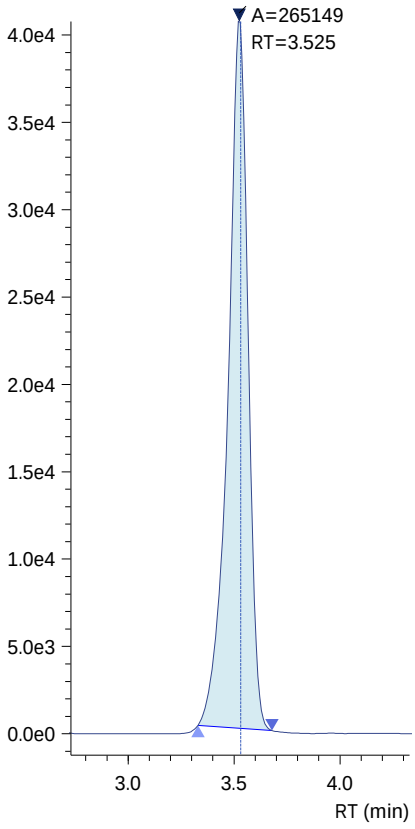
R1 101.00>85.00 (-) A=77347 1.16e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.08e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

E2400216-006X10000

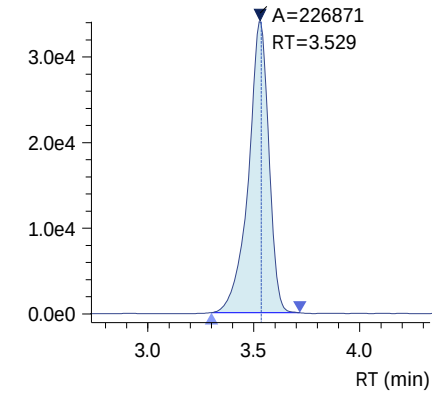
Sample ID: E2400216-006
Date Acquired: 3/18/2024 2:30:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-023.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	226871	281107	5.1138	ng/mL	101.00 >85.00	32.28	26.31 -43.47
Sodium Perchlorate-18O4_IS	M	3.526	281107	281107	1.0000	ng/mL	----	----	

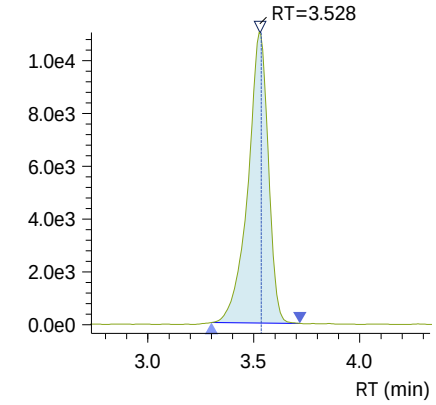
Perchlorate

Conc 5.1138
R#1 32.28 (34.10)

Q 99.00>83.00 (-) 3.41e4



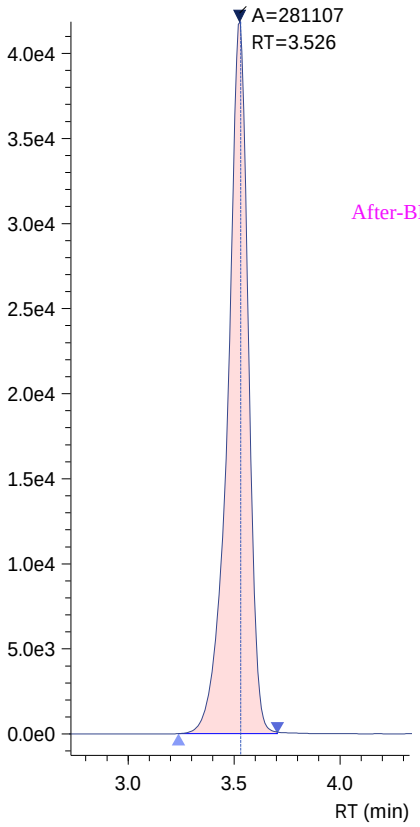
R1 101.00>85.00 (-) A=73233 1.11e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.19e4



After-BLC

Insight Report

Printed at 3/19/2024 11:52:59 AM

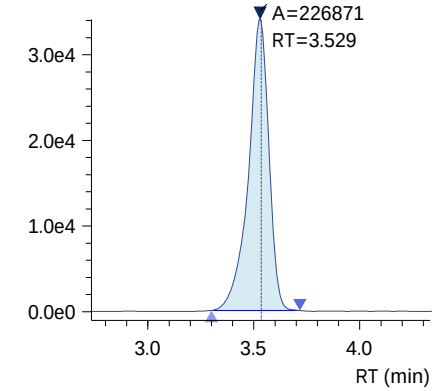
E2400216-006X10000

Sample ID: E2400216-006
Date Acquired: 3/18/2024 2:30:24 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-023.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 3

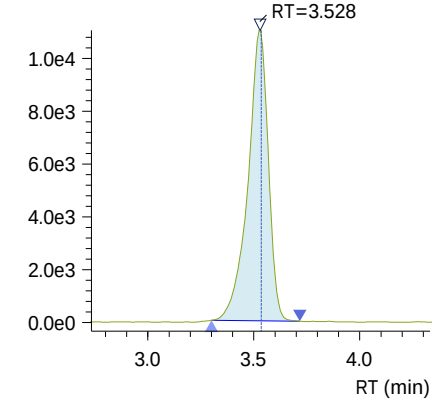
Perchlorate

Conc 5.2817
R#1 32.28 (34.10)

Q 99.00>83.00 (-) 3.41e4



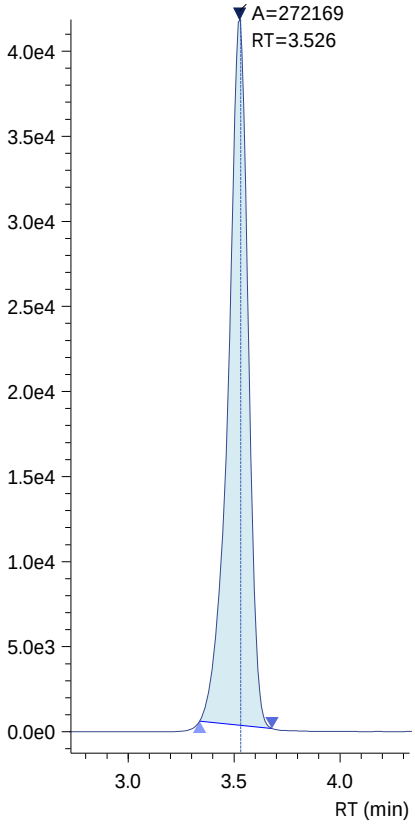
R1 101.00>85.00 (-) A=73233 1.11e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.19e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

EQ2400134-05MSX10000

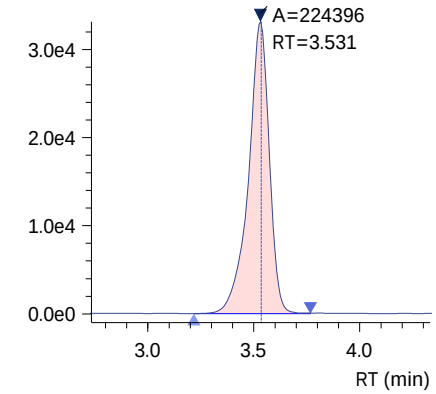
Sample ID: EQ2400134-05
Date Acquired: 3/18/2024 3:33:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-024.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.531	224396	273942	5.1903	ng/mL	101.00 >85.00	33.30	26.31 -43.47
Sodium Perchlorate-18O4_IS	M	3.526	273942	273942	1.0000	ng/mL	----	----	

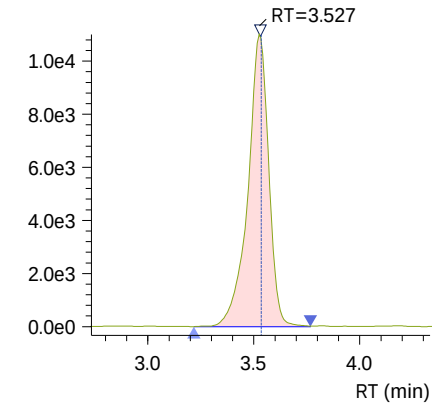
Perchlorate

Conc 5.1903
R#1 33.30 (34.10)

Q 99.00>83.00 (-) 3.32e4



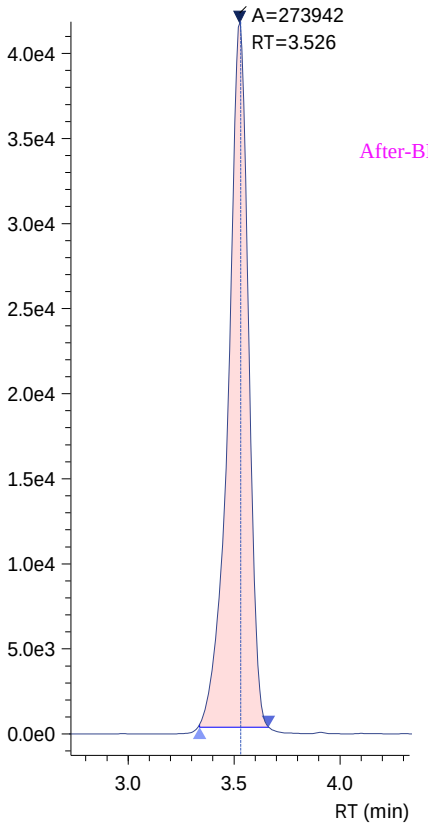
R1 101.00>85.00 (-) A=74727 1.10e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.19e4



After-BLC

Insight Report

Printed at 3/19/2024 11:52:59 AM

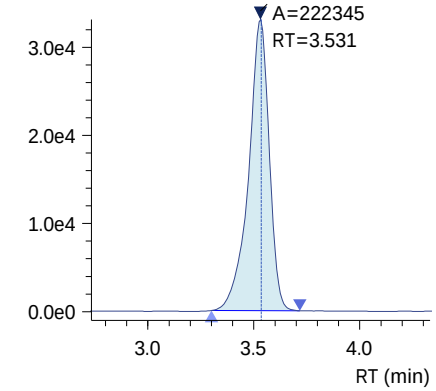
EQ2400134-05MSX10000

Sample ID: EQ2400134-05
Date Acquired: 3/18/2024 3:33:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-024.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 3

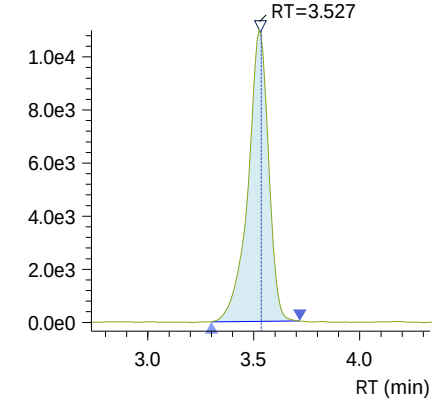
Perchlorate

Conc 5.1050
R#1 33.11 (34.10)

Q 99.00>83.00 (-) 3.32e4



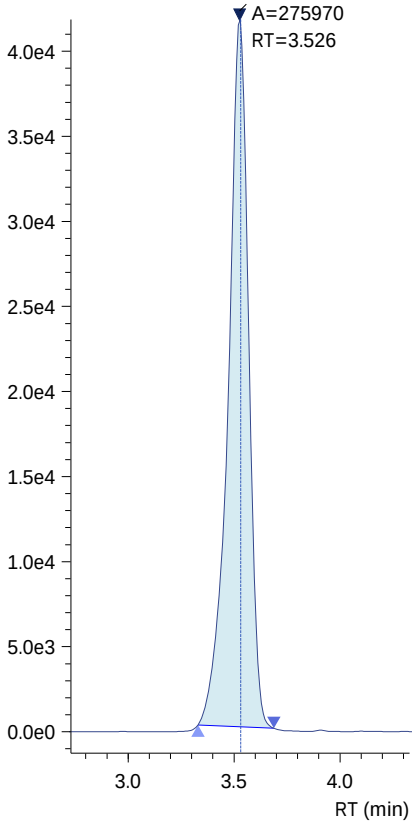
R1 101.00>85.00 (-) A=73627 1.10e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.19e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

EQ2400134-06MSX10000

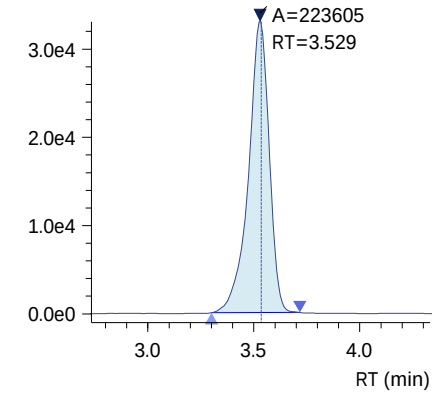
Sample ID: EQ2400134-06
Date Acquired: 3/18/2024 3:40:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-025.lcd
Vial: 14 | Inj. Volume: 10.0000uL | Tray: 3

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	223605	271558	5.2174	ng/mL	101.00 >85.00	32.80	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.527	271558	271558	1.0000	ng/mL	----	----	

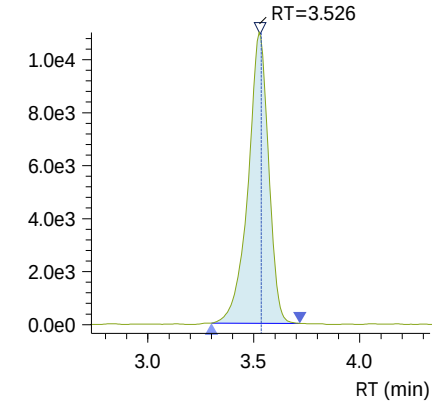
Perchlorate

Conc 5.2174
R#1 32.80 (34.10)

Q 99.00>83.00 (-) 3.31e4



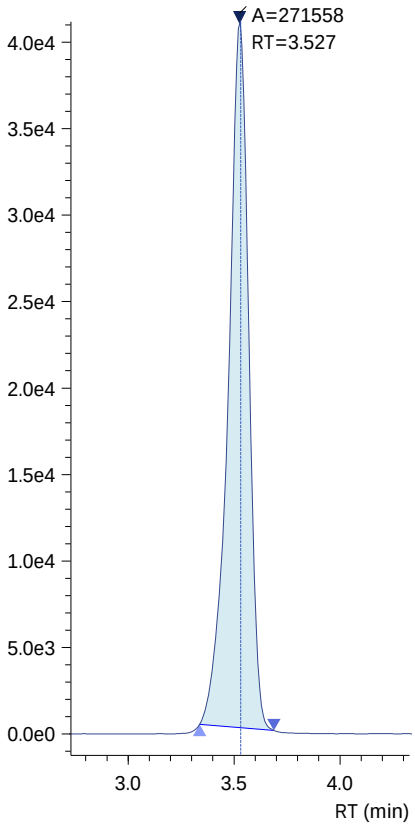
R1 101.00>85.00 (-) A=73344 1.10e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.12e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

CCV

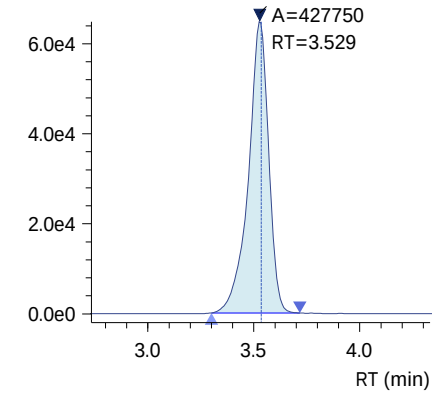
Sample ID: CCV
Date Acquired: 3/18/2024 3:45:43 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-026.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.529	4277 50	266489	10.1 706	ng/mL	101.00 >85.00	32.81	26.31 -43.47
Sodium Perchlorate-18O4_IS	Auto	3.526	2664 89	266489	1.0000	ng/mL	----	----	

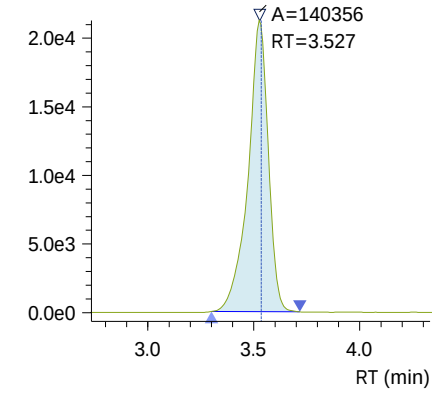
Perchlorate

Conc 10.1706
R#1 32.81 (34.10)

Q 99.00>83.00 (-) 6.49e4



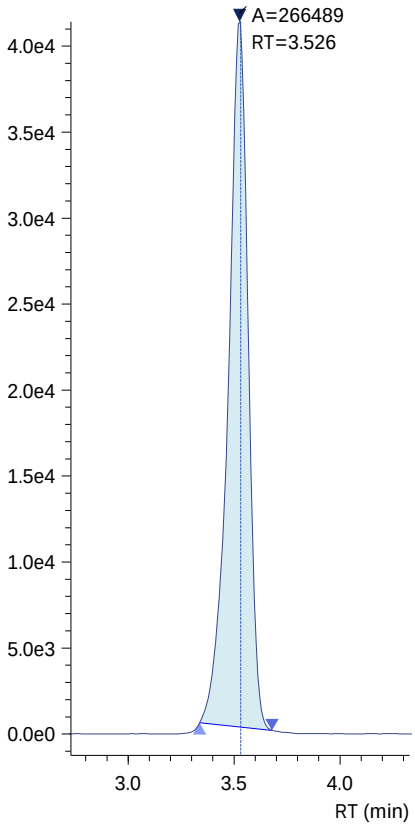
R1 101.00>85.00 (-) 2.13e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 4.14e4



Insight Report

Printed at 3/19/2024 11:47:00 AM

IB

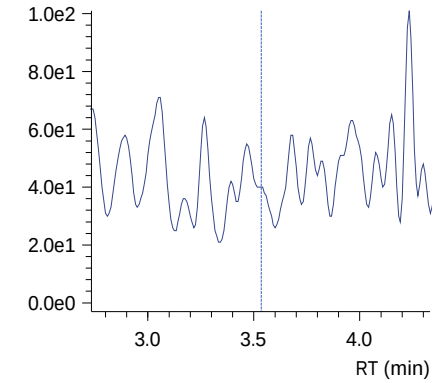
Sample ID: IB
Date Acquired: 3/18/2024 3:51:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240318\20240318-027.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	259499	----	ng/mL	101.00 >85.00	0.00	26.31 -43.47
Sodium Perchlorate-18O4_IS	M	3.524	259499	259499	1.0000	ng/mL	----	----	

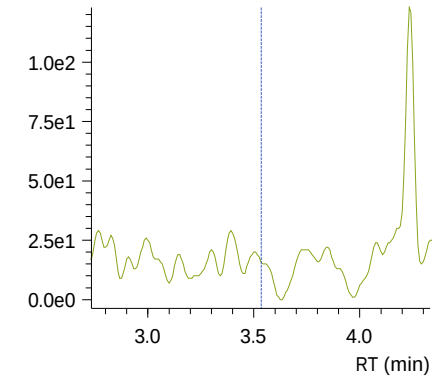
Perchlorate

Conc ----
R#1 0.00 (34.10)

Q 99.00>83.00 (-) 1.01e2



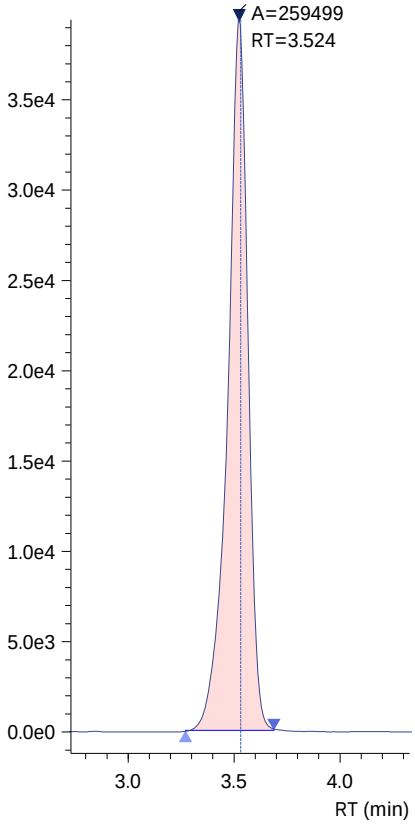
R1 101.00>85.00 (-) 1.23e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 3.94e4



After-BLC

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
alsglobal.com

right solutions.
right partner.

WorkOrder: HS24061405

LHAAP Site 17

Bhate Environmental Associates, Inc.

Marcia Olive
445 Union Blvd Ste 129
Lakewood CO 80228

25-Jul-2024

WorkOrder: HS24061405

ALS Environmental
ALS Group USA, Corp
10450 Stancliff Road, Suite 210
Houston, TX 77099
T : +1 281 530 5656
F : +1 281 530 5887
www.alsglobal.com

Table of Contents

HS24061405 LHAAP Site 17 COVER PAGE
- CoverPage
- HS24061405 LHAAP Site 17 Final
  - CoverLetter
  - Sample Summary
  - CaseNarrative
  - 130_062124
  - 17WW03_062124
  - 17WW01_062124
  - 17WW01_062124_A
  - 17WW02_062124
  - 17WW06_062124
  - Dates Report
  - Acronyms
  - Certifications
  - SampleReceiptCheckList
  - COC
  - HS24061405 E2400736 Perch Level II Report
- HS24061405 E2400736 Perch Level IV Report
  - CoverLetter
  - Certificate of Analysis
  - Chain of Custody

Table of Contents (continued)

Preparation Sheets
Analytical Results
Accuracy and Precision
Initial Calibration
Chromatograms and Selected Ion Monitoring

HS24061405 LHAAP Site 17 COVER PAGE

ALS WO# HS24061405

HS24061405 LHAAP Site 17 Final

ALS WO# HS24061405

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 12, 2024

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS24061405**

Laboratory Results for: **LHAAP Site 17**

Dear Marcia Olive,

ALS Environmental received 6 sample(s) on Jun 22, 2024 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
Luis.Aguilar

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
Work Order: HS24061405

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS24061405-01	130_062124	Water		21-Jun-2024 07:30	22-Jun-2024 09:20	☐
HS24061405-02	17WW03_062124	Water		21-Jun-2024 08:10	22-Jun-2024 09:20	☐
HS24061405-03	17WW01_062124	Water		21-Jun-2024 08:50	22-Jun-2024 09:20	☐
HS24061405-04	17WW01_062124_A	Water		21-Jun-2024 08:50	22-Jun-2024 09:20	☐
HS24061405-05	17WW02_062124	Water		21-Jun-2024 09:00	22-Jun-2024 09:20	☐
HS24061405-06	17WW06_062124	Water		21-Jun-2024 09:10	22-Jun-2024 09:20	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP Site 17
Work Order: HS24061405

Subcontracted by Method NA

Batch ID: R471756

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
Sample ID: 130_062124
Collection Date: 21-Jun-2024 07:30

ANALYTICAL REPORT
WorkOrder:HS24061405
Lab ID:HS24061405-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jul-2024 08:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
Sample ID: 17WW03_062124
Collection Date: 21-Jun-2024 08:10

ANALYTICAL REPORT
WorkOrder:HS24061405
Lab ID:HS24061405-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jul-2024 08:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
Sample ID: 17WW01_062124
Collection Date: 21-Jun-2024 08:50

ANALYTICAL REPORT
WorkOrder:HS24061405
Lab ID:HS24061405-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jul-2024 08:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
Sample ID: 17WW01_062124_A
Collection Date: 21-Jun-2024 08:50

ANALYTICAL REPORT
WorkOrder:HS24061405
Lab ID:HS24061405-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jul-2024 08:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
Sample ID: 17WW02_062124
Collection Date: 21-Jun-2024 09:00

ANALYTICAL REPORT
WorkOrder:HS24061405
Lab ID:HS24061405-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jul-2024 08:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
Sample ID: 17WW06_062124
Collection Date: 21-Jun-2024 09:10

ANALYTICAL REPORT
WorkOrder:HS24061405
Lab ID:HS24061405-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	12-Jul-2024 08:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
WorkOrder: HS24061405

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R471756 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS24061405-01	130_062124	21 Jun 2024 07:30			12 Jul 2024 08:03	1
HS24061405-02	17WW03_062124	21 Jun 2024 08:10			12 Jul 2024 08:03	1
HS24061405-03	17WW01_062124	21 Jun 2024 08:50			12 Jul 2024 08:03	1
HS24061405-04	17WW01_062124_A	21 Jun 2024 08:50			12 Jul 2024 08:03	1
HS24061405-05	17WW02_062124	21 Jun 2024 09:00			12 Jul 2024 08:03	1
HS24061405-06	17WW06_062124	21 Jun 2024 09:10			12 Jul 2024 08:03	1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP Site 17
WorkOrder: **HS24061405**

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

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arizona	AZ0793	27-May-2025
Arkansas	88-00356_2024	27-Mar-2025
California	2919; 2025	30-Apr-2025
Illinois	2000322023-11	31-Jul-2025
Kansas	E-10352 2023-2024	31-Jul-2024
Kentucky	123043	30-Apr-2025
Louisiana	03087 2023-2024	30-Jun-2025
Maine	2024017	23-Jun-2026
Michigan	9971	30-Apr-2025
North Carolina	624 - 2024	31-Dec-2024
Oklahoma	2023-140	31-Aug-2024
Pennsylvania	018	30-Jun-2025
Tennessee	04016	30-Apr-2025
Texas	T104704231 TX-C24-00130	30-Apr-2025
Utah	TX026932023-14	31-Jul-2024

ALS Houston, US Date: 12-Jul-24

Sample Receipt Checklist

Work Order ID: HS24061405 **Date/Time Received:** 22-Jun-2024 09:20

Client Name: Bhate Environmental **Received by:** Kaycee Rogers

Completed By:	/S/ Kaycee Rogers	22-Jun-2024 14:15	**Reviewed by:**	/S/ sebastian.lugo	28-Jun-2024 15:48
	eSignature	Date/Time		eSignature	Date/Time

Matrices: W Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
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 ☐	
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):	2.3UC/2.4C	IR 31	
Cooler(s)/Kit(s):	49893		
Date/Time sample(s) sent to storage:	06/22/2024 1415		
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:

RIGHT SOLUTIONS | RIGHT PARTNER

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

HS24061405 01335201

Bhate Environmental Associates, Inc.
LHAAP Site 17

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 17

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	PERCHLORATE										Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
130_062124	21 JUN 2024	0730	-	N		wb	1	X													
17WWC3_062124	21 JUN 2024	0810	-	N		wb	1	X													
17WWC3_062124_MS	21 JUN 2024	0810	-	MS		wb	1	X													
17WWC3_062124_MSD	21 JUN 2024	0810		SD		wb	1	X													
17WWC01_062124	21 JUN 2024	0850		N		wb	1	X													
17WWC01_062124_A	21 JUN 2024	0850	-	FD		wb	1	X													
17WWC02_062124	21 JUN 2024	0900	-	N		wb	1	X													
17WWC06_062124	21 JUN 2024	0910	-	N		wb	1	X													
			-																		
			-																		
			-																		

COMMENTS: Standard TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received By (Signed)	Date	Time
1. Scott Beesinger	6/21/24	0930	1. [illegible]	6/22/24	920
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No.:
_____ Method of Shipment: _____
_____ Fed Ex _____ Airbill Number:
_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656
ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

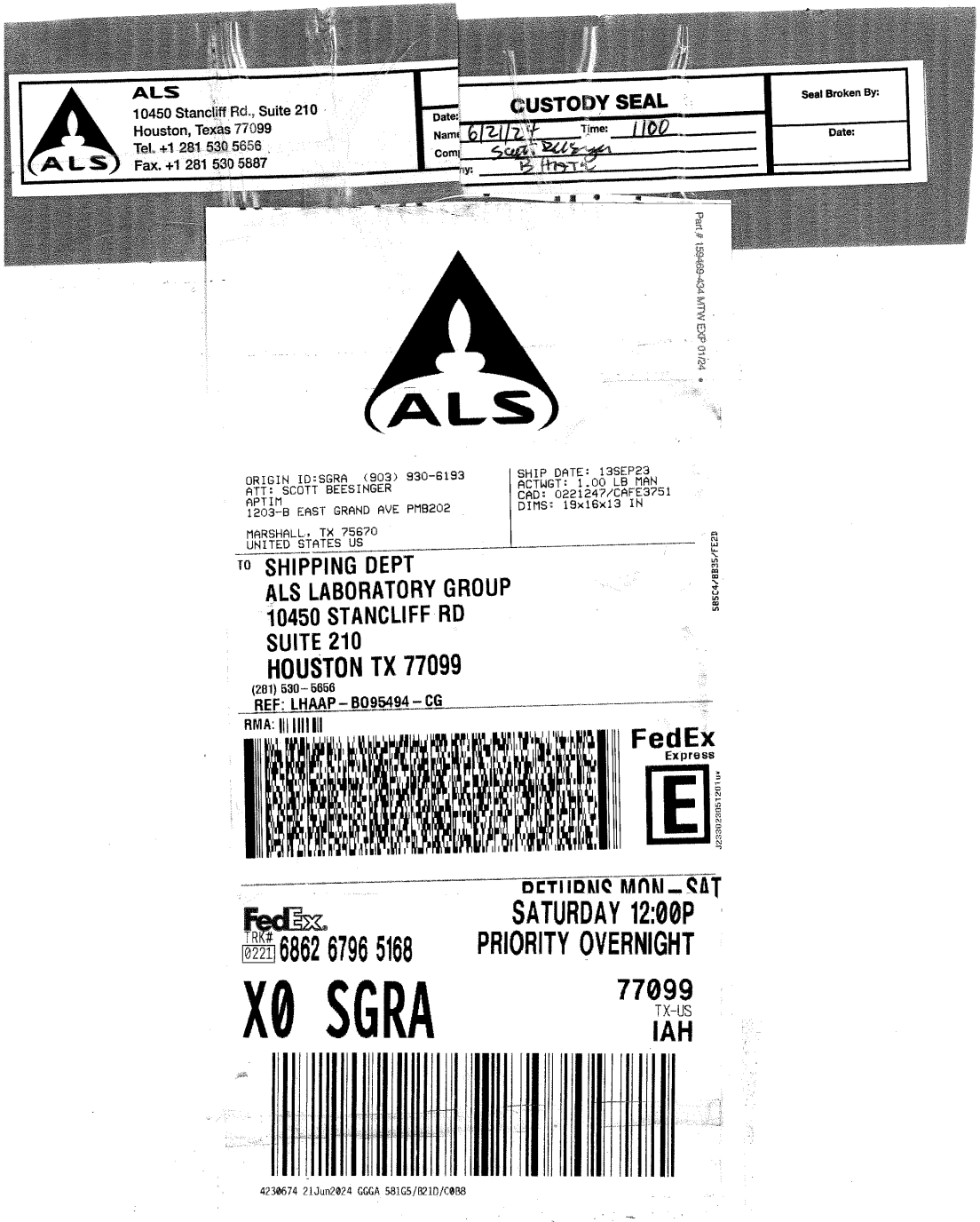
1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)
2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks
5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.
6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

49893
#31
2.3

RIGHT SOLUTIONS | RIGHT PARTNER



RIGHT SOLUTIONS | RIGHT PARTNER



RIGHT SOLUTIONS | RIGHT PARTNER

July 11, 2024 Service Request No:E2400736

Luis Aguilar
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

Laboratory Results for: HS24061405

Dear Luis,

Enclosed are the results of the sample(s) submitted to our laboratory June 22, 2024
For your reference, these analyses have been assigned our service request number **E2400736.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

HKelany

Hussam Kelany
Project Manager

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

RIGHT SOLUTIONS | RIGHT PARTNER

Client:	ALS Environmental - US	**Service Request No.:**	E2400736
Project:	HS24061405	**Date Received:**	06/22/24 - 06/24/24
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six samples were received for analysis at ALS Environmental in Houston on 06/22/24 - 06/24/24.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2400375: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined on an unrelated sample in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: ALS Environmental - US **Service Request:**E2400736

Project: HS24061405

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2400736-001	130_062124	6/21/2024	0730
E2400736-002	17WW03_062124	6/21/2024	0810
E2400736-003	17WW01_062124	6/21/2024	0850
E2400736-004	17WW01_062124_A	6/21/2024	0850
E2400736-005	17WW02_062124	6/21/2024	0900
E2400736-006	17WW06_062124	6/21/2024	0910

Service Request Summary

01335208

8 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 1A

Pressure Gas:

Folder #: **E2400736**
Client Name: ALS Environmental - US
Project Name: HS24061405
Project Number:

Report To: Luis Aguilar
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099
USA
Phone Number:
Cell Number:
Fax Number:
E-mail: luis.aguilar@alsglobal.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: MONICA.SMITH
Date Received: 06/22/24 - 06/24/24
Internal Due Date: 7/3/2024
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2400736-001	130_062124	Water	06/21/24 0730	**IV**
E2400736-002	17WW03_062124	Water	06/21/24 0810	**IV**
E2400736-003	17WW01_062124	Water	06/21/24 0850	**IV**
E2400736-004	17WW01_062124_A	Water	06/21/24 0850	**IV**
E2400736-005	17WW02_062124	Water	06/21/24 0900	**IV**
E2400736-006	17WW06_062124	Water	06/21/24 0910	**IV**

Service Request Summary

Folder #:	**E2400736**
Client Name:	ALS Environmental - US
Project Name:	HS24061405
Project Number:	
Report To:	Luis Aguilar ALS Environmental - US 10450 Stancliff Rd Suite 210 Houston, TX 77099 USA
Phone Number:	
Cell Number:	
Fax Number:	
E-mail:	luis.aguilar@alsglobal.com

Project Chemist:	Hussam Kelany
Originating Lab:	HOUSTON
Logged By:	MONICA.SMITH
Date Received:	06/22/24 - 06/24/24
Internal Due Date:	7/3/2024
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	
EDD:	No EDD Specified

01335209

8 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 1A

Pressure Gas:

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of 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.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

RIGHT SOLUTIONS | RIGHT PARTNER

Data Qualifiers

Lab Standard

M1 Matrix interference due to coelution with a non-target compound; results may be biased high.
N Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N The Matrix Spike sample recovery is not within control limits. See case narrative.
O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R Duplicate Precision not met.
R1 Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S Surrogate recovery not within specified limits.
S The reported value was determined by the Method of Standard Additions (MSA).
T Analyte is a tentatively identified compound, result is estimated.
U Compound was analyzed for, but was not detected (ND).
V1 The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2 The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W Result quantified, but the corresponding peak was detected outside the generated retention time window.
W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X See case narrative.
Y Recovery outside limits
Y The chromatogram resembles a petroleum product but does not match the calibration standard.
Z The chromatogram does not resemble a petroleum product.
i The MRL/MDL has been elevated due to a matrix interference.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

RIGHT SOLUTIONS | RIGHT PARTNER

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arkansas Department of Environmental Quality	88-00356	3/28/2025
California State Environmental Laboratory Accreditation Program	2919-2024	4/30/2025
Department of Defense	L24-240	4/30/2026
Hawaii Department of Health	2024	4/30/2025
Kansas Department of Health and Environment	E-10352 2023-2024	7/31/2024
Louisiana Department of Health and Hospitals	LA028-2024	12/31/2024
Minnesota Department of Health	2645386	12/31/2024
Nevada Division of Environmental Protection	TX026932024-1	7/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209424-A	4/24/2025
Oklahoma Department of Environmental Quality	2023-140	8/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-2024	5/15/2025
Tennessee Department of Environment and Conservation	04016-2024	4/30/2025
Texas Commision on Environmental Quality	TX-C24-00130	4/30/2025
Utah Department of Health Environmental Laboratory Certification	TX026932023-14	7/31/2024
Washington Department of Ecology	C819-23	11/14/2024

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

RIGHT SOLUTIONS | RIGHT PARTNER

E2400736 5
ALS Laboratory Group
HS24061405

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: **Dept of Defense** **COC ID:** **26127**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Luis.Aguilar
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	luis.aguilar@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:	HS24061405
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS24061405-01**	**130_062124**	**Water**	**21 Jun 2024 07:30**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
2.	**HS24061405-02**	**17WW03_062124**	**Water**	**21 Jun 2024 08:10**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
3.	**HS24061405-03**	**17WW01_062124**	**Water**	**21 Jun 2024 08:50**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
4.	**HS24061405-04**	**17WW01_062124_A**	**Water**	**21 Jun 2024 08:50**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
5.	**HS24061405-05**	**17WW02_062124**	**Water**	**21 Jun 2024 09:00**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
6.	**HS24061405-06**	**17WW06_062124**	**Water**	**21 Jun 2024 09:10**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

RIGHT SOLUTIONS | RIGHT PARTNER

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **26127**

Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____

Cooler ID(s): _____ Temperature(s): _____

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Sample Receipt Checklist

Work Order ID: HS24061405 **Date/Time received:** 22 Jun 2024 09:20

Client name: Bhate Environmental Associates, Inc. **Received by:** Kaycee Rogers

Completed/By: 22 Jun 2024 14:15 Kaycee Rogers **Reviewed/By:**
Date/Time eSignature Date/Time eSignature

Matrices: W **Carrier name:** FedEx

Shipping container/cooler in good condition?	☑ Yes	☐ No	☐ Not Present	
Custody seals intact on shipping container/cooler?	☑ Yes	☐ No	☐ Not Present	
Custody seals intact on Sample bottles?	☐ Yes	☐ No	☑ Not Present	
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 ID(s):	
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): 2.3UC/2.4C IR 31

Cooler Information: 1 Cooler(s), 49893

Date/Time sample(s) sent to storage: 06/22/2024 1415

Water - VOA vials have zero headspace?	☐ Yes	☐ No	☑ No VOA vials submitted
Water - pH acceptable upon receipt?	☐ Yes	☐ No	☑ Not Applicable
pH adjusted?	☐ Yes	☐ No	☑ Not Applicable

pH adjusted by:

Login notes:

Client contacted: **Date contacted:** **Person contacted:**

Contacted by: **Regarding:**

Comments:

Corrective action:

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

RIGHT SOLUTIONS | RIGHT PARTNER

Preparation Information Benchsheet

01335220

Prep Run#: 441034 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 7/3/24 11:00

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2400734-021	ICT14C_062024	.02	6850/ClO4 DOD			Ground Water	10mL	
2	E2400734-022	ICT14D_062024	.02	6850/ClO4 DOD			Ground Water	10mL	
3	E2400734-023	ICT14E_062024	.02	6850/ClO4 DOD			Ground Water	10mL	
4	E2400735-001	18WW19_061924	.01	6850/ClO4 DOD			Water	10mL	
5	E2400735-002	18WW20_061924	.01	6850/ClO4 DOD			Water	10mL	
6	E2400735-003	18WW25_061924	.01	6850/ClO4 DOD			Water	10mL	
7	E2400735-004	125_061924	.01	6850/ClO4 DOD			Water	10mL	
8	E2400735-005	18CPTMW16_061924	.01	6850/ClO4 DOD			Water	10mL	
9	E2400735-006	18CPTMW16_061924_a	.01	6850/ClO4 DOD			Water	10mL	
10	E2400736-001	130_062124	.02	6850/ClO4 DOD			Water	10mL	
11	E2400736-002	17WW03_062124	.02	6850/ClO4 DOD			Water	10mL	
12	E2400736-003	17WW01_062124	.02	6850/ClO4 DOD			Water	10mL	
13	E2400736-004	17WW01_062124_A	.02	6850/ClO4 DOD			Water	10mL	
14	E2400736-005	17WW02_062124	.02	6850/ClO4 DOD			Water	10mL	
15	E2400736-006	17WW06_062124	.02	6850/ClO4 DOD			Water	10mL	
16	E2400785-001	LGAC-INF-070124	.01	6850/ClO4 DOD			Water	10mL	
17	E2400787-001	LH18/24-SP650_070224_AIX	.01	6850/ClO4 DOD			Water	10mL	
18	E2400788-001	LH18/24-SP650_070224_BIX	.01	6850/ClO4 DOD			Water	10mL	
19	E2400788-002	LH18/24-SP650_070224_AIX	.01	6850/ClO4 DOD			Water	10mL	
20	E2400789-001	LH18/24-SP140_070224	.01	6850/ClO4 DOD			Water	10mL	
21	EQ2400375-01	MB		6850/ClO4 DOD			Liquid	10mL	
22	EQ2400375-02	LCS		6850/ClO4 DOD			Liquid	10mL	
23	EQ2400375-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
24	EQ2400375-04	ICS		6850/ClO4 DOD			Liquid	10mL	
25	EQ2400375-05	18WW19_061924 MS	.01	6850/ClO4 DOD			Liquid	10mL	
26	EQ2400375-06	18WW19_061924 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
27	EQ2400375-07	17WW03_062124 MS	.02	6850/ClO4 DOD			Liquid	10mL	
28	EQ2400375-08	17WW03_062124 DMS	.02	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Anion Spiking Soln. 25,000 ppm Inventory ID 233595 Logbook Ref: Expires On: 08/04/2024

EQ2400375-04 20.00µL

Preparation Information Benchsheet

01335221

Prep Run#: 441034 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 7/3/24 11:00

Name:	Perchlorate Internal Standard 1ug/mL	Inventory ID	236095	Logbook Ref:	Perchlorate IS cg7/3/24	Expires On:	11/24/2024

E2400734-021	100.00µL	E2400734-022	100.00µL	E2400734-023	100.00µL	E2400735-001	100.00µL	E2400735-002	100.00µL	E2400735-003	100.00µL
E2400735-004	100.00µL	E2400735-005	100.00µL	E2400735-006	100.00µL	E2400736-001	100.00µL	E2400736-002	100.00µL	E2400736-003	100.00µL
E2400736-004	100.00µL	E2400736-005	100.00µL	E2400736-006	100.00µL	E2400785-001	100.00µL	E2400787-001	100.00µL	E2400788-001	100.00µL
E2400788-002	100.00µL	E2400789-001	100.00µL	EQ2400375-01	100.00µL	EQ2400375-02	100.00µL	EQ2400375-03	100.00µL	EQ2400375-04	100.00µL
EQ2400375-05	100.00µL	EQ2400375-06	100.00µL	EQ2400375-07	100.00µL	EQ2400375-08	100.00µL				

Name:	Perchlorate Intermediate Stock 3	Inventory ID	236096	Logbook Ref:	Perchlorate Inter. Stock 3 cg7	Expires On:	10/25/2024

EQ2400375-02	100.00µL	EQ2400375-03	100.00µL	EQ2400375-04	100.00µL	EQ2400375-05	100.00µL	EQ2400375-06	100.00µL	EQ2400375-07	100.00µL
EQ2400375-08	100.00µL										

Preparation Materials

6850 Luer-Lok Syringes Luer Lok Syringes (235268)

Preparation Steps

Step: Preparation
Started: 7/3/24 11:00
Finished: 7/3/24 13:32
By: JOSEL.JUAREZ
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

RIGHT SOLUTIONS | RIGHT PARTNER

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0730
Sample Matrix:	Water	**Date Received:**	6/22/24
Sample Name:	130_062124	**Units:**	µg/L
Lab Code:	E2400736-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 18:34	441034	846917	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0810
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW03_062124	**Units:**	µg/L
Lab Code:	E2400736-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:05	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0850
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW01_062124	**Units:**	µg/L
Lab Code:	E2400736-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:22	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0850
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW01_062124_A	**Units:**	µg/L
Lab Code:	E2400736-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:28	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0900
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW02_062124	**Units:**	µg/L
Lab Code:	E2400736-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**2.00**		0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 19:19	441034	846917	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0910
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW06_062124	**Units:**	µg/L
Lab Code:	E2400736-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**4670**		100	50.0	25.0	1000	7/ 3/24	7/10/24 16:01	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2400375-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 13:51	441034	846469	

Accuracy & Precision

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

RIGHT SOLUTIONS | RIGHT PARTNER

RIGHT SOLUTIONS | RIGHT PARTNER

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Analyzed:**	07/05/24
Sample Matrix:	Water	**Date Extracted:**	07/03/24

Duplicate Lab Control Sample Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analysis Method:	6850	**Units:**	ug/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	846469

	Lab Control Sample EQ2400375-02			Duplicate Lab Control Sample EQ2400375-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.105	0.100	105	0.104	0.100	104	84-119	2	15

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400375-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.105**		0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 13:56	441034	846469	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400375-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.104**		0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 14:02	441034	846469	

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	06/21/24
Sample Matrix:	Water	**Date Received:**	06/24/24
		Date Analyzed:	07/10/24
		Date Extracted:	07/3/24

Duplicate Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW03_062124	**Units:**	ug/L
Lab Code:	E2400736-002	**Basis:**	NA
Analysis Method:	6850		
Prep Method:	Method		

		Matrix Spike			Duplicate Matrix Spike					
		EQ2400375-07			EQ2400375-08					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	ND U	0.100	0 *	ND U	0.100	0 *	84-119	NC	15

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.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0810
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW03_062124	**Units:**	µg/L
Lab Code:	EQ2400375-07	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:11	441034	846941	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0810
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW03_062124	**Units:**	µg/L
Lab Code:	EQ2400375-08	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:17	441034	846941	

HS24061405 E2400736 Perch Level IV Report

ALS WO# HS24061405

July 11, 2024 Service Request No:E2400736

Luis Aguilar
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099

Laboratory Results for: HS24061405

Dear Luis,

Enclosed are the results of the sample(s) submitted to our laboratory June 22, 2024
For your reference, these analyses have been assigned our service request number **E2400736.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

HKelany

Hussam Kelany
Project Manager

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	ALS Environmental - US	**Service Request No.:**	E2400736
Project:	HS24061405	**Date Received:**	06/22/24 - 06/24/24
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Six samples were received for analysis at ALS Environmental in Houston on 06/22/24 - 06/24/24.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2400375: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined on an unrelated sample in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: ALS Environmental - US **Service Request:**E2400736

Project: HS24061405

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2400736-001	130_062124	6/21/2024	0730
E2400736-002	17WW03_062124	6/21/2024	0810
E2400736-003	17WW01_062124	6/21/2024	0850
E2400736-004	17WW01_062124_A	6/21/2024	0850
E2400736-005	17WW02_062124	6/21/2024	0900
E2400736-006	17WW06_062124	6/21/2024	0910

Service Request Summary

01335242

8 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 1A

Pressure Gas:

Folder #: **E2400736**
Client Name: ALS Environmental - US
Project Name: HS24061405
Project Number:

Report To: Luis Aguilar
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099
USA
Phone Number:
Cell Number:
Fax Number:
E-mail: luis.aguilar@alsglobal.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: MONICA.SMITH
Date Received: 06/22/24 - 06/24/24
Internal Due Date: 7/3/2024
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2400736-001	130_062124	Water	06/21/24 0730	**IV**
E2400736-002	17WW03_062124	Water	06/21/24 0810	**IV**
E2400736-003	17WW01_062124	Water	06/21/24 0850	**IV**
E2400736-004	17WW01_062124_A	Water	06/21/24 0850	**IV**
E2400736-005	17WW02_062124	Water	06/21/24 0900	**IV**
E2400736-006	17WW06_062124	Water	06/21/24 0910	**IV**

Service Request Summary

Folder #: **E2400736**
Client Name: ALS Environmental - US
Project Name: HS24061405
Project Number:

Report To: Luis Aguilar
ALS Environmental - US
10450 Stancliff Rd Suite 210
Houston, TX 77099
USA
Phone Number:
Cell Number:
Fax Number:
E-mail: luis.aguilar@alsglobal.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: MONICA.SMITH
Date Received: 06/22/24 - 06/24/24
Internal Due Date: 7/3/2024
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: No EDD Specified

01335243
8 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-WIC 1A
Pressure Gas:

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of 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.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

Data Qualifiers

Lab Standard

M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.
S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arkansas Department of Environmental Quality	88-00356	3/28/2025
California State Environmental Laboratory Accreditation Program	2919-2024	4/30/2025
Department of Defense	L24-240	4/30/2026
Hawaii Department of Health	2024	4/30/2025
Kansas Department of Health and Environment	E-10352 2023-2024	7/31/2024
Louisiana Department of Health and Hospitals	LA028-2024	12/31/2024
Minnesota Department of Health	2645386	12/31/2024
Nevada Division of Environmental Protection	TX026932024-1	7/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209424-A	4/24/2025
Oklahoma Department of Environmental Quality	2023-140	8/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-2024	5/15/2025
Tennessee Department of Environment and Conservation	04016-2024	4/30/2025
Texas Commision on Environmental Quality	TX-C24-00130	4/30/2025
Utah Department of Health Environmental Laboratory Certification	TX026932023-14	7/31/2024
Washington Department of Ecology	C819-23	11/14/2024

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

E2400736 5
ALS Laboratory Group
HS24061405

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: **Dept of Defense** **COC ID:** **26127**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Luis.Aguilar
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	luis.aguilar@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:	HS24061405
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS24061405-01**	**130_062124**	**Water**	**21 Jun 2024 07:30**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
2.	**HS24061405-02**	**17WW03_062124**	**Water**	**21 Jun 2024 08:10**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
3.	**HS24061405-03**	**17WW01_062124**	**Water**	**21 Jun 2024 08:50**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
4.	**HS24061405-04**	**17WW01_062124_A**	**Water**	**21 Jun 2024 08:50**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
5.	**HS24061405-05**	**17WW02_062124**	**Water**	**21 Jun 2024 09:00**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024
6.	**HS24061405-06**	**17WW06_062124**	**Water**	**21 Jun 2024 09:10**
	Perchlorate Level II and Level IV reports on a seperate pdf. Send WOA to Vicki Graves.			03 Jul 2024

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Subcontract Chain of Custody

SAMPLING STATE: **Dept of Defense** **COC ID:** **26127**

Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____

Cooler ID(s): _____ Temperature(s): _____

E2400736 5

ALS Laboratory Group
HS24061405

01335251

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Sample Receipt Checklist

Work Order ID: HS24061405 **Date/Time received:** 22 Jun 2024 09:20

Client name: Bhate Environmental Associates, Inc. **Received by:** Kaycee Rogers

Completed/By: 22 Jun 2024 14:15 Kaycee Rogers **Reviewed/By:**
Date/Time eSignature Date/Time eSignature

Matrices: W **Carrier name:** FedEx

Shipping container/cooler in good condition?	☑ Yes	☐ No	☐ Not Present
Custody seals intact on shipping container/cooler?	☑ Yes	☐ No	☐ Not Present
Custody seals intact on Sample bottles?	☐ Yes	☐ No	☑ Not Present
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 ID(s):
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): 2.3UC/2.4C IR 31

Cooler Information: 1 Cooler(s), 49893

Date/Time sample(s) sent to storage: 06/22/2024 1415

Water - VOA vials have zero headspace?	☐ Yes	☐ No	☑ No VOA vials submitted
Water - pH acceptable upon receipt?	☐ Yes	☐ No	☑ Not Applicable
pH adjusted?	☐ Yes	☐ No	☑ Not Applicable

pH adjusted by:

Login notes:

Client contacted: **Date contacted:** **Person contacted:**

Contacted by: **Regarding:**

Comments:

Corrective action:

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Preparation Information Benchsheet

01335254

Prep Run#: 441034 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 7/3/24 11:00

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2400734-021	ICT14C_062024	.02	6850/ClO4 DOD			Ground Water	10mL	
2	E2400734-022	ICT14D_062024	.02	6850/ClO4 DOD			Ground Water	10mL	
3	E2400734-023	ICT14E_062024	.02	6850/ClO4 DOD			Ground Water	10mL	
4	E2400735-001	18WW19_061924	.01	6850/ClO4 DOD			Water	10mL	
5	E2400735-002	18WW20_061924	.01	6850/ClO4 DOD			Water	10mL	
6	E2400735-003	18WW25_061924	.01	6850/ClO4 DOD			Water	10mL	
7	E2400735-004	125_061924	.01	6850/ClO4 DOD			Water	10mL	
8	E2400735-005	18CPTMW16_061924	.01	6850/ClO4 DOD			Water	10mL	
9	E2400735-006	18CPTMW16_061924_a	.01	6850/ClO4 DOD			Water	10mL	
10	E2400736-001	130_062124	.02	6850/ClO4 DOD			Water	10mL	
11	E2400736-002	17WW03_062124	.02	6850/ClO4 DOD			Water	10mL	
12	E2400736-003	17WW01_062124	.02	6850/ClO4 DOD			Water	10mL	
13	E2400736-004	17WW01_062124_A	.02	6850/ClO4 DOD			Water	10mL	
14	E2400736-005	17WW02_062124	.02	6850/ClO4 DOD			Water	10mL	
15	E2400736-006	17WW06_062124	.02	6850/ClO4 DOD			Water	10mL	
16	E2400785-001	LGAC-INF-070124	.01	6850/ClO4 DOD			Water	10mL	
17	E2400787-001	LH18/24-SP650_070224_AIX	.01	6850/ClO4 DOD			Water	10mL	
18	E2400788-001	LH18/24-SP650_070224_BIX	.01	6850/ClO4 DOD			Water	10mL	
19	E2400788-002	LH18/24-SP650_070224_AIX	.01	6850/ClO4 DOD			Water	10mL	
20	E2400789-001	LH18/24-SP140_070224	.01	6850/ClO4 DOD			Water	10mL	
21	EQ2400375-01	MB		6850/ClO4 DOD			Liquid	10mL	
22	EQ2400375-02	LCS		6850/ClO4 DOD			Liquid	10mL	
23	EQ2400375-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
24	EQ2400375-04	ICS		6850/ClO4 DOD			Liquid	10mL	
25	EQ2400375-05	18WW19_061924 MS	.01	6850/ClO4 DOD			Liquid	10mL	
26	EQ2400375-06	18WW19_061924 DMS	.01	6850/ClO4 DOD			Liquid	10mL	
27	EQ2400375-07	17WW03_062124 MS	.02	6850/ClO4 DOD			Liquid	10mL	
28	EQ2400375-08	17WW03_062124 DMS	.02	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Anion Spiking Soln. 25,000 ppm Inventory ID 233595 Logbook Ref: Expires On: 08/04/2024

EQ2400375-04 20.00µL

Preparation Information Benchsheet

01335255

Prep Run#: 441034 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 7/3/24 11:00

Name:	Perchlorate Internal Standard 1ug/mL	Inventory ID	236095	Logbook Ref:	Perchlorate IS cg7/3/24	Expires On:	11/24/2024

E2400734-021	100.00µL	E2400734-022	100.00µL	E2400734-023	100.00µL	E2400735-001	100.00µL	E2400735-002	100.00µL	E2400735-003	100.00µL
E2400735-004	100.00µL	E2400735-005	100.00µL	E2400735-006	100.00µL	E2400736-001	100.00µL	E2400736-002	100.00µL	E2400736-003	100.00µL
E2400736-004	100.00µL	E2400736-005	100.00µL	E2400736-006	100.00µL	E2400785-001	100.00µL	E2400787-001	100.00µL	E2400788-001	100.00µL
E2400788-002	100.00µL	E2400789-001	100.00µL	EQ2400375-01	100.00µL	EQ2400375-02	100.00µL	EQ2400375-03	100.00µL	EQ2400375-04	100.00µL
EQ2400375-05	100.00µL	EQ2400375-06	100.00µL	EQ2400375-07	100.00µL	EQ2400375-08	100.00µL				

Name:	Perchlorate Intermediate Stock 3	Inventory ID	236096	Logbook Ref:	Perchlorate Inter. Stock 3 cg7	Expires On:	10/25/2024

EQ2400375-02	100.00µL	EQ2400375-03	100.00µL	EQ2400375-04	100.00µL	EQ2400375-05	100.00µL	EQ2400375-06	100.00µL	EQ2400375-07	100.00µL
EQ2400375-08	100.00µL										

Preparation Materials

6850 Luer-Lok Syringes Luer Lok Syringes (235268)

Preparation Steps

Step: Preparation
Started: 7/3/24 11:00
Finished: 7/3/24 13:32
By: JOSEL.JUAREZ
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0730
Sample Matrix:	Water	**Date Received:**	6/22/24
Sample Name:	130_062124	**Units:**	µg/L
Lab Code:	E2400736-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 18:34	441034	846917	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0810
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW03_062124	**Units:**	µg/L
Lab Code:	E2400736-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:05	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0850
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW01_062124	**Units:**	µg/L
Lab Code:	E2400736-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:22	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0850
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW01_062124_A	**Units:**	µg/L
Lab Code:	E2400736-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:28	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0900
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW02_062124	**Units:**	µg/L
Lab Code:	E2400736-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**2.00**		0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 19:19	441034	846917	*

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0910
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW06_062124	**Units:**	µg/L
Lab Code:	E2400736-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**4670**		100	50.0	25.0	1000	7/ 3/24	7/10/24 16:01	441034	846941	*

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2400375-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 13:51	441034	846469	

Accuracy & Precision

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Analyzed:**	07/05/24
Sample Matrix:	Water	**Date Extracted:**	07/03/24

Duplicate Lab Control Sample Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analysis Method:	6850	**Units:**	ug/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	846469

	Lab Control Sample EQ2400375-02			Duplicate Lab Control Sample EQ2400375-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.105	0.100	105	0.104	0.100	104	84-119	2	15

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400375-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.105**		0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 13:56	441034	846469	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400375-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.104**		0.100	0.0500	0.0250	1	7/ 3/24	7/5/24 14:02	441034	846469	

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	06/21/24
Sample Matrix:	Water	**Date Received:**	06/24/24
		Date Analyzed:	07/10/24
		Date Extracted:	07/3/24

Duplicate Matrix Spike Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	17WW03_062124	**Units:**	ug/L
Lab Code:	E2400736-002	**Basis:**	NA
Analysis Method:	6850		
Prep Method:	Method		

		Matrix Spike EQ2400375-07			Duplicate Matrix Spike EQ2400375-08					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	ND U	0.100	0 *	ND U	0.100	0 *	84-119	NC	15

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.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0810
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW03_062124	**Units:**	µg/L
Lab Code:	EQ2400375-07	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:11	441034	846941	

Client:	ALS Environmental - US	**Service Request:**	E2400736
Project:	HS24061405	**Date Collected:**	6/21/24 0810
Sample Matrix:	Water	**Date Received:**	6/24/24
Sample Name:	17WW03_062124	**Units:**	µg/L
Lab Code:	EQ2400375-08	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	7/ 3/24	7/10/24 15:17	441034	846941	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

843806

Injection Log

LCMS01 -Shimadzu 8050

1st Review: CG **ICAL Date:** 6/11/2024
2nd Review: **Cal. Std. xp:** 8/13/2024
ICAL ID: EC2400009

Mobile Phases : A:20mM ammonium acetate in water **3211810-9 B:**Acetonitrile 3211810-8
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
1	20240611-001	IB	Perchlorate6850c.lcm	1x		6/11/2024 15:40
2	20240611-002	Perchlorate ICAL 1	Perchlorate6850c.lcm	1x		6/11/2024 15:46
3	20240611-003	Perchlorate ICAL 2	Perchlorate6850c.lcm	1x		6/11/2024 15:52
4	20240611-004	Perchlorate ICAL 3	Perchlorate6850c.lcm	1x		6/11/2024 15:57
5	20240611-005	Perchlorate ICAL 4	Perchlorate6850c.lcm	1x		6/11/2024 16:03
6	20240611-006	Perchlorate ICAL 5	Perchlorate6850c.lcm	1x		6/11/2024 16:08
7	20240611-007	Perchlorate ICAL 6	Perchlorate6850c.lcm	1x		6/11/2024 16:14
8	20240611-008	Perchlorate ICAL 7	Perchlorate6850c.lcm	1x		6/11/2024 16:19
9	20240611-009	Perchlorate ICAL 8	Perchlorate6850c.lcm	1x		6/11/2024 16:25
10	20240611-010	Perchlorate ICAL 9	Perchlorate6850c.lcm	1x		6/11/2024 16:30
11	20240611-011	Perchlorate ICAL 10	Perchlorate6850c.lcm	1x		6/11/2024 16:36
12	20240611-012	PerchlorateICV	Perchlorate6850c.lcm	1x		6/11/2024 16:42
13	20240611-013	IB	Perchlorate6850c.lcm	1x		6/11/2024 16:47
14	20240611-014	LODV	Perchlorate6850c.lcm	1x		6/11/2024 16:53
15	20240611-015	ICS	Perchlorate6850c.lcm	1x		6/11/2024 16:58
16	20240611-016	CCV	Perchlorate6850c.lcm	1x		6/11/2024 17:04
17	20240611-017	IB	Perchlorate6850c.lcm	1x		6/11/2024 17:09
18	20240611-018	EQ2400303-001	Perchlorate6850c.lcm	1x		6/11/2024 17:15
19	20240611-019	EQ2400303-002	Perchlorate6850c.lcm	1x		6/11/2024 17:20
20	20240611-020	EQ2400303-003	Perchlorate6850c.lcm	1x		6/11/2024 17:26
21	20240611-021	EQ2400303-004	Perchlorate6850c.lcm	1x		6/11/2024 17:31
22	20240611-022	EQ2400303-005	Perchlorate6850c.lcm	1x		6/11/2024 17:37
23	20240611-023	E2400629-001	Perchlorate6850c.lcm	1x		6/11/2024 17:42
24	20240611-024	E2400647-001	Perchlorate6850c.lcm	1x		6/11/2024 17:48
25	20240611-025	E2400647-002	Perchlorate6850c.lcm	1x		6/11/2024 17:54
26	20240611-026	E2400647-003	Perchlorate6850c.lcm	1x		6/11/2024 17:59
27	20240611-027	E2400647-004	Perchlorate6850c.lcm	1x		6/11/2024 18:05
28	20240611-028	CCV	Perchlorate6850c.lcm	1x		6/11/2024 18:10
29	20240611-029	IB	Perchlorate6850c.lcm	1x		6/11/2024 18:16
30	20240611-030	E2400647-005	Perchlorate6850c.lcm	1x		6/11/2024 18:21
31	20240611-031	E2400647-006	Perchlorate6850c.lcm	1x		6/11/2024 18:27
32	20240611-032	E2400650-001	Perchlorate6850c.lcm	1x	DNU needs DL	6/11/2024 18:32
33	20240611-033	E2400650-002	Perchlorate6850c.lcm	1x	DNU needs DL	6/11/2024 18:38
34	20240611-034	E2400650-003	Perchlorate6850c.lcm	1x	DNU needs DL	6/11/2024 18:43
35	20240611-035	E2400650-004	Perchlorate6850c.lcm	1x	DNU RI possible C/O	6/11/2024 18:49
36	20240611-036	E2400650-005	Perchlorate6850c.lcm	1x	DNU RI possible C/O	6/11/2024 18:54
37	20240611-037	E2400650-006	Perchlorate6850c.lcm	1x		6/11/2024 19:00
38	20240611-038	CCV	Perchlorate6850c.lcm	1x		6/11/2024 19:06
39	20240611-039	IB	Perchlorate6850c.lcm	1x		6/11/2024 19:11
40			Perchlorate6850c.lcm	1x		

843806

Injection Log

LCMS01 -Shimadzu 8050

1st Review: CG
2nd Review:

ICAL Date: 6/11/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400009

Mobile Phases : A:20mM ammonium acetate in water **3211810-9 B:**Acetonitrile 3211810-8
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
41			Perchlorate6850c.lcm	1x		
42			Perchlorate6850c.lcm	1x		
43			Perchlorate6850c.lcm	1x		
44			Perchlorate6850c.lcm	1x		
45			Perchlorate6850c.lcm	1x		
46			Perchlorate6850c.lcm	1x		
47			Perchlorate6850c.lcm	1x		

Initial Calibration - Detailed Report

Calibration ID: EC2400009 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2400009-01	Perchlorate ICAL 1	20240611-002	06/11/2024 15:46
02	EC2400009-02	Perchlorate ICAL 2	20240611-003	06/11/2024 15:52
03	EC2400009-03	Perchlorate ICAL 3	20240611-004	06/11/2024 15:57
04	EC2400009-04	Perchlorate ICAL 4	20240611-005	06/11/2024 16:03
05	EC2400009-05	Perchlorate ICAL 5	20240611-006	06/11/2024 16:08
06	EC2400009-06	Perchlorate ICAL 6	20240611-007	06/11/2024 16:14
07	EC2400009-07	Perchlorate ICAL 7	20240611-008	06/11/2024 16:19
08	EC2400009-08	Perchlorate ICAL 8	20240611-009	06/11/2024 16:25
09	EC2400009-09	Perchlorate ICAL 9	20240611-010	06/11/2024 16:30
10	EC2400009-10	Perchlorate ICAL 10	20240611-011	06/11/2024 16:36

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 5.222** **Average RF = 0.146**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1359	02	0.5000	0.1389	03	0.7000	0.1344	04	1.0000	0.1446
05	2.0000	0.1447	06	5.0000	0.1567	07	10.0000	0.1526	08	20.0000	0.1528
09	30.0000	0.1488	10	50.0000	0.1506						

Analyte

Perchlorate RSE = 5.22

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.0931	-6.9	02	0.5000	0.476	-4.9	03	0.7000	0.644	-7.9
04	1.0000	0.990	-1.0	05	2.0000	1.98	-0.9	06	5.0000	5.37	7.3
07	10.0000	10.5	4.5	08	20.0000	20.9	4.7	09	30.0000	30.6	1.9
10	50.0000	51.6	3.1								

Initial Calibration Verification Summary Report

Calibration ID:	EC2400009	**Instrument ID:**	E-LCMS-01
Datafile ID:	20240611-012	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2400009-11	T	Average RF	10	10.282	ng/mL	2.8	<= 15

Insight Report

Method File: I:\LCMS01\DATA\20240611\202405611_ICAL.lcm
Project File: I:\LCMS01\DATA\20240611\20240611_ICAL.damlp

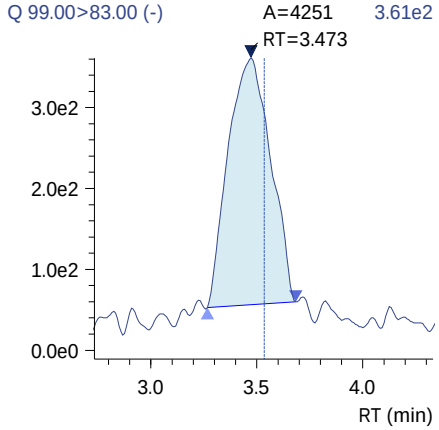
Perchlorate ICAL 1

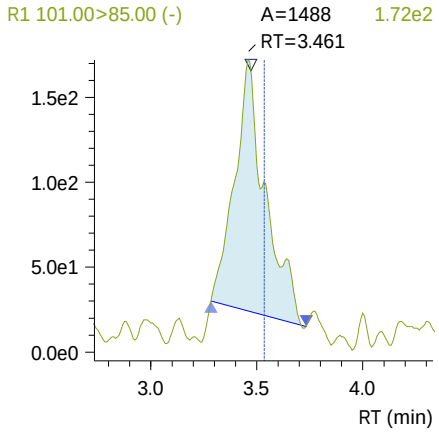
Sample ID: Perchlorate ICAL 1
Date Acquired: 6/11/2024 3:46:30 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-002.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.473	4251	312768	0.0931	ng/mL	101.00 >85.00	35.01	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.453	312768	312768	1.0000	ng/mL	----	----	

Perchlorate

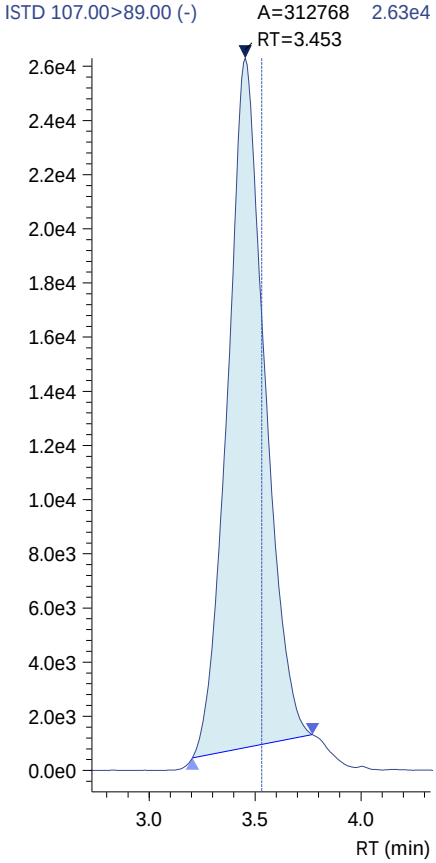
Conc 0.0931
R#1 35.01 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/12/2024 8:45:04 AM

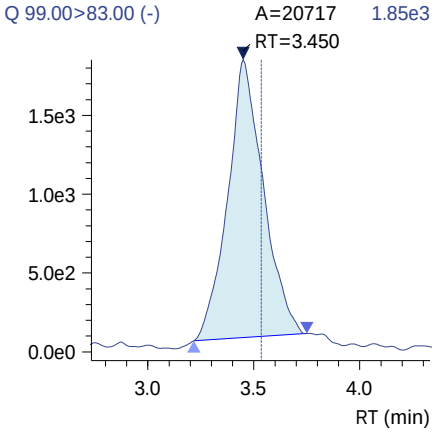
Perchlorate ICAL 2

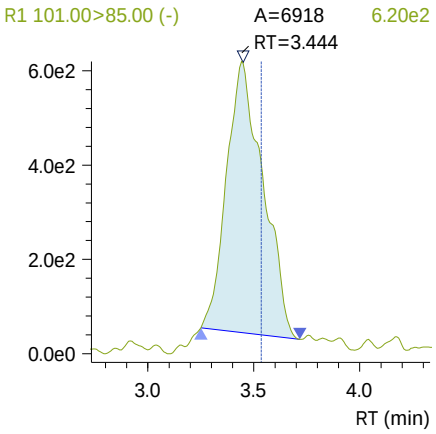
Sample ID: Perchlorate ICAL 2
Date Acquired: 6/11/2024 3:52:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-003.lcd
Vial: 2 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.450	20717	298266	0.4757	ng/mL	101.00 >85.00	33.39	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.455	298266	298266	1.0000	ng/mL	----	----	

Perchlorate

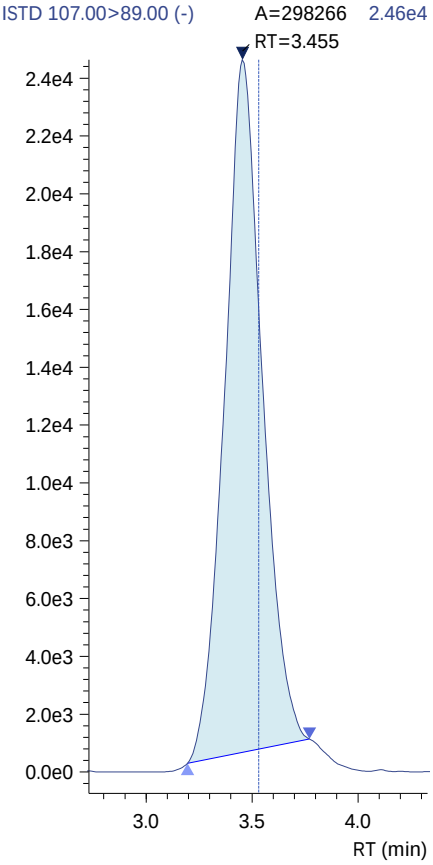
Conc 0.4757
R#1 33.39 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

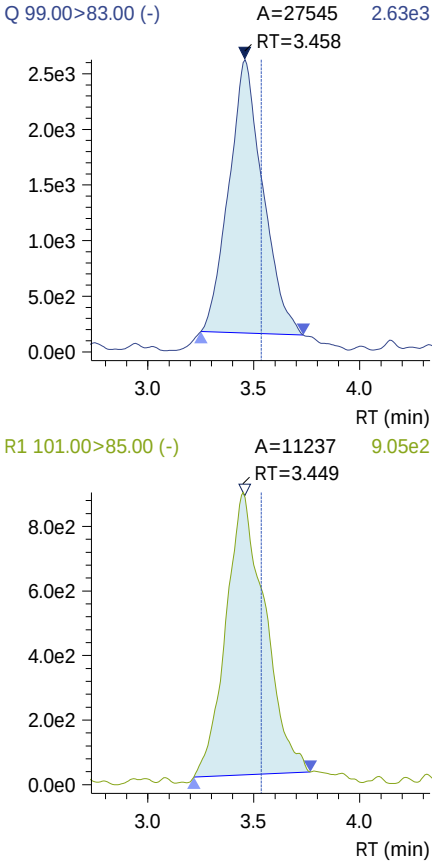
Perchlorate ICAL 3

Sample ID: Perchlorate ICAL 3
Date Acquired: 6/11/2024 3:57:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-004.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.458	27545	292777	0.6444	ng/mL	101.00 >85.00	40.79	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.459	292777	292777	1.0000	ng/mL	----	----	

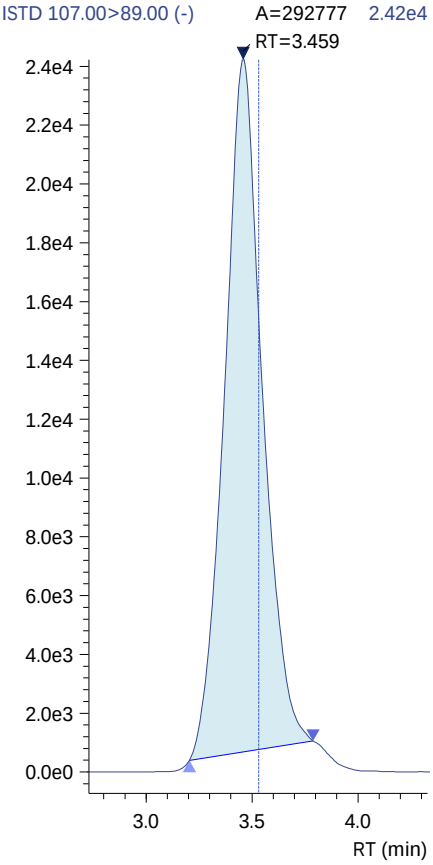
Perchlorate

Conc 0.6444
R#1 40.79 (34.10)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/12/2024 8:45:04 AM

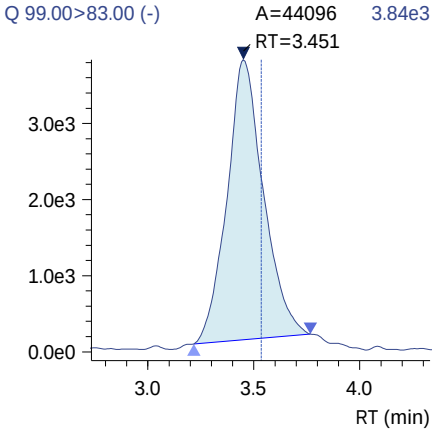
Perchlorate ICAL 4

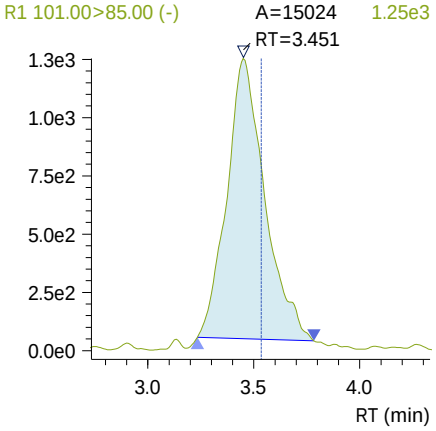
Sample ID: Perchlorate ICAL 4
Date Acquired: 6/11/2024 4:03:10 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-005.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.451	44096	304940	0.9904	ng/mL	101.00 >85.00	34.07	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.454	304940	304940	1.0000	ng/mL	----	----	

Perchlorate

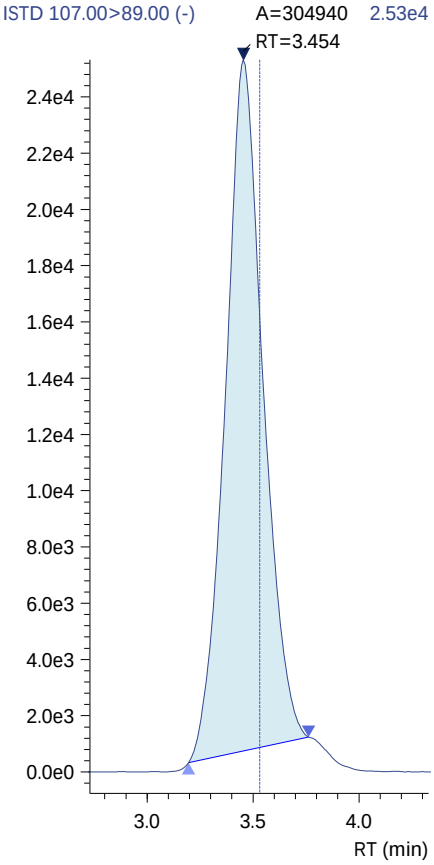
Conc 0.9904
R#1 34.07 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

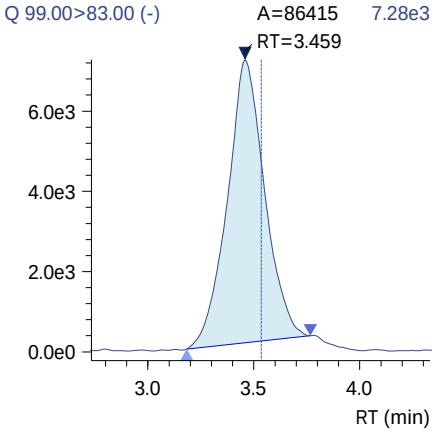
Perchlorate ICAL 5

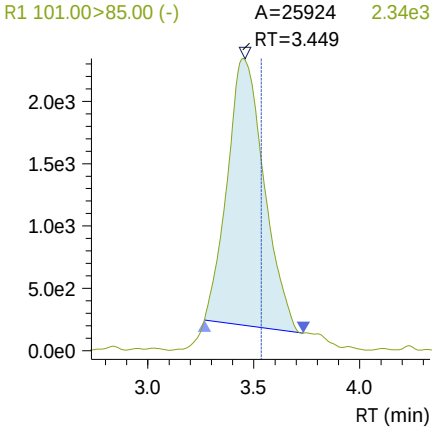
Sample ID: Perchlorate ICAL 5
Date Acquired: 6/11/2024 4:08:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-006.lcd
Vial: 5 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.459	86415	298543	1.9825	ng/mL	101.00 >85.00	30.00	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.454	298543	298543	1.0000	ng/mL	----	----	

Perchlorate

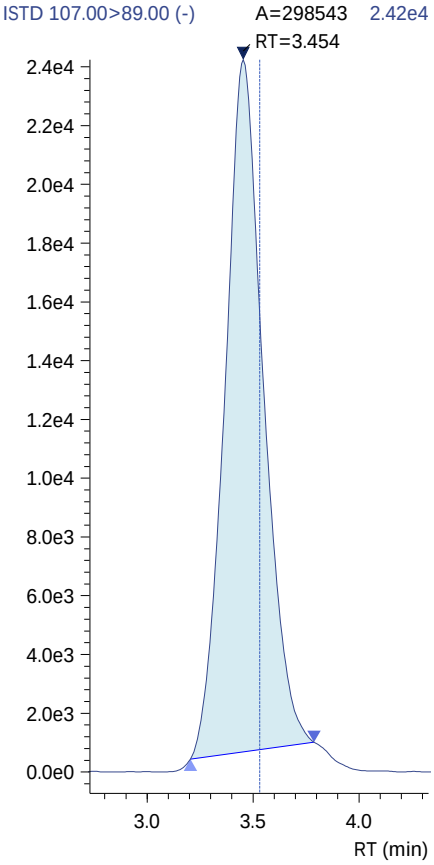
Conc 1.9825
R#1 30.00 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/12/2024 8:45:04 AM

Perchlorate ICAL 6

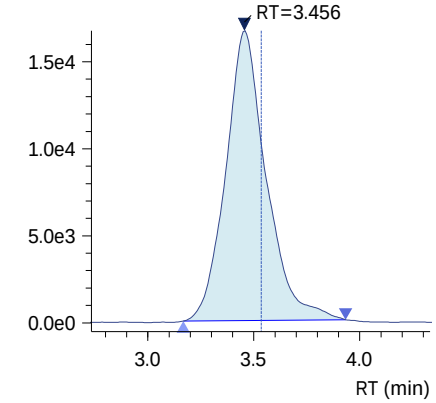
Sample ID: Perchlorate ICAL 6
Date Acquired: 6/11/2024 4:14:20 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-007.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.456	221568	282809	5.3659	ng/mL	101.00 >85.00	32.17	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.453	282809	282809	1.0000	ng/mL	----	----	

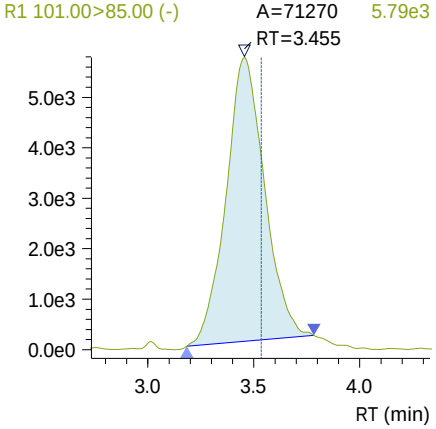
Perchlorate

Conc 5.3659
R#1 32.17 (34.10)

Q 99.00>83.00 (-) A=221568 1.68e4 RT=3.456



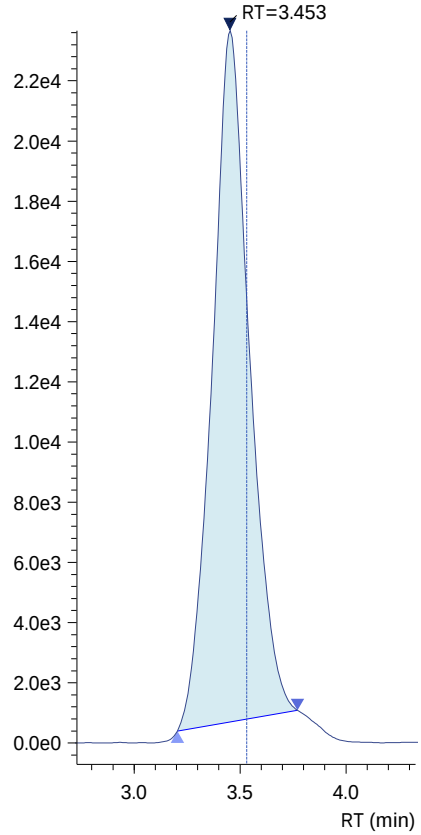
R1 101.00>85.00 (-) A=71270 5.79e3 RT=3.455



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=282809 2.37e4 RT=3.453



Insight Report

Printed at 6/12/2024 8:45:04 AM

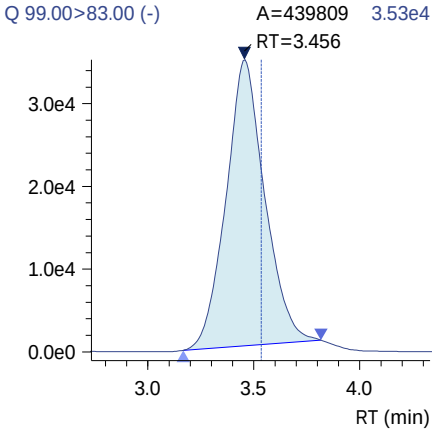
Perchlorate ICAL 7

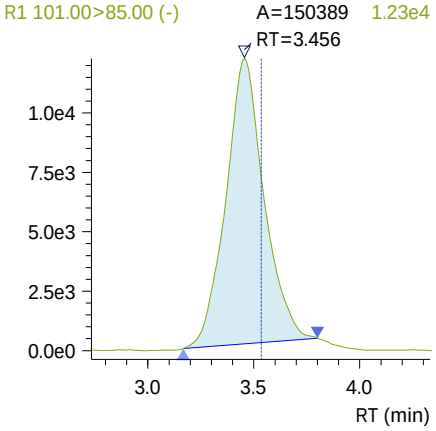
Sample ID: Perchlorate ICAL 7
Date Acquired: 6/11/2024 4:19:54 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-008.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.456	439809	288244	10.4505	ng/mL	101.00 >85.00	34.19	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.455	288244	288244	1.0000	ng/mL	----	----	

Perchlorate

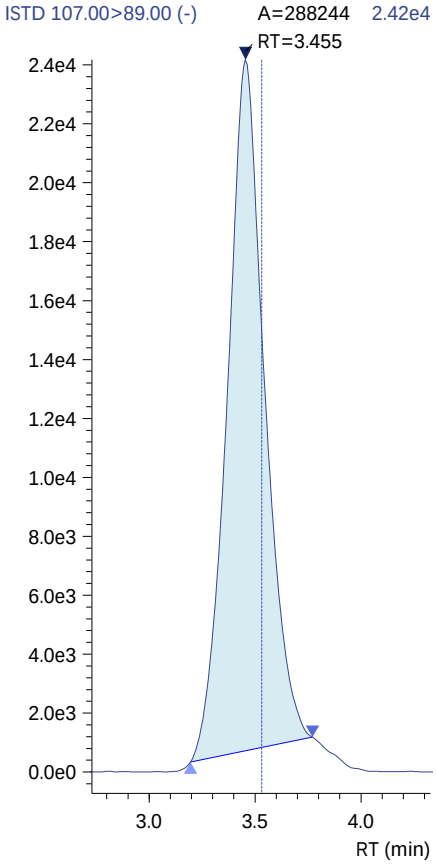
Conc 10.4505
R#1 34.19 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/12/2024 8:45:04 AM

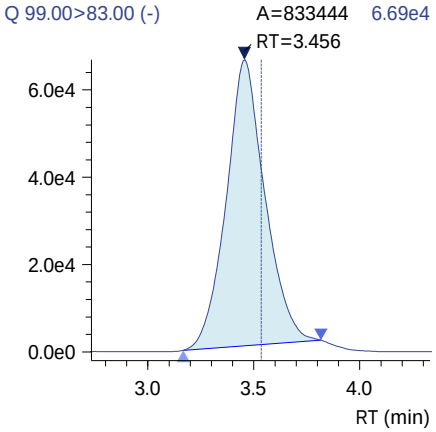
Perchlorate ICAL 8

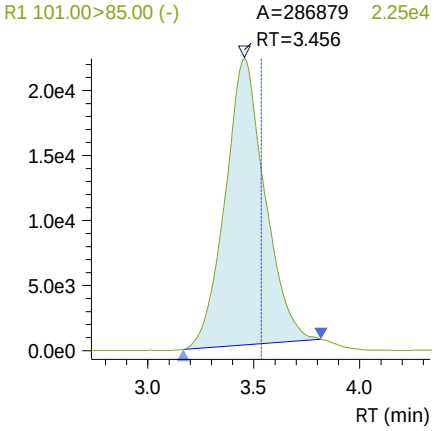
Sample ID: Perchlorate ICAL 8
Date Acquired: 6/11/2024 4:25:27 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-009.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.456	833444	272651	20.9364	ng/mL	101.00 >85.00	34.42	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.455	272651	272651	1.0000	ng/mL	----	----	

Perchlorate

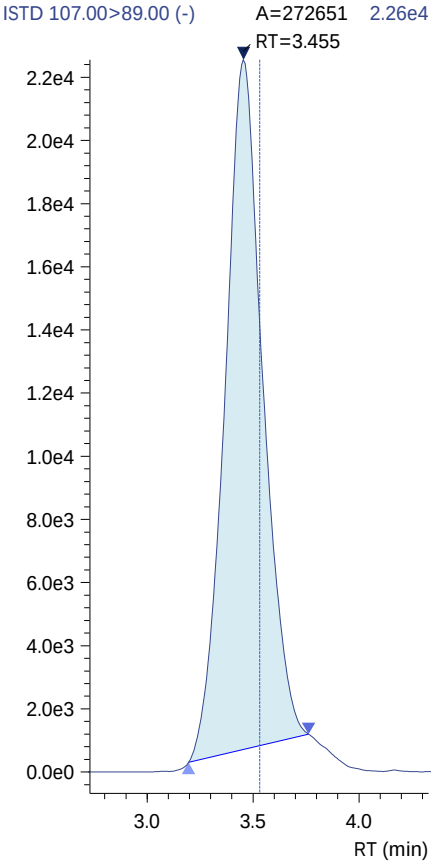
Conc 20.9364
R#1 34.42 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/12/2024 8:45:04 AM

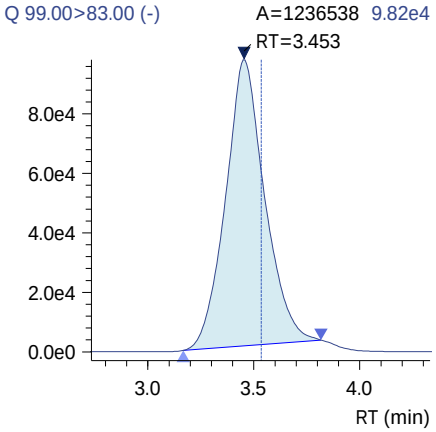
Perchlorate ICAL 9

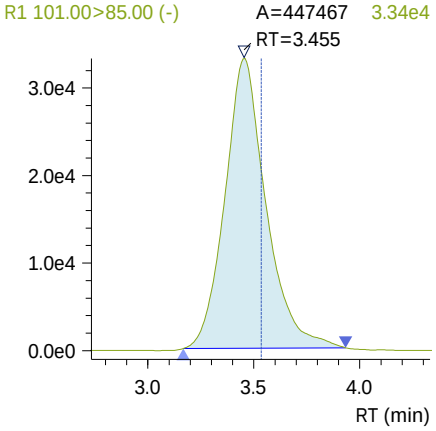
Sample ID: Perchlorate ICAL 9
Date Acquired: 6/11/2024 4:30:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-010.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.453	12365 38	276997	30.5 749	ng/mL	101.00 >85.00	36.19	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.452	276997	276997	1.0000	ng/mL	----	----	

Perchlorate

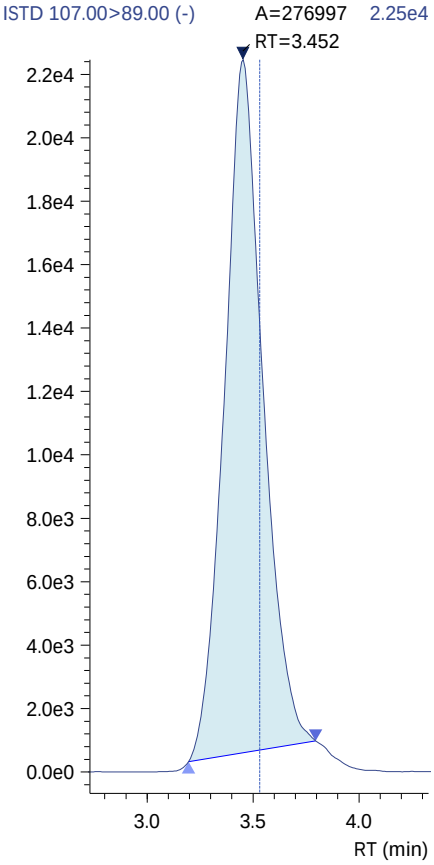
Conc 30.5749
R#1 36.19 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/12/2024 8:45:04 AM

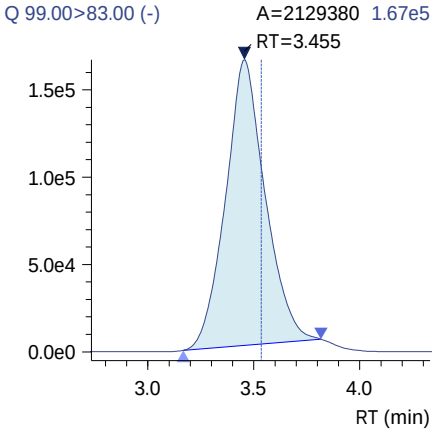
Perchlorate ICAL 10

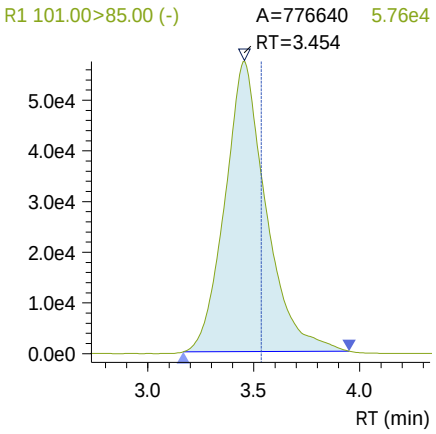
Sample ID: Perchlorate ICAL 10
Date Acquired: 6/11/2024 4:36:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-011.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.455	21293 80	282834	51.5 649	ng/mL	101.00 >85.00	36.47	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.453	282834	282834	1.0000	ng/mL	----	----	

Perchlorate

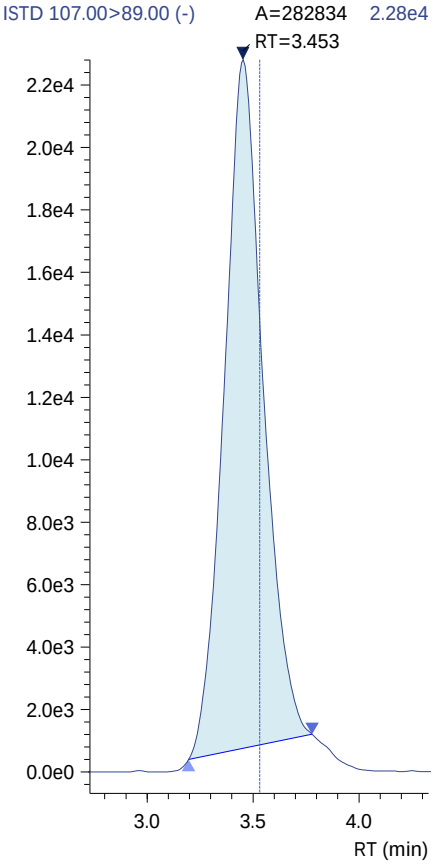
Conc 51.5649
R#1 36.47 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 6/12/2024 8:45:04 AM

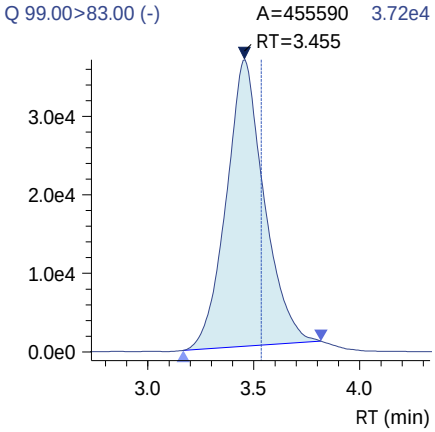
PerchlorateICV

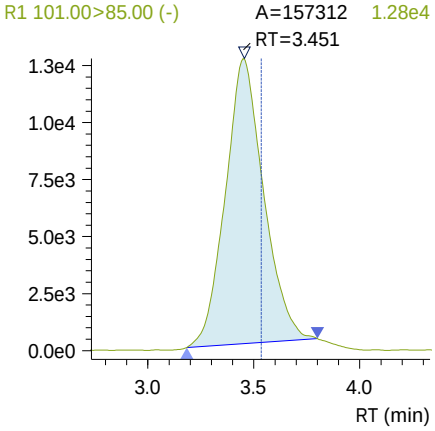
Sample ID: PerchlorateICV
Date Acquired: 6/11/2024 4:42:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240611\20240611-012.lcd
Vial: 11 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.455	455590	303470	10.2823	ng/mL	101.00 >85.00	34.53	23.50 -43.64
Sodium Perchlorate -18O4_IS	Auto	3.454	303470	303470	1.0000	ng/mL	----	----	

Perchlorate

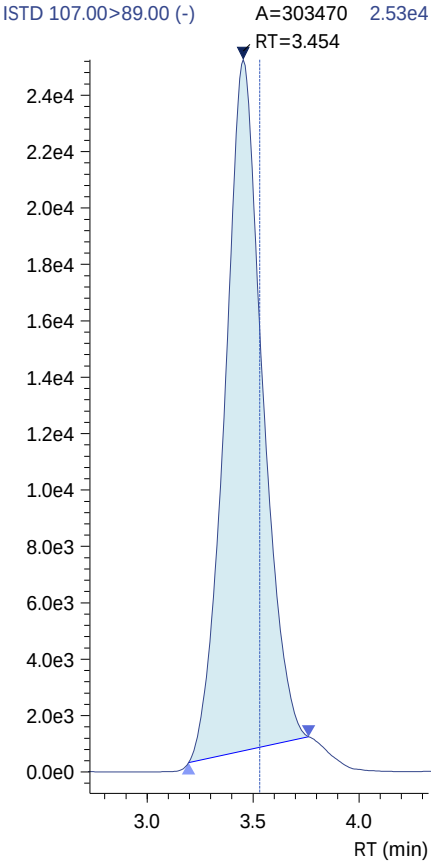
Conc 10.2823
R#1 34.53 (34.10)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Injection Log

LCMS01 -Shimadzu 8050

1st Review: JLJ
2nd Review:

ICAL Date: 6/11/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400009

Mobile Phases : A:20mM ammonium acetate in water **3211813-9 B:**Acetonitrile 235171
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
1	20240705-001	IB	Perchlorate6850c.lcm	1x		7/5/2024 12:32
2	20240705-002	IB	Perchlorate6850c.lcm	1x		7/5/2024 12:56
3	20240705-003	CCV	Perchlorate6850c.lcm	1x		7/5/2024 13:02
4	20240705-004	ICS	Perchlorate6850c.lcm	1x		7/5/2024 13:16
5	20240705-005	LODV	Perchlorate6850c.lcm	1x		7/5/2024 13:29
6	20240705-006	IB	Perchlorate6850c.lcm	1x		7/5/2024 13:34
7	20240705-007	E2400788-001	Perchlorate6850c.lcm	1x		7/5/2024 13:40
8	20240705-008	E2400788-002	Perchlorate6850c.lcm	1x		7/5/2024 13:45
9	20240705-009	EQ2400375-01MB	Perchlorate6850c.lcm	1x		7/5/2024 13:51
10	20240705-010	EQ2400375-02LCS	Perchlorate6850c.lcm	1x		7/5/2024 13:56
11	20240705-011	EQ2400375-03DLCS	Perchlorate6850c.lcm	1x		7/5/2024 14:02
12	20240705-012	EQ2400375-04ICS	Perchlorate6850c.lcm	1x		7/5/2024 14:07
13	20240705-013	IB	Perchlorate6850c.lcm	1x		7/5/2024 14:14
14	20240705-014	CCV	Perchlorate6850c.lcm	1x		7/5/2024 14:19
15	20240705-015	EQ2400374-01MB	Perchlorate6850c.lcm	1x		7/5/2024 14:25
16	20240705-016	EQ2400374-02LCS	Perchlorate6850c.lcm	1x		7/5/2024 14:30
17	20240705-017	EQ2400374-03DLCS	Perchlorate6850c.lcm	1x		7/5/2024 14:36
18	20240705-018	EQ2400374-04ICS	Perchlorate6850c.lcm	1x		7/5/2024 14:42
19	20240705-019	E2400734-001	Perchlorate6850c.lcm	1x		7/5/2024 14:47
20	20240705-020	E2400734-002	Perchlorate6850c.lcm	1x	DNU	7/5/2024 14:53
21	20240705-021	E2400734-003	Perchlorate6850c.lcm	1x	DNU	7/5/2024 14:58
22	20240705-022	E2400734-004	Perchlorate6850c.lcm	1x	DNU	7/5/2024 15:04
23	20240705-023	EQ2400374-05MS	Perchlorate6850c.lcm	1x	DNU	7/5/2024 15:09
24	20240705-024	EQ2400374-06DMS	Perchlorate6850c.lcm	1x	DNU	7/5/2024 15:15
25	20240705-025	IB	Perchlorate6850c.lcm	1x		7/5/2024 15:20
26	20240705-026	CCV	Perchlorate6850c.lcm	1x		7/5/2024 15:26
27	20240705-027	E2400734-005	Perchlorate6850c.lcm	1x	DNU	7/5/2024 15:32
28	20240705-028	E2400734-006	Perchlorate6850c.lcm	1x	DNU	7/5/2024 15:37
29	20240705-029	E2400734-007	Perchlorate6850c.lcm	1x	DNU	7/5/2024 15:43
30	20240705-030	E2400734-008	Perchlorate6850c.lcm	1x	DNU	7/5/2024 15:48
31	20240705-031	E2400734-009	Perchlorate6850c.lcm	1x		7/5/2024 15:54
32	20240705-032	E2400734-010	Perchlorate6850c.lcm	1x		7/5/2024 15:59
33	20240705-033	E2400734-011	Perchlorate6850c.lcm	1x		7/5/2024 16:05
34	20240705-034	E2400734-012	Perchlorate6850c.lcm	1x		7/5/2024 16:10
35	20240705-035	E2400734-013	Perchlorate6850c.lcm	1x	DNU	7/5/2024 16:16
36	20240705-036	E2400734-014	Perchlorate6850c.lcm	1x		7/5/2024 16:21
37	20240705-037	IB	Perchlorate6850c.lcm	1x		7/5/2024 16:27
38	20240705-038	CCV	Perchlorate6850c.lcm	1x		7/5/2024 16:32
39	20240705-039	E2400734-015	Perchlorate6850c.lcm	1x		7/5/2024 16:38
40	20240705-040	E2400734-016	Perchlorate6850c.lcm	1x		7/5/2024 16:44
41	20240705-041	E2400734-017	Perchlorate6850c.lcm	1x	DNU	7/5/2024 16:49

Injection Log

LCMS01 -Shimadzu 8050

1st Review: JLJ
2nd Review:

ICAL Date: 6/11/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400009

Mobile Phases : A:20mM ammonium acetate in water **3211813-9 B:**Acetonitrile 235171
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
42	20240705-042	E2400734-018	Perchlorate6850c.lcm	1x		7/5/2024 16:55
43	20240705-043	E2400734-019	Perchlorate6850c.lcm	1x		7/5/2024 17:00
44	20240705-044	E2400734-020	Perchlorate6850c.lcm	1x	DNU	7/5/2024 17:06
45	20240705-045	E2400734-021	Perchlorate6850c.lcm	1x	DNU	7/5/2024 17:11
46	20240705-046	E2400734-022	Perchlorate6850c.lcm	1x		7/5/2024 17:17
47	20240705-047	E2400734-023	Perchlorate6850c.lcm	1x	DNU	7/5/2024 17:22
48	20240705-048	E2400735-001	Perchlorate6850c.lcm	1x		7/5/2024 17:28
49	20240705-049	IB	Perchlorate6850c.lcm	1x		7/5/2024 17:33
50	20240705-050	CCV	Perchlorate6850c.lcm	1x		7/5/2024 17:39
51	20240705-051	EQ2400374-02LCS	Perchlorate6850c.lcm	1x	DNU	7/5/2024 17:44
52	20240705-052	EQ2400374-03DLCS	Perchlorate6850c.lcm	1x	DNU	7/5/2024 17:50
53	20240705-053	E2400735-001MS	Perchlorate6850c.lcm	1x		7/5/2024 17:56
54	20240705-054	E2400735-001DMS	Perchlorate6850c.lcm	1x		7/5/2024 18:01
55	20240705-055	E2400735-002	Perchlorate6850c.lcm	1x		7/5/2024 18:07
56	20240705-056	E2400735-003	Perchlorate6850c.lcm	1x		7/5/2024 18:12
57	20240705-057	E2400735-004	Perchlorate6850c.lcm	1x	DNU	7/5/2024 18:18
58	20240705-058	E2400735-005	Perchlorate6850c.lcm	1x		7/5/2024 18:23
59	20240705-059	E2400735-006	Perchlorate6850c.lcm	1x		7/5/2024 18:29
60	20240705-060	E2400736-001	Perchlorate6850c.lcm	1x		7/5/2024 18:34
61	20240705-061	IB	Perchlorate6850c.lcm	1x		7/5/2024 18:40
62	20240705-062	CCV	Perchlorate6850c.lcm	1x		7/5/2024 18:45
63	20240705-063	E2400736-002	Perchlorate6850c.lcm	1x	DNU	7/5/2024 18:51
64	20240705-064	E2400736-002MS	Perchlorate6850c.lcm	1x	DNU	7/5/2024 18:56
65	20240705-065	E2400736-002DMS	Perchlorate6850c.lcm	1x	DNU	7/5/2024 19:02
66	20240705-066	E2400736-003	Perchlorate6850c.lcm	1x	DNU	7/5/2024 19:08
67	20240705-067	E2400736-004	Perchlorate6850c.lcm	1x	DNU	7/5/2024 19:13
68	20240705-068	E2400736-005	Perchlorate6850c.lcm	1x		7/5/2024 19:19
69	20240705-069	E2400736-006	Perchlorate6850c.lcm	1x	DNU	7/5/2024 19:24
70	20240705-070	E2400785-001	Perchlorate6850c.lcm	1x		7/5/2024 19:30
71	20240705-071	E2400787-001	Perchlorate6850c.lcm	1x		7/5/2024 19:35
72	20240705-072	E2400789-001	Perchlorate6850c.lcm	1x	DNU	7/5/2024 19:41
73	20240705-073	IB	Perchlorate6850c.lcm	1x		7/5/2024 19:46
74	20240705-074	CCV	Perchlorate6850c.lcm	1x		7/5/2024 19:52

Injection Log

LCMS01 -Shimadzu 8050

1st Review: JLJ
2nd Review:

ICAL Date: 6/11/2024
Cal. Std. xp: 8/13/2024
ICAL ID: EC2400009

Mobile Phases : A:20mM ammonium acetate in water **3211814-2 B:**Acetonitrile 235171
LODV: 233573 **CCV:233565**

	File Name	Sample Name	Acquisition Method	Dilution	Comments	Date/Time
1	20240710-001	IB	Perchlorate6850c.lcm	1x		7/10/2024 13:34
2	20240710-002	ICS	Perchlorate6850c.lcm	1x		7/10/2024 13:39
3	20240710-003	CCV	Perchlorate6850c.lcm	1x		7/10/2024 13:45
4	20240710-004	LODV	Perchlorate6850c.lcm	1x		7/10/2024 13:50
5	20240710-005	IB	Perchlorate6850c.lcm	1x		7/10/2024 13:56
6	20240710-006	EQ2400374-01MB	Perchlorate6850c.lcm	1x	DNU Report 7/5 run	7/10/2024 14:38
7	20240710-007	EQ2400374-02LCS	Perchlorate6850c.lcm	1x	DNU	7/10/2024 14:43
8	20240710-008	EQ2400374-03DLCS	Perchlorate6850c.lcm	1x	DNU	7/10/2024 14:49
9	20240710-009	EQ2400374-04ICS	Perchlorate6850c.lcm	1x	DNU Report 7/5 run	7/10/2024 14:54
10	20240710-010	E2400735-004x100	Perchlorate6850c.lcm	100x		7/10/2024 15:00
11	20240710-011	E2400736-002x10	Perchlorate6850c.lcm	10x		7/10/2024 15:05
12	20240710-012	EQ2400375-07MSX10	Perchlorate6850c.lcm	10x		7/10/2024 15:11
13	20240710-013	EQ2400375-08DMSX10	Perchlorate6850c.lcm	10x		7/10/2024 15:17
14	20240710-014	E2400376-003X10	Perchlorate6850c.lcm	10x		7/10/2024 15:22
15	20240710-015	E2400376-004X10	Perchlorate6850c.lcm	10x		7/10/2024 15:28
16	20240710-016	CCV	Perchlorate6850c.lcm	1x		7/10/2024 15:33
17	20240710-017	IB	Perchlorate6850c.lcm	1x		7/10/2024 15:39
18	20240710-018	EQ2400374-02LCS	Perchlorate6850c.lcm	1x		7/10/2024 15:44
19	20240710-019	EQ2400374-03DLCS	Perchlorate6850c.lcm	1x		7/10/2024 15:50
20	20240710-020	E2400376-005X10	Perchlorate6850c.lcm	10x	DNU Report 7/5 run	7/10/2024 15:56
21	20240710-021	E2400736-006X1000	Perchlorate6850c.lcm	1000x		7/10/2024 16:01
22	20240710-022	E2400789-001X500	Perchlorate6850c.lcm	500x		7/10/2024 16:07
23	20240710-023	E2400734-002X100	Perchlorate6850c.lcm	100x		7/10/2024 16:12
24	20240710-024	E2400734-003X10	Perchlorate6850c.lcm	10x		7/10/2024 16:18
25	20240710-025	E2400734-004X100	Perchlorate6850c.lcm	100x		7/10/2024 16:23
26	20240710-026	EQ2400374-05MSX100	Perchlorate6850c.lcm	100x		7/10/2024 16:29
27	20240710-027	EQ2400374-06DMSX100	Perchlorate6850c.lcm	100x		7/10/2024 16:34
28	20240710-028	CCV	Perchlorate6850c.lcm	1x		7/10/2024 16:40
29	20240710-029	IB	Perchlorate6850c.lcm	1x		7/10/2024 16:46
30	20240710-030	E2400734-005X1000	Perchlorate6850c.lcm	1000x		7/10/2024 16:51
31	20240710-031	E2400734-006X100	Perchlorate6850c.lcm	100x		7/10/2024 16:57
32	20240710-032	E2400734-007X1000	Perchlorate6850c.lcm	1000x		7/10/2024 17:02
33	20240710-033	E2400734-008X50	Perchlorate6850c.lcm	50x		7/10/2024 17:08
34	20240710-034	E2400734-013X50	Perchlorate6850c.lcm	50x		7/10/2024 17:13
35	20240710-035	E2400734-014X10	Perchlorate6850c.lcm	10x		7/10/2024 17:19
36	20240710-036	E2400734-017X10	Perchlorate6850c.lcm	10x		7/10/2024 17:24
37	20240710-037	E2400734-020X100	Perchlorate6850c.lcm	100x		7/10/2024 17:30
38	20240710-038	E2400734-021X100	Perchlorate6850c.lcm	100x		7/10/2024 17:35
39	20240710-039	E2400734-023X10	Perchlorate6850c.lcm	10x		7/10/2024 17:41
40	20240710-040	CCV	Perchlorate6850c.lcm	1x		7/10/2024 17:46
41	20240710-041	IB	Perchlorate6850c.lcm	1x		7/10/2024 17:52

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS24061405

Service Request: E2400736
Date Analyzed: 7/5/24 13:02

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-003
Instrument ID: E-LCMS-01
Analytical Method: 6850

Lab Code: EQ2400376-01
Analysis Lot: 846469
Signal ID: 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400376-01	197,133	3.43
Method Blank	EQ2400375-01	196,343	3.43
Lab Control Sample	EQ2400375-02	191,311	3.43
Duplicate Lab Control Sample	EQ2400375-03	179,660	3.43

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/5/24 14:19

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-014 **Lab Code:** EQ2400376-02
Instrument ID: E-LCMS-01 **Analysis Lot:** 846469
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400376-02	201,802	3.43

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/5/24 14:19

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-014 **Lab Code:** EQ2400381-01
Instrument ID: E-LCMS-01 **Analysis Lot:** 846917
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400381-01	201,802	3.43

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

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS24061405

Service Request: E2400736
Date Analyzed: 7/5/24 15:26

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-026
Instrument ID: E-LCMS-01
Analytical Method: 6850

Lab Code: EQ2400381-02
Analysis Lot: 846917
Signal ID: 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400381-02	208,764	3.42

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/5/24 16:32

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-038 **Lab Code:** EQ2400381-03
Instrument ID: E-LCMS-01 **Analysis Lot:** 846917
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400381-03	200,200	3.42

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

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/5/24 17:39

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-050 **Lab Code:** EQ2400381-04
Instrument ID: E-LCMS-01 **Analysis Lot:** 846917
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400381-04	196,021	3.42
130_062124	E2400736-001	198,905	3.42

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/5/24 18:45

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-062 **Lab Code:** EQ2400381-05
Instrument ID: E-LCMS-01 **Analysis Lot:** 846917
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400381-05	198,372	3.42
17WW02_062124	E2400736-005	196,726	3.42

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/5/24 19:52

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240705\20240705-074 **Lab Code:** EQ2400381-06
Instrument ID: E-LCMS-01 **Analysis Lot:** 846917
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400381-06	218,852	3.42

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/10/24 13:45

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240710\20240710-003 **Lab Code:** EQ2400383-01
Instrument ID: E-LCMS-01 **Analysis Lot:** 846941
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400383-01	152,163	3.40
17WW03_062124	E2400736-002	403,739	3.42
17WW03_062124MS	EQ2400375-07	226,023	3.42
17WW03_062124DMS	EQ2400375-08	222,866	3.42
17WW01_062124	E2400736-003	228,187	3.42
17WW01_062124_A	E2400736-004	226,848	3.42

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/10/24 15:33

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240710\20240710-016 **Lab Code:** EQ2400383-02
Instrument ID: E-LCMS-01 **Analysis Lot:** 846941
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400383-02	164,410	3.41
17WW06_062124	E2400736-006	173,026	3.40

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/10/24 16:40

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240710\20240710-028 **Lab Code:** EQ2400383-03
Instrument ID: E-LCMS-01 **Analysis Lot:** 846941
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400383-03	179,730	3.40

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/10/24 17:46

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID: I:\LCMS01\DATA\20240710\20240710-040 **Lab Code:** EQ2400383-04
Instrument ID: E-LCMS-01 **Analysis Lot:** 846941
Analytical Method: 6850 **Signal ID:** 1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	291,083	3.45
	Upper Limit ==>	436,625	5.45
	Lower Limit ==>	145,542	1.45
Associated Analyses			
Continuing Calibration Verification	EQ2400383-04	173,977	3.40

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

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240705\20240705-003 **Calibration ID:** EC2400009
Analysis Lot: 846469
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.0	0.1460	0.1463	0.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS24061405

Service Request: E2400736
Date Analyzed: 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20240705\20240705-014

Calibration Date: 6/11/24
Calibration ID: EC2400009
Analysis Lot: 846469
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1460	0.1573	7.7	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240705\20240705-014 **Calibration ID:** EC2400009
Analysis Lot: 846917
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1460	3.174E4	######*	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240705\20240705-026 **Calibration ID:** EC2400009
Analysis Lot: 846917
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.9	0.1460	3.320E4	######*	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240705\20240705-038 **Calibration ID:** EC2400009
Analysis Lot: 846917
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1460	3.166E4	######*	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240705\20240705-050 **Calibration ID:** EC2400009
Analysis Lot: 846917
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.7	0.1460	3.060E4	######*	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240705\20240705-062 **Calibration ID:** EC2400009
Analysis Lot: 846917
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1460	3.121E4	######*	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/ 5/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240705\20240705-074 **Calibration ID:** EC2400009
Analysis Lot: 846917
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.6	0.1460	3.399E4	######*	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/10/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240710\20240710-003 **Calibration ID:** EC2400009
Analysis Lot: 846941
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.74	0.1460	2.165E4	######*	NA	± 15 %	Average RF

QA/QC Report

Client: ALS Environmental - US **Service Request:** E2400736
Project: HS24061405 **Date Analyzed:** 7/10/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850 **Calibration Date:** 6/11/24
File ID: I:\LCMS01\DATA\20240710\20240710-016 **Calibration ID:** EC2400009
Analysis Lot: 846941
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.82	0.1460	2.358E4	######*	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS24061405

Service Request: E2400736
Date Analyzed: 7/10/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20240710\20240710-028

Calibration Date: 6/11/24
Calibration ID: EC2400009
Analysis Lot: 846941
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	9.61	0.1460	2.522E4	######*	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS24061405

Service Request: E2400736
Date Analyzed: 7/10/24

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20240710\20240710-040

Calibration Date: 6/11/24
Calibration ID: EC2400009
Analysis Lot: 846941
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1460	2.566E4	######*	NA	± 15 %	Average RF

Insight Report

Printed at 7/11/2024 11:39:02 AM

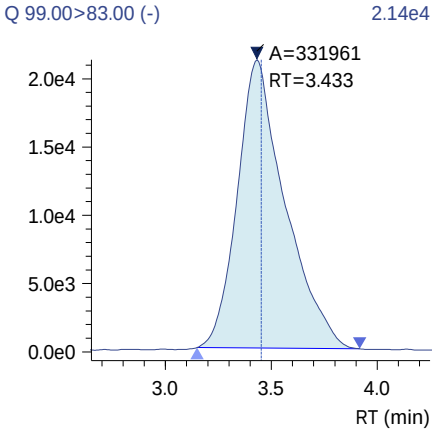
CCV

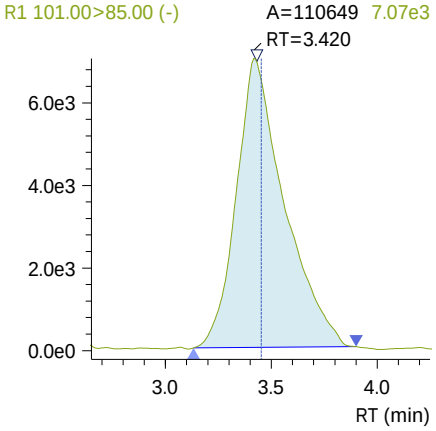
Sample ID: CCV
Date Acquired: 7/5/2024 3:26:27 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-026.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.433	331961	208764	10.8909	ng/mL	101.00 >85.00	33.33	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.422	208764	208764	1.0000	ng/mL	----	----	

Perchlorate

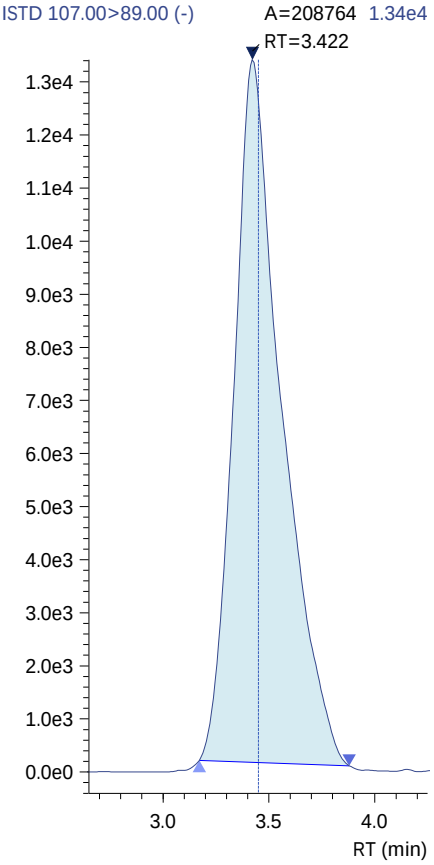
Conc 10.8909
R#1 33.33 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

Method File: I:\LCMS01\DATA\20240705\20240705.lcm
Project File: I:\LCMS01\DATA\20240705\20240705.damlp

IB

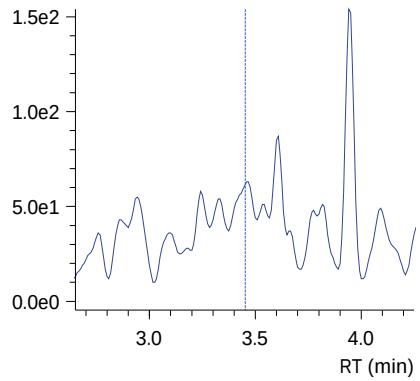
Sample ID: IB
Date Acquired: 7/5/2024 12:32:34 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-001.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	177014	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate-18O4_IS	Auto	3.428	177014	177014	1.0000	ng/mL	----	----	

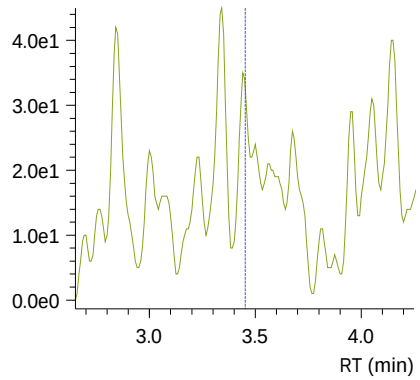
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 1.54e2



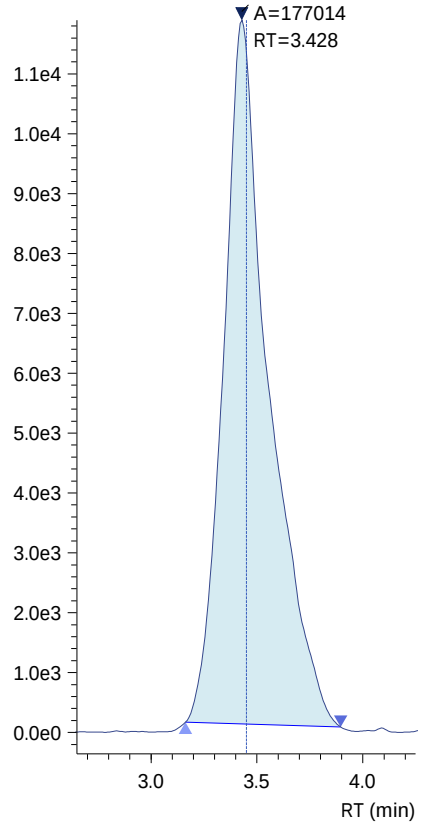
R1 101.00>85.00 (-) 4.50e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.19e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

IB

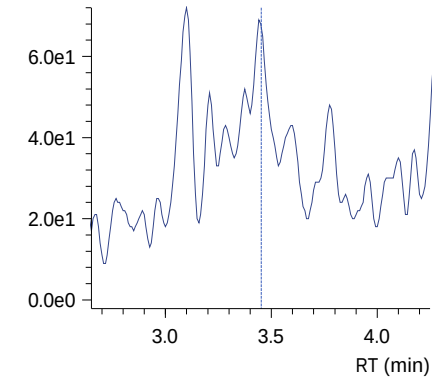
Sample ID: IB
Date Acquired: 7/5/2024 12:56:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-002.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	192052	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate-18O4_IS	Auto	3.431	192052	192052	1.0000	ng/mL	----	----	

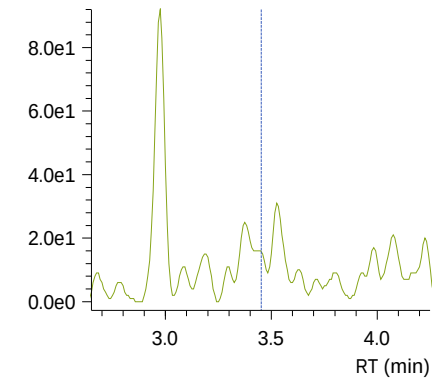
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 7.20e1



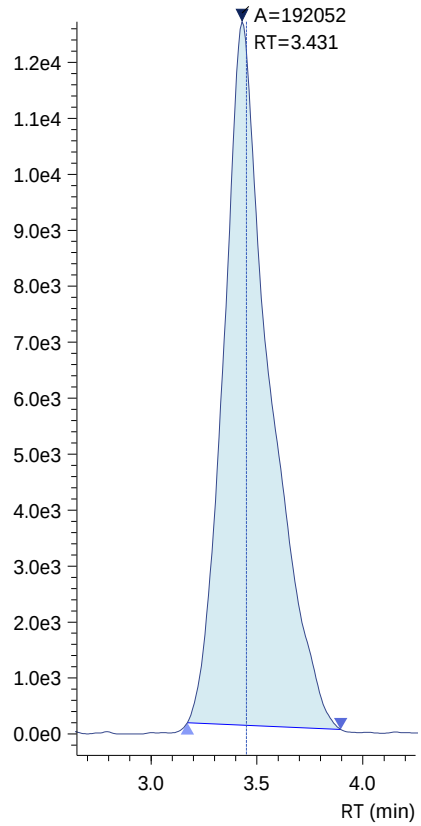
R1 101.00>85.00 (-) 9.20e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.27e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

CCV

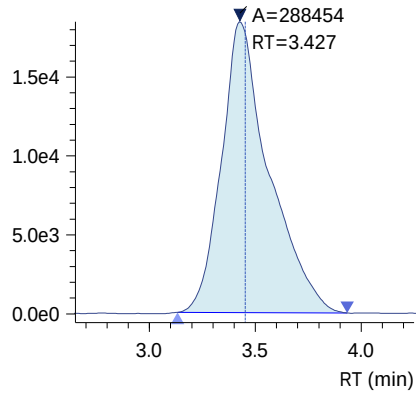
Sample ID: CCV
Date Acquired: 7/5/2024 1:02:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-003.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.427	288454	197133	10.0219	ng/mL	101.00 >85.00	33.11	23.32 -42.91
Sodium Perchlorate -18O4_IS	M	3.430	197133	197133	1.0000	ng/mL	----	----	

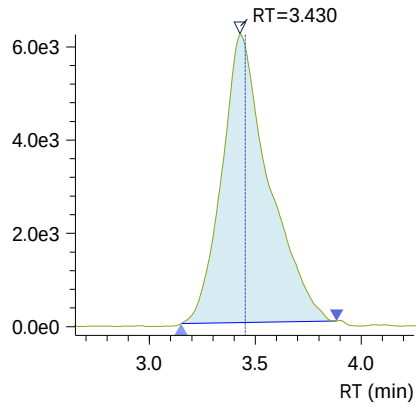
Perchlorate

Conc 10.0219
R#1 33.11 (35.24)

Q 99.00>83.00 (-) 1.85e4



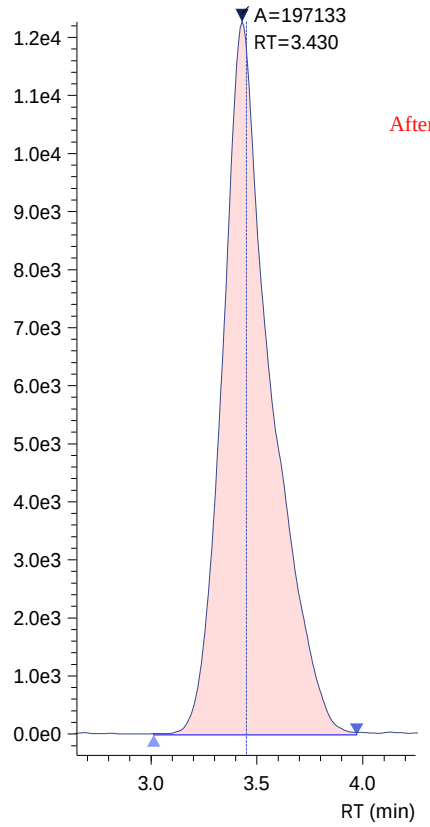
R1 101.00>85.00 (-) A=95508 6.27e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.23e4



After-BLC

Insight Report

Method File: I:\LCMS01\DATA\20240705\20240705.lcm
Project File: I:\LCMS01\DATA\20240705\20240705.damlp

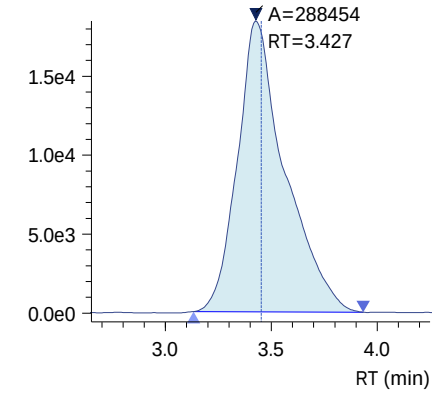
CCV

Sample ID: CCV
Date Acquired: 7/5/2024 1:02:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-003.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

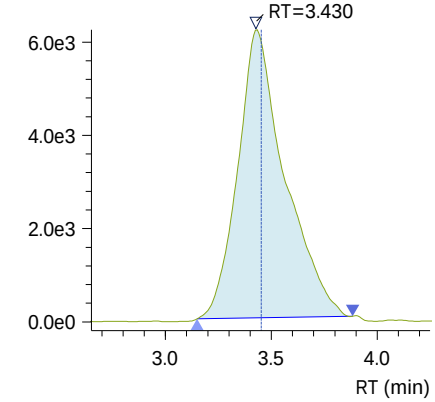
Perchlorate

Conc 10.4491
R#1 33.11 (35.24)

Q 99.00>83.00 (-) 1.85e4



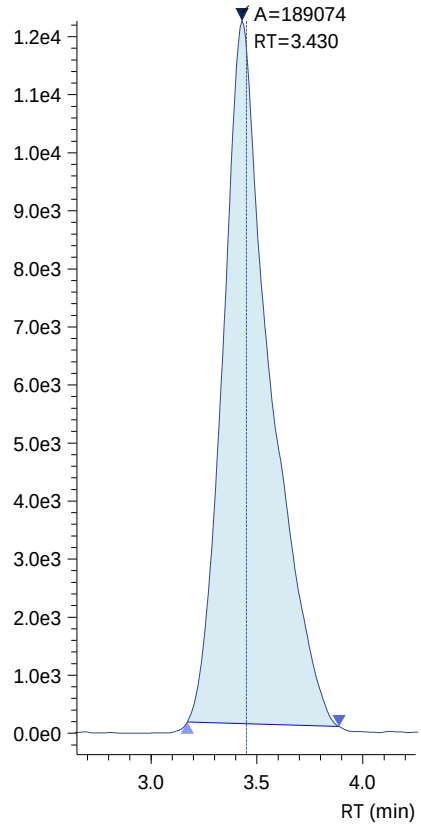
R1 101.00>85.00 (-) A=95508 6.27e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.23e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

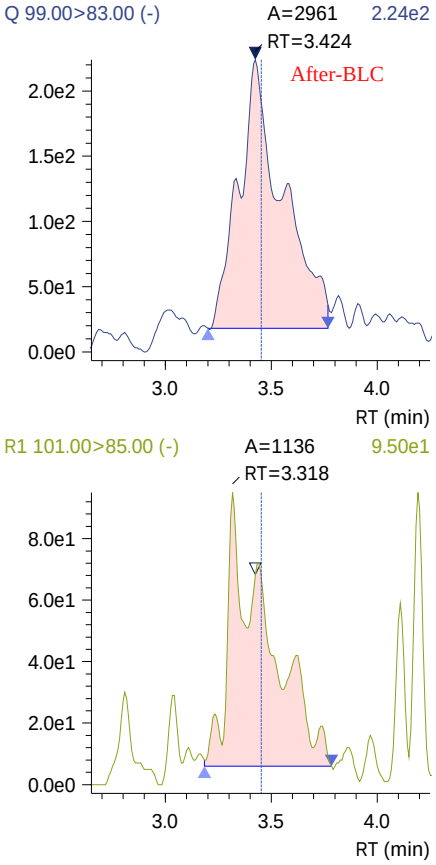
ICS

Sample ID: ICS
Date Acquired: 7/5/2024 1:16:51 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-004.lcd
Vial: 15 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.424	2961	184580	0.1099	ng/mL	101.00 >85.00	38.35	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.428	184580	184580	1.0000	ng/mL	----	----	

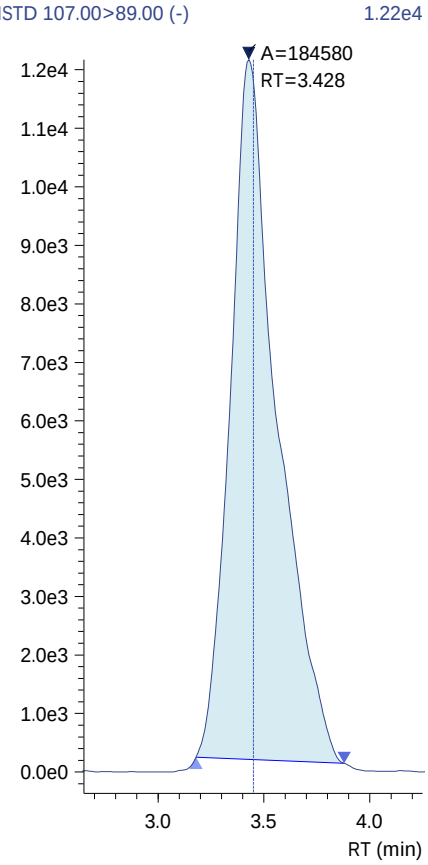
Perchlorate

Conc 0.1099
R#1 38.35 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:40:38 AM

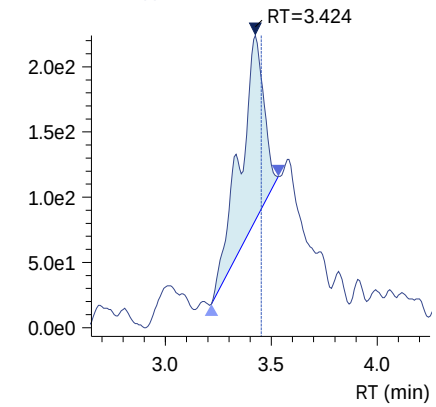
ICS

Sample ID: ICS
Date Acquired: 7/5/2024 1:16:51 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-004.lcd
Vial: 15 | Inj. Volume: 10.0000uL | Tray: 1

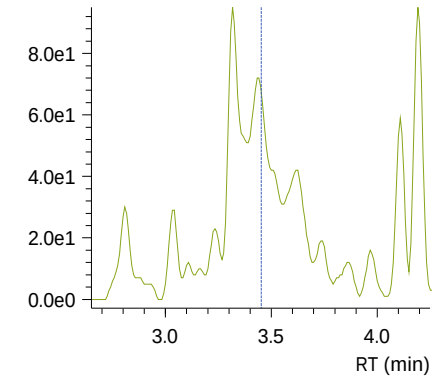
Perchlorate

Conc 0.0412
R#1 0.00 (35.24)

Q 99.00>83.00 (-) A=1110 2.24e2



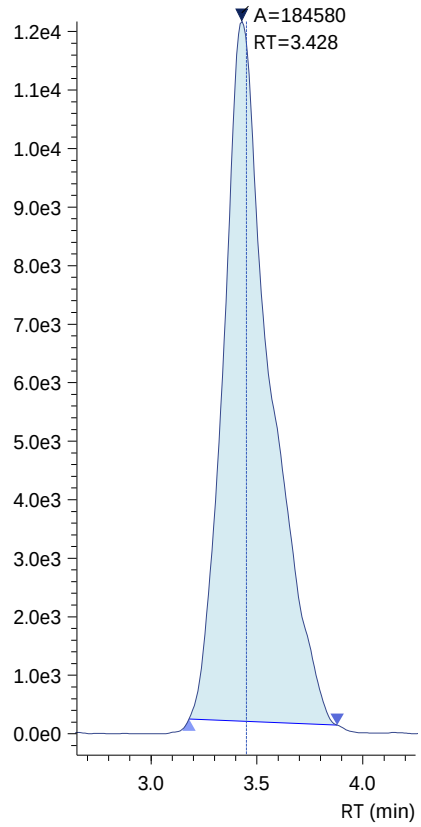
R1 101.00>85.00 (-) 9.50e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.22e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

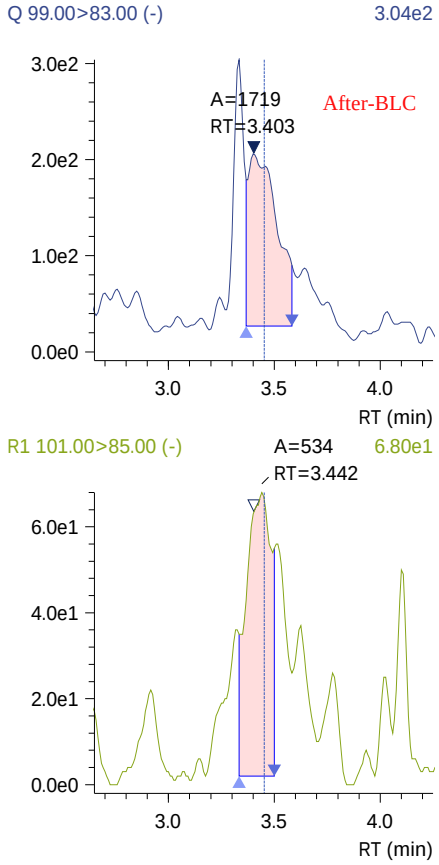
LODV

Sample ID: LODV
Date Acquired: 7/5/2024 1:29:00 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-005.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.403	1719	221331	0.0532	ng/mL	101.00 >85.00	31.07	23.32 -42.91
Sodium Perchlorate -18O4_IS	M	3.430	221331	221331	1.0000	ng/mL	----	----	

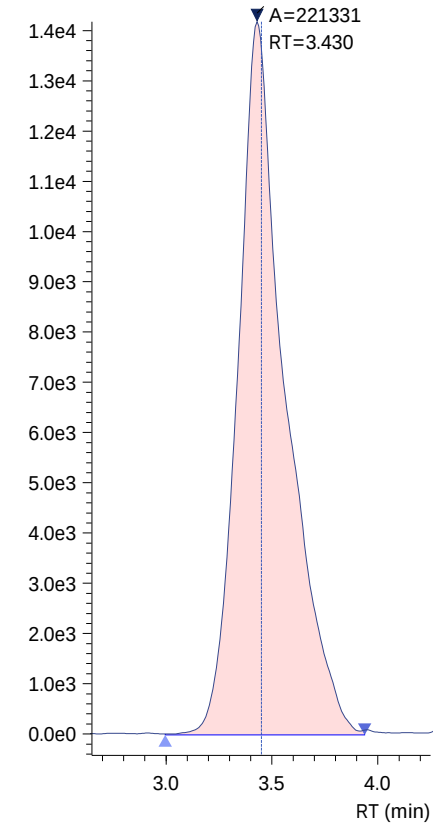
Perchlorate

Conc 0.0532
R#1 31.07 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



After-BLC

Insight Report

Printed at 7/11/2024 11:40:38 AM

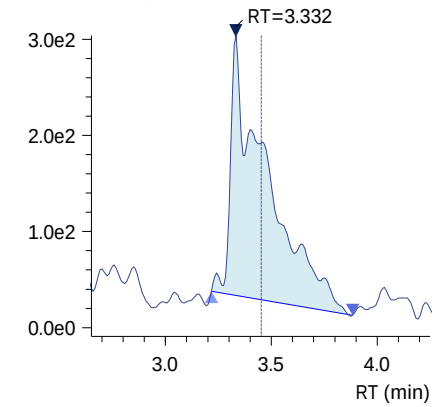
LODV

Sample ID: LODV
Date Acquired: 7/5/2024 1:29:00 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-005.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 1

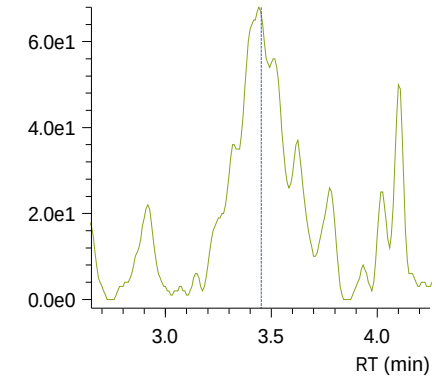
Perchlorate

Conc 0.1025
R#1 0.00 (35.24)

Q 99.00>83.00 (-) A=3194 3.04e2



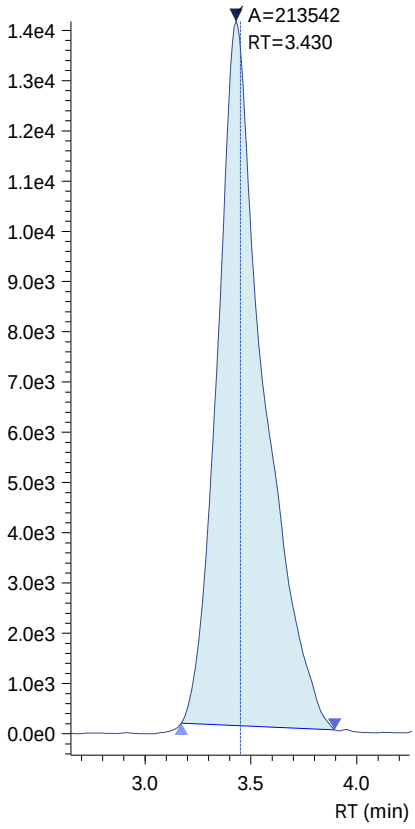
R1 101.00>85.00 (-) 6.80e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.42e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

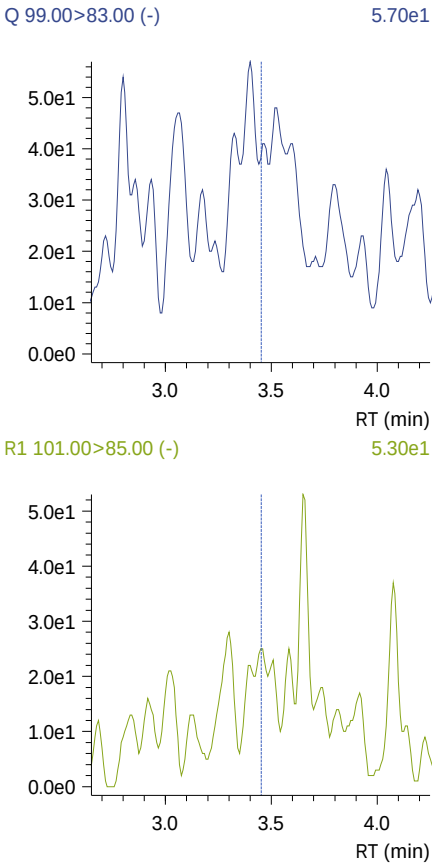
IB

Sample ID: IB
Date Acquired: 7/5/2024 1:34:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-006.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	203269	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate-18O4_IS	M	3.425	203269	203269	1.0000	ng/mL	----	----	

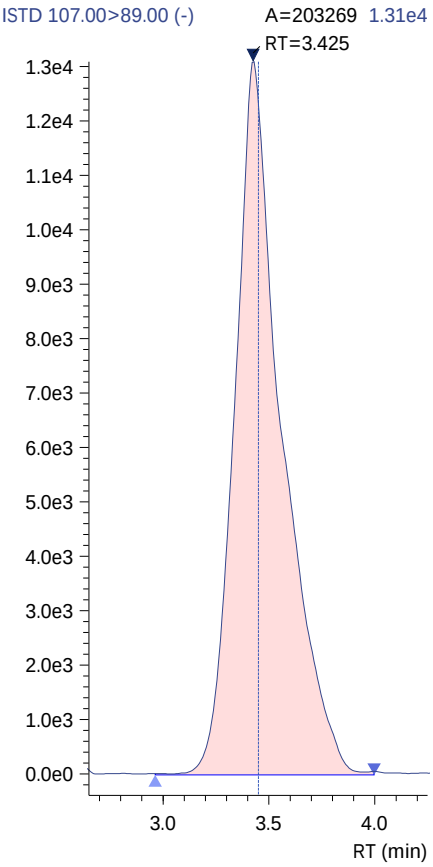
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



After-BLC

Insight Report

Printed at 7/11/2024 11:40:38 AM

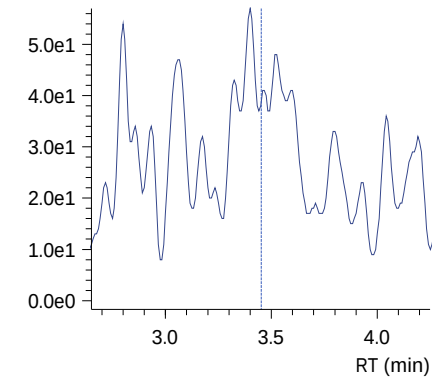
IB

Sample ID: IB
Date Acquired: 7/5/2024 1:34:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-006.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

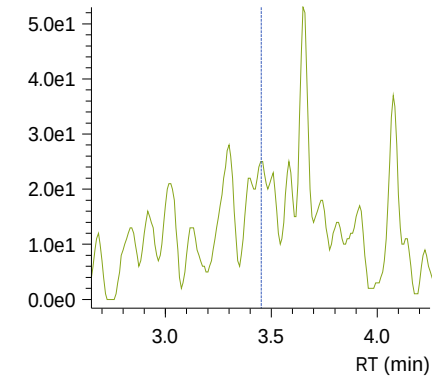
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 5.70e1



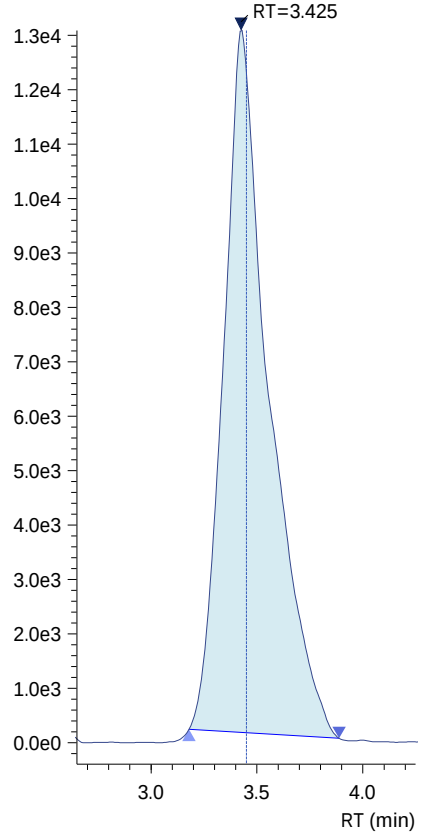
R1 101.00>85.00 (-) 5.30e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=194571 1.31e4
RT=3.425



Insight Report

Printed at 7/11/2024 11:39:02 AM

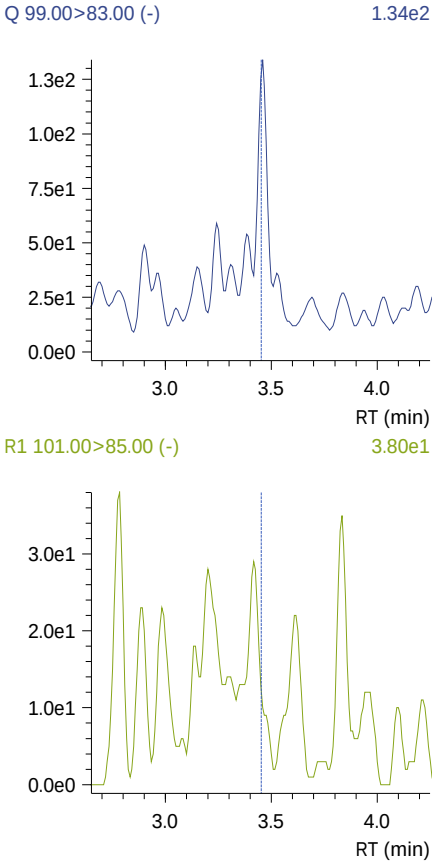
EQ2400375-01MB

Sample ID: EQ2400375-01
Date Acquired: 7/5/2024 1:51:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-009.lcd
Vial: 3 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	196343	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate-18O4_IS	Auto	3.425	196343	196343	1.0000	ng/mL	----	----	

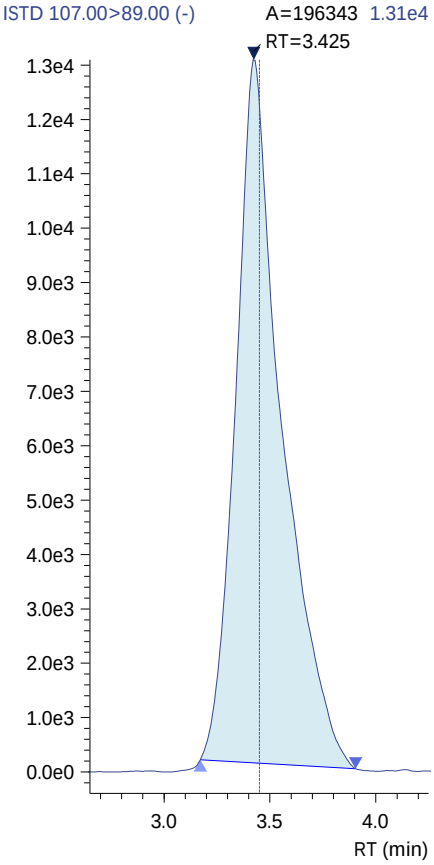
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

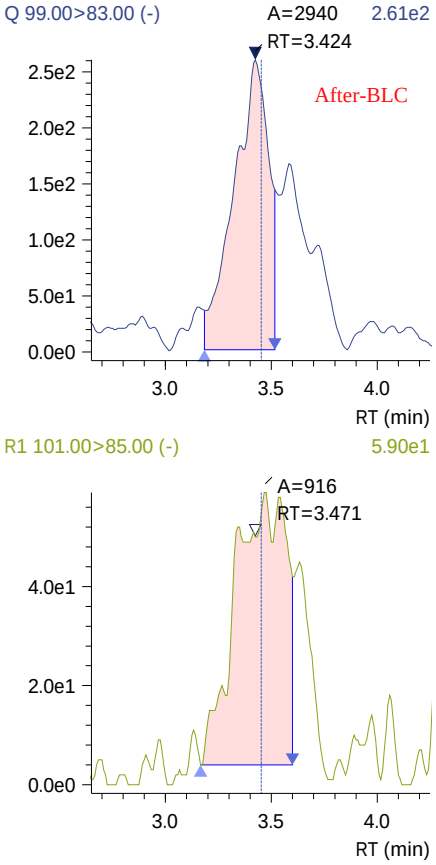
EQ2400375-02LCS

Sample ID: EQ2400375-02
Date Acquired: 7/5/2024 1:56:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-010.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.424	2940	191311	0.1052	ng/mL	101.00 >85.00	31.16	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.428	191311	191311	1.0000	ng/mL	----	----	

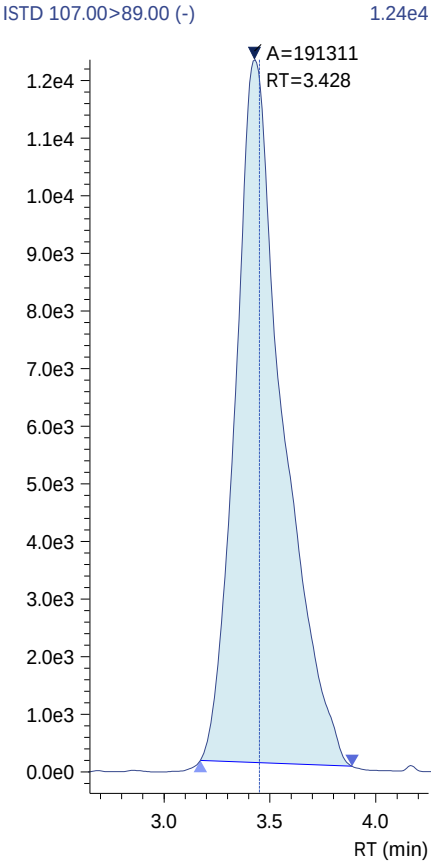
Perchlorate

Conc 0.1052
R#1 31.16 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:40:38 AM

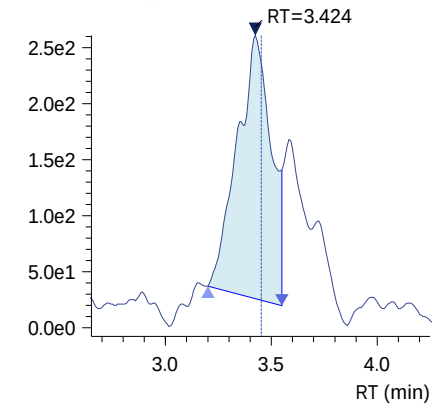
EQ2400375-02LCS

Sample ID: EQ2400375-02
Date Acquired: 7/5/2024 1:56:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-010.lcd
Vial: 4 | Inj. Volume: 10.0000uL | Tray: 4

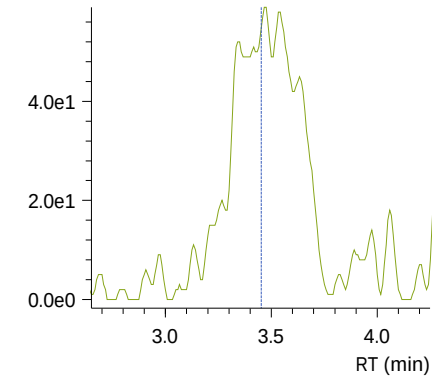
Perchlorate

Conc 0.0942
R#1 0.00 (35.24)

Q 99.00>83.00 (-) A=2630 2.61e2



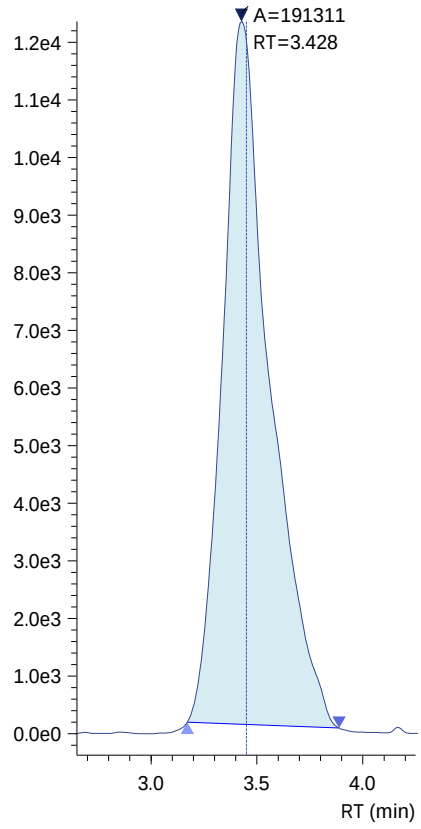
R1 101.00>85.00 (-) 5.90e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.24e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

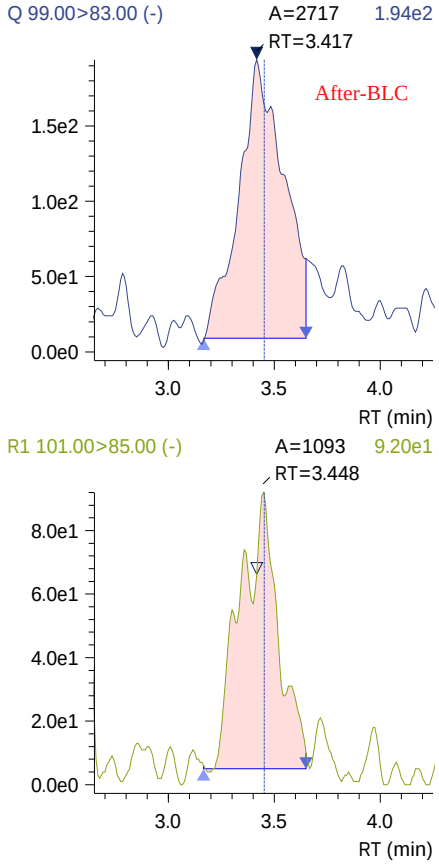
EQ2400375-03DLCS

Sample ID: EQ2400375-03
Date Acquired: 7/5/2024 2:02:21 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-011.lcd
Vial: 5 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.417	2717	179660	0.1036	ng/mL	101.00 >85.00	40.22	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.425	179660	179660	1.0000	ng/mL	----	----	

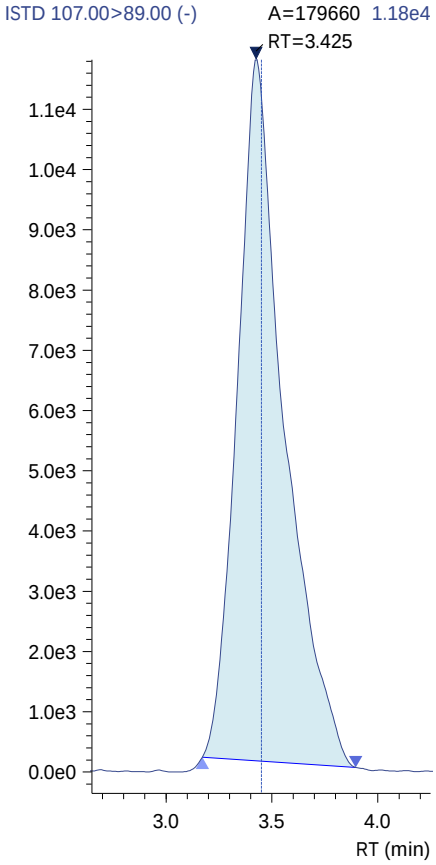
Perchlorate

Conc 0.1036
R#1 40.22 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:40:38 AM

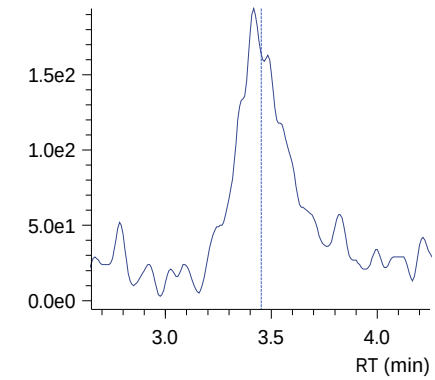
EQ2400375-03DLCS

Sample ID: EQ2400375-03
Date Acquired: 7/5/2024 2:02:21 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-011.lcd
Vial: 5 | Inj. Volume: 10.0000uL | Tray: 4

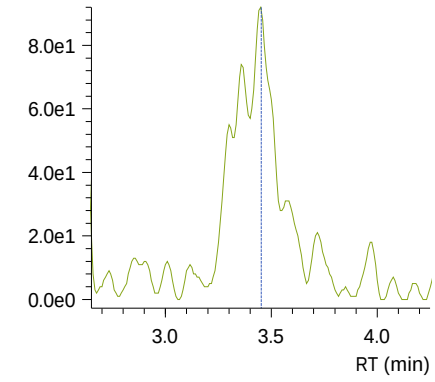
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 1.94e2



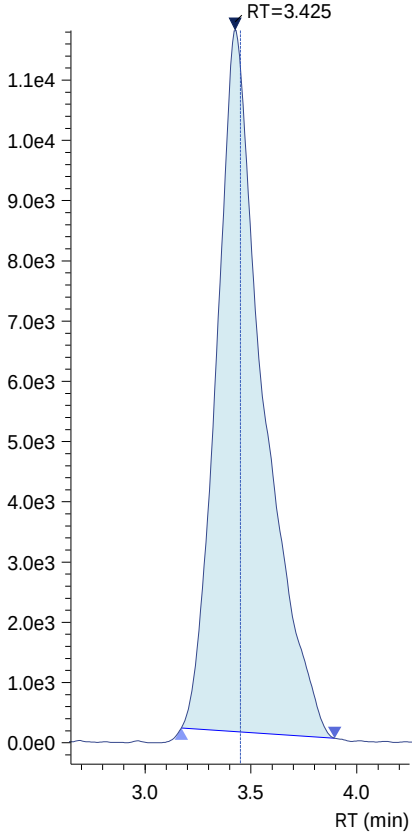
R1 101.00>85.00 (-) 9.20e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=179660 1.18e4
RT=3.425



Insight Report

Printed at 7/11/2024 11:39:02 AM

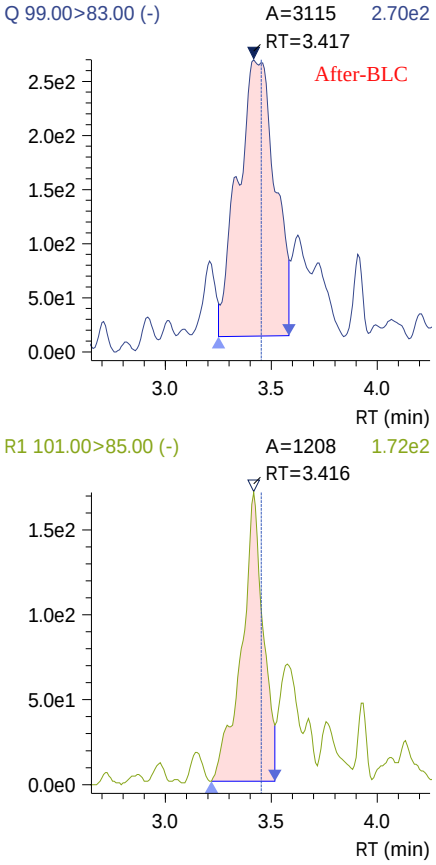
EQ2400375-04ICS

Sample ID: EQ2400375-04
Date Acquired: 7/5/2024 2:07:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-012.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.417	3115	199970	0.1067	ng/mL	101.00 >85.00	38.78	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.425	199970	199970	1.0000	ng/mL	----	----	

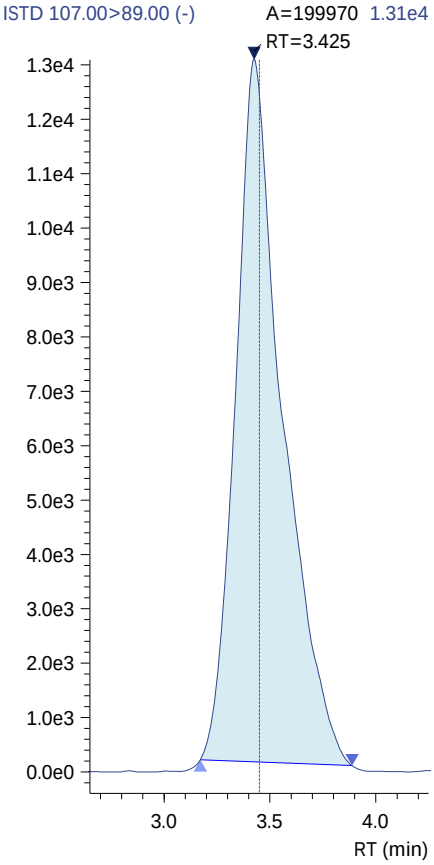
Perchlorate

Conc 0.1067
R#1 38.78 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:40:38 AM

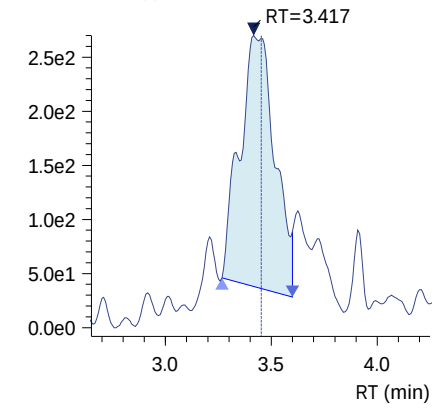
EQ2400375-04ICS

Sample ID: EQ2400375-04
Date Acquired: 7/5/2024 2:07:53 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-012.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 4

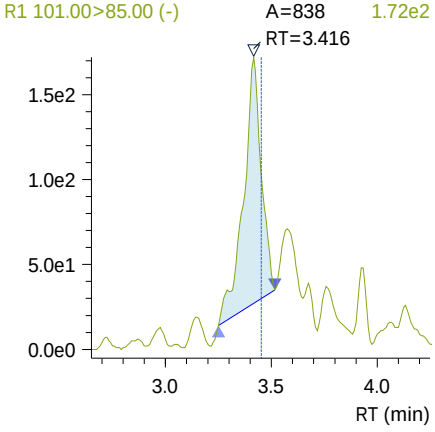
Perchlorate

Conc 0.0926
R#1 31.00 (35.24)

Q 99.00>83.00 (-) A=2703 2.70e2



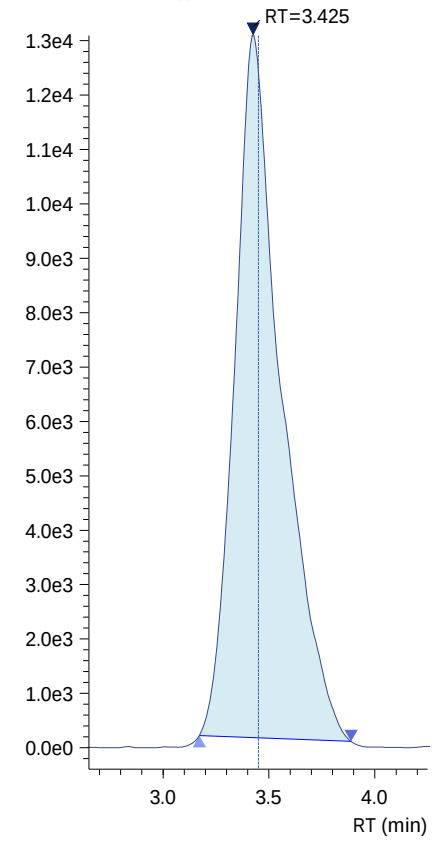
R1 101.00>85.00 (-) A=838 1.72e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=199970 1.31e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

IB

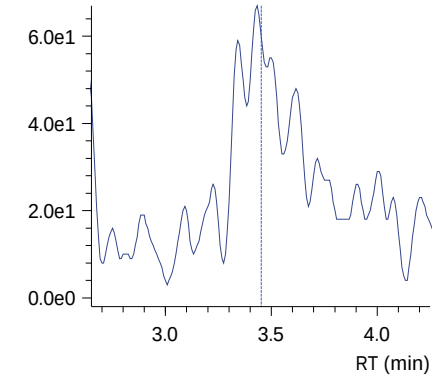
Sample ID: IB
Date Acquired: 7/5/2024 2:14:15 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-013.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	203684	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate-18O4_IS	Auto	3.423	203684	203684	1.0000	ng/mL	----	----	

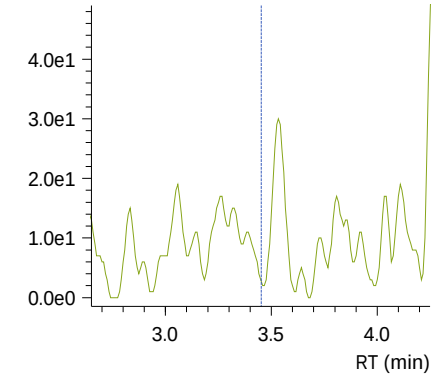
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 6.70e1



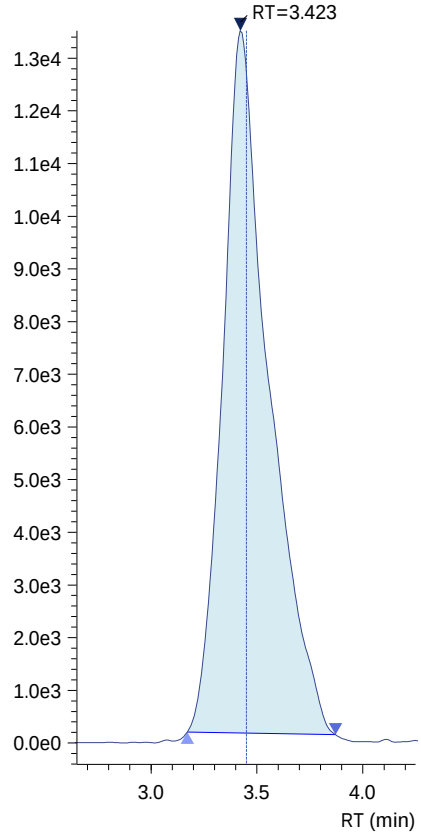
R1 101.00>85.00 (-) 4.90e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=203684 1.35e4
RT=3.423



Insight Report

Printed at 7/11/2024 11:39:02 AM

CCV

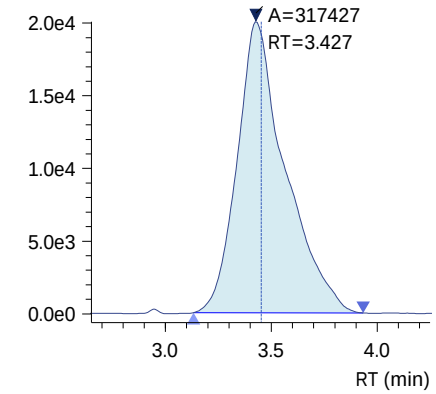
Sample ID: CCV
Date Acquired: 7/5/2024 2:19:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-014.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.427	317427	201802	10.7734	ng/mL	101.00 >85.00	33.06	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.430	201802	201802	1.0000	ng/mL	----	----	

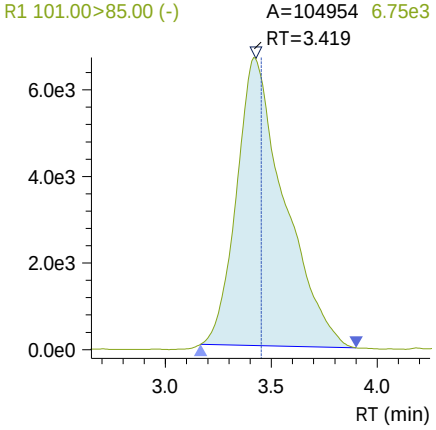
Perchlorate

Conc 10.7734
R#1 33.06 (35.24)

Q 99.00>83.00 (-) 2.01e4



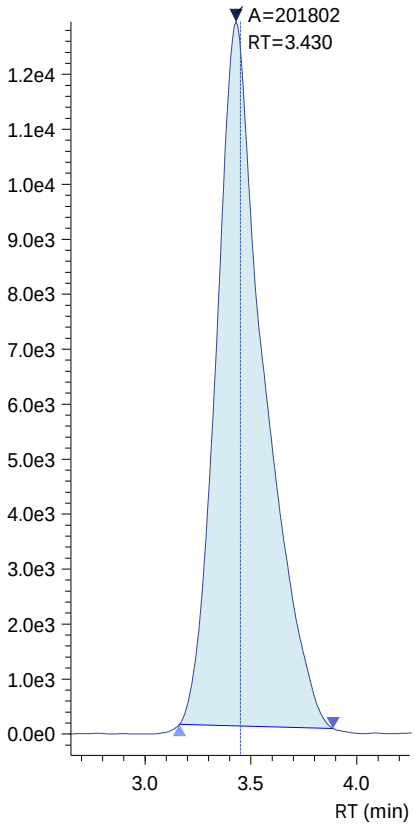
R1 101.00>85.00 (-) A=104954 6.75e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.30e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

IB

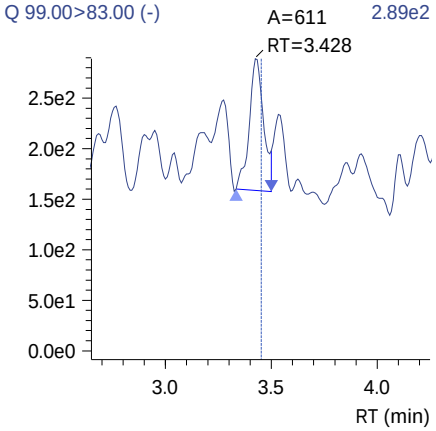
Sample ID: IB
Date Acquired: 7/5/2024 3:20:55 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-025.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	NI	----	----	207757	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.428	207757	207757	1.0000	ng/mL	----	----	

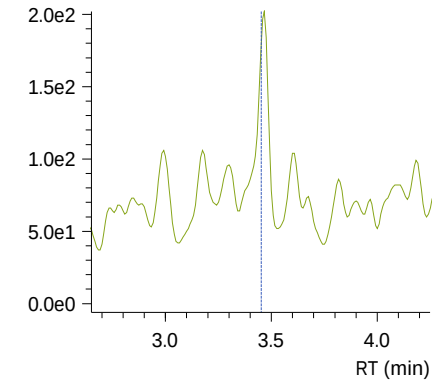
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 2.89e2



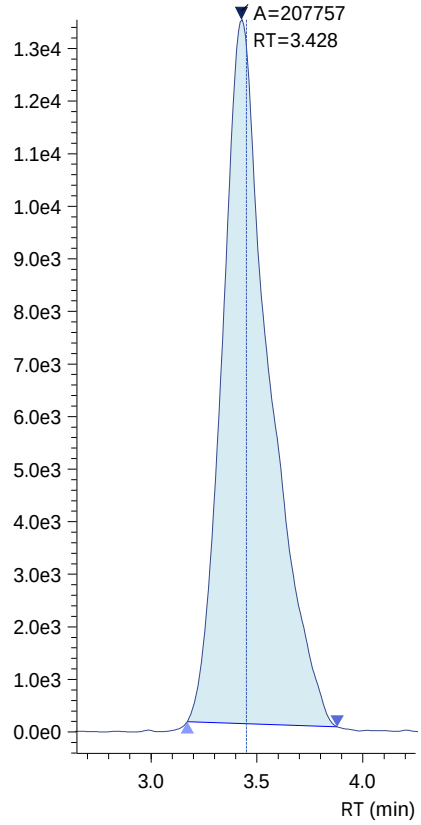
R1 101.00>85.00 (-) 2.02e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 1.35e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

CCV

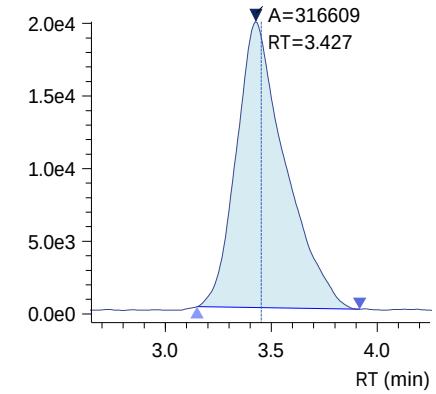
Sample ID: CCV
Date Acquired: 7/5/2024 4:32:59 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-038.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.427	316609	200200	10.8316	ng/mL	101.00 >85.00	33.63	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.423	200200	200200	1.0000	ng/mL	----	----	

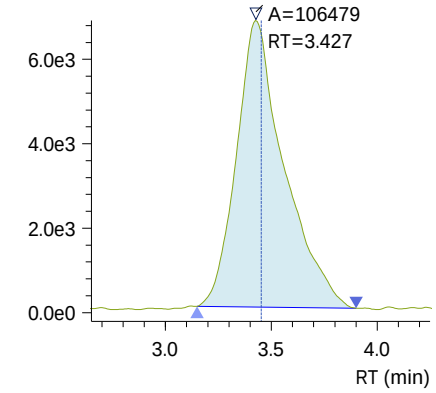
Perchlorate

Conc 10.8316
R#1 33.63 (35.24)

Q 99.00>83.00 (-) 2.01e4



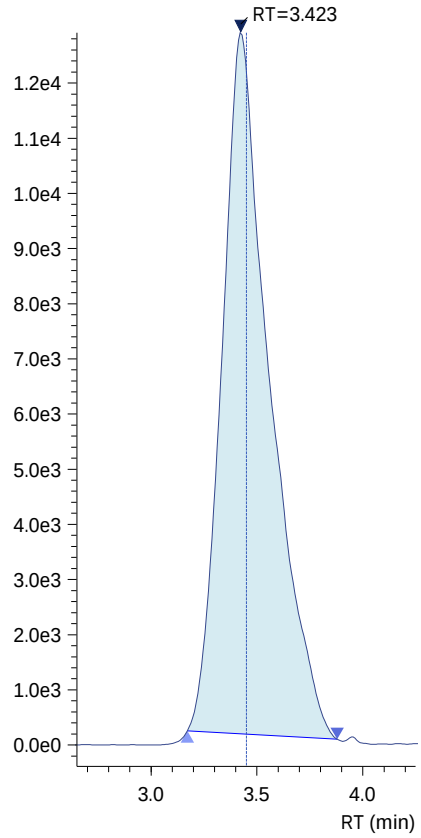
R1 101.00>85.00 (-) 6.92e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=200200 1.29e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

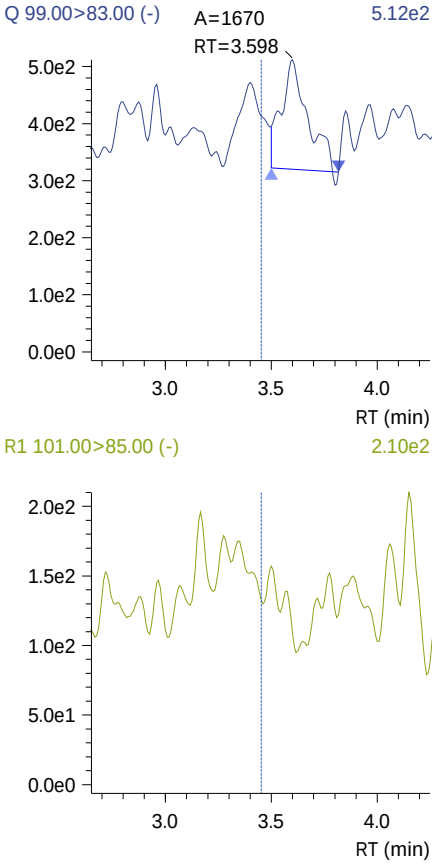
IB

Sample ID: IB
Date Acquired: 7/5/2024 5:33:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-049.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	NI	----	----	198346	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.424	198346	198346	1.0000	ng/mL	----	----	

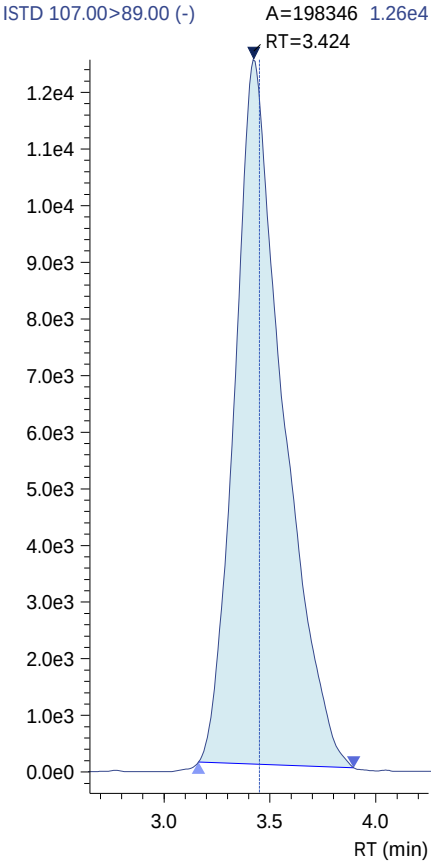
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

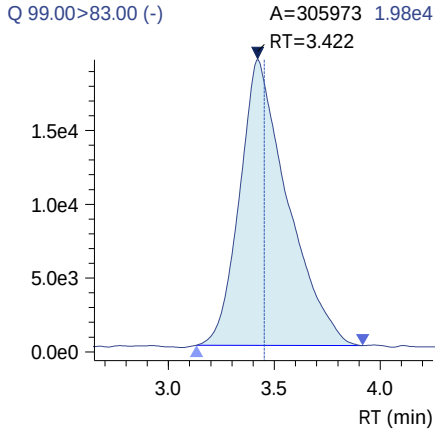
CCV

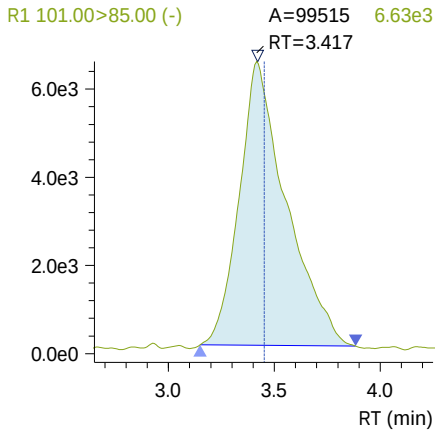
Sample ID: CCV
Date Acquired: 7/5/2024 5:39:23 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-050.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.422	305973	196021	10.6909	ng/mL	101.00 >85.00	32.52	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.424	196021	196021	1.0000	ng/mL	----	----	

Perchlorate

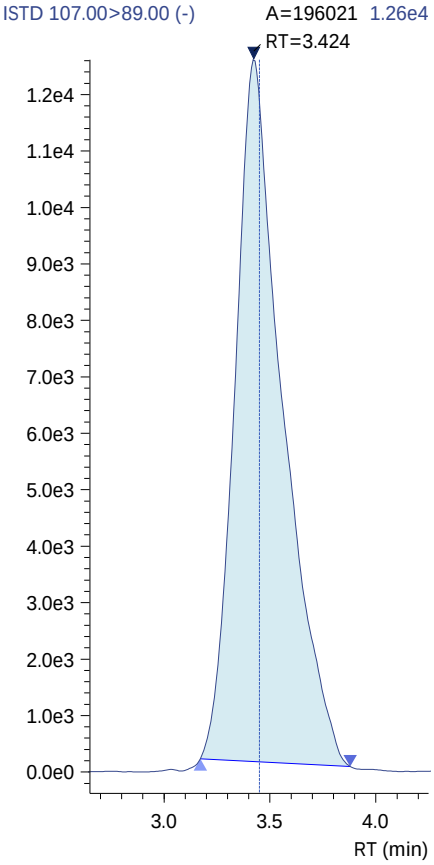
Conc 10.6909
R#1 32.52 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

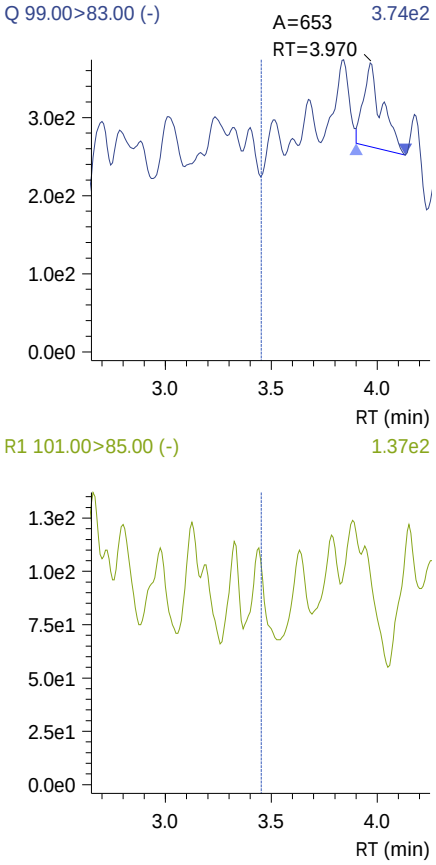
IB

Sample ID: IB
Date Acquired: 7/5/2024 4:27:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-037.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	201701	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate-18O4_IS	Auto	3.420	201701	201701	1.0000	ng/mL	----	----	

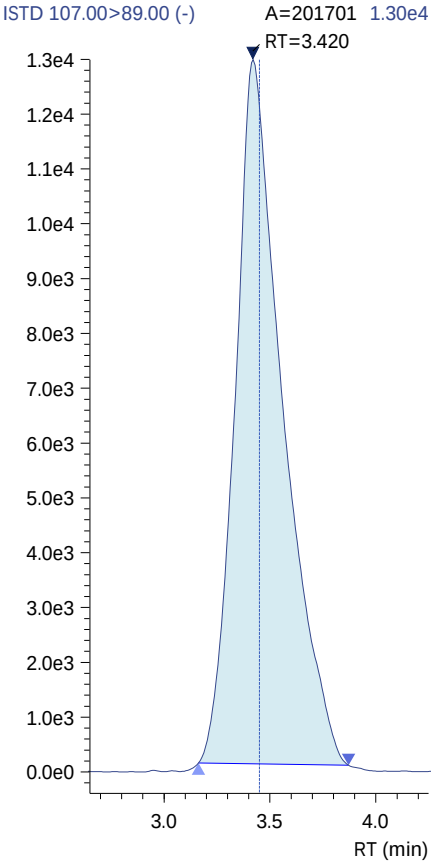
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

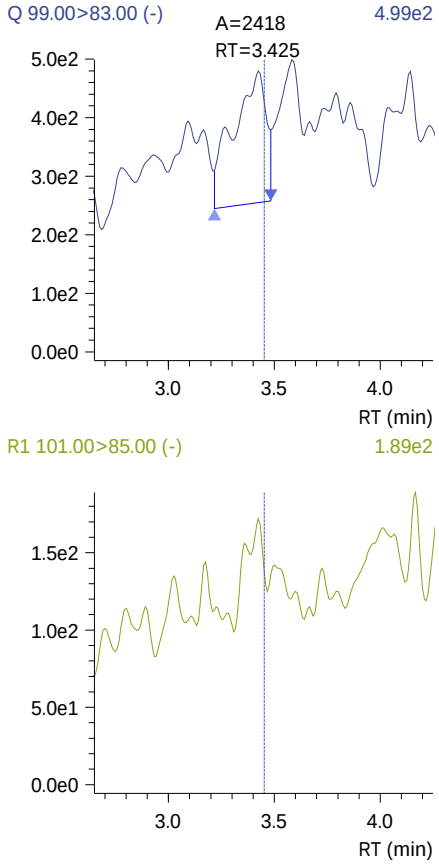
E2400735-001

Sample ID: E2400735-001
Date Acquired: 7/5/2024 5:28:20 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-048.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	NI	----	----	198204	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.420	198204	198204	1.0000	ng/mL	----	----	

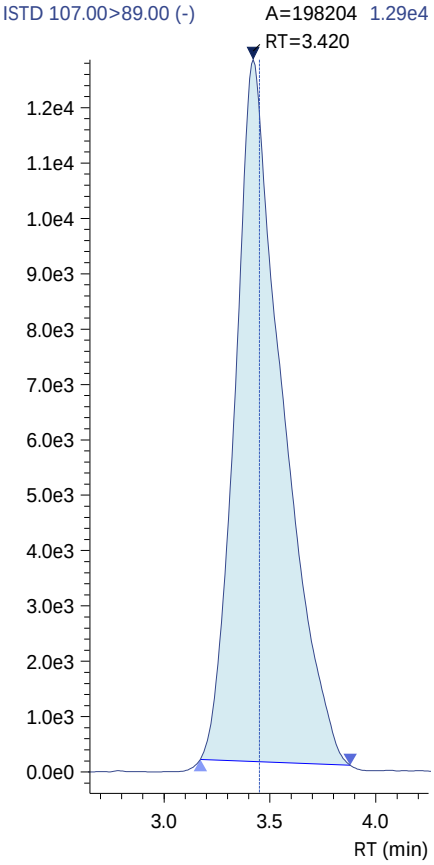
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

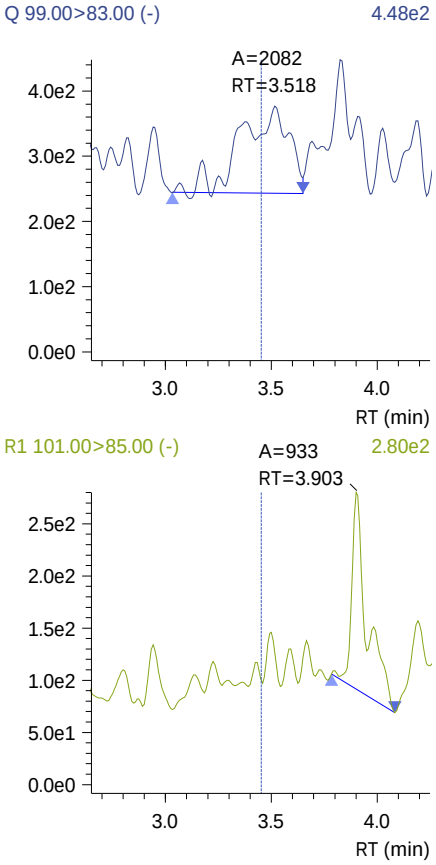
IB

Sample ID: IB
Date Acquired: 7/5/2024 6:40:17 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-061.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	NI	----	----	203195	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.422	203195	203195	1.0000	ng/mL	----	----	

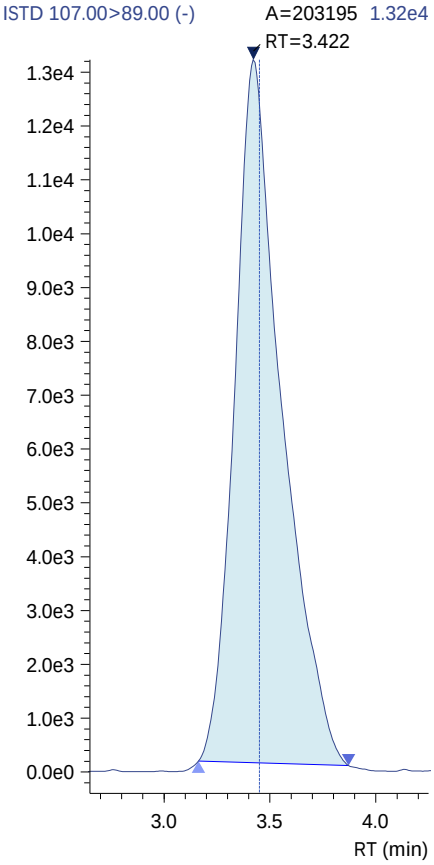
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

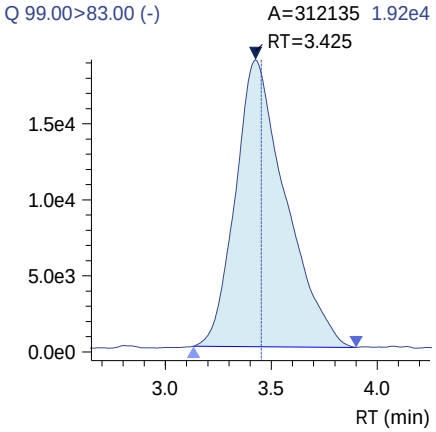
CCV

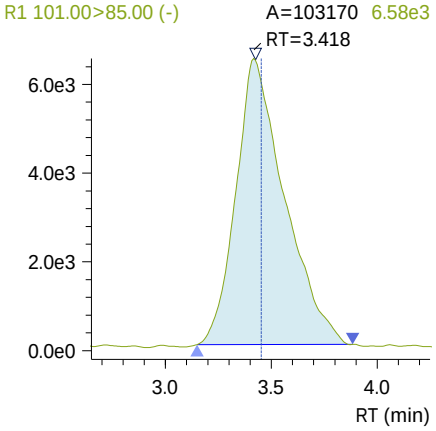
Sample ID: CCV
Date Acquired: 7/5/2024 6:45:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-062.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.425	312135	198372	10.7769	ng/mL	101.00 >85.00	33.05	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.421	198372	198372	1.0000	ng/mL	----	----	

Perchlorate

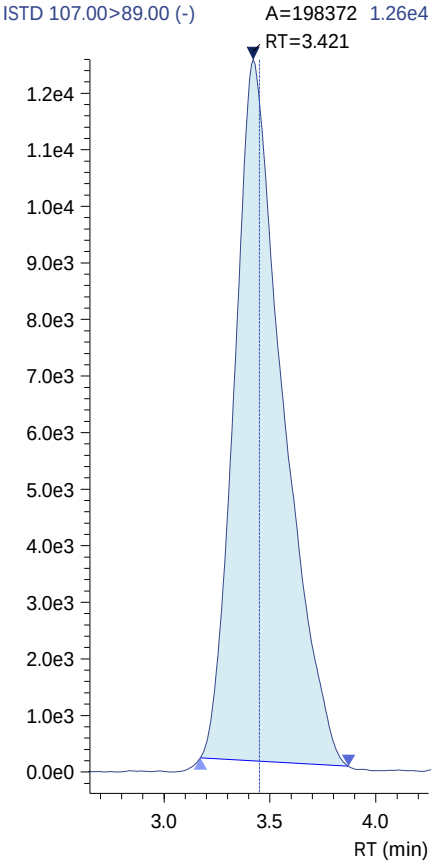
Conc 10.7769
R#1 33.05 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

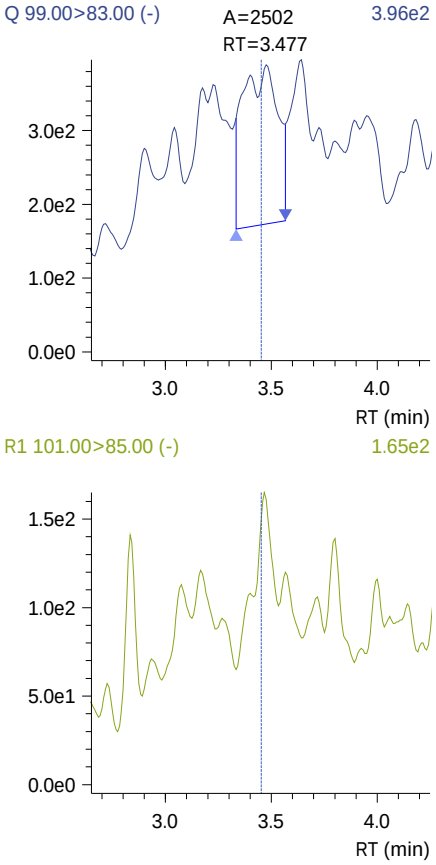
E2400736-001

Sample ID: E2400736-001
Date Acquired: 7/5/2024 6:34:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-060.lcd
Vial: 18 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	NI	----	----	198905	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.421	198905	198905	1.0000	ng/mL	----	----	

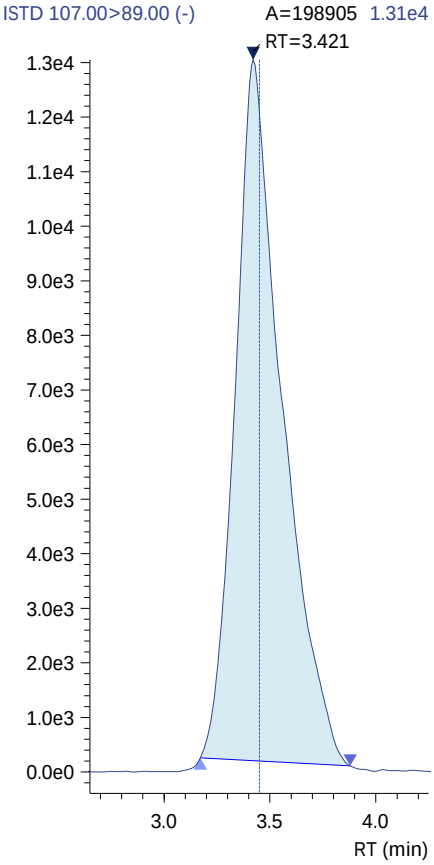
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

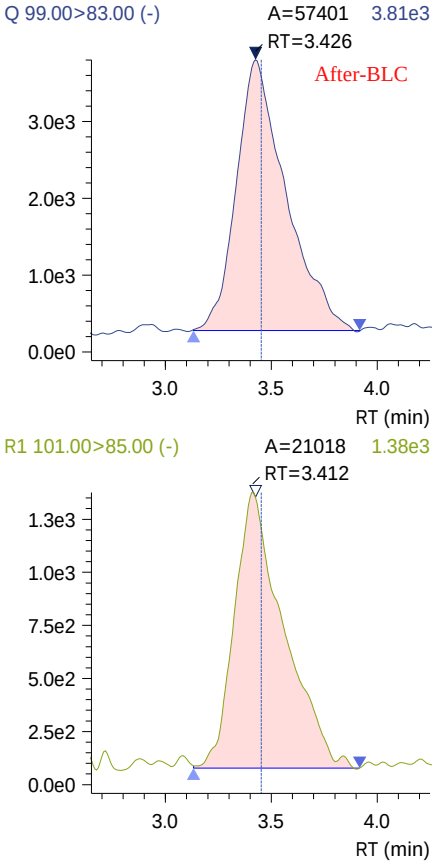
E2400736-005

Sample ID: E2400736-005
Date Acquired: 7/5/2024 7:19:09 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-068.lcd
Vial: 24 | Inj. Volume: 10.0000uL | Tray: 4

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.426	57401	196726	1.9984	ng/mL	101.00 >85.00	36.62	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.421	196726	196726	1.0000	ng/mL	----	----	

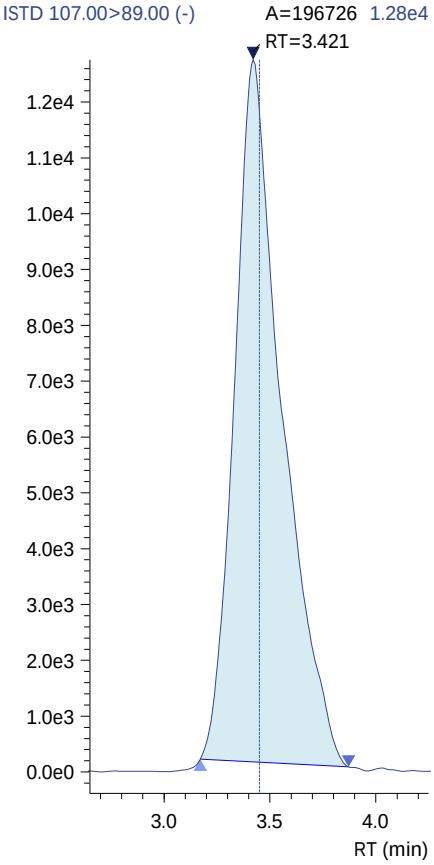
Perchlorate

Conc 1.9984
R#1 36.62 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:40:38 AM

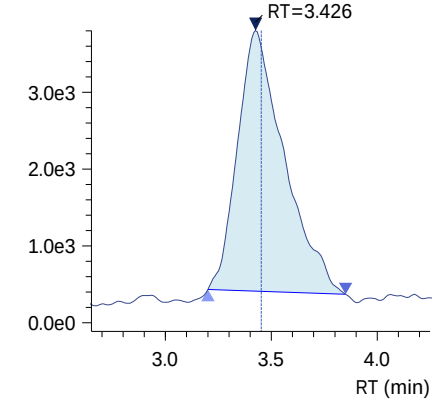
E2400736-005

Sample ID: E2400736-005
Date Acquired: 7/5/2024 7:19:09 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-068.lcd
Vial: 24 | Inj. Volume: 10.0000uL | Tray: 4

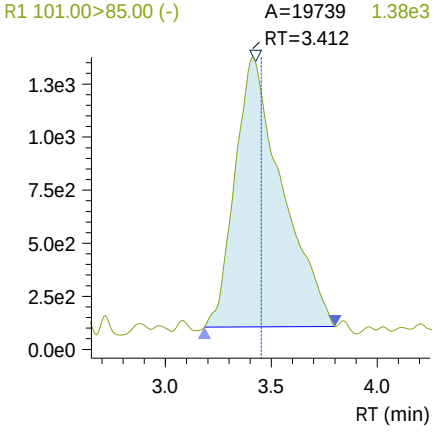
Perchlorate

Conc 1.8203
R#1 37.75 (35.24)

Q 99.00>83.00 (-) A=52285 3.81e3



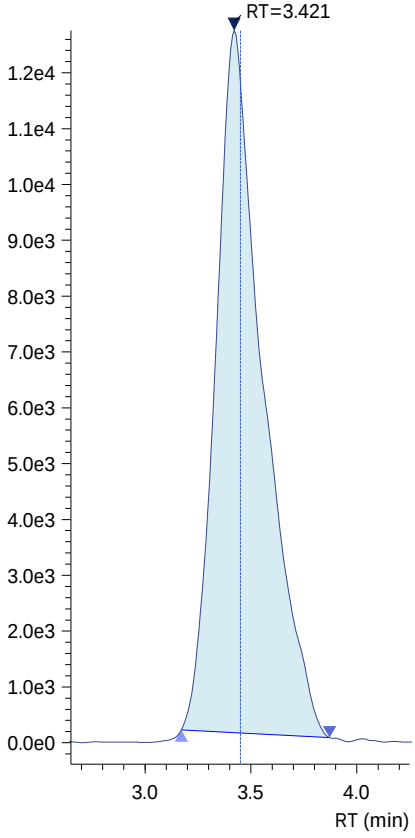
R1 101.00>85.00 (-) A=19739 1.38e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=196726 1.28e4



Insight Report

Printed at 7/11/2024 11:39:02 AM

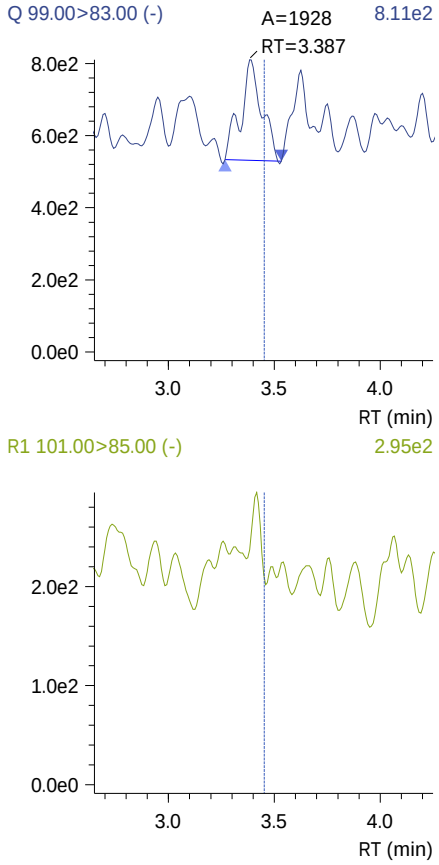
IB

Sample ID: IB
Date Acquired: 7/5/2024 7:46:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-073.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	NI	----	----	218507	----	ng/mL	101.00 >85.00	0.00	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.416	218507	218507	1.0000	ng/mL	----	----	

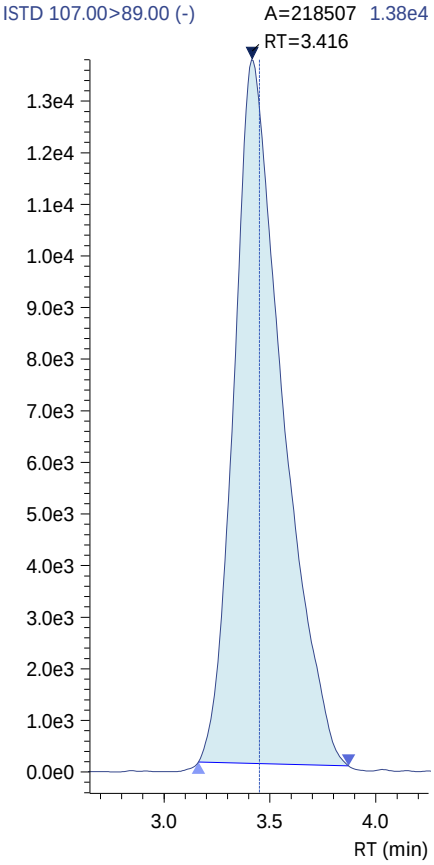
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:39:02 AM

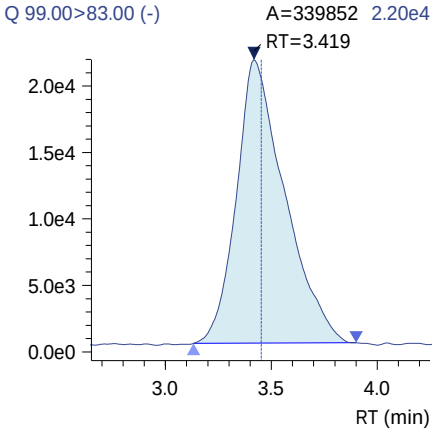
CCV

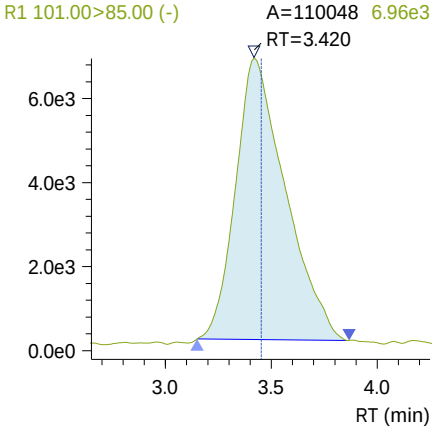
Sample ID: CCV
Date Acquired: 7/5/2024 7:52:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240705\20240705-074.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.419	339852	218852	10.6359	ng/mL	101.00 >85.00	32.38	23.32 -42.91
Sodium Perchlorate -18O4_IS	Auto	3.421	218852	218852	1.0000	ng/mL	----	----	

Perchlorate

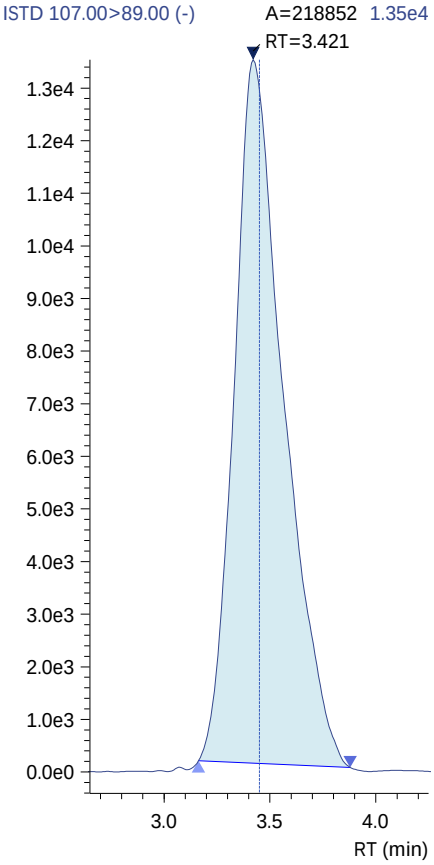
Conc 10.6359
R#1 32.38 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

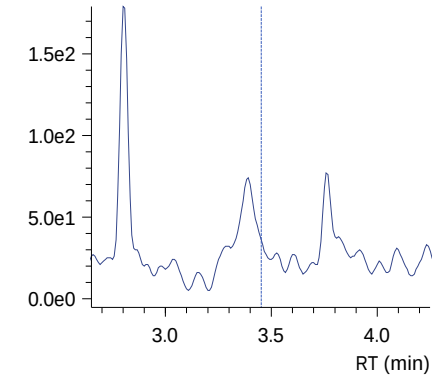
IB

Sample ID: IB
Date Acquired: 7/10/2024 1:56:21 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-005.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

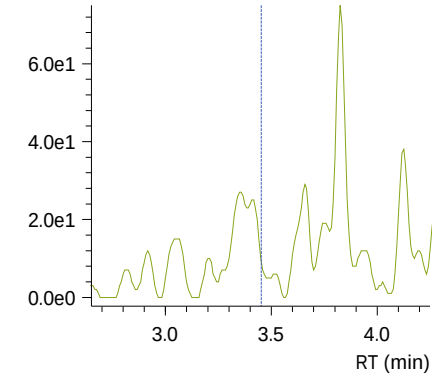
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 1.79e2



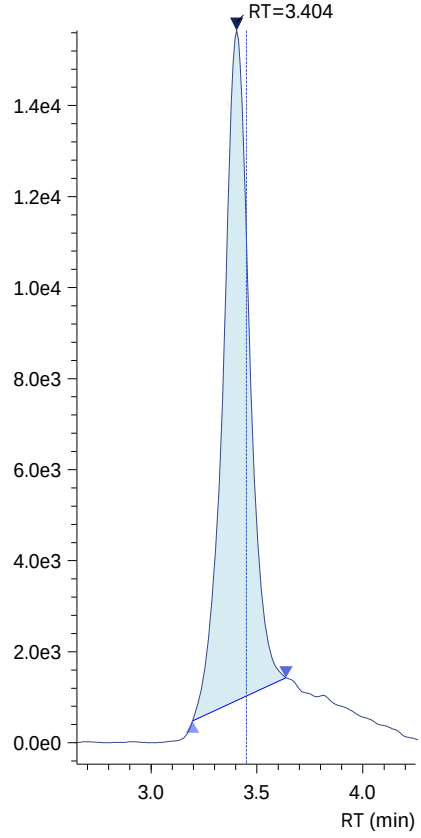
R1 101.00>85.00 (-) 7.50e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=127252 1.56e4
RT=3.404



Insight Report

Printed at 7/11/2024 11:51:12 AM

Method File: I:\LCMS01\DATA\20240710\20240710.lcm
Project File: I:\LCMS01\DATA\20240710\20240710.damlp

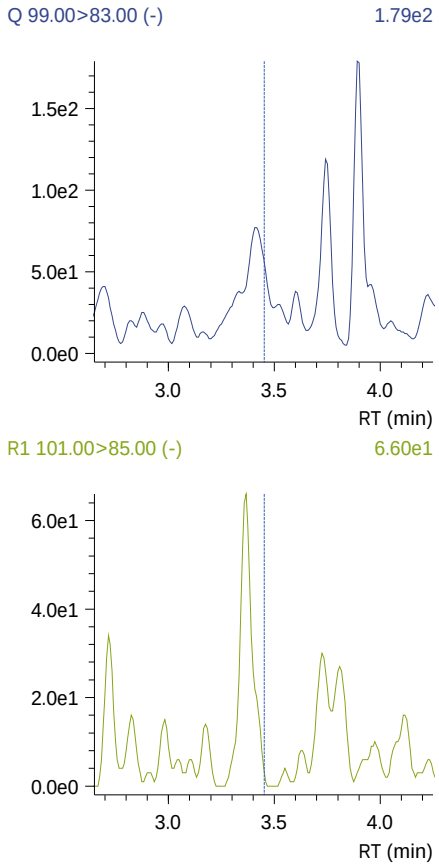
IB

Sample ID: IB
Date Acquired: 7/10/2024 1:34:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-001.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	149115	----	ng/mL	101.00 >85.00	0.00	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.409	149115	149115	1.0000	ng/mL	----	----	

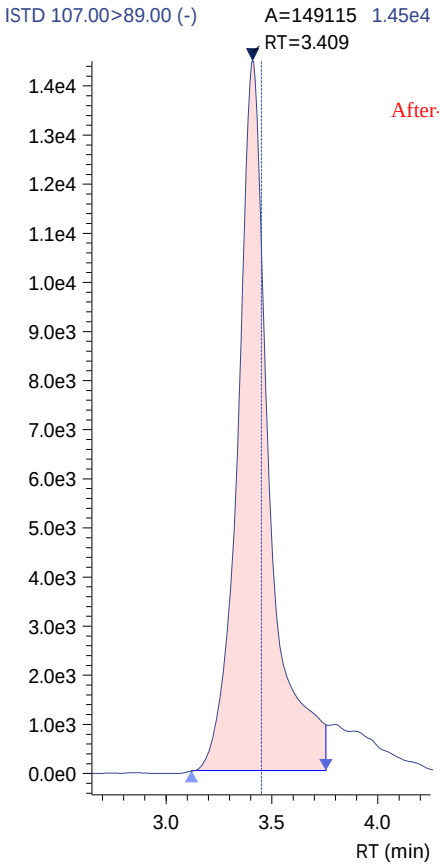
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



After-BLC

Insight Report

Printed at 7/11/2024 11:51:53 AM

Method File: I:\LCMS01\DATA\20240710\20240710.lcm
Project File: I:\LCMS01\DATA\20240710\20240710.damlp

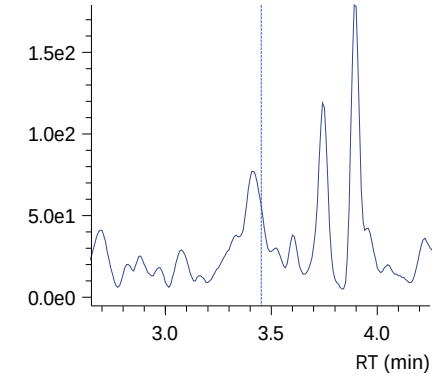
IB

Sample ID: IB
Date Acquired: 7/10/2024 1:34:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-001.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

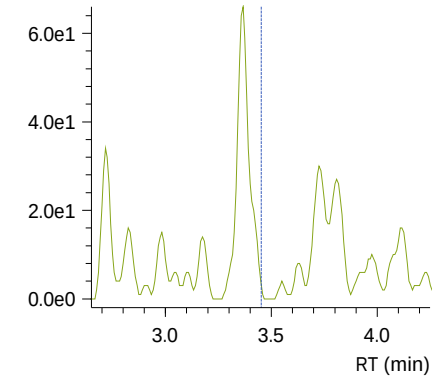
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 1.79e2



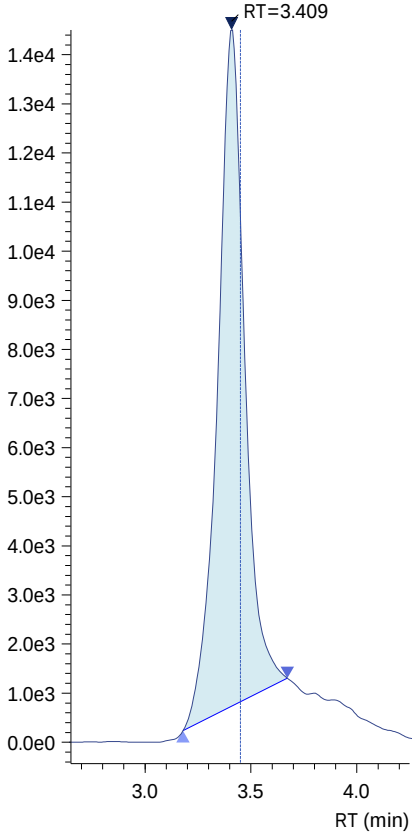
R1 101.00>85.00 (-) 6.60e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=122602 1.45e4
RT=3.409



Insight Report

Printed at 7/11/2024 11:51:12 AM

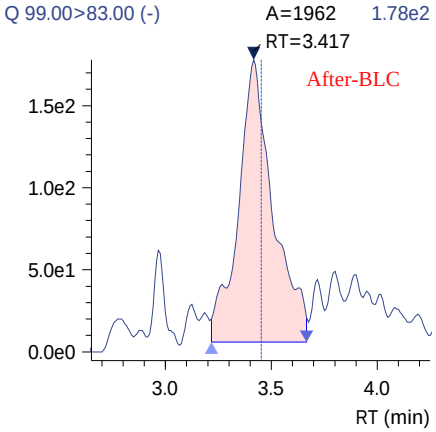
ICS

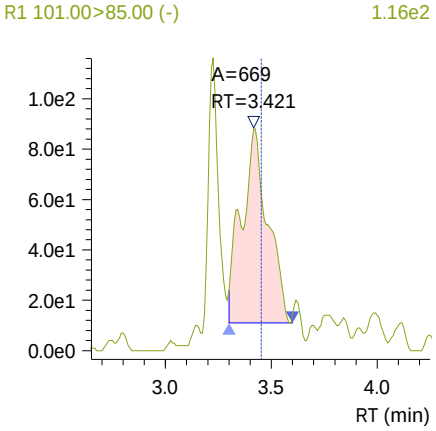
Sample ID: ICS
Date Acquired: 7/10/2024 1:39:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-002.lcd
Vial: 15 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.417	1962	153744	0.0874	ng/mL	101.00 >85.00	34.08	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.406	1537 44	153744	1.0000	ng/mL	----	----	

Perchlorate

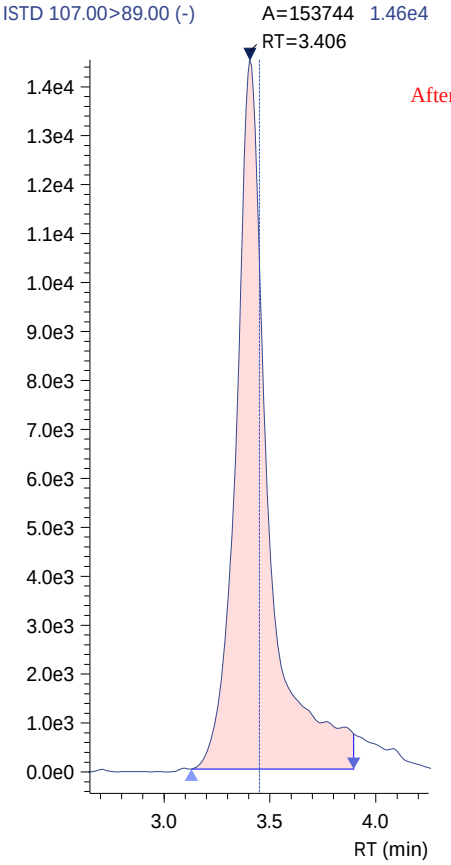
Conc 0.0874
R#1 34.08 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

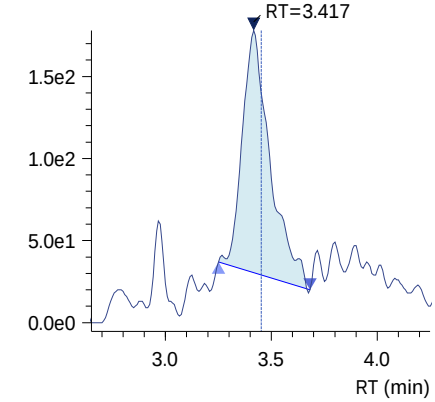
ICS

Sample ID: ICS
Date Acquired: 7/10/2024 1:39:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-002.lcd
Vial: 15 | Inj. Volume: 10.0000uL | Tray: 1

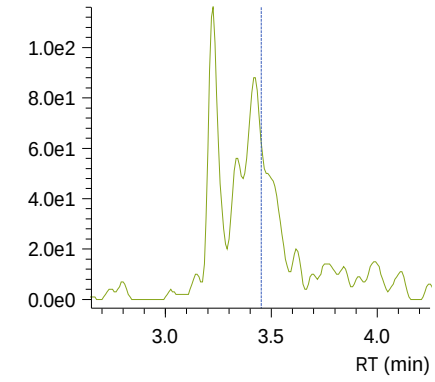
Perchlorate

Conc 0.0778
R#1 0.00 (35.24)

Q 99.00>83.00 (-) A=1346 1.78e2
RT=3.417



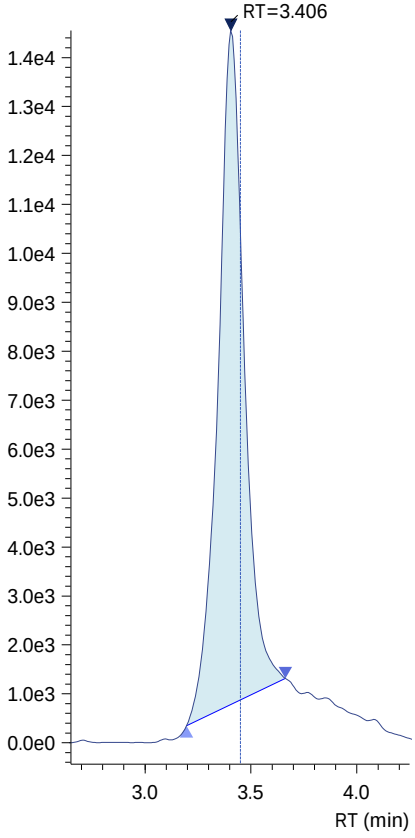
R1 101.00>85.00 (-) 1.16e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=118460 1.46e4
RT=3.406



Insight Report

Printed at 7/11/2024 11:51:12 AM

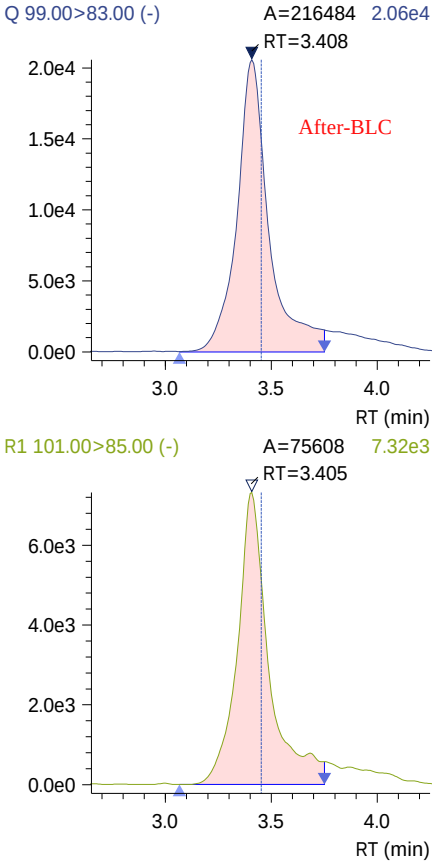
CCV

Sample ID: CCV
Date Acquired: 7/10/2024 1:45:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-003.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.408	216484	152163	9.7443	ng/mL	101.00 >85.00	34.92	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.403	152163	152163	1.0000	ng/mL	----	----	

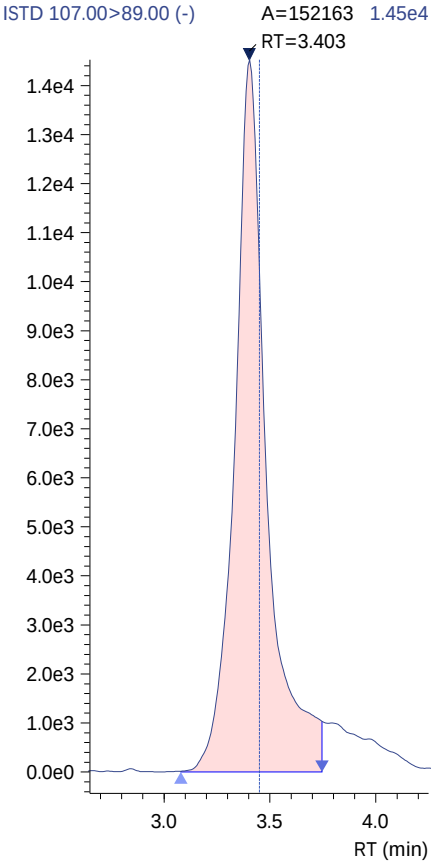
Perchlorate

Conc 9.7443
R#1 34.92 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

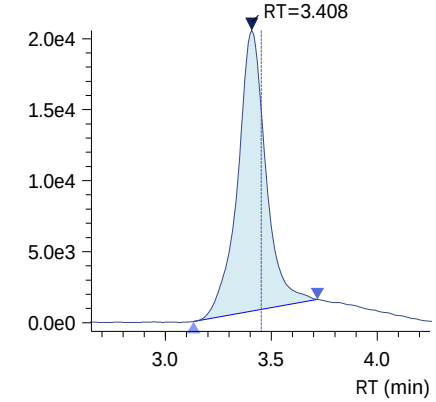
CCV

Sample ID: CCV
Date Acquired: 7/10/2024 1:45:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-003.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

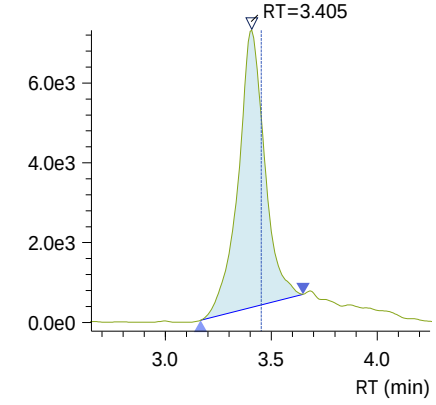
Perchlorate

Conc 10.1836
R#1 33.07 (35.24)

Q 99.00>83.00 (-) A=183225 2.06e4



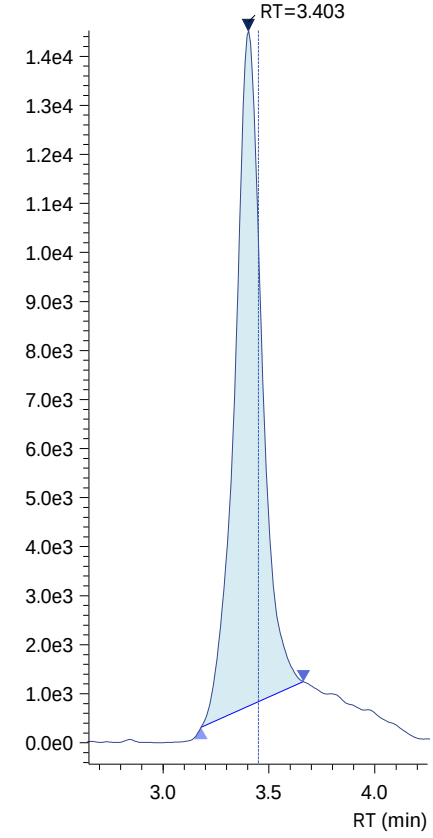
R1 101.00>85.00 (-) A=60592 7.32e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=123230 1.45e4



Insight Report

Printed at 7/11/2024 11:51:12 AM

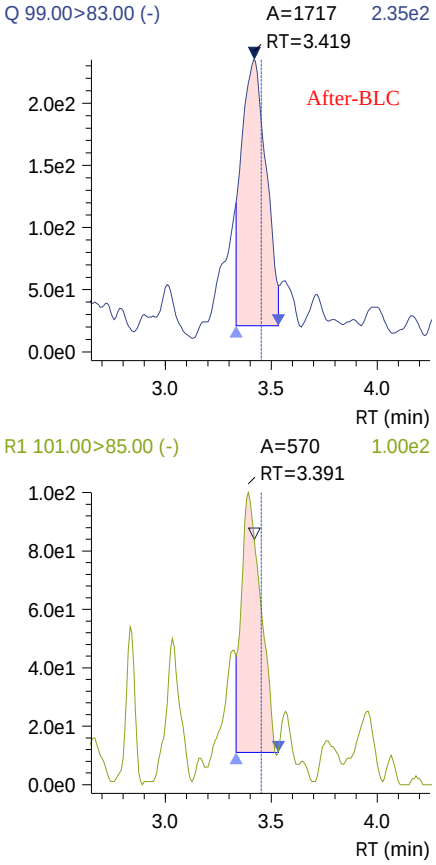
LODV

Sample ID: LODV
Date Acquired: 7/10/2024 1:50:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-004.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.419	1717	198887	0.0591	ng/mL	101.00 >85.00	33.16	24.17 -44.88
Sodium Perchlorate-18O4 _IS	M	3.404	1988 87	198887	1.0000	ng/mL	----	----	

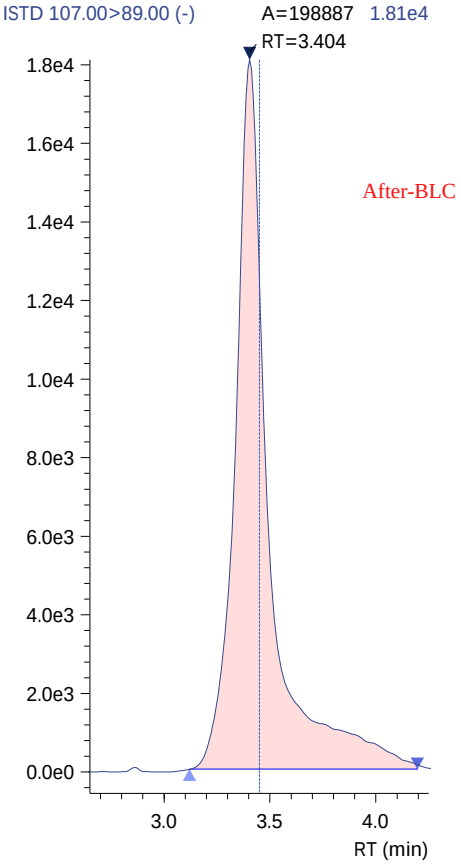
Perchlorate

Conc 0.0591
R#1 33.16 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

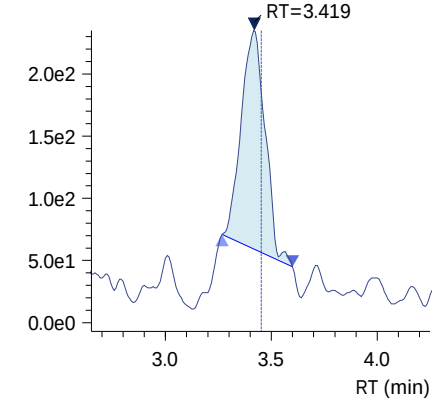
LODV

Sample ID: LODV
Date Acquired: 7/10/2024 1:50:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-004.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 1

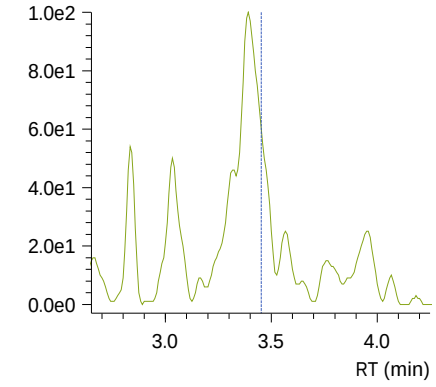
Perchlorate

Conc 0.0609
R#1 0.00 (35.24)

Q 99.00>83.00 (-) A=1376 2.35e2 RT=3.419



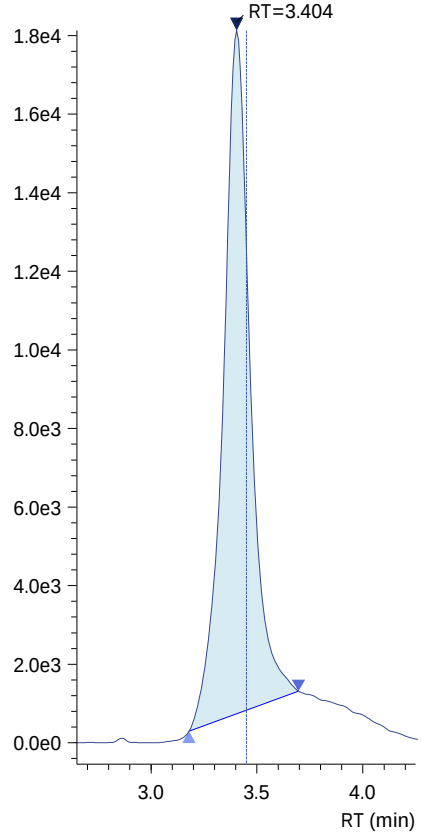
R1 101.00>85.00 (-) 1.00e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=154812 1.81e4 RT=3.404



Insight Report

Printed at 7/11/2024 11:51:12 AM

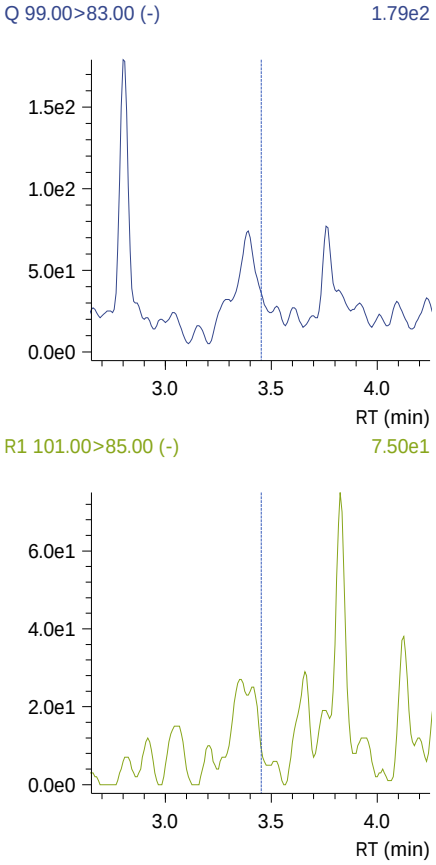
IB

Sample ID: IB
Date Acquired: 7/10/2024 1:56:21 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-005.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	168115	----	ng/mL	101.00 >85.00	0.00	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.404	168115	168115	1.0000	ng/mL	----	----	

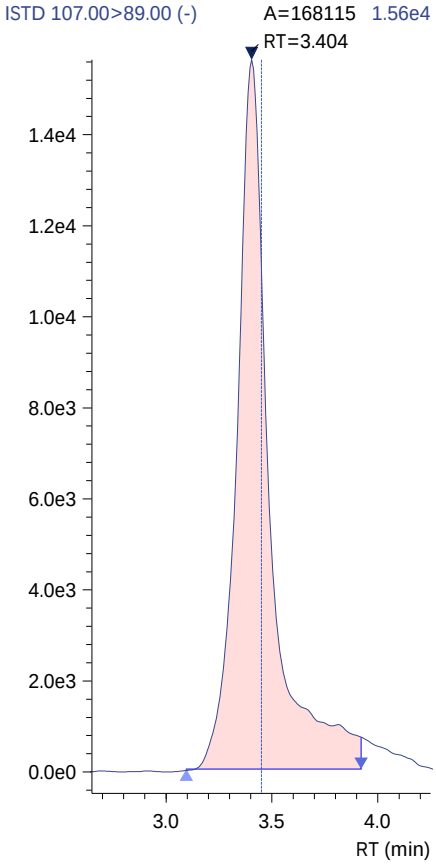
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



After-BLC

Insight Report

Printed at 7/11/2024 11:51:12 AM

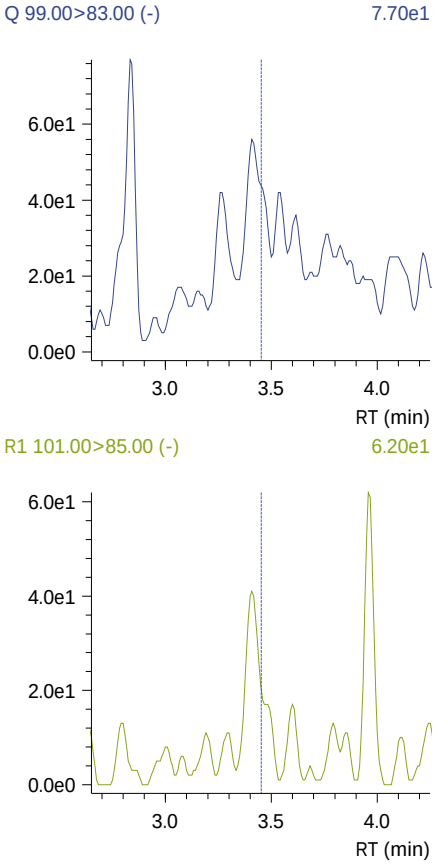
E2400736-002x10

Sample ID: E2400736-002x10
Date Acquired: 7/10/2024 3:05:57 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-011.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	403739	----	ng/mL	101.00 >85.00	0.00	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.422	403739	403739	1.0000	ng/mL	----	----	

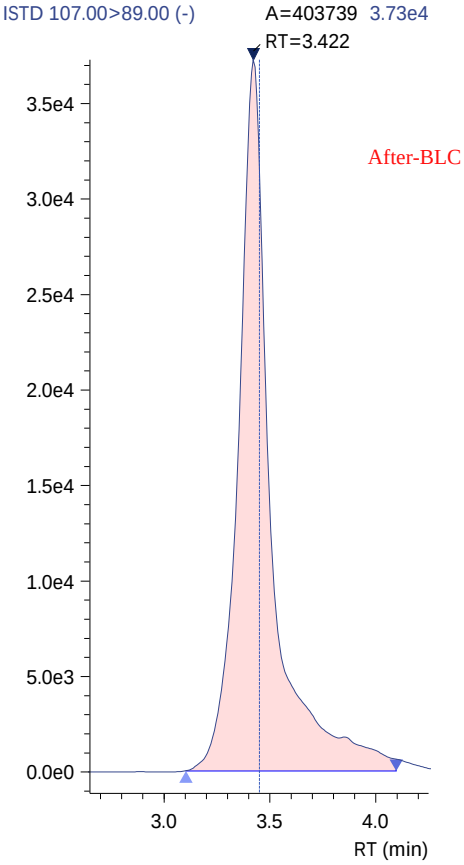
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



After-BLC

Insight Report

Printed at 7/11/2024 11:51:53 AM

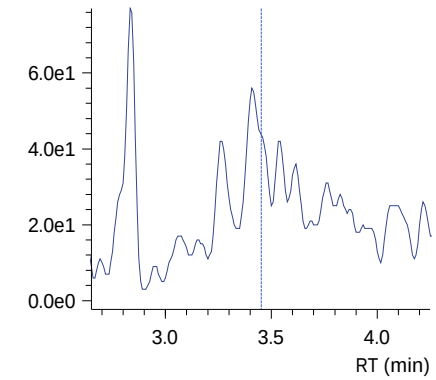
E2400736-002x10

Sample ID: E2400736-002x10
Date Acquired: 7/10/2024 3:05:57 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-011.lcd
Vial: 6 | Inj. Volume: 10.0000uL | Tray: 2

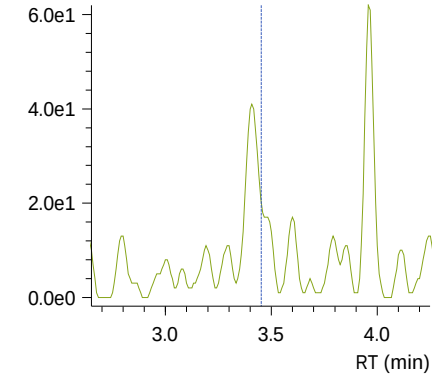
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 7.70e1



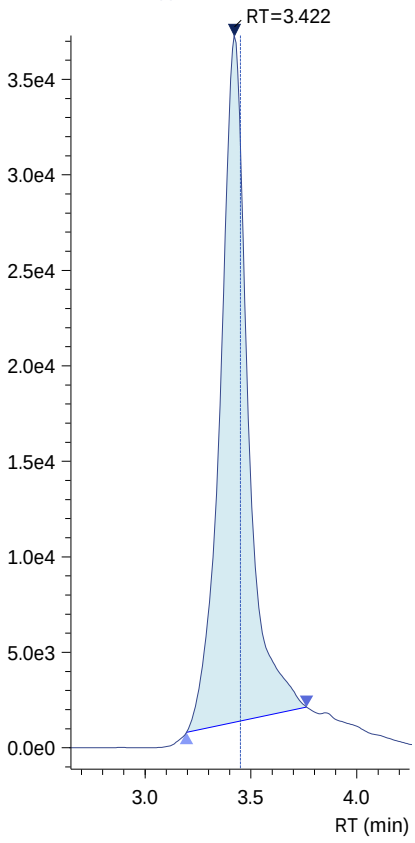
R1 101.00>85.00 (-) 6.20e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=327063 3.73e4
RT=3.422



Insight Report

Printed at 7/11/2024 11:51:12 AM

EQ2400375-07MSX10

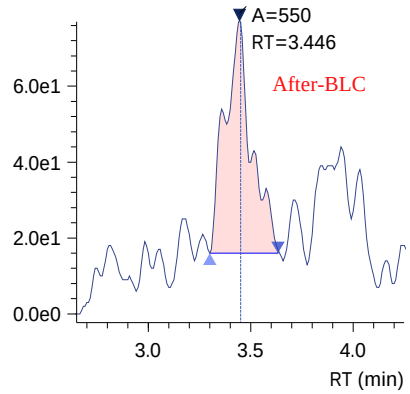
Sample ID: EQ2400375-07MSX10
Date Acquired: 7/10/2024 3:11:28 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-012.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.446	550	226023	0.0167	ng/mL	101.00 >85.00	33.80	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.422	2260 23	226023	1.0000	ng/mL	----	----	

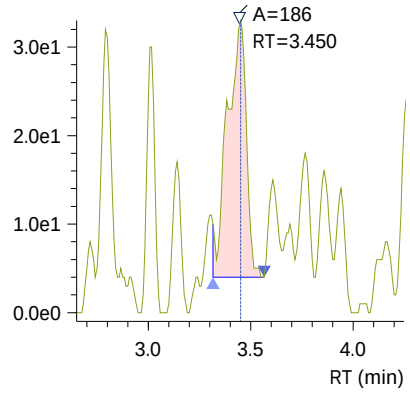
Perchlorate

Conc 0.0167
R#1 33.80 (35.24)

Q 99.00>83.00 (-) 7.70e1



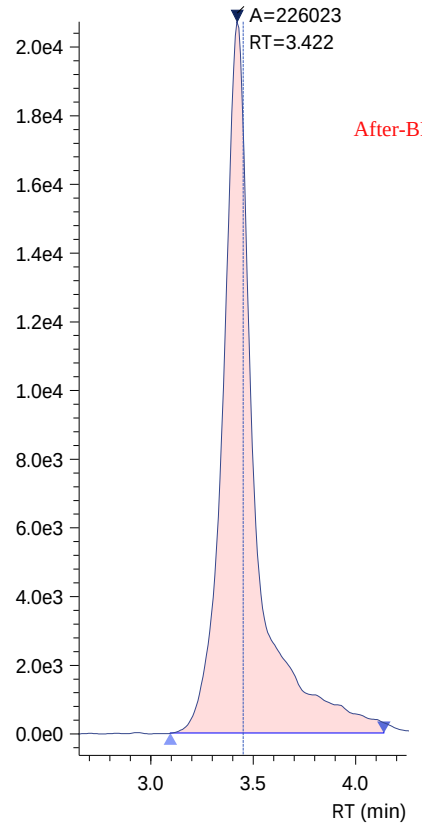
R1 101.00>85.00 (-) 3.30e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.07e4



Insight Report

Printed at 7/11/2024 11:51:53 AM

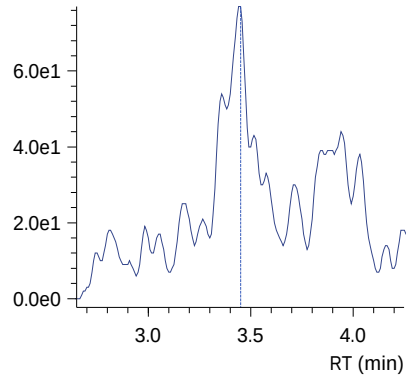
EQ2400375-07MSX10

Sample ID: EQ2400375-07MSX10
Date Acquired: 7/10/2024 3:11:28 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-012.lcd
Vial: 7 | Inj. Volume: 10.0000uL | Tray: 2

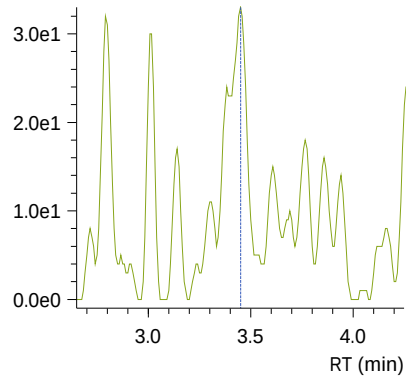
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 7.70e1



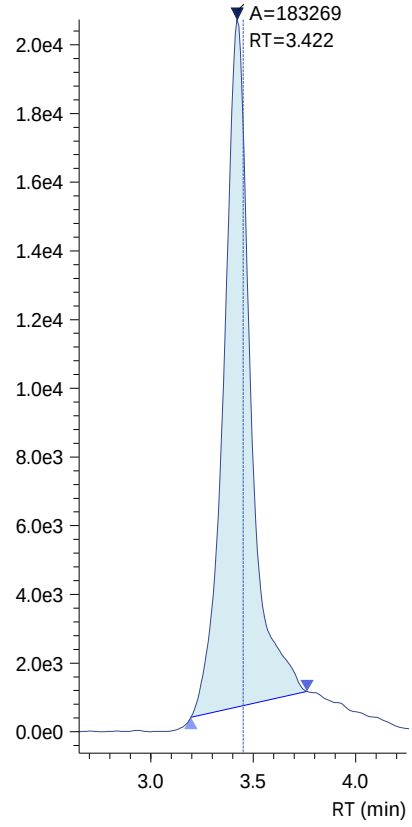
R1 101.00>85.00 (-) 3.30e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.07e4



Insight Report

Printed at 7/11/2024 11:51:12 AM

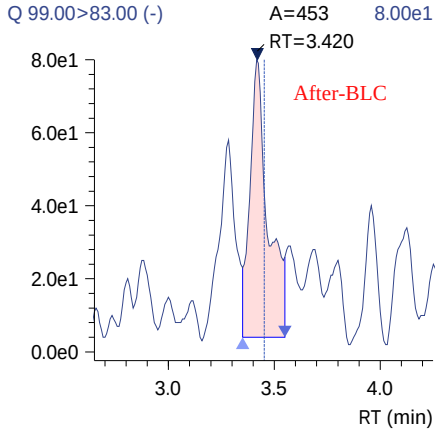
EQ2400375-08DMSX10

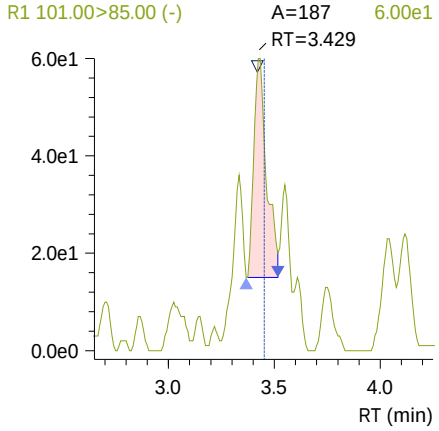
Sample ID: EQ2400375-08DMSX10
Date Acquired: 7/10/2024 3:17:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-013.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.420	453	222866	0.0139	ng/mL	101.00 >85.00	41.20	24.17 -44.88
Sodium Perchlorate-18O4 _IS	M	3.424	222866	222866	1.0000	ng/mL	----	----	

Perchlorate

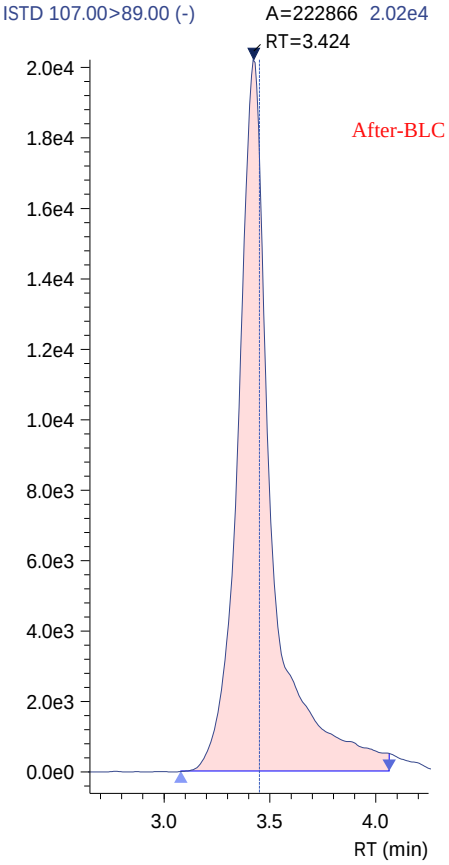
Conc 0.0139
R#1 41.20 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

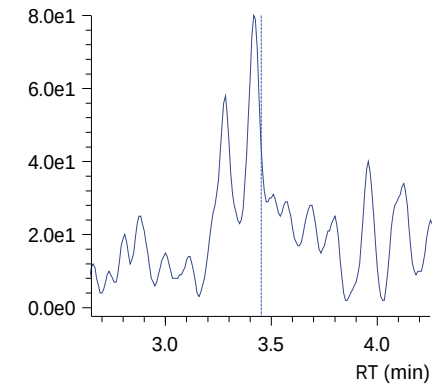
EQ2400375-08DMSX10

Sample ID: EQ2400375-08DMSX10
Date Acquired: 7/10/2024 3:17:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-013.lcd
Vial: 8 | Inj. Volume: 10.0000uL | Tray: 2

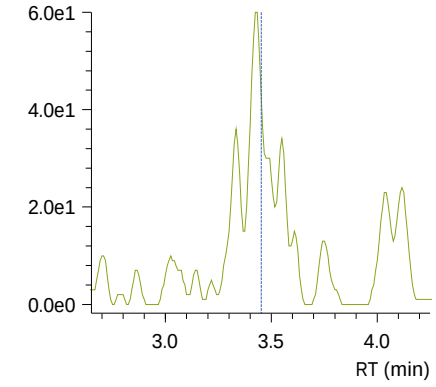
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 8.00e1



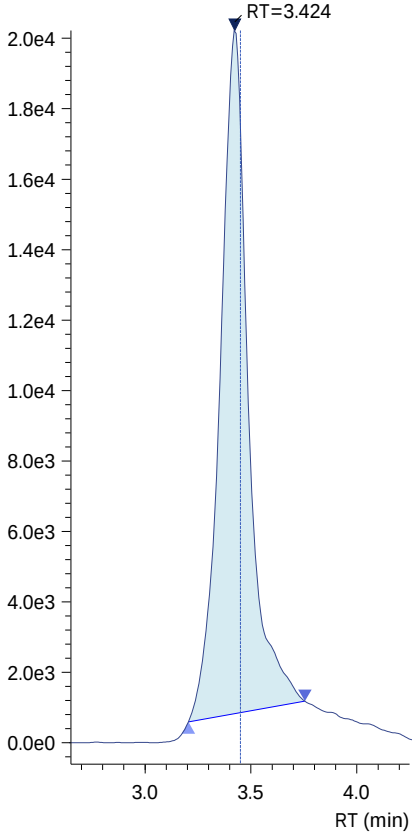
R1 101.00>85.00 (-) 6.00e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=179451 2.02e4
RT=3.424



Insight Report

Printed at 7/11/2024 1:53:42 PM

Method File: I:\LCMS01\DATA\20240710\20240710.lcm
Project File: I:\LCMS01\DATA\20240710\20240710.damlp

E2400736-003X10

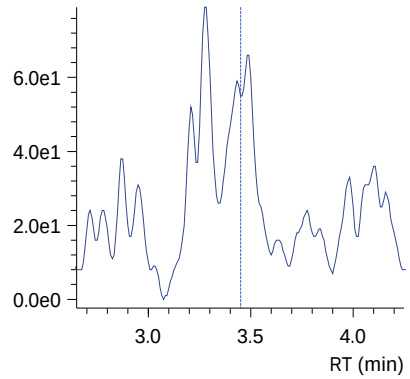
Sample ID: E2400736-003X10
Date Acquired: 7/10/2024 3:22:37 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-014.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	228187	----	ng/mL	101.00 >85.00	0.00	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.421	228187	228187	1.0000	ng/mL	----	----	

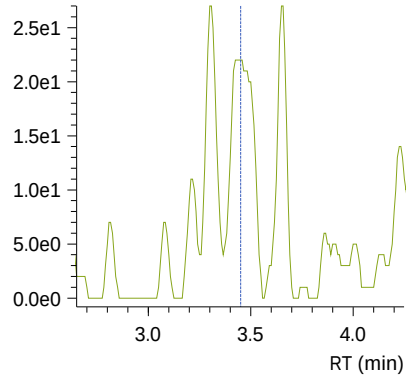
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 7.90e1



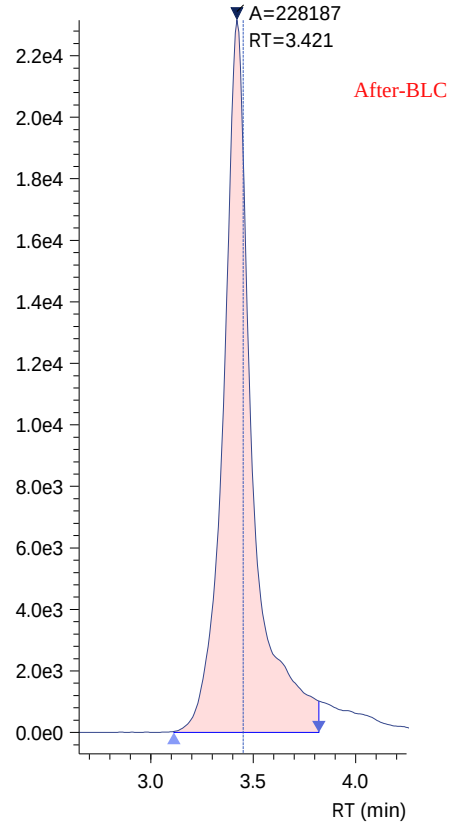
R1 101.00>85.00 (-) 2.70e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.32e4



Insight Report

Printed at 7/11/2024 1:54:45 PM

Method File: I:\LCMS01\DATA\20240710\20240710.lcm
Project File: I:\LCMS01\DATA\20240710\20240710.damlp

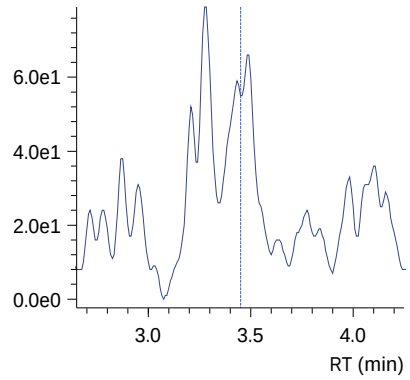
E2400736-003X10

Sample ID: E2400736-003X10
Date Acquired: 7/10/2024 3:22:37 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-014.lcd
Vial: 9 | Inj. Volume: 10.0000uL | Tray: 2

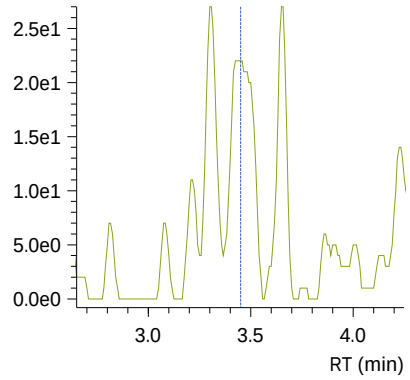
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 7.90e1



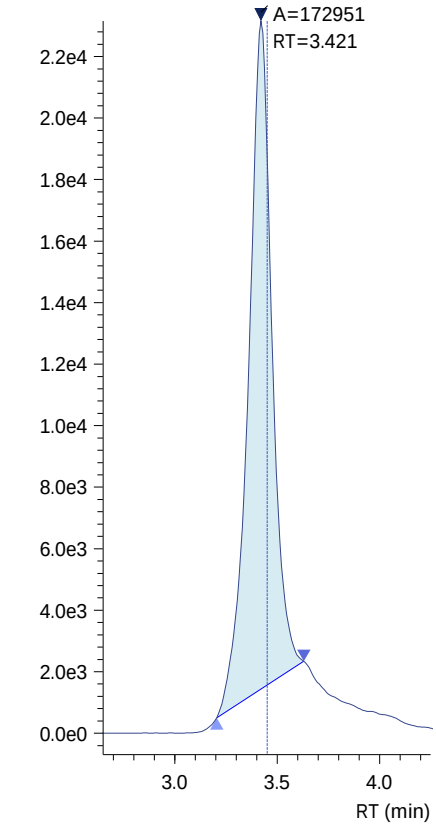
R1 101.00>85.00 (-) 2.70e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) 2.32e4



Insight Report

Printed at 7/11/2024 1:53:42 PM

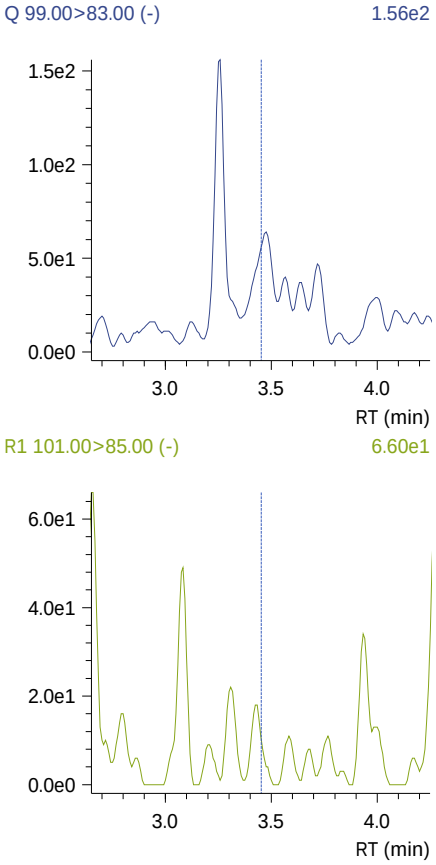
E2400736-004X10

Sample ID: E2400736-004X10
Date Acquired: 7/10/2024 3:28:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-015.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	226848	----	ng/mL	101.00 >85.00	0.00	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.420	226848	226848	1.0000	ng/mL	----	----	

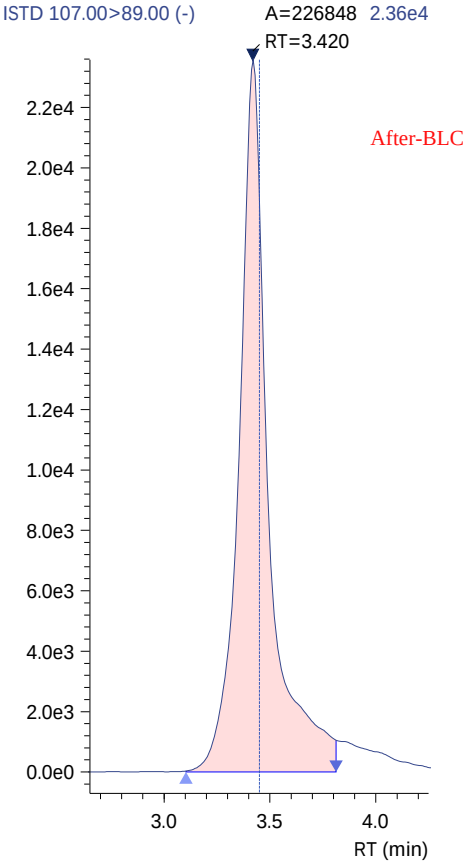
Perchlorate

Conc ----
R#1 0.00 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 1:54:45 PM

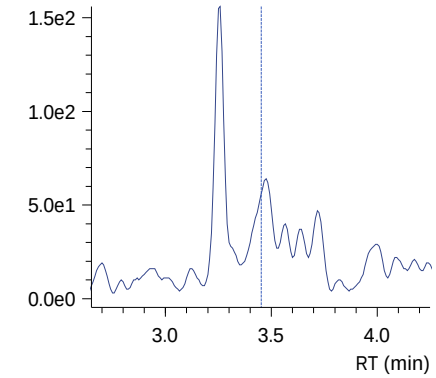
E2400736-004X10

Sample ID: E2400736-004X10
Date Acquired: 7/10/2024 3:28:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-015.lcd
Vial: 10 | Inj. Volume: 10.0000uL | Tray: 2

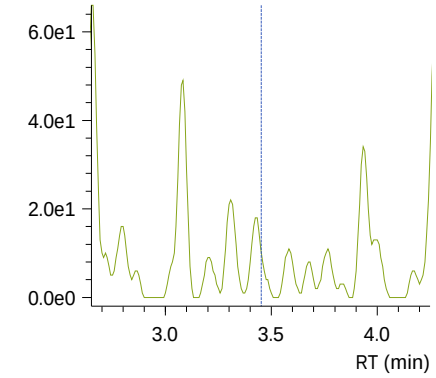
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 1.56e2



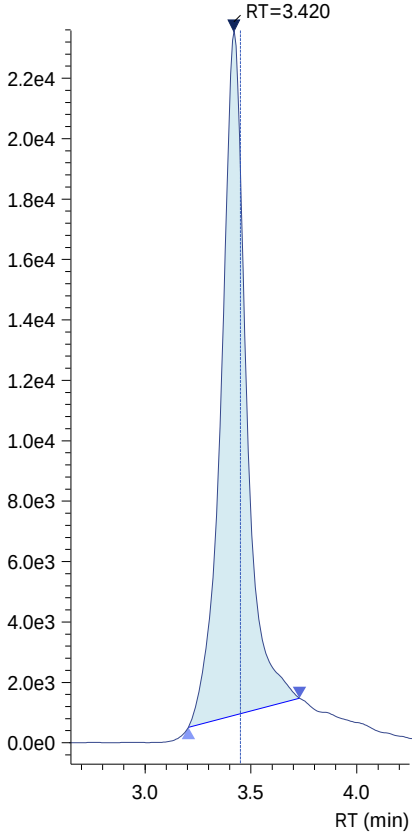
R1 101.00>85.00 (-) 6.60e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=187922 2.36e4
RT=3.420



Insight Report

Printed at 7/11/2024 11:51:12 AM

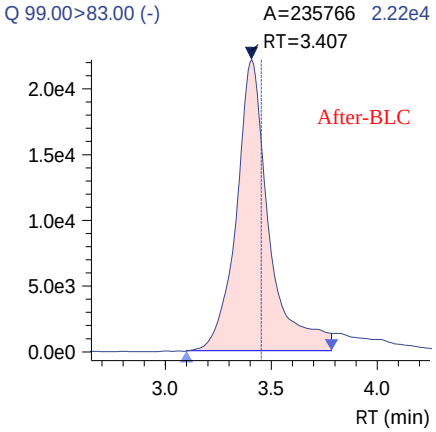
CCV

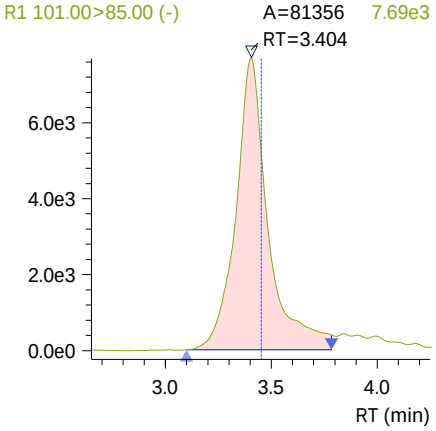
Sample ID: CCV
Date Acquired: 7/10/2024 3:33:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-016.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.407	235766	164410	9.8217	ng/mL	101.00 >85.00	34.51	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.405	164410	164410	1.0000	ng/mL	----	----	

Perchlorate

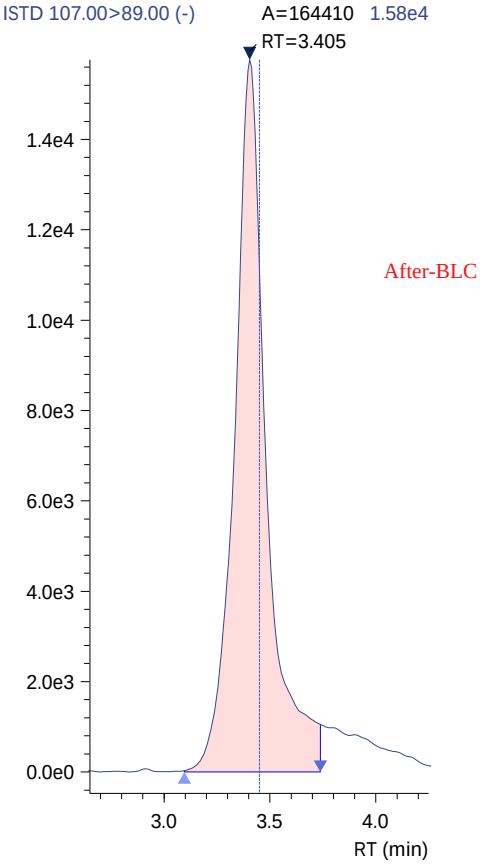
Conc 9.8217
R#1 34.51 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

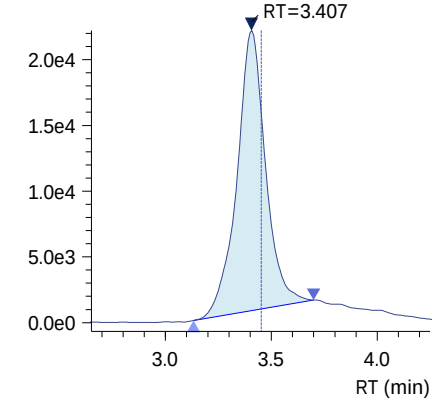
CCV

Sample ID: CCV
Date Acquired: 7/10/2024 3:33:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-016.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

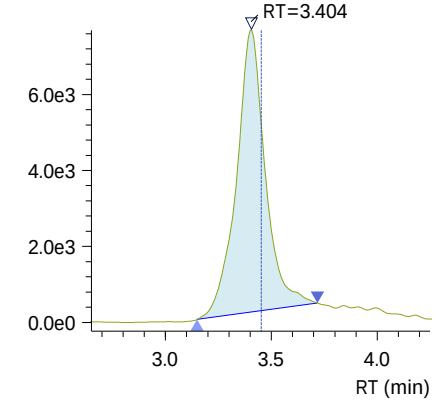
Perchlorate

Conc 10.0877
R#1 35.21 (35.24)

Q 99.00>83.00 (-) A=199416 2.22e4



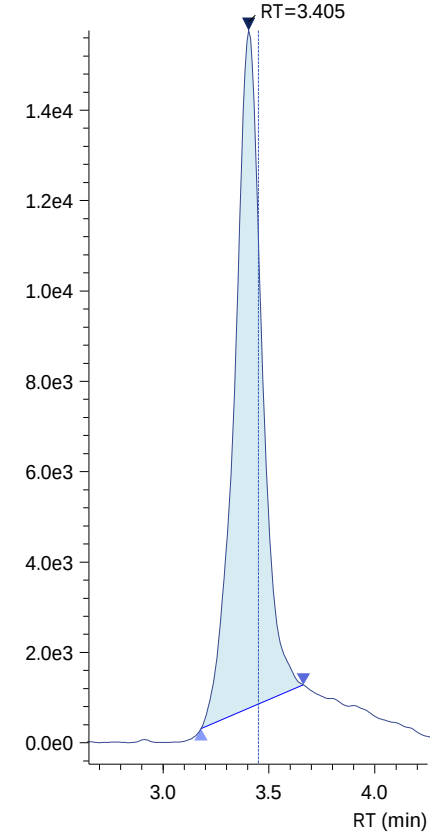
R1 101.00>85.00 (-) A=70219 7.69e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=135394 1.58e4



Insight Report

Printed at 7/11/2024 11:51:12 AM

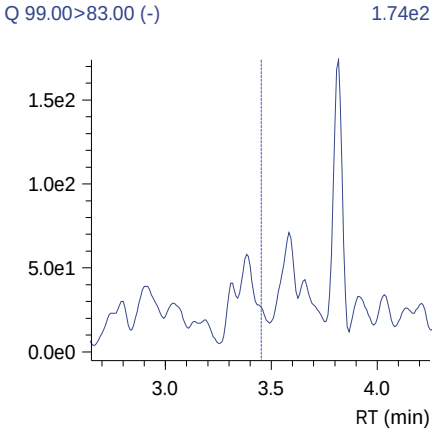
IB

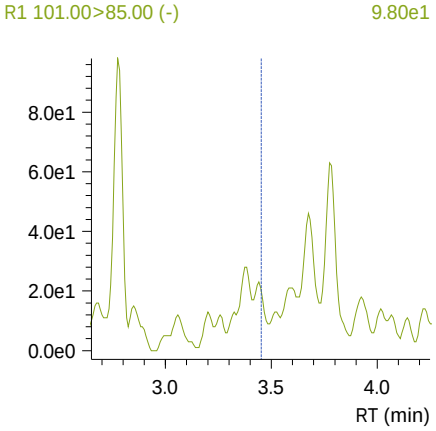
Sample ID: IB
Date Acquired: 7/10/2024 3:39:17 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-017.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	169849	----	ng/mL	101.00 >85.00	0.00	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.404	169849	169849	1.0000	ng/mL	----	----	

Perchlorate

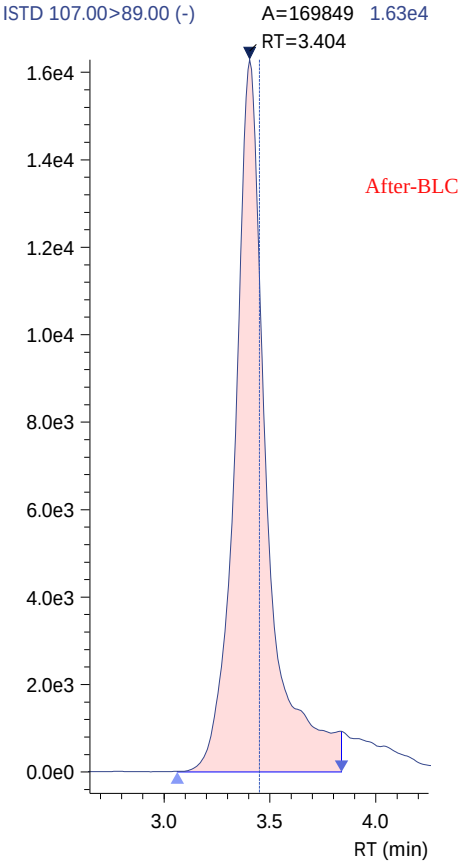
Conc ----
R#1 0.00 (35.24)





Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

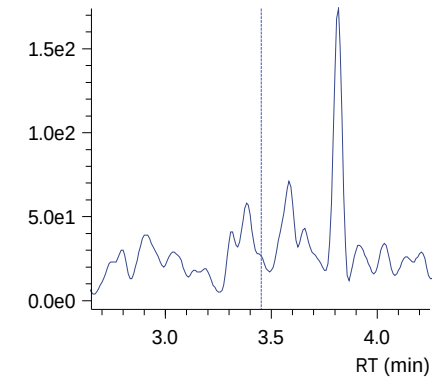
IB

Sample ID: IB
Date Acquired: 7/10/2024 3:39:17 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-017.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

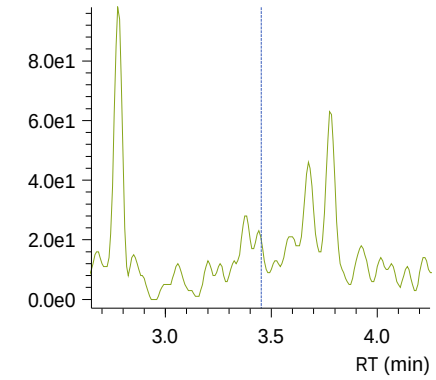
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 1.74e2



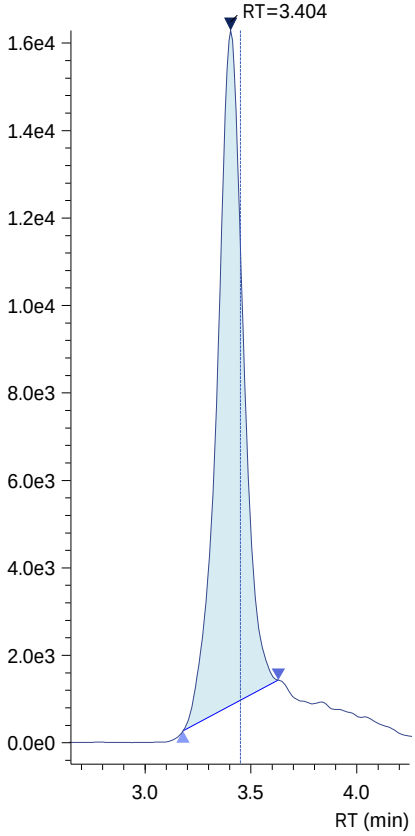
R1 101.00>85.00 (-) 9.80e1



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=133107 1.63e4
RT=3.404



Insight Report

Printed at 7/11/2024 11:51:12 AM

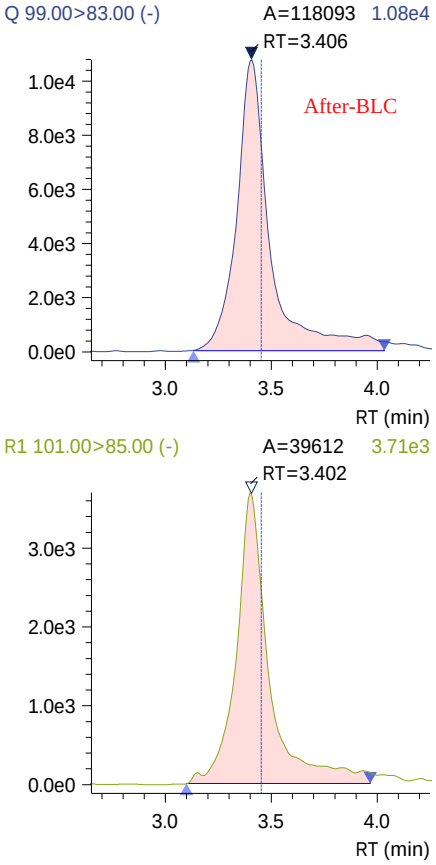
E2400736-006X1000

Sample ID: E2400736-006X1000
Date Acquired: 7/10/2024 4:01:32 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-021.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 2

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.406	1180 93	173026	4.6746	ng/mL	101.00 >85.00	33.54	24.17 -44.88
Sodium Perchlorate-18O4 _IS	M	3.402	1730 26	173026	1.0000	ng/mL	----	----	

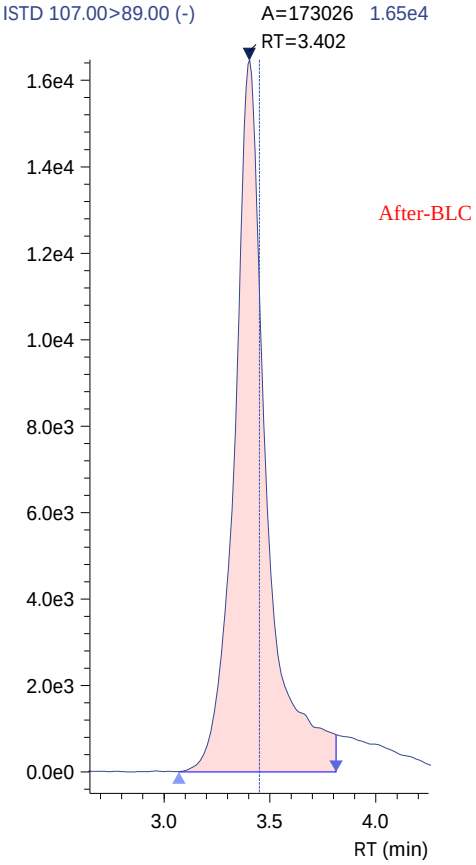
Perchlorate

Conc 4.6746
R#1 33.54 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

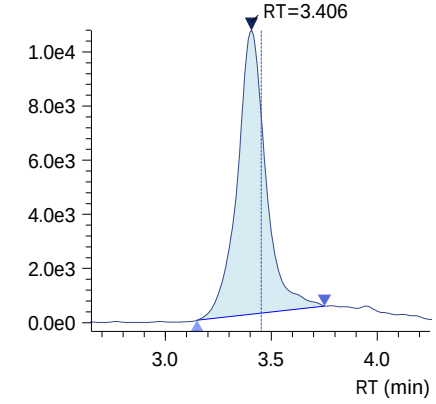
E2400736-006X1000

Sample ID: E2400736-006X1000
Date Acquired: 7/10/2024 4:01:32 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-021.lcd
Vial: 12 | Inj. Volume: 10.0000uL | Tray: 2

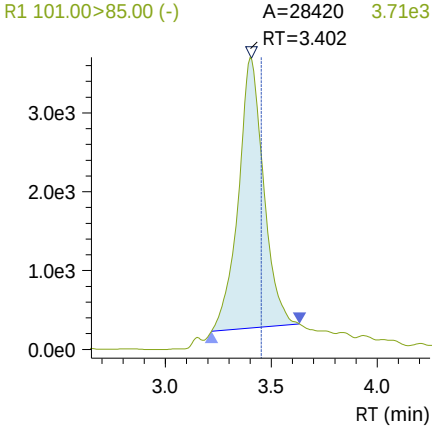
Perchlorate

Conc 4.9017
R#1 28.82 (35.24)

Q 99.00>83.00 (-) A=98607 1.08e4



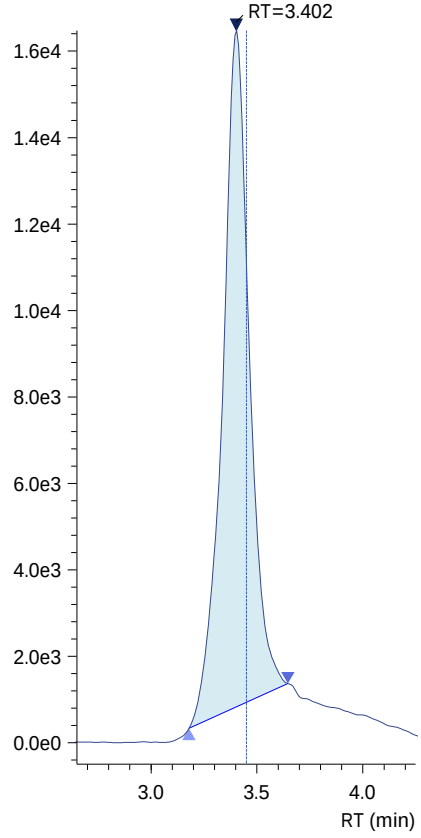
R1 101.00>85.00 (-) A=28420 3.71e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=137782 1.65e4



Insight Report

Printed at 7/11/2024 11:51:12 AM

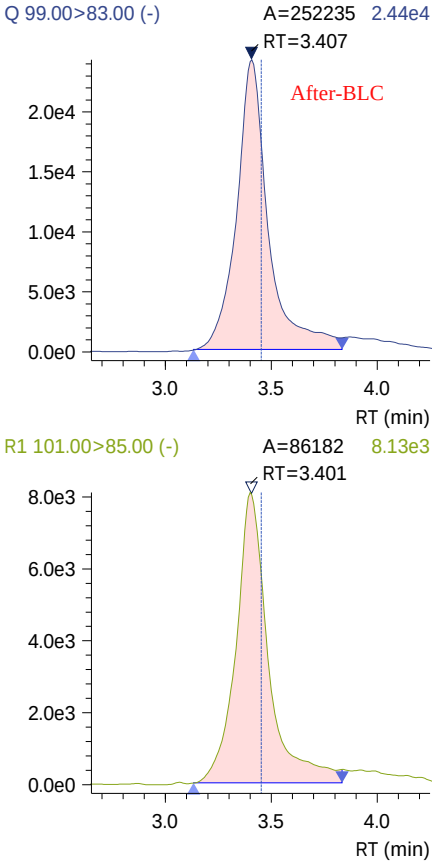
CCV

Sample ID: CCV
Date Acquired: 7/10/2024 4:40:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-028.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.407	2522 35	179730	9.6121	ng/mL	101.00 >85.00	34.17	24.17 -44.88
Sodium Perchlorate-18O4 _IS	M	3.403	1797 30	179730	1.0000	ng/mL	----	----	

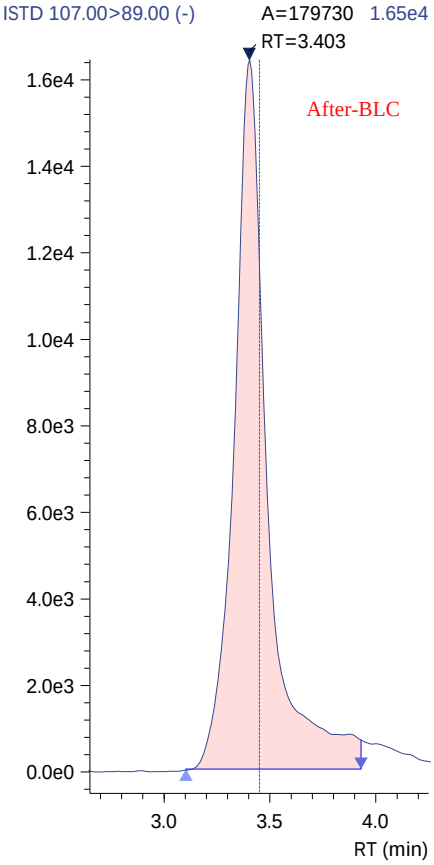
Perchlorate

Conc 9.6121
R#1 34.17 (35.24)



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 7/11/2024 11:51:53 AM

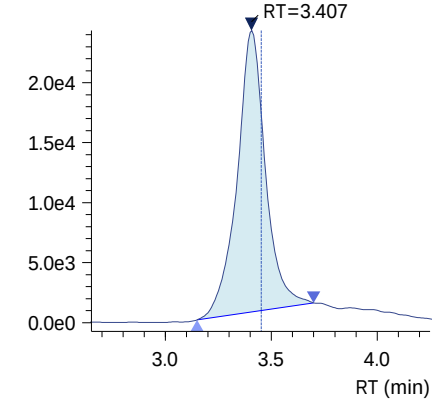
CCV

Sample ID: CCV
Date Acquired: 7/10/2024 4:40:29 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-028.lcd
Vial: 13 | Inj. Volume: 10.0000uL | Tray: 1

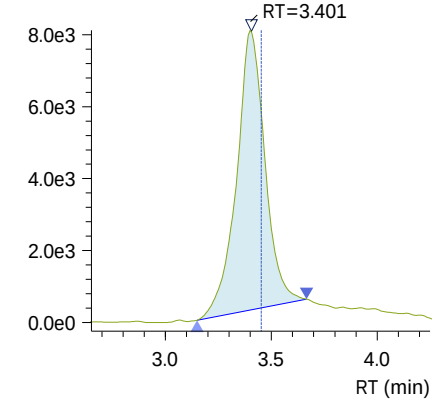
Perchlorate

Conc 10.4194
R#1 33.09 (35.24)

Q 99.00>83.00 (-) A=218511 2.44e4



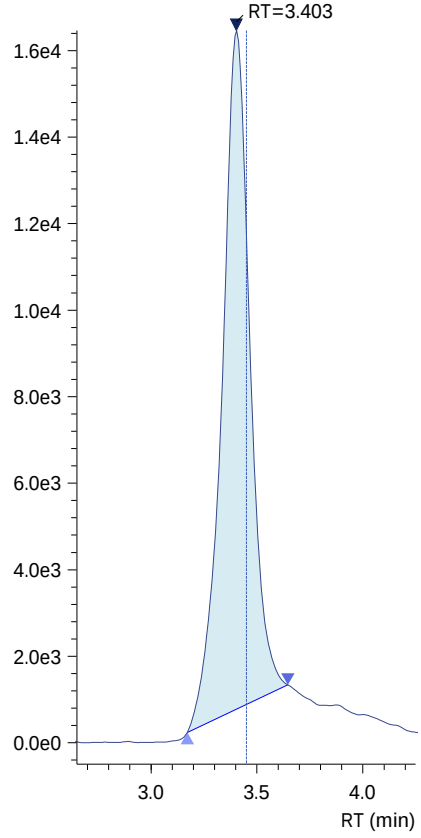
R1 101.00>85.00 (-) A=72311 8.13e3



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=143636 1.65e4



Insight Report

Printed at 7/11/2024 11:51:12 AM

IB

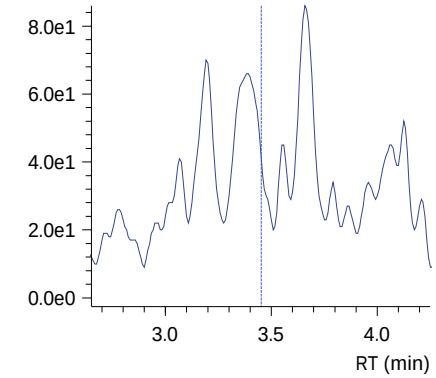
Sample ID: IB
Date Acquired: 7/10/2024 4:46:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-029.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 m/z	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	181818	----	ng/mL	101.00 >85.00	0.00	24.17 -44.88
Sodium Perchlorate-18O4_IS	M	3.403	181818	181818	1.0000	ng/mL	----	----	

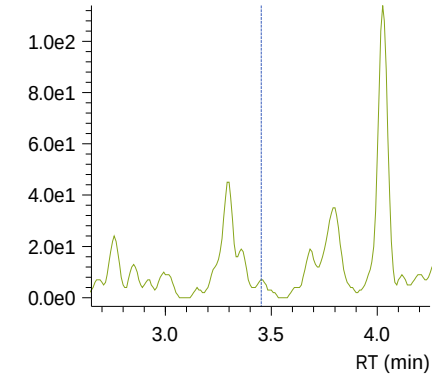
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 8.60e1



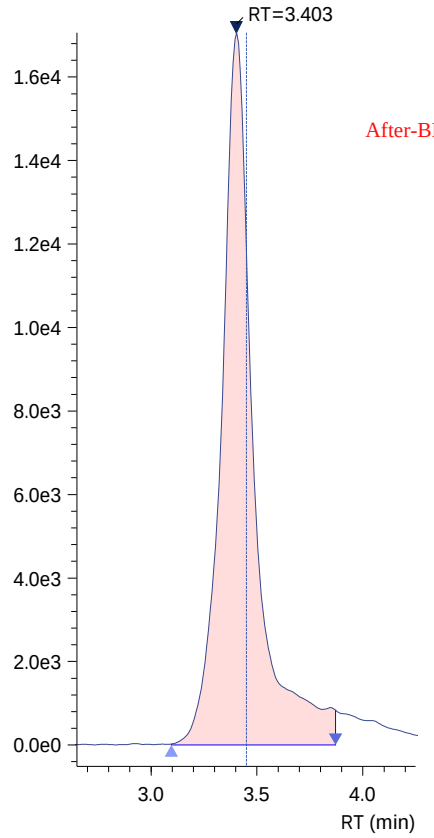
R1 101.00>85.00 (-) 1.14e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=181818 1.71e4



After-BLC

Insight Report

Printed at 7/11/2024 11:51:53 AM

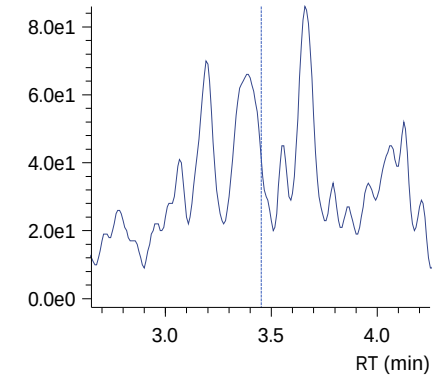
IB

Sample ID: IB
Date Acquired: 7/10/2024 4:46:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20240710\20240710-029.lcd
Vial: 1 | Inj. Volume: 10.0000uL | Tray: 0

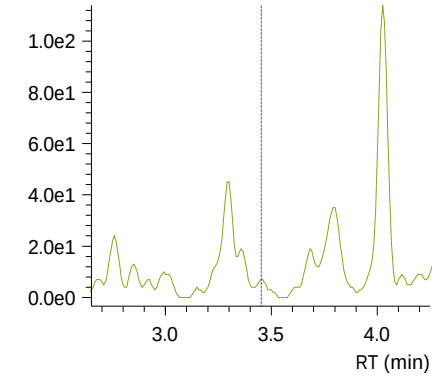
Perchlorate

Conc ----
R#1 0.00 (35.24)

Q 99.00>83.00 (-) 8.60e1



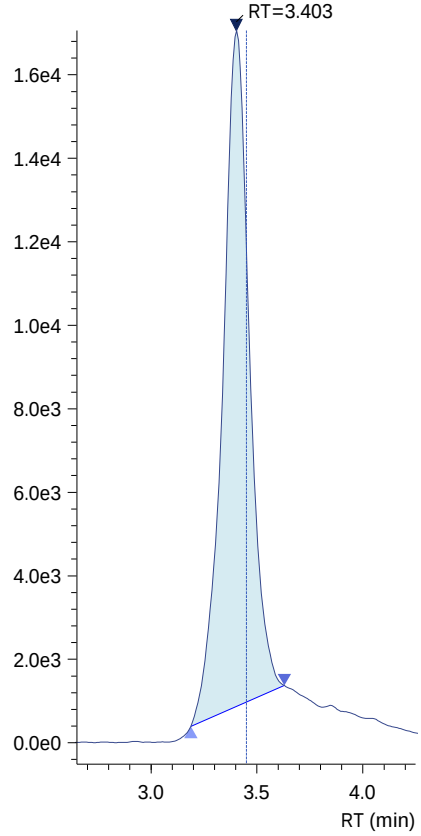
R1 101.00>85.00 (-) 1.14e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

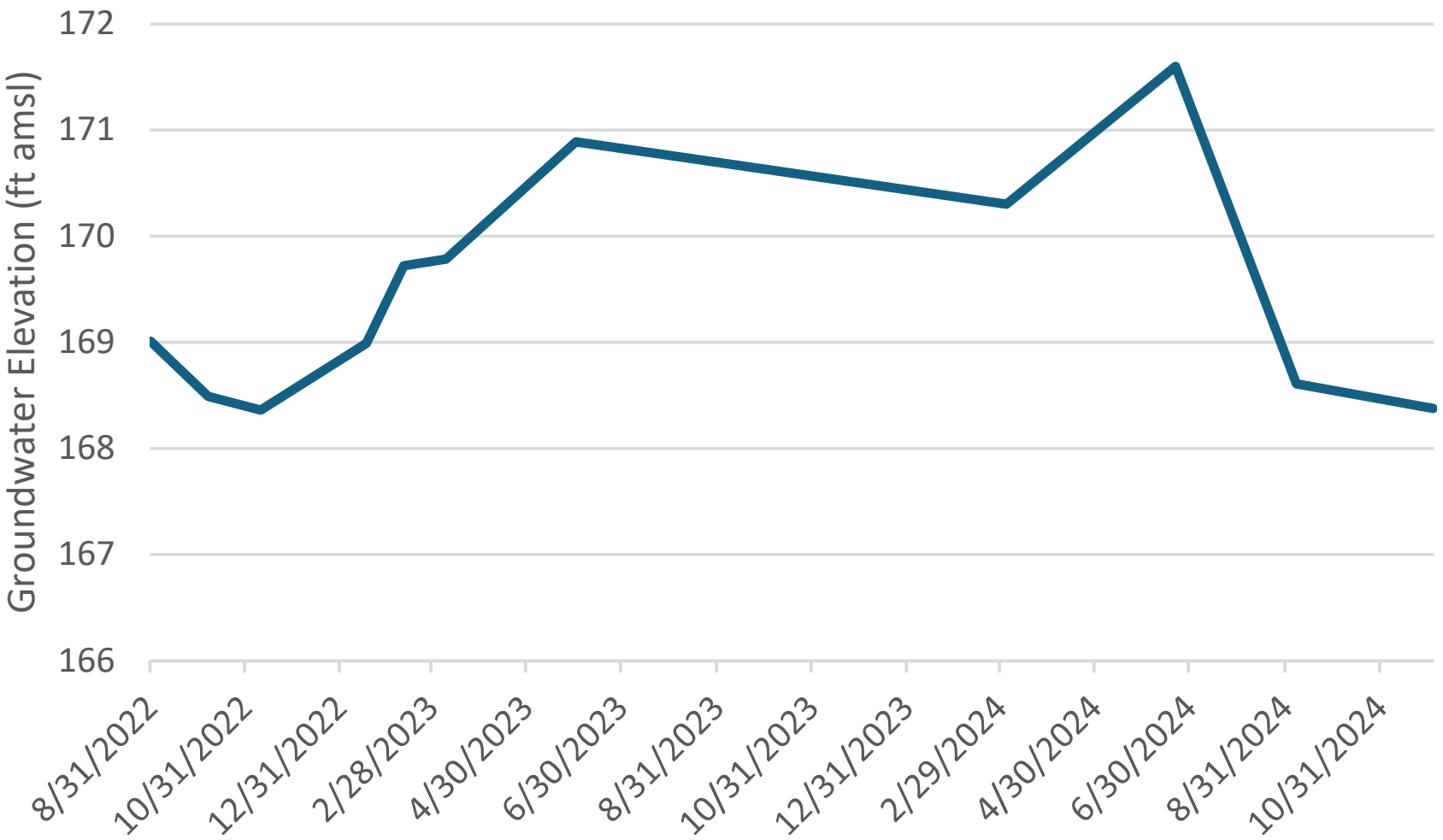
ISTD 107.00>89.00 (-) A=142439 1.71e4
RT=3.403



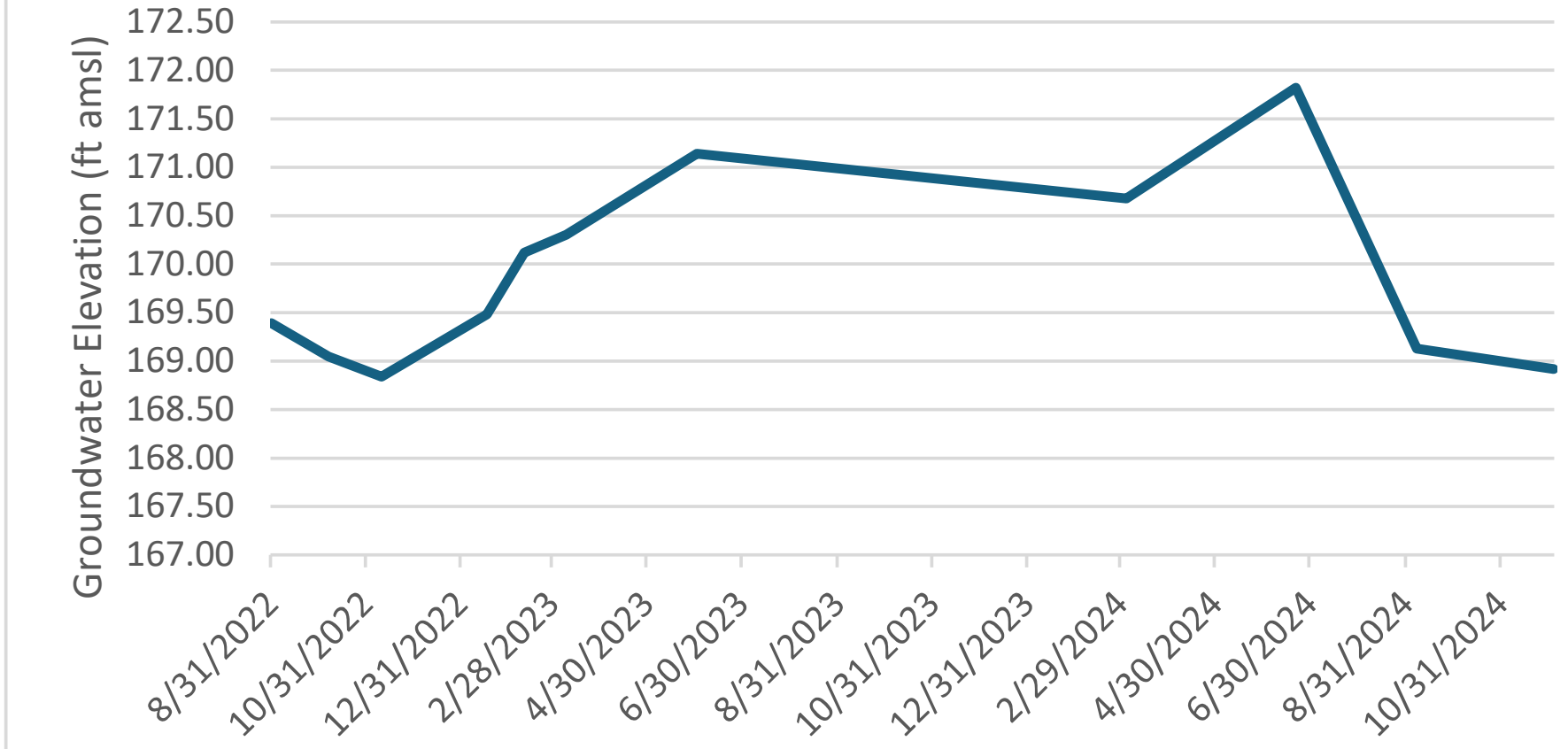
APPENDIX E
HYDROGRAPHS

This page intentionally left blank.

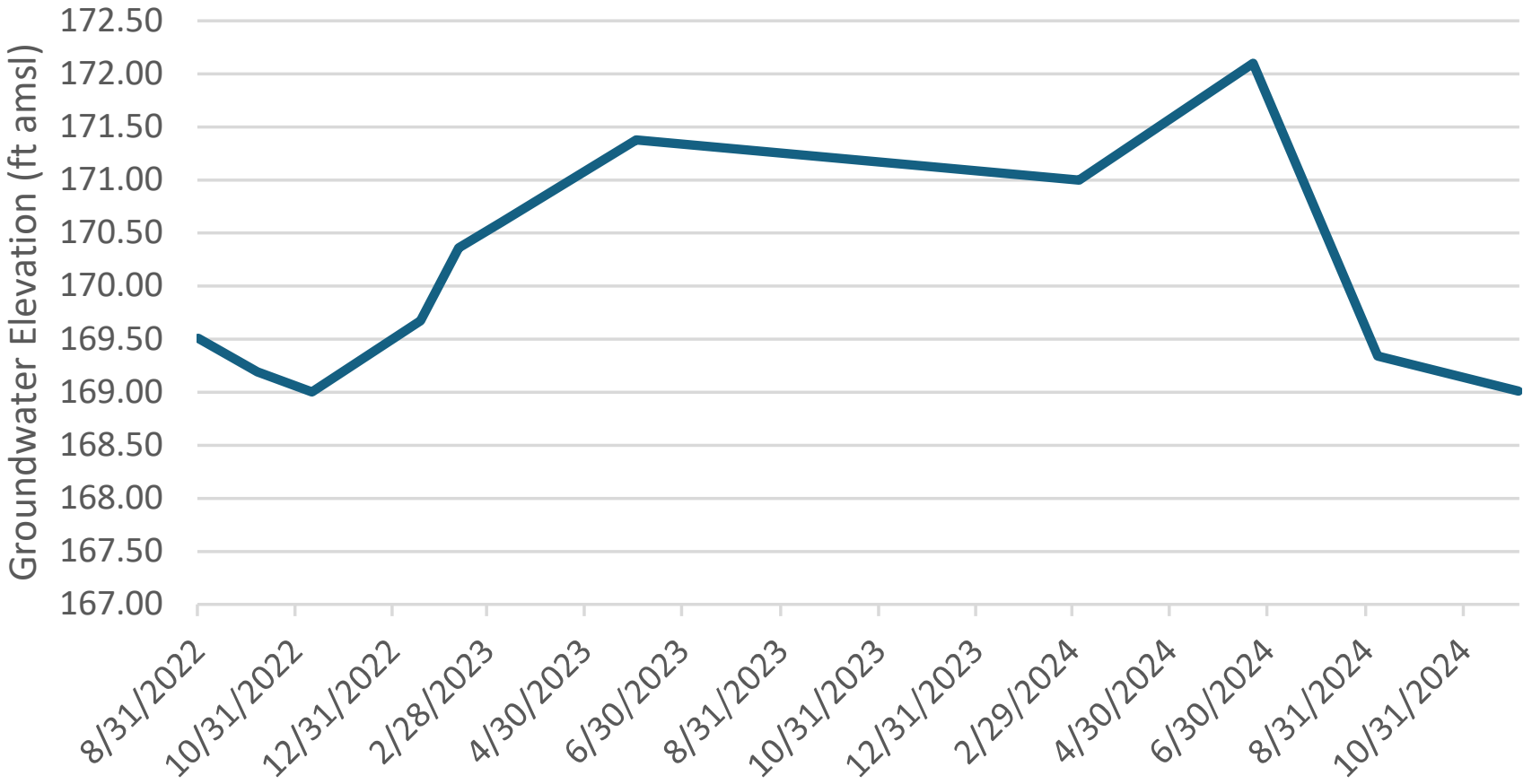
Appendix E
17WW01 Hydrograph



Appendix E
17WW03 Hydrograph



Appendix E
130 Hydrograph



DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
US ARMY ENVIRONMENTAL COMMAND
2455 REYNOLDS ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-7588

June 27, 2025

SUBJECT: Draft Final 2024 Remedial Action Operation Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, June 2025

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

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://aptimcorp.sharepoint.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 document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the draft version received on June 02, 2025, and the Texas Commission on Environmental Quality's (TCEQ) comments received on May 22, 2025. Tables of responses to the EPA and TCEQ comments on the draft version are included with this draft final document. In accordance with the Federal Facility Agreement, this draft final will be considered final after 30 days without further comment.

The document was prepared by the PCI-Bhate Joint Venture (PCI-Bhate) team, on behalf of the Army as part of PCI-Bhate's Performance Based Remediation contract for the facility. I ask that Zack Beck, PCI-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 (210) 793-7900, or by email at: Kelly.U.Norwood.civ@army.mil.

Sincerely,

Kelly Norwood, Geologist
ESM, West and Pacific Division
U.S. Army Environmental Command

Electronic copies furnished:
B. Follin, USEPA Region 6, Dallas, TX
J. Reyes, USEPA Region 6, Dallas, TX
E. Duerkop, USFWS, Caddo Lake NWR, TX
C. Montoya, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
K. Russell, BRAC, Huntsville, AL
Z. Beck, Bhate, Lakewood, CO
N. Alfino, PCI Environmental, Denver, CO
P. Srivastav, APTIM, Houston, TX

DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
US ARMY ENVIRONMENTAL COMMAND
2455 REYNOLDS ROAD
JOINT BASE SAN ANTONIO FORT SAM HOUSTON, TX 78234-7588

June 27, 2025

SUBJECT: Draft Final 2024 Remedial Action Operation Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, June 2025

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

Dear Mr. Follin,

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://aptimcorp.sharepoint.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 document includes revisions based upon the Environmental Protection Agency's (EPA) comments on the draft version received on June 02, 2025, and the Texas Commission on Environmental Quality's (TCEQ) comments received on May 22, 2025. Tables of responses to the EPA and TCEQ comments on the draft version are included with this draft final document. In accordance with the Federal Facility Agreement, this draft final will be considered final after 30 days without further comment.

The document was prepared by the PCI-Bhate Joint Venture (PCI-Bhate) team, on behalf of the Army as part of PCI-Bhate's Performance Based Remediation contract for the facility. I ask that Zack Beck, PCI-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 (210) 793-7900, or by email at: Kelly.U.Norwood.civ@army.mil.

Sincerely,

Kelly Norwood, Geologist
ESM, West and Pacific Division
U.S. Army Environmental Command

Electronic copies furnished:
A. Palmie, TCEQ, Austin, TX
J. Reyes, USEPA Region 6, Dallas, TX
E. Duerkop, USFWS, Caddo Lake NWR, TX
C. Montoya, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
K. Russell, BRAC, Huntsville, AL
Z. Beck, Bhate, Lakewood, CO
N. Alfino, PCI Environmental, Denver, CO
P. Srivastav, APTIM, Houston, TX

Response to Comments on
Draft 2024 Remediation Action Operation Report, LHAAP-04 Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, June 2025

Document Date: April 16, 2025
Comment Date: May 22, 2025

Reviewers: April Palmie - TCEQ
Respondent: Aaron Williams - Army

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

Number	Section/Page	Comment	C,D	Response	A,D
1	4 Summary	TCEQ agrees to reduce sampling frequency to annual. Any month that works with the larger LHAAP sampling schedule would be acceptable.	C	Noted.	
2	Table 2-1	Consider removing the columns for Years 1-4.	C	Concur. Years 1-4 will be removed from Table 2-1.	
3	Table 2-2	Repeat the heading on each page of the table.	C	Concur. The heading on each page of the table will be repeated in Table 2-2.	
4	Append A	LUC form, can you add the RD date?	C	Concur. The RD date of April 2019 will be added to the LUC form.	
5	Append D	Please move Package HS24030040 before E2400895, so they are in order by sample date.	C	Concur. The Lab packages will be arranged so they are in order by sample date.	

DRAFT FINAL
2024 REMEDIAL ACTION OPERATION REPORT
LHAAP-04 FORMER PILOT WASTEWATER TREATMENT PLANT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

June 2025

Prepared For:





U.S. Army Corps of Engineers
Tulsa District
1645 S 101 E Avenue
Tulsa, Oklahoma 74128-4609

Contract No: W9128F-13-D-0012
Bhate Project No.: JVPCIBH.0001.0002.02

Prepared By:

PCIbhate

11921 Freedom Drive, Suite 550
Reston, VA 20190
1-251-333-1127

This page intentionally left blank.

TABLE OF CONTENTS

Acronyms and Abbreviations iii

1 Introduction 1-1

1.1 Remedial Action Objectives 1-2
1.2 Performance Objectives 1-2
1.3 Conceptual Site Model 1-3

2 Site Activities At LHAAP-04 2-1

2.1 Annual LUC Compliance Inspection 2-1
2.2 Groundwater Monitoring 2-1
2.2.1 Groundwater Elevations and Flow Direction 2-2
2.2.2 Groundwater Analytical Results 2-2
2.2.3 Quality Control 2-2
2.3 Groundwater Monitoring System Maintenance 2-3
2.4 Year 6 Groundwater Monitoring Network 2-3

3 Remedy Evaluation 3-1

4 Summary and Conclusions 4-1

5 References 5-1

Figures

Figure 1 Longhorn Army Ammunition Plant Location and Site Vicinity Map
Figure 2 Site Layout and Features
Figure 3 Shallow Potentiometric Surface Map (February 2024)
Figure 4 Shallow Potentiometric Surface Map (August 2024)
Figure 5 Perchlorate Concentration in Groundwater (Year 5)

Tables

Table 2-1 Current Remedial Action Operation Monitoring Plan
Table 2-2 Groundwater Elevation Data, Year 5
Table 2-3 Year 5 RA-O Analytical Results
Table 2-4 Historical Perchlorate Concentrations (2000-2024)
Table 2-5 Year 5 RA-O Well Maintenance Summary

Appendices

Appendix A Annual Land Use Control Compliance Certification and Documentation
Appendix B Sample Collection Logs
Appendix C Well Inspection Forms and Well Photographs
Appendix D Laboratory Analytical Data Packages
Appendix E Quality Control Summary Report

This page intentionally left blank.

ACRONYMS AND ABBREVIATIONS

AECOM	AECOM Technical Services, Inc.
amsl	Above Mean Sea Level
Bhate	Bhate Environmental Associates, Inc.
btoc	Below Top of Casing
°C	Degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC(s)	Contaminant(s) of concern
CSM	Conceptual site model
DO	Dissolved oxygen
DUP	Field Duplicate
ft	Feet
GWTP	Groundwater Treatment Plant
ID	Identifier
ISB	In-situ Bioremediation
J	Data qualifier denoting an estimated concentration
J+	The analyte was positively identified
LHAAP	Longhorn Army Ammunition Plant
LTM	Long-term Monitoring
LUC(s)	Land Use Control(s)
MCL(s)	Maximum contaminant level(s)
µg/L	Micrograms per liter
µmhos/cm	Microhoms per centimeter
mg/L	Milligrams per liter
MNA	Monitored Natural Attenuation
MSC	Medium-specific concentration
mV	Millivolts
NA	Not Analyzed
NTU	Nephelometric Turbidity Unit
NV	No Value

ORP	Oxidation-reduction potential
PBJV	Poarch Creek Indians, Government Services, LLC (PCI-GS)/Bhate Environmental Associates, Inc. (Bhate) 8(a) Joint Venture
PCI-GS	The Poach Creek Indians, Government Services, LLC
PCL	Protective Concentration Level
QCSR	Quality Control Summary Report
RAO(s)	Remedial Action Objective(s)
RA-O	Remedial Action-Operation
RACR	Remedial Action Completion Report
RAWP	Remedial Action Work Plan
RD	Remedial Design
ROD	Record of Decision
REG	Regular Sample
SU	Standard units
Shaw	Shaw Environmental & Infrastructure, Inc.
TCEQ	Texas Commission on Environmental Quality
TOC	Total Organic Carbon
U	Undetected: The analyte was analyzed for, but not detected.
U.S. Army	United States Department of the Army
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UTL	Upper Tolerance Limit
Val Qual	Validation Qualifier

1 INTRODUCTION

The Poarch Creek Indians, Government Services, LLC (PCI-GS)/Bhate Environmental Associates, Inc. (Bhate) 8(a) Joint Venture, herein referred to as PBJV, was awarded contract number W912BV23C0007 under United States Army Corps of Engineers (USACE) to provide remedial services at Longhorn Army Ammunition Plant (LHAAP). PBJV is performing groundwater and surface water monitoring as part of Remedial Action Operation (RA-O) for the In-situ Bioremediation (ISB) and Monitored Natural Attenuation (MNA) groundwater remedy at LHAAP-04. Remedial activities are required under the Final Record of Decision (ROD) for LHAAP-04 (AECOM Technical Services, Inc. [AECOM], October 2016). LHAAP is an inactive, government-owned, formerly contractor-operated and maintained Department of Defense facility located in east Texas (**Figure 1**).

LHAAP is approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. The installation occupies approximately 1,100 acres of its former 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The facility can be accessed via State Highways 43 and 134.

LHAAP-04, known as Site 04 or the former pilot wastewater treatment plant, is approximately 0.5 acres located in the central portion of LHAAP at the northwest corner of 6th and 60th Streets, near the former fire station (**Figure 2**). LHAAP-04 is surrounded by light-duty roads. Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the former pilot wastewater treatment facility structures, tanks, and piping and the disposal of the associated wastes was completed in the summer of 1997 as part of the Resource Conservation and Recovery Act closure of the plant. The final remedy for soil was conducted in 2009 as a Non-Time-Critical Removal Action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Program (Shaw Environmental & Infrastructure, Inc. [Shaw], August 2011). Soil along the southern edge of the slab that formerly housed storage tanks for the former pilot wastewater treatment facility that was impacted with mercury and perchlorate at the LHAAP-04 site was removed to meet the soil medium-specific concentrations (MSCs). The soil removed was above the soil/air and ingestion MSCs for industrial use for mercury and the groundwater protective MSC for industrial use for perchlorate.

The United States Department of the Army (U.S. Army) issued the Final ROD for LHAAP-04 (AECOM, October 2016) in October 2016. The ROD was signed by the Army on December 15, 2016 and the U.S. Environmental Protection Agency (USEPA) on March 30, 2017. The Texas Commission on Environmental Quality (TCEQ) issued a letter concurring with the ROD on February 7, 2017. The ROD identified perchlorate as the only contaminant of concern (COC) in groundwater for LHAAP-04. The remedy selected in the ROD included ISB for perchlorate concentration in groundwater, long-term monitoring (LTM) of groundwater, and land use controls (LUCs) to maintain the remedy and prohibit groundwater use until COC concentrations are reduced to levels supportive of unlimited use and unrestricted exposure. The ISB remedy was implemented in November 2019 in accordance with the *Final Remedial Design (RD) and Remedial Action Work Plan (RAWP) for LHAAP-04* (Bhate, April 2019).

This RA-O Report represents the fifth year of RA-O implementation and summarizes the results of monitoring network inspections, LUC inspections, and sampling activities. Baseline sampling was conducted in January and November 2019 and is summarized in the *Final Remedial Action Completion Report* (RACR) (Bhate, April 2021a). The first and second annual RA-O quarterly monitoring events were conducted in February, May, August, and November of 2020 and 2021. The first and second years of RA-O are summarized in the *Draft First Annual Remedial Action Operation Report* and the *Draft Final Second Annual Remedial Action Operation Report*, respectively (Bhate, June 2021b; Bhate, August 2022a). The third year RA-O semiannual sampling events were conducted in February and August 2022 (Bhate, May 2023). The fourth year RA-O semiannual sampling events were conducted in February and August 2023 (Bhate, May 2024). The fifth year RA-O semiannual sampling events were conducted in February and August 2024 and the results are presented in this report. In accordance with the RD/RAWP (Bhate, April 2019), a remedy evaluation is also included in this report. However, a statistical analysis of perchlorate concentration trends is unnecessary because the perchlorate concentrations have remained below the Texas Risk Reduction Program Tier 1 Groundwater Residential Protective Concentration Level (PCL) of 17 micrograms per liter (µg/L) that was established as the cleanup level for the RA-O sampling locations since the February 2020 sampling event.

1.1 Remedial Action Objectives

The following Remedial Action Objectives [RAO(s)] were developed for LHAAP-04 and are outlined in the Final ROD (AECOM, October 2016):

- Protect human health by preventing ingestion of groundwater contaminated with perchlorate.
- Return groundwater to its potential beneficial use, wherever practicable, within a reasonable time period given the site circumstances.
- Prevent groundwater contaminated with perchlorate from migrating into nearby surface water.

1.2 Performance Objectives

The remedy selected for groundwater at LHAAP-04 includes ISB, LUCs, RA-O, and LTM. The remedy includes the following components:

- ISB of perchlorate-contaminated groundwater in an area near monitoring well 04WW04.
- LUCs in the impacted area to ensure protection of human health by restricting the use of groundwater exceeding the applicable cleanup levels, restricting land use to non-residential, and maintaining the integrity of any current or future remedial or monitoring system. The LUCs will remain in effect until such time as the U.S. Army, USEPA, and TCEQ agree that COC concentrations have met cleanup levels. As a component of the LUC implementation, the civil survey of the LUC boundary was conducted in January 2021 and recorded in the Harrison County Courthouse on March 22, 2021.

- RA-O performance monitoring of perchlorate concentrations in groundwater to evaluate the ISB remedy for two years following implementation. The RA-O performance monitoring program includes two years of quarterly groundwater monitoring to verify that reducing conditions conducive to degradation of perchlorate are present and that plume concentrations are declining fast enough to achieve the PCL within six years as required by the ROD. RA-O performance monitoring continued semi-annually for an additional three years, and will continue annually thereafter, if necessary.
- LTM of groundwater beyond the first five years of RA-O will be performed annually, until the next CERCLA Five-Year Review, if concentrations remain above the PCL. RA-O associated with this remedy will be used to track the continued effectiveness of the remedy. Further reductions in sampling will depend on the Five-Year Reviews, but sampling will be conducted at least once every five years until the PCL is achieved.

According to the RACR (Bhate, April 2021a), RA-O performance monitoring is being performed to evaluate remedy effectiveness. The groundwater monitoring program for RA-O is designed to evaluate and monitor the degradation of perchlorate in the shallow and intermediate groundwater zones. In accordance with the RD/RAWP, the remedy performance will be evaluated using two lines of evidence (Bhate, April 2019):

- Plume stability (i.e., plume concentrations are declining in the performance wells, and the plume is not expanding in area as demonstrated by downgradient monitoring wells).
- Reducing conditions conducive for the degradation of perchlorate are present within the treatment area.

Work completed as part of the Fifth Annual RA-O in 2024 consisted of the following:

- February and August 2024 groundwater monitoring events consisting of seven monitoring wells.
- LUC inspection (August 1, 2024).
- Mowing.
- Well Inspections (February and August 2024).

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

1.3 Conceptual Site Model

A detailed Conceptual Site Model (CSM) of LHAAP-04 was presented in the ROD (AECOM, October 2016) and has been updated to incorporate more recent investigation results from 2017 through 2019, summarized in Section 2.2.2 of the RD/RAWP (Bhate, April 2019).

The former pilot wastewater treatment plant was the source for the perchlorate released into the environment. Prior to the plant's removal, the CSM assumes perchlorate was released via overflows, spills, and leaks to the soil. After the pilot wastewater treatment plant was removed, there was no longer a release mechanism for overflows, spills, and leaks. Perchlorate was released to the soil. Prior to the soil removal action in 2009, sufficient perchlorate levels existed in the soil to act as a source of groundwater contamination or to potentially release into surface

water during storm events (Shaw, August 2011). Because the perchlorate-contaminated vadose zone soil above cleanup levels was removed in 2009, it is not expected that LHAAP-04 will contribute to surface water contamination (Shaw, August 2011). Soil-to-groundwater and soil-to-surface water pathways have, therefore, been eliminated from consideration in the current CSM.

Surface water samples collected in 2010 and 2011 were below the perchlorate PCL. Therefore, the CSM does not include any impact to surface water from groundwater, as the groundwater-to-surface water migration pathway is incomplete. Protection of surface water will continue to be confirmed via groundwater monitoring and evaluation of the groundwater ISB remedy.

Groundwater at monitoring well 04WW04 (**Figure 2**) was the only location that exceeded the perchlorate PCL in the September – November 2010 sampling events leading up to the development of the ROD. However, additional sampling conducted in 2017 through 2019 indicated that the perchlorate plume had migrated westward, impacting the previously clean downgradient well 04WW05, and wells 04WW07, 04WW09, and 04WW10 (installed as part of an effort to delineate the extent of the plume) (**Figure 2**) at concentrations exceeding the PCL, while the perchlorate concentration at 04WW04 had dropped below the PCL. One well has been completed in the intermediate zone (04WW08) and low perchlorate concentrations have been detected in groundwater analyzed from the intermediate zone; however, the detected perchlorate concentrations are below the PCL. The only potentially complete exposure pathway considered for remediation is the hypothetical future non-residential groundwater use.

Based on groundwater elevation data from 2017 to 2024, the dominant shallow zone groundwater gradient has generally been somewhat radially outward from the northeastern corner of the site. However, in the area impacted by perchlorate concentrations above the PCL, the groundwater flow direction is generally to the southwest and south-southwest.

Perchlorate concentrations at the RA-O performance groundwater monitoring locations at LHAAP-04 have been below the PCL for 13 consecutive sampling events during the period from February 2020 to August 2024. Field parameters were measured to evaluate the continued effectiveness of the ISB remedy. The evaluation of the ISB remedy indicates that reductive degradation processes stimulated by the injections have eliminated the perchlorate plume. Reducing conditions in the shallow groundwater that were generated by the ISB remedy are slowly returning to an aerobic state, with some parameters showing lingering effects from the residual carbon present in the groundwater.

2 SITE ACTIVITIES AT LHAAP-04

This section describes the results of the fifth annual RA-O activities, including the annual LUC compliance inspection, semiannual RA-O performance monitoring, and monitoring well network inspections performed at LHAAP-04.

2.1 Annual LUC Compliance Inspection

The annual LUC compliance inspection for LHAAP-04 was performed on August 1, 2024. The LUCs for this site restrict groundwater use and prohibit well installation for any purpose other than environmental monitoring and testing, as well as requiring the integrity of any current or future remedial or monitoring systems to be maintained. Also, the LUCs prohibit residential land use until the levels of COCs in the groundwater and soil allow unlimited use and unrestricted exposure. The restriction applies to groundwater underlying an approximately 1.885-acre area defined by the surveyed LUC boundary (Bhate, April 2021a). The Annual LUC Compliance Certification Form for the fifth annual RA-O monitoring period is included in **Appendix A**. No noncompliance issues or concerns were noted during the annual inspection. No damage to bollards, well pads, or protective casings was observed during the 2024 well inspections, and minimal encroachment of weeds or brush on the well pads was observed. Area mowing and clearing around the wells are conducted on an as-needed basis, but typically before sampling events. Groundwater Sample Collection Logs for each of the sampling events are included in **Appendix B**. Well inspection forms and a photographic log of the wells from each event are included in **Appendix C**.

2.2 Groundwater Monitoring

As is outlined in the *Final RD and RAWP for LHAAP-04* (Bhate, April 2019), semiannual monitoring is to be conducted at LHAAP-04 in years 3 through 5 of the RA-O reporting period. The fifth annual RA-O reporting period includes the period from January 2024 to December 2024 and encompasses the fifth year of post-injection semiannual monitoring. Semiannual groundwater sampling events were completed in February and August 2024. As per the recommendations in the Year 3 RA-O Report, the monitoring network for the first and second semiannual events in February and August 2024 was revised by discontinuing monitoring at wells upgradient and outside of the historical plume area, which reduced the number of wells being sampled to seven. Revisions to the analytical program included discontinuing monitoring for total organic carbon (TOC) at the RA-O performance monitoring locations. The RA-O performance monitoring network and the analytes for each well are summarized in **Table 2-1**. The RA-O performance monitoring network locations are shown on **Figure 2**. Revisions to the LHAAP-04 RA-O monitoring network and analytes were proposed in the *Draft Final Technical Memorandum—Proposed Revisions to LHAAP-04 and -16 Remedial Action Operation Monitoring* (Bhate, August 2022b) and were approved by the TCEQ in an email dated July 22, 2022 and by the USEPA in an email dated July 25, 2022.

Prior to collecting groundwater samples, monitoring wells were gauged using a water level probe, and the depth to water was recorded to the nearest 0.01 feet from the top of casing. Depth-to-water measurements were used to calculate the groundwater elevations presented in **Table 2-2**. Water samples were collected using low-flow sampling methods in accordance with the groundwater sampling procedures found in the *Final Installation-Wide Work Plan* (Bhate, May 2018).

2.2.1 Groundwater Elevations and Flow Direction

During the fifth year RA-O semiannual RA-O performance sampling events, groundwater elevations in the shallow wells varied by 1.43 to 2.62 feet throughout the year (**Table 2-2**). Measured total depths in monitoring wells indicated that wells with measured siltation have less than 10 percent of the screened interval blocked by silt accumulation, and well redevelopment is not required at this time. The highest groundwater elevations generally occurred during the February 2024 event, and the lowest elevations generally occurred during the August 2024 event, reflecting the relatively dry summer that occurred in 2024. The groundwater flow gradient was interpreted to be generally to the southwest or south-southwest based on the potentiometric surface maps for each event (**Figures 3** and **4**).

2.2.2 Groundwater Analytical Results

Semiannual RA-O performance samples were collected and analyzed for perchlorate according to USEPA Method 6850 and for geochemical field parameters as shown in **Table 2-1**. The samples from the February and August 2024 sampling events were analyzed for perchlorate by ALS Laboratories.

Over the course of the fifth annual RA-O performance sampling events, perchlorate concentrations remained below the PCL in the seven wells sampled. During the February 2024 sampling, perchlorate was detected at concentrations of less than 1 µg/L at MW-04WW04, MW-04WW05, MW-04WW10, and MW-04WW11. During the August 2024 event, perchlorate was detected at concentrations of less than 1 µg/L at MW-04WW01 and MW-04WW04. As of the August 2024 sampling event, perchlorate concentrations at the monitoring locations have been below the PCL for seven consecutive quarterly sampling events and the past six semiannual RA-O performance monitoring events. **Table 2-3** presents the perchlorate and geochemical data from the 2024 semiannual RA-O events. Historical perchlorate results from 2000 to 2024 are presented in **Table 2-4**. **Figure 5** shows the perchlorate concentrations in groundwater from the February and August 2024 RA-O performance sampling events.

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

2.2.3 Quality Control

This report summarizes the data for samples collected in February and August 2024. The samples were reviewed and validated in accordance with the guidelines in the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (USEPA,

November 2020); USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (USEPA, November 2020); and the quality control criteria specified in the Basewide Uniform Federal Policy - Quality Assurance Project Plan Longhorn Army Ammunition Plant which is in Appendix C of the Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas (Bhate, May 2018). The Quality Control Summary Report (QCSR) is included in **Appendix E**.

Quality control and quality assurance problems noted in the case narratives received from the laboratory are minor and do not affect the usability of the data for evaluation of remedy performance at LHAAP-04. As noted in the QCSR, no sample results from the Year 5 RA-O performance monitoring were rejected due to quality control problems.

ALS Environmental analyzed the compliance samples collected from the Groundwater Treatment Plant (GWTP). The laboratory reports for the GWTP are included in **Appendix D**.

2.3 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 well inspection forms. **Appendix C** includes well inspection forms and a photo log, which shows the condition of the wells for each sampling event. Maintenance or repairs were performed, as needed, based on observed conditions. During the fifth annual reporting period, no damage to well bollards, pads, or protective well casings was observed. Also, only minimal encroachment of weeds or brush on the well pads was observed. Mowing the area to control brush and weeds was conducted on a routine basis, and as needed, to allow access to the wells and was conducted at LHAAP-04 prior to sampling in August 2024. **Table 2-5** provides a summary of the maintenance activities that were performed at the site.

2.4 Year 6 Groundwater Monitoring Network

After Year 5 of RA-O, the RD and RAWP for LHAAP-04 (Bhate, April 2019) states that annual monitoring will continue at the site until groundwater perchlorate concentrations are below the PCL. As shown in **Table 2-4**, perchlorate concentrations at the site have been below the PCL since February 2020; therefore, groundwater monitoring will be reduced to annual sampling for the Year 6 RA-O. No changes to the monitoring network are planned as shown in **Table 2-1** and on **Figure 2**.

This page intentionally left blank.

3 REMEDY EVALUATION

Remedy evaluation for the site is no longer applicable because the perchlorate concentrations at the performance monitoring locations have been below the PCL for 13 consecutive sampling events since February 2020. The highest perchlorate concentration detected during the fifth annual RA-O monitoring (0.148 µg/L) was from groundwater collected from shallow zone well 04WW11, during the February 2024 sampling event. In the August 2024 groundwater sampling event, perchlorate was not detected from the sample collected from monitoring well 04WW11.

The perchlorate concentrations in groundwater at LHAAP-04 are showing no signs of rebound as the field-measured parameters continue to indicate a return from strong anaerobic conditions towards normal aerobic conditions. Four of the seven monitoring wells (04WW05, 04WW07, 04WW10, 04WW11) had positive oxidation-reduction potential (ORP) values during both the February and August 2024 sampling events. The three wells with negative ORP values (04WW01, 04WW04, O4WW09) increased in value from February to August. Dissolved oxygen (DO) increased from the February to the August 2024 sampling events at monitoring wells 04WW01, 04WW04, and 04WW09, whereas the DO decreased at monitoring wells 04WW05, 04WW07, 04WW10, and 04WW11. The DO was above 0.5 milligram per liter (mg/L) during at least one of the sampling events at 04WW04, 04WW05, 04WW07, 04WW09, 04WW10, and 04WW11, with DO concentrations higher in February than in August 2024. Both monitoring well 04WW04 and 04WW010 are located upgradient and within the zone of influence from the ISB injections.

The selected remedy for LHAAP-04, which included five years of RA-O monitoring with the provision for additional monitoring, if necessary, has effectively reduced the perchlorate levels to below the PCL. However, anaerobic conditions are affected by dry conditions during summer months and lack of oxygenated recharge from infiltrating rainfall, combined with continuing reductive influence from any residual carbon present in the groundwater. Based on the February and August 2024 geochemical indicators, the site is trending towards normal aerobic conditions but has not returned to baseline geochemical parameters. Therefore, monitoring will continue annually.

This page intentionally left blank.

4 SUMMARY AND CONCLUSIONS

The LUCs for LHAAP-04 include a land use restriction prohibiting residential use and a groundwater use restriction, which prohibits water well installation for any purpose other than environmental monitoring and testing until COCs in the groundwater and soil allow unrestricted use and unlimited exposure. The ROD defines the groundwater COC for LHAAP-04 as perchlorate (AECOM, October 2016). The annual LUC compliance inspection for the fifth annual RA-O was conducted on August 1, 2024. Noncompliance issues or concerns were not identified during the annual inspection, and site monitoring wells were in good condition. No change in land or groundwater use occurred at the site during the fifth annual RA-O monitoring period.

Perchlorate data and field parameters were collected over the course of the two semiannual RA-O performance monitoring events completed in February and August 2024 to evaluate the continued effectiveness of the ISB remedy. Perchlorate concentrations in groundwater collected from the RA-O performance monitoring wells have been below the PCL for 13 consecutive sampling events, starting in February 2020.

The evaluation of the ISB remedy at LHAAP-04 indicates that reductive degradation processes stimulated by the ISB injections have eliminated the perchlorate plume. Based on the RA-O groundwater monitoring, reducing conditions are returning towards aerobic conditions in shallow groundwater. ORP values at four of the seven monitoring wells were positive during both sampling events and the wells with negative values increased in value between February and August. DO values remain variable, with six of the seven wells above 0.5 mg/L during at least one of the sampling events. Several of the wells showed decreasing ORP and DO values between February and August which is indicative of the dry conditions during the summer and the lack of oxygenated recharge from infiltrating rainfall, combined with continuing reductive influence from the residual carbon present in the groundwater. Geochemical parameters indicate that site conditions remain partially anaerobic.

RA-O performance monitoring is recommended to be reduced to annually based on over four years of groundwater analytical results that support perchlorate has been successfully remediated and the RAOs achieved. The selected remedy for LHAAP-04, which included five years of RA-O monitoring, has effectively reduced the perchlorate levels to below the PCL. Annual monitoring will allow for continued perchlorate sampling along with assessment of field parameters to evaluate the aquifer's return to aerobic conditions.

This page intentionally left blank.

5 REFERENCES

AECOM Technical Services, Inc. (AECOM). October 2016. *Final Record of Decision LHAAP-04, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate Environmental Associates, Inc. (Bhate). May 2018. *Final Installation-Wide Work Plan, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. April 2019. *Final Remedial Design and Remedial Action Work Plan for LHAAP-04, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. April 2021a. *Final Remedial Action Completion Report, LHAAP-04, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. June 2021b. *Draft Final First Annual Remedial Action Operation Report, LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. August 2022a. Draft Final Second Annual Remedial Action Operation Report, LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas.

Bhate. August 2022b. *Draft Final Technical Memorandum, Proposed Revisions to LHAAP-04 and LHAAP-16 Remedial Action Operation Groundwater Monitoring Programs, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. May 2023. Draft Final Third Annual Remedial Action Operation Report, LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas.

Bhate. May 2024. Draft Final Fourth Annual Remedial Action Operation Report, LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas.

Shaw Environmental & Infrastructure, Inc. (Shaw). August 2011. *Final Completion Report Non-Time-Critical Removal Action, Longhorn Army Ammunition Plant, Karnack, Texas. Houston, Texas*.

USEPA. November 2020. *National Functional Guidelines for Inorganic Superfund Methods Data Review.* EPA 542-R-20-006

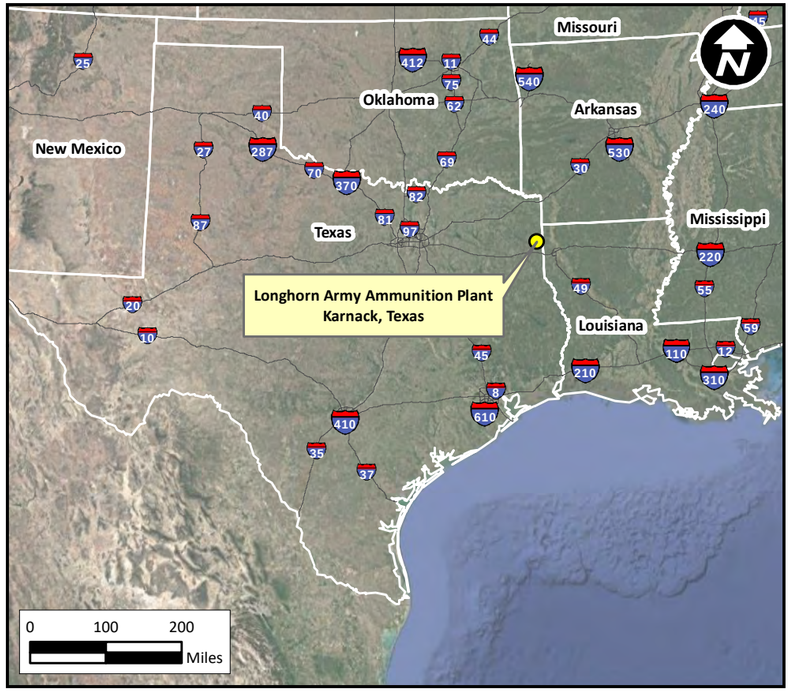
USEPA. November 2020. *National Functional Guidelines for Organic Superfund Methods Data Review.* EPA 542-R-20-005

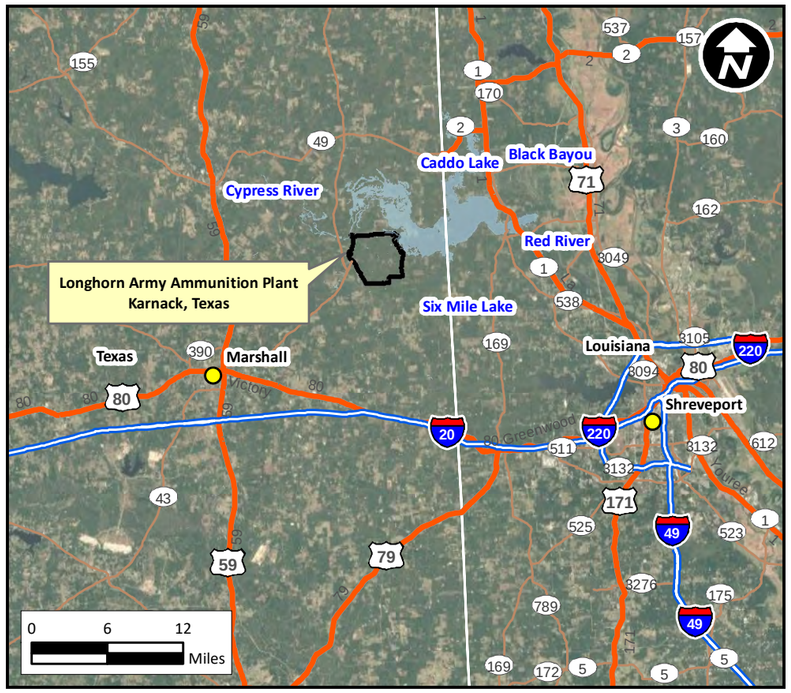
This page intentionally left blank.

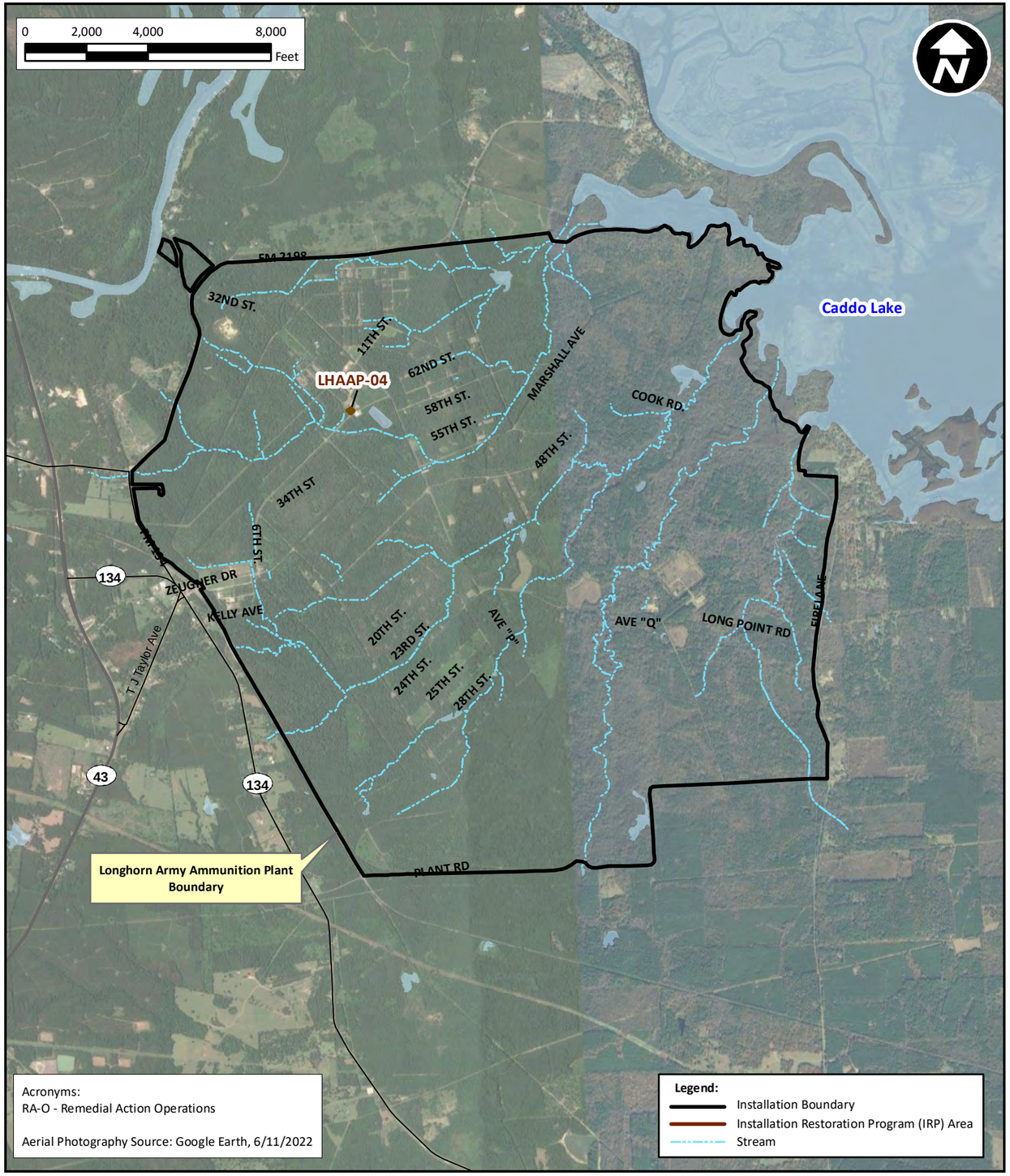
FIGURES

This page intentionally left blank.

Figures







01335410

Longhorn Army Ammunition Plant
Location and Site Vicinity Map

Figure 1

2024 RA-O Report LHAAP-04
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 1/15/2025

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0002.01

PCIbhate

This page intentionally left blank.

Figures

01335412

Site Layout and Features

Figure 2

2024 RA-O Report LHAAP-04
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 1/15/2025

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0002.01

PCIbhate

04WW02
04WW06
04WW08
04WW04
04WW09
04WW05
04WW11
04WW10
04WW07
04WW01
LHSMW01
LHSMW02
LHAAP-66
LHAAP-60A
LHAAP-60B
LHAAP-60C
LHAAP-04
Site LHAAP-04 Boundary
60TH ST.
AVE "I"
6TH ST.
Former Fire Station

Acronyms:
RA-O - Remedial Action Operations

Aerial Photography Source: Google Earth, 6/11/2022

0 30 60 120
Feet

Legend:

- RA-O Monitoring Well Location
- Shallow Monitoring Well Location
- Intermediate Monitoring Well Location
- Limits of Excavation at Surface (Source: LHAAP-04 Final Completion Report, Shaw, 2011)
- Land Use Control Boundary
- Installation Restoration Program (IRP) Area
- Stream
- Former and/or Existing Building Location

This page intentionally left blank.

Figures

01335414

Shallow Potentiometric Surface Map (February 2024)

Figure 3

2024 RA-O Report LHAAP-04
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 1/15/2025

SCALE: As Shown

PROJECT NO: JVPC|BH.0001.0002.01

PC|bhate

LHAAP-66

LHAAP-60A

LHAAP-60B

LHAAP-60C

LHAAP-04

Site LHAAP-04 Boundary

04WW02 (NM)

04WW06 (NM)

LHSMW01 (NM)

LHSMW02 (NM)

04WW04 (205.55)

04WW09 (204.74)

04WW05 (203.25)

04WW10 (203.42)

04WW11 (203.31)

04WW07 (204.93)

04WW01 (200.49)

205.00

204.00

203.00

202.00

201.00

AVE "I"

60TH ST.

6TH ST.

Former Fire Station

Acronyms:
RA-O - Remedial Action Operations
NM - Not Measured

Aerial Photography Source: Google Earth, 6/11/2022

0 30 60 120 Feet

Legend:

- Shallow Monitoring Well Location
- (204.93) Potentiometric Surface Elevation in Feet Above Mean Sea Level
- Potentiometric Surface Contour
- Direction of Groundwater Flow
- Limits of Excavation at Surface (Source: LHAAP-04 Final Completion Report, Shaw, 2011)
- Land Use Control Boundary
- Installation Restoration Program (IRP) Area
- Stream
- Former and/or Existing Building Location

This page intentionally left blank.

Figures

01335416

Shallow Potentiometric Surface Map (August 2024)

Figure 4

2024 RA-O Report LHAAP-04
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 1/15/2025

SCALE: As Shown

PROJECT NO: JVPC|BH.0001.0002.01

PC|bhate

LHAAP-66

LHAAP-60A

LHAAP-60B

LHAAP-60C

LHAAP-04

Site LHAAP-04 Boundary

04WW01 (198.88)

04WW02 (NM)

04WW04 (204.12)

04WW05 (201.57)

04WW06 (NM)

04WW07 (203.33)

04WW09 (203.17)

04WW10 (201.93)

04WW11 (200.69)

LHSMW01 (NM)

LHSMW02 (NM)

204.00

203.00

202.00

201.00

200.00

199.00

AVE "T"

60TH ST.

6TH ST.

Former Fire Station

Acronyms:
RA-O - Remedial Action Operations
NM - Not Measured

Aerial Photography Source: Google Earth, 6/11/2022

0 30 60 120 Feet

Legend:

- Shallow Monitoring Well Location
- (203.33) Potentiometric Surface Elevation in Feet Above Mean Sea Level
- Potentiometric Surface Contour
- Direction of Groundwater Flow
- Limits of Excavation at Surface (Source: LHAAP-04 Final Completion Report, Shaw, 2011)
- Land Use Control Boundary
- Installation Restoration Program (IRP) Area
- Stream
- Former and/or Existing Building Location

This page intentionally left blank.

Figures

Notes:
J = Estimated value
U = Result is less than the laboratory detection limit
COC = Contaminant of Concern
MCL = Maximum Contaminant Level
MCL results are reported in micrograms per liter (µg/L).

COCs shown on this figure

COC	MCL
Perchlorate	17

04WW04	2/29/2024	8/1/2024
COC	Result	Result
Perchlorate	0.0510 J	0.0947 J

04WW09	2/29/2024	8/1/2024
COC	Result	Result
Perchlorate	<0.05 U	<0.05 U

04WW05	2/29/2024	8/1/2024
COC	Result	Result
Perchlorate	0.0474 J	<0.05 U

04WW11	2/29/2024	8/1/2024
COC	Result	Result
Perchlorate	0.148	<0.05 U

04WW01	2/29/2024	8/1/2024
COC	Result	Result
Perchlorate	<0.05 U	0.0860 J

04WW07	2/29/2024	8/1/2024
COC	Result	Result
Perchlorate	<0.05 U	<0.05 U

04WW10	2/29/2024	8/1/2024
COC	Result	Result
Perchlorate	0.0558 J	<0.05 U

Acronyms:
RA-O - Remedial Action Operations

Aerial Photography Source: Google Earth, 6/11/2022

0 30 60 120 Feet

Legend:
- RA-O Monitoring Well Location
- Shallow Monitoring Well Location
- Intermediate Monitoring Well Location
- Direction of Groundwater Flow (August 2024)
- Limits of Excavation at Surface (Source: LHAAP-04 Final Completion Report, Shaw, 2011)
- Land Use Control Boundary
- Installation Restoration Program (IRP) Area
- Stream
- Former and/or Existing Building Location

01335418

Perchlorate Concentration in Groundwater (Year 5)

Figure 5

2024 RA-O Report LHAAP-04
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM
DATE: 1/15/2025
SCALE: As Shown
PROJECT NO: JVPCIBH.0001.0002.01

PCIbhate

This page intentionally left blank.

Figures

TABLES

This page intentionally left blank.

Table 2-1
Current Remedial Action Operation Monitoring Plan
Fifth Annual Remedial Action Operation Report

Monitoring Location	Primary Rationale for Well Selection	LTM – Year 5 First and Second Semiannual					LTM – Year 6 Annual				
		Perchlorate (314.0)	Dissolved Oxygen (field)	Oxidation-Reduction Potential (field)	pH (field reading)	Total Organic Carbon (SW9060)	Perchlorate (314.0)	Dissolved Oxygen (field)	Oxidation-Reduction Potential (field)	pH (field reading)	Total Organic Carbon (SW9060)
04WW01	Well downgradient of pre-treatment plume area	✓	✓	✓	✓		✓	✓	✓	✓	
04WW04	Upgradient well in original source area	✓	✓	✓	✓		✓	✓	✓	✓	
04WW05	Well located within pre-treatment plume area	✓	✓	✓	✓		✓	✓	✓	✓	
04WW07	Well located within pre-treatment plume area	✓	✓	✓	✓		✓	✓	✓	✓	
04WW09	Well located within pre-treatment plume area	✓	✓	✓	✓		✓	✓	✓	✓	
04WW10	Well located within pre-treatment plume area	✓	✓	✓	✓		✓	✓	✓	✓	
04WW06	Upgradient well for measuring plume stability										
04WW11	Well downgradient of pre-treatment plume area	✓	✓	✓	✓		✓	✓	✓	✓	
LHSMW01	Crossgradient well for measuring plume stability										
LHSMW02	Crossgradient well										
04WW08	Intermediate Zone well										
04WW02	Upgradient well										

Notes:

[a] Anions include nitrate, nitrites, and sulfate.

✓ Indicates sample was collected and analyzed for the listed analyte.

LTM - long-term monitoring

This page intentionally left blank.

Table 2-2
Groundwater Elevation Data, Year 5
Fifth Annual Remedial Action Operation Report

01335424

Monitoring Well	Date	Ground Surface Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Top of Screen (ft btoc)	Bottom of Screen (ft btoc)	Constructed Well Depth (ft bgs)	Measured Well Depth (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)	Screened Interval Siltation (%)
04WW01	2/4/2020	208.78	212.51	16.73	26.73	26.73	27.23	8.43	204.08	None
	5/4/2020	208.78	212.51	16.73	26.73	26.73	27.23	6.25	206.26	None
	11/4/2020	208.78	212.51	16.73	26.73	26.73	27.72	10.10	202.41	None
	3/10/2021	208.78	212.51	16.73	26.73	26.73	27.21	7.10	205.41	None
	5/24/2021	208.78	212.51	16.73	26.73	26.73	27.22	6.63	205.88	None
	8/4/2021	208.78	212.51	16.73	26.73	26.73	27.22	8.98	203.53	None
	11/4/2021	208.78	212.51	16.73	26.73	26.73	27.21	11.77	200.74	None
	2/1/2022	208.78	212.51	16.73	26.73	26.73	27.21	10.55	201.96	None
	8/2/2022	208.78	212.51	16.73	26.73	26.73	27.22	12.72	199.79	None
	2/3/2023	208.78	212.51	16.73	26.73	26.73	27.13	7.02	201.76	None
	8/1/2023	208.78	212.51	16.73	26.73	26.73	27.20	11.39	197.39	None
	2/29/2024	208.78	212.51	16.73	26.73	26.73	27.22	8.29	200.49	None
	8/1/2024	208.78	212.51	16.73	26.73	26.73	27.22	9.90	198.88	None
04WW02	2/3/2020	212.80	216.70	16.90	26.90	26.90	26.70	21.00	195.70	2.0
	5/4/2020	212.80	216.70	16.90	26.90	26.90	26.70	9.35	207.35	2.0
	11/4/2020	212.80	216.70	16.90	26.90	26.90	26.67	7.82	208.88	2.3
	3/10/2021	212.80	216.70	16.90	26.90	26.90	26.68	6.31	210.39	2.2
	5/24/2021	212.80	216.70	16.90	26.90	26.90	26.66	5.92	210.78	2.4
	8/4/2021	212.80	216.70	16.90	26.90	26.90	26.70	7.52	209.18	2.0
	11/4/2021	212.80	216.70	16.90	26.90	26.90	26.63	10.27	206.43	2.7
	2/1/2022	212.80	216.70	16.90	26.90	26.90	26.67	8.93	207.77	2.3
	2/3/2023	212.8	216.70	16.90	26.90	26.90	26.63	6.03	206.77	2.7
04WW04	2/3/2020	211.3	214.10	10.80	20.80	20.80	21.55	4.11	209.99	None
	5/4/2020	211.3	214.10	10.80	20.80	20.80	21.55	4.95	209.15	None
	11/4/2020	211.3	214.10	10.80	20.80	20.80	21.55	7.05	207.05	None
	3/10/2021	211.3	214.10	10.80	20.80	20.80	21.42	4.93	209.17	None
	5/24/2021	211.3	214.10	10.80	20.80	20.80	21.55	4.15	209.95	None
	8/4/2021	211.3	214.10	10.80	20.80	20.80	21.56	6.65	207.45	None
	11/4/2021	211.3	214.10	10.80	20.80	20.80	21.40	8.73	205.37	None
	2/1/2022	211.3	214.10	10.80	20.80	20.80	21.42	7.13	206.97	None
	8/2/2022	211.3	214.10	10.80	20.80	20.80	21.41	9.38	204.72	None
	2/3/2023	211.3	214.10	10.80	20.80	20.80	21.40	3.71	207.59	None
	8/1/2023	211.3	214.10	10.80	20.80	20.80	21.38	8.89	202.41	None
	2/29/2024	211.3	214.10	10.80	20.80	20.80	21.39	5.75	205.55	None
	8/1/2024	211.3	214.10	10.80	20.80	20.80	21.41	7.18	204.12	None

Table 2-2
Groundwater Elevation Data, Year 5
Fifth Annual Remedial Action Operation Report

Monitoring Well	Date	Ground Surface Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Top of Screen (ft btoc)	Bottom of Screen (ft btoc)	Constructed Well Depth (ft bgs)	Measured Well Depth (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)	Screened Interval Siltation (%)
04WW05	2/4/2020	211	213.70	18.70	28.70	28.70	29.61	7.25	206.45	None
	5/4/2020	211	213.70	18.70	28.70	28.70	29.62	6.55	207.15	None
	11/5/2020	211	213.70	18.70	28.70	28.70	29.57	9.66	204.04	None
	3/10/2021	211	213.70	18.70	28.70	28.70	29.62	6.41	207.29	None
	5/25/2021	211	213.70	18.70	28.70	28.70	29.60	6.12	207.58	None
	8/5/2021	211	213.70	18.70	28.70	28.70	29.61	8.15	205.55	None
	11/9/2021	211	213.70	18.70	28.70	28.70	29.60	11.05	202.65	None
	2/2/2022	211	213.70	18.70	28.70	28.70	29.60	10.09	203.61	None
	8/2/2022	211	213.70	18.70	28.70	28.70	29.60	11.93	201.77	None
	2/3/2023	211	213.70	18.70	28.70	28.70	29.43	5.90	205.10	None
	8/1/2023	211	213.70	18.70	28.70	28.70	29.40	10.20	200.80	None
	2/29/2024	211	213.70	18.70	28.70	28.70	29.60	7.75	203.25	None
	8/1/2024	211	213.70	18.70	28.70	28.70	29.48	9.43	201.57	None
04WW06	2/3/2020	212.52	215.63	18.11	28.11	28.11	28.07	4.97	210.66	0.4
	5/4/2020	212.52	215.63	18.11	28.11	28.11	28.11	5.34	210.29	0.0
	11/4/2020	212.52	215.63	18.11	28.11	28.11	28.05	7.84	207.79	0.6
	3/10/2021	212.52	215.63	18.11	28.11	28.11	28.06	5.03	210.60	0.5
	5/24/2021	212.52	215.63	18.11	28.11	28.11	28.07	4.60	211.03	0.4
	8/4/2021	212.52	215.63	18.11	28.11	28.11	28.08	7.08	208.55	0.3
	11/4/2021	212.52	215.63	18.11	28.11	28.11	28.05	10.87	204.76	0.6
	2/1/2022	212.52	215.63	18.11	28.11	28.11	28.08	8.63	207.00	0.3
	2/3/2023	212.52	215.63	18.11	28.11	28.11	28.05	5.17	207.35	0.6
04WW07	2/4/2020	211.66	214.64	12.98	22.98	22.98	22.61	5.27	209.37	3.7
	5/5/2020	211.66	214.64	12.98	22.98	22.98	22.98	6.30	208.34	0.0
	11/5/2020	211.66	214.64	12.98	22.98	22.98	22.63	8.39	206.25	3.5
	3/11/2021	211.66	214.64	12.98	22.98	22.98	22.60	6.20	208.44	3.8
	5/25/2021	211.66	214.64	12.98	22.98	22.98	22.25	5.52	209.12	7.3
	8/5/2021	211.66	214.64	12.98	22.98	22.98	22.28	7.82	206.82	7.0
	11/9/2021	211.66	214.64	12.98	22.98	22.98	22.61	10.53	204.11	3.7
	2/2/2022	211.66	214.64	12.98	22.98	22.98	22.27	8.22	206.42	7.1
	8/2/2022	211.66	214.64	12.98	22.98	22.98	22.58	10.63	204.01	4.0
	2/3/2023	211.66	214.64	12.98	22.98	22.98	22.60	4.53	207.13	3.8
	8/1/2023	211.66	214.64	12.98	22.98	22.98	22.60	9.19	202.47	3.8
	2/29/2024	211.66	214.64	12.98	22.98	22.98	22.60	6.73	204.93	3.8
	8/1/2024	211.66	214.64	12.98	22.98	22.98	22.60	8.33	203.33	3.8
04WW08	2/3/2020	212.07	214.82	33.75	43.75	43.75	43.82	15.92	198.90	None
	5/4/2020	212.07	214.82	33.75	43.75	43.75	43.90	16.23	198.59	None
	11/4/2020	212.07	214.82	33.75	43.75	43.75	43.65	16.63	198.19	1.0
	3/10/2021	212.07	214.82	33.75	43.75	43.75	43.65	16.33	198.49	1.0
	5/24/2021	212.07	214.82	33.75	43.75	43.75	43.63	16.90	197.92	1.2
	8/4/2021	212.07	214.82	33.75	43.75	43.75	43.65	17.37	197.45	1.0
	11/4/2021	212.07	214.82	33.75	43.75	43.75	43.81	18.22	196.60	None
	2/1/2022	212.07	214.82	33.75	43.75	43.75	43.65	18.70	196.12	1.0
	2/3/2023	212.07	214.82	33.75	43.75	43.75	43.70	18.52	193.55	0.5

Table 2-2
Groundwater Elevation Data, Year 5
Fifth Annual Remedial Action Operation Report

Monitoring Well	Date	Ground Surface Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Top of Screen (ft btoc)	Bottom of Screen (ft btoc)	Constructed Well Depth (ft bgs)	Measured Well Depth (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)	Screened Interval Siltation (%)
04WW09	2/4/2020	211.47	214.61	13.14	23.14	23.14	23.45	5.62	208.99	None
	5/5/2020	211.47	214.61	13.14	23.14	23.14	23.47	4.43	210.18	None
	11/5/2020	211.47	214.61	13.14	23.14	23.14	23.47	7.95	206.66	None
	3/11/2021	211.47	214.61	13.14	23.14	23.14	23.45	5.43	209.18	None
	5/25/2021	211.47	214.61	13.14	23.14	23.14	23.49	4.87	209.74	None
	8/5/2021	211.47	214.61	13.14	23.14	23.14	23.45	7.50	207.11	None
	11/9/2021	211.47	214.61	13.14	23.14	23.14	23.45	9.68	204.93	None
	2/2/2022	211.47	214.61	13.14	23.14	23.14	23.45	8.28	206.33	None
	8/2/2022	211.47	214.61	13.14	23.14	23.14	23.45	10.55	204.06	None
	2/3/2023	211.47	214.61	13.14	23.14	23.14	23.45	4.33	207.14	None
	8/1/2023	211.47	214.61	13.14	23.14	23.14	23.43	9.14	202.33	None
	2/29/2024	211.47	214.61	13.14	23.14	23.14	23.48	6.73	204.74	None
	8/1/2024	211.47	214.61	13.14	23.14	23.14	23.42	8.30	203.17	None
04WW10	2/4/2020	210.40	213.67	12.27	22.27	22.27	22.52	6.91	206.76	None
	5/5/2020	210.40	213.67	12.27	22.27	22.27	22.53	6.65	207.02	None
	11/5/2020	210.40	213.67	12.27	22.27	22.27	22.52	7.72	205.95	None
	3/11/2021	210.40	213.67	12.27	22.27	22.27	22.54	6.35	207.32	None
	5/25/2021	210.40	213.67	12.27	22.27	22.27	22.55	6.09	207.58	None
	8/5/2021	210.40	213.67	12.27	22.27	22.27	22.53	7.66	206.01	None
	11/9/2021	210.40	213.67	12.27	22.27	22.27	22.52	9.53	204.14	None
	2/2/2022	210.40	213.67	12.27	22.27	22.27	22.53	7.90	205.77	None
	8/2/2022	210.40	213.67	12.27	22.27	22.27	22.53	10.63	203.04	None
	2/3/2023	210.4	213.67	12.27	22.27	22.27	22.51	5.49	204.91	None
	8/1/2023	210.4	213.67	12.27	22.27	22.27	22.53	9.47	200.93	None
	2/29/2024	210.4	213.67	12.27	22.27	22.27	22.43	6.98	203.42	None
	8/1/2024	210.4	213.67	12.27	22.27	22.27	22.52	8.47	201.93	None
04WW11	2/4/2020	209.31	212.01	8.20	18.20	18.20	18.50	5.40	206.61	None
	5/4/2020	209.31	212.01	8.20	18.20	18.20	18.45	5.29	206.72	None
	11/4/2020	209.31	212.01	8.20	18.20	18.20	18.49	9.32	202.69	None
	3/10/2021	209.31	212.01	8.20	18.20	18.20	18.44	4.77	207.24	None
	5/24/2021	209.31	212.01	8.20	18.20	18.20	18.50	4.45	207.56	None
	8/4/2021	209.31	212.01	8.20	18.20	18.20	18.51	8.10	203.91	None
	11/4/2021	209.31	212.01	8.20	18.20	18.20	18.47	10.18	201.83	None
	2/1/2022	209.31	212.01	8.20	18.20	18.20	18.45	9.11	202.90	None
	8/2/2022	209.31	212.01	8.20	18.20	18.20	18.45	11.43	200.58	None
	2/3/2023	209.31	212.01	8.20	18.20	18.20	18.47	3.51	205.80	None
	8/1/2023	209.31	212.01	8.20	18.20	18.20	18.45	10.11	199.20	None
	2/29/2024	209.31	212.01	8.20	18.20	18.20	18.45	6.00	203.31	None
	8/1/2024	209.31	212.01	8.20	18.20	18.20	18.45	8.62	200.69	None

Table 2-2
Groundwater Elevation Data, Year 5
Fifth Annual Remedial Action Operation Report

Monitoring Well	Date	Ground Surface Elevation (ft amsl)	Top of Casing Elevation (ft amsl)	Top of Screen (ft btoc)	Bottom of Screen (ft btoc)	Constructed Well Depth (ft bgs)	Measured Well Depth (ft btoc)	Depth to Water (ft btoc)	Groundwater Elevation (ft amsl)	Screened Interval Siltation (%)
LHSMW01	2/3/2020	211.19	214.43	7.74	17.74	18.24	17.95	3.90	210.53	None
	5/4/2020	211.19	214.43	7.74	17.74	18.24	17.95	4.86	209.57	None
	11/4/2020	211.19	214.43	7.74	17.74	18.24	17.95	7.32	207.11	None
	3/10/2021	211.19	214.43	7.74	17.74	18.24	17.95	4.25	210.18	None
	5/24/2021	211.19	214.43	7.74	17.74	18.24	17.95	4.11	210.32	None
	8/4/2021	211.19	214.43	7.74	17.74	18.24	17.95	10.52	203.91	None
	11/4/2021	211.19	214.43	7.74	17.74	18.24	17.90	9.20	205.23	None
	2/1/2022	211.19	214.43	7.74	17.74	18.24	17.96	7.44	206.99	None
	2/3/2023	211.19	214.43	7.74	17.74	18.24	17.92	3.93	207.26	None
LHSMW02	2/3/2020	213.75	215.43	7.18	17.18	17.68	19.00	13.53	201.90	None
	5/4/2020	213.75	215.43	7.18	17.18	17.68	18.98	8.64	206.79	None
	11/4/2020	213.75	215.43	7.18	17.18	17.68	19.10	13.90	201.53	None
	3/10/2021	213.75	215.43	7.18	17.18	17.68	19.04	7.66	207.77	None
	5/24/2021	213.75	215.43	7.18	17.18	17.68	19.03	6.34	209.09	None
	8/4/2021	213.75	215.43	7.18	17.18	17.68	19.06	10.85	204.58	None
	11/4/2021	213.75	215.43	7.18	17.18	17.68	19.05	14.90	200.53	None
	2/1/2022	213.75	215.43	7.18	17.18	17.68	18.98	15.48	199.95	None
	2/3/2023	213.75	215.43	7.18	17.18	17.68	19.00	15.02	198.73	None

Notes:

[a] The percent siltation of the screened interval is calculated as the length of silted screened interval divided by the total screened interval length, times 100. Wells will be redeveloped if the siltation reaches or exceeds 10%.

% - percent

ft - feet

amsl - above mean sea level

btoc - feet below top of casing

bgs - below ground surface

Table 2-3
Year 5 RA-O Analytical Results
2024 Remedial Action Operation Report

01335428

			Location Code	04WW01						04WW04			
			Sample ID	04WW01_022924		04WW01_022924-a		04WW01_080124		04WW04_022924		04WW04_080124	
			Sample Date	2/29/2024		2/29/2024		8/3/2024		2/29/2024		8/1/2024	
			Sample Purpose	REG		DUP		REG		REG		REG	
			Location Description	Shallow Zone, Downgradient of Plume		Shallow Zone, Downgradient of Plume		Shallow Zone, Downgradient of Plume		Shallow Zone, Downgradient of Plume		Shallow Zone, Within Plume Area	
Parameter		Units	MCL / PCL / UTL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
FIELD TESTS													
	Dissolved Oxygen	mg/L	NV	0.25		0.25		0.26		0.29		2.89	
	Ferrous Iron	mg/L	NV	NA		NA		NA		NA		NA	
	Oxidation-Reduction Potential	mV	NV	-75		-75		-20		-118		-42	
	pH	SU	NV	6.39		6.39		6.91		6.38		6.92	
	Specific conductivity	µmhos/cm	NV	2.91		2.91		3.18		0.252		0.337	
	Temperature	°C	NV	14.29		14.29		24.46		15.14		25.6	
	Turbidity	NTU	NV	80.3		80.3		57.3		87.1		178	
GEN CHEMISTRY													
	Total Organic Carbon	mg/L	NV	NA		NA		NA		NA		NA	
PERCHLORATE													
	Perchlorate	µg/L	17	<0.05	U	<0.05	U	0.086	J	0.051	J	0.0947	J

Notes:

< The analyte was not detected above the concentration shown.

µg/L - micrograms per Liter

µmhos/cm - micromhos per centimeter

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.

°C- degrees Celsius

-a - field duplicate

ID - Identifier

MCL - Maximum Contaminant Level

mg/L - milligrams per Liter

mV - millivolt

NA - not analyzed

NTU - nephelometric turbidity unit

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

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

RA-O - Remedial Action Operation

REG - regular sample

DUP - duplicate sample

SU - standard unit

UTL - Upper Tolerance Limit

Val Qual - validation qualifier

Table 2-3
Year 5 RA-O Analytical Results
2024 Remedial Action Operation Report

01335429

			Location Code	04WW05				04WW07					
			Sample ID	04WW05_022924		04WW05_080124		04WW07_022924		04WW07_080124		04WW07_080124-a	
			Sample Date	2/29/2024		8/1/2024		2/29/2024		8/1/2024		8/1/2024	
			Sample Purpose	REG		REG		REG		REG		DUP	
			Location Description	Shallow Zone, Downgradient of Plume		Shallow Zone, Within Plume Area		Shallow Zone, Downgradient of Plume		Shallow Zone, Downgradient of Plume Area		Shallow Zone, Downgradient of Plume Area	
Parameter		Units	MCL / PCL / UTL	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual	Result	Val Qual
FIELD TESTS													
	Dissolved Oxygen	mg/L	NV	0.83		0.38		0.73		0.25		0.25	
	Ferrous Iron	mg/L	NV	NA		NA		NA		NA		NA	
	Oxidation-Reduction Potential	mV	NV	43		7		198		10		10	
	pH	SU	NV	6.22		6.99		6.61		7.05		7.05	
	Specific conductivity	µmhos/cm	NV	0.78		1.3		2.37		2.95		2.95	
	Temperature	°C	NV	14.92		28.42		14.66		22.48		22.48	
	Turbidity	NTU	NV	123		59		14.2		15		15	
GEN CHEMISTRY													
	Total Organic Carbon	mg/L	NV	NA		NA		NA		NA		NA	
PERCHLORATE													
	Perchlorate	µg/L	17	0.0474	J	<0.05	U	<0.05	U	<0.05	U	<0.05	U

Notes:

< The analyte was not detected above the concentration shown.

µg/L - micrograms per Liter

µmhos/cm - micromhos per centimeter

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.

°C- degrees Celsius

-a - field duplicate

ID - Identifier

MCL - Maximum Contaminant Level

mg/L - milligrams per Liter

mV - millivolt

NA - not analyzed

NTU - nephelometric turbidity unit

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

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

RA-O - Remedial Action Operation

REG - regular sample

DUP - duplicate sample

SU - standard unit

UTL - Upper Tolerance Limit

Val Qual - validation qualifier

Table 2-3
Year 5 RA-O Analytical Results
2024 Remedial Action Operation Report

01335430

			Location Code	04WW09				04WW10				04WW11			
			Sample ID	04WW09_022924		04WW09_080124		04WW10_022924		04WW10_080124		04WW11_022924		04WW11_080124	
			Sample Date	2/29/2024		8/1/2024		2/29/2024		8/1/2024		2/29/2024		8/1/2024	
			Sample Purpose	REG		REG		REG		REG		REG		REG	
			Location Description	Shallow Zone, Downgradient of Plume		Shallow Zone, Within Treatment Area		Shallow Zone, Downgradient of Plume		Shallow Zone, Within Treatment Area		Shallow Zone, Downgradient of Plume		Shallow Zone, Downgradient of Plume	
Parameter		**Units**	**MCL / PCL / UTL**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**	**Result**	**Val Qual**
FIELD TESTS															
	Dissolved Oxygen	mg/L	NV	0.19		3.7		2.23		0.76		3.22		0.35	
	Ferrous Iron	mg/L	NV	NA		NA		NA		NA		NA		NA	
	Oxidation-Reduction Potential	mV	NV	-46		-37		273		77		78		26	
	pH	SU	NV	6.6		6.93		6.28		6.96		6.7		7.16	
	Specific conductivity	µmhos/cm	NV	0.471		0.817		0.77		1.79		0.128		0.213	
	Temperature	°C	NV	15.36		24.77		15.08		23.99		13.17		29.59	
	Turbidity	NTU	NV	177		0		39.3		14.2		12.1		28.2	
GEN CHEMISTRY															
	Total Organic Carbon	mg/L	NV	NA		NA		NA		NA		NA		NA	
PERCHLORATE															
	Perchlorate	µg/L	17	<0.05	U	<0.05	U	0.0558	J	<0.05	U	0.148		<0.05	U

Notes:

< The analyte was not detected above the concentration shown.

µg/L - micrograms per Liter

µmhos/cm - micromhos per centimeter

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.

°C- degrees Celsius

-a - field duplicate

ID - Identifier

MCL - Maximum Contaminant Level

mg/L - milligrams per Liter

mV - millivolt

NA - not analyzed

NTU - nephelometric turbidity unit

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

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

RA-O - Remedial Action Operation

REG - regular sample

DUP - duplicate sample

SU - standard unit

UTL - Upper Tolerance Limit

Val Qual - validation qualifier

This page intentionally left blank.

Monitoring Well	Date	Perchlorate Concentration (µg/L)
04WW01	12-19-2000	< 0.3
	3-17-2002	3.98
	9-18-2002	< 4
	9-9-2004	< 1
	9-3-2010	< 0.1
	2-23-2011	0.114
	1-10-2018	< 4
	1-22-2019	< 2
	2-4-2020	**19**
	5-4-2020	< 0.05
	8-10-2020	0.561 J
	11-4-2020	0.246 J
	3-10-2021	< 0.05
	5-24-2021	< 0.05
	8-4-2021	< 0.5
	11-4-2021	< 0.2
	2-1-2022	< 0.2
	8-2-2022	< 0.05
	2-3-2023	<0.05
	8-1-2023	0.0528 J
	2-29-2024	<0.05
	8-1-2024	0.086 J
04WW02	12-19-2000	< 0.3
	3-10-2002	< 4
	9-18-2002	< 4
	9-9-2004	< 1
	9-3-2010	< 0.1
	1-9-2018	< 4
	1-21-2019	< 4
	11-5-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.0477 J
	11-4-2020	0.0693 J
	3-10-2021	< 0.05
	5-24-2021	0.54
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	< 0.2
04WW03	12-19-2000	< 0.3
	9-9-2004	< 1
	8-20-2010	< 0.1
	1-9-2018	< 4
	1-21-2019	< 4
	11-6-2019	< 2

Table 2-4
Historical Perchlorate Concentrations 2000-2024
2024 Remedial Action Operation Report

Monitoring Well	Date	Perchlorate Concentration (µg/L)
04WW04	9-3-2010	**4,590**
	10-13-2010	**2,920**
	11-10-2010	**5,410**
	2-23-2011	**1,580**
	1-9-2018	**31 J**
	1-21-2019	< 2
	11-6-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	< 0.1
	11-4-2020	0.158
	3-10-2021	0.139
	5-24-2021	< 0.05
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	0.055 J
	8-2-2022	< 0.05
	2-3-2023	< 0.05
	8-1-2023	0.0326 J
	2-29-2024	0.051 J
	8-1-2024	0.0947 J
04WW05	9-3-2010	0.9
	11-10-2010	6.58
	2-23-2011	0.326
	2-23-2011	0.327
	1-9-2018	**78**
	1-21-2019	**78**
	11-6-2019	< 2
	2-4-2020	< 2
	5-5-2020	< 0.05
	8-11-2020	0.399 J
	11-4-2020	< 0.05
	3-11-2021	< 0.05
	5-25-2021	< 0.05
	8-5-2021	< 0.5
	11-9-2021	< 0.2
	2-2-2022	0.28
	8-2-2022	< 0.05
	2-3-2023	< 0.05
	8-1-2023	0.0333 J
	2-29-2024	0.0474 J
	8-1-2024	< 0.05
04WW06	1-9-2018	3.1 J
	1-21-2019	< 2
	11-6-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.567 J
	11-4-2020	< 0.05

Monitoring Well	Date	Perchlorate Concentration (µg/L)
04WW06 (cont.)	3-10-2021	< 0.05
	5-24-2021	0.0272 J
	8-4-2021	< 0.1
	11-4-2021	< 0.2
	2-1-2022	< 0.2
04WW07	1-9-2018	13
	1-22-2019	**110**
	2-4-2020	**86**
	5-5-2020	3.51
	8-11-2020	0.557 J
	11-4-2020	0.19 J
	3-11-2021	0.169
	5-25-2021	< 0.05
	8-5-2021	< 0.5
	11-9-2021	< 0.2
	2-2-2022	< 0.2
	8-2-2022	< 0.05
	2-3-2023	< 0.05
	8-1-2023	0.300 J
	2-29-2024	< 0.05
	8-1-2024	< 0.05
04WW08	1-9-2018	1.5 J
	11-6-2019	13
	2-3-2020	< 2
	5-4-2020	9.29
	8-10-2020	1.66
	11-4-2020	4.65
	3-10-2021	4
	5-24-2021	0.0359 J
	8-4-2021	< 0.5
	11-4-2021	< 0.2
	2-1-2022	< 1
04WW09	1-22-2019	**2,100**
	2-4-2020	**18**
	5-5-2020	11.1
	8-11-2020	3.92
	11-4-2020	2.02
	3-11-2021	< 0.05
	5-25-2021	< 0.5
	8-5-2021	< 0.5
	11-9-2021	< 0.2
	2-2-2022	< 1
	8-2-2022	< 0.05
	2-3-2023	< 0.05
	8-1-2023	0.0323 J
	2-29-2024	< 0.05
	8-1-2024	< 0.05
04WW10	1-22-2019	**10,000**
	2-4-2020	< 2
	5-5-2020	< 0.05
	8-11-2020	0.339 J+
	11-4-2020	0.0888 J

Table 2-4
Historical Perchlorate Concentrations 2000-2024
2024 Remedial Action Operation Report

Monitoring Well	Date	Perchlorate Concentration (µg/L)
04WW10 (cont.)	3-11-2021	< 0.05
	5-25-2021	< 0.05
	8-5-2021	< 0.05
	11-9-2021	< 0.2
	2-2-2022	< 0.2
	8-2-2022	< 0.05
	2-3-2023	< 0.05
	8-2-2023	0.031 J
	2-29-2024	0.0558 J
	8-1-2024	< 0.05
04WW11	1-22-2019	< 4
	11-6-2019	< 2
	2-4-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.0435 J
	11-4-2020	< 0.05
	3-10-2021	< 0.05
	5-24-2021	0.0627 J
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	< 0.2
	8-2-2022	< 0.05
	2-3-2023	< 0.05
	8-1-2023	< 0.05 U
	2-29-2024	0.148
	8-1-2024	< 0.05
LHSMW01	5-24-2000	**36.9**
	10-3-2000	< 16
	2-8-2001	**81**
	9-18-2002	< 4
	9-3-2010	0.676
	2-23-2011	0.208
	1-9-2018	< 4
	1-22-2019	< 4
	11-6-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.179 J
	11-4-2020	< 0.05
	3-10-2021	< 0.05
	5-24-2021	< 0.05
	8-4-2021	< 0.1
	11-4-2021	< 0.2
	2-1-2022	0.078 J

Table 2-4
Historical Perchlorate Concentrations 2000-2024
2024 Remedial Action Operation Report

Monitoring Well	Date	Perchlorate Concentration (µg/L)
LHSMW02	8-20-2010	< 0.1
	2-23-2011	1.3
	2-15-2018	< 4
	1-21-2019	< 2
	11-5-2019	< 2
	2-3-2020	< 2
	5-4-2020	< 0.05
	8-10-2020	0.121
	11-4-2020	0.169
	3-10-2021	0.082 J
	5-24-2021	0.0392 J
	8-4-2021	< 0.25
	11-4-2021	< 0.2
	2-1-2022	< 0.2

Notes:

Bolded highlighted concentrations exceed the PCL (17 µg/L).

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

< Perchlorate was not detected above the detection limit shown.

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.

J+ The analyte was positively identified; the associated numerical value is its approximate concentration with a high bias in the sample.

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

This page intentionally left blank.

Table 2-5
Year 5 RA-O Well Maintenance Summary
2024 Remedial Action Operation Report

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Photos	Comments From Well Inspection Form
04WW01	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	11/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/3/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/29/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
04WW02	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	
	8/4/2021	Good	Good	Good	In Place	Yes	
	11/4/2021	Good	Good	Good	In Place	Yes	
	2/1/2022	Good	Good	Good	In Place	Yes	
	2/3/2023	Good	Good	Good	In Place	Yes	
04WW04	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	11/4/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/3/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/29/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
04WW05	3/11/2021	Good	Good	Good	In Place	Yes	
	5/25/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/5/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	11/9/2021	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/3/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/29/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen

Table 2-5
Year 5 RA-O Well Maintenance Summary
2024 Remedial Action Operation Report

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Photos	Comments From Well Inspection Form
04WW06	3/10/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/24/2021	Good	Good	Good	In Place	Yes	Needs paint
	8/4/2021	Good	Good	Good	In Place	Yes	Needs paint
	11/4/2021	Good	Good	Good	In Place	Yes	Needs paint
	2/1/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
	2/3/2023	Good	Good	Good	In Place	Yes	
04WW07	3/11/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/25/2021	Good	Good	Good	In Place	Yes	Needs paint
	8/5/2021	Good	Good	Good	In Place	Yes	Needs paint
	11/9/2021	Good	Good	Good	In Place	Yes	Needs paint
	2/2/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
	8/2/2022	Good	Good	Good	In Place	Yes	
	2/3/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2023	Good	Good	Good	In Place	Yes	
	2/29/2024	Good	Good	Good	In Place	Yes	
	8/1/2024	Good	Good	Good	In Place	Yes	
04WW08	3/10/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/24/2021	Good	Good	Good	In Place	Yes	Needs paint; Silt present at <10% of well screen
	8/4/2021	Good	Good	Good	In Place	Yes	Needs paint; Silt present at <10% of well screen
	11/4/2021	Good	Good	Good	In Place	Yes	Needs paint; Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022; Silt present at <10% of well screen
	2/3/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
04WW09	3/11/2021	Good	Good	Good	In Place	Yes	Label partially missing; Silt present at <10% of well screen
	5/25/2021	Good	Good	Good	In Place	Yes	Label partially missing; Silt present at <10% of well screen
	8/5/2021	Good	Good	Good	In Place	Yes	Label partially missing
	11/9/2021	Good	Good	Good	In Place	Yes	Label partially missing; Silt present at <10% of well screen
	2/2/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022; Silt present at <10% of well screen
	8/2/2022	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/3/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	2/29/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2024	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen

Table 2-5
Year 5 RA-O Well Maintenance Summary
2024 Remedial Action Operation Report

Well ID	Date Inspected	Pads	Bollards	Protective Casings	Locks	Photos	Comments From Well Inspection Form
04WW10	3/11/2021	Good	Good	Good	In Place	Yes	Label partially missing
	5/25/2021	Good	Good	Good	In Place	Yes	Label partially missing
	8/5/2021	Good	Good	Good	In Place	Yes	Label partially missing
	11/9/2021	Good	Good	Good	In Place	Yes	Label partially missing
	2/2/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
	8/2/2022	Good	Good	Good	In Place	Yes	
	2/3/2023	Good	Good	Good	In Place	Yes	Silt present at <10% of well screen
	8/1/2023	Good	Good	Good	In Place	Yes	
	2/29/2024	Good	Good	Good	In Place	Yes	
	8/1/2024	Good	Good	Good	In Place	Yes	
04WW11	3/10/2021	Good	Good	Good	In Place	Yes	Label partially missing
	5/24/2021	Good	Good	Good	In Place	Yes	Label partially missing
	8/4/2021	Good	Good	Good	In Place	Yes	Label partially missing
	11/4/2021	Good	Good	Good	In Place	Yes	Label partially missing
	2/1/2022	Good	Good	Good	In Place	Yes	Painted and label replaced 04/2022
	8/2/2022	Good	Good	Good	In Place	Yes	
	2/3/2023	Good	Good	Good	In Place	Yes	
	8/1/2023	Good	Good	Good	In Place	Yes	
	2/29/2024	Good	Good	Good	In Place	Yes	
	8/1/2024	Good	Good	Good	In Place	Yes	
LHSMW01	3/10/2021	Good	Good	Good	In Place	Yes	
	5/24/2021	Good	Good	Good	In Place	Yes	
	8/4/2021	Good	Good	Good	In Place	Yes	
	11/4/2021	Good	Good	Good	In Place	Yes	
	2/1/2022	Good	Good	Good	In Place	Yes	
	2/3/2023	Good	Good	Good	In Place	Yes	
LHSMW02	3/10/2021	Good	Good	Good	In Place	Yes	Needs paint
	5/24/2021	Good	Good	Good	In Place	Yes	Needs paint
	8/4/2021	Good	Good	Good	In Place	Yes	Needs Paint
	11/4/2021	Good	Good	Good	In Place	Yes	Needs Paint; Silt present at <10% of well screen
	2/1/2022	Good	Good	Good	In Place	Yes	Label replaced 4/2022; Silt present at <10% of well screen
	2/3/2023	Good	Good	Good	In Place	Yes	

Notes:

< less than

% - percent

ID - identifier

RA-O - Remedial Action Operation

This page intentionally left blank.

APPENDIX A
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION AND DOCUMENTATION

This page intentionally left blank.

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated April 2019 for LHAAP-04 an inspection of the site was conducted by BHMTH [indicate transferee] on 8/1/24.

The land use control mechanisms are:

- Groundwater restrictions - The groundwater underlying LHAAP-04 within the LUC boundary shall not be accessed or used for any purpose (except for environmental monitoring and testing) without the prior written approval of U.S. Army, the USEPA and the TCEQ. The LUC to prohibiting groundwater use shall be implemented and shall remain in place at the site until the levels of contaminants of concern (COCs) in soil and groundwater allow for unlimited use and unrestricted exposure.;
- Land use restrictions - restrict land use within the LUC boundary to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: AUGUST 1, 2024

Name/Title: Scott Baesemann / Senior Environmental Tech

Signature: Scott Baesemann

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

This page intentionally left blank.

APPENDIX B
SAMPLE COLLECTION LOGS

This page intentionally left blank.

01335448

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

Page 1 of 1

LOCATION	Site: LHAAP - 04	Location ID: 04WW01	Date: 2/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 8.29
	Total Well Depth (ft) (C): 27.22	Water Column Thickness (ft) (C-B): 18.93	2nd Depth to Water(pre-purge): 8.29
	Screened Interval: 16.73 - 26.73	Weather: Cloudy / cold	Well Volume (gal) (A*(C-B)): 12.34
	Pump placement: 21.73	Well Condition: Good	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
2/29/24	1035	8.36	0.13	100	13.35	5.30	2.82	0.71	96.3	-47	
	1040	8.42	0.26	100	14.11	6.27	2.86	0.35	87.5	-64	
	1045	8.46	0.39	100	14.18	6.35	2.90	0.27	82.4	-73	
	1050	8.48	0.52	100	14.22	6.37	2.90	0.26	81.5	-74	
	1055	8.50	0.65	100	14.26	6.38	2.91	0.25	80.8	-74	
↓	1100	8.52	0.78	100	14.29	6.39	2.91	0.25	80.3	-75	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	2	125ml Plastic	NA	Y		Perchlorate
Sample ID: 04WW01_022924				Sample Time: 1100		

01335449

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

Page 1 of 1

LOCATION	Site: LHAAP - 04	Location ID: 04WW04	Date: 2/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 5.75
	Total Well Depth (ft) (C): 21.39	Water Column Thickness (ft) (C-B): 15.64	2nd Depth to Water(pre-purge): 5.75
	Screened Interval: 10.80 - 20.80	Weather: Cloudy / Cold	Well Volume (gal) (A*(C-B)): 2.50
	Pump placement: 15.80	Well Condition: Good	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
2/29/24	0710	5.83	0.13	100	13.93	6.99	0.343	0.82	100	-121	
	0715	5.89	0.26	100	14.80	6.48	0.270	0.40	93.5	-119	
	0720	5.94	0.39	100	14.96	6.40	0.254	0.31	89.4	-119	
	0725	5.96	0.52	100	15.04	6.39	0.253	0.30	88.5	-118	
	0730	5.98	0.65	100	15.09	6.39	0.252	0.29	87.7	-118	
↓	0735	6.00	0.78	100	15.14	6.38	0.252	0.29	87.1	-118	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type	Preserv.	Filter (Y/N)	Method	Parameter(s)
1 125 ml Plastic	NA	Y		Perchlorate

Sample ID: 04WW04_022924 Sample Time: 0735

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335450

LOCATION	Site: LHAAP - 04	Location ID: 04WW05	Date: 2/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 7.75
	Total Well Depth (ft) (C): 29.60	Water Column Thickness (ft) (C-B): 21.85	2nd Depth to Water(pre-purge): 7.75
	Screened Interval: 18.70-28.70	Weather: Cloudy / Cold	Well Volume (gal) (A*(C-B)): 3.50
	Pump placement: 23.70	Well Condition: Good	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
2/29/24	0830	7.82	0.13	100	13.93	6.82	0.772	1.21	151	8	
	0835	7.88	0.26	100	14.51	6.47	0.777	0.98	135	24	
	0840	7.92	0.39	100	14.77	6.27	0.779	0.85	127	40	
	0845	7.95	0.52	100	14.84	6.25	0.779	0.84	125	41	
	0850	7.97	0.65	100	14.88	6.23	0.781	0.84	124	42	
↓	0855	7.99	0.78	100	14.92	6.22	0.780	0.83	123	43	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125ml Plastic	NA	Y		PERCHLORATE

Sample ID: 04WW05_022924

Sample Time: 0855

01335451

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

Page 1 of 1

LOCATION	Site: LHAAP - 04	Location ID: 04WW07	Date: 2/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 6.73
	Total Well Depth (ft) (C): 22.60	Water Column Thickness (ft) (C-B): 15.87	2nd Depth to Water(pre-purge): 6.73
	Screened Interval: 12.48 - 22.48	Weather: CLOUDY / COLD	Well Volume (gal) (A*(C-B)): 10.35
	Pump placement: 17.98	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
2/29/24	0630	6.80	0.13	100	14.29	6.78	2.35	1.05	18.9	193	
	0635	6.86	0.26	100	14.43	6.68	2.37	0.88	16.0	196	
	0640	6.90	0.39	100	14.51	6.62	2.37	0.75	15.7	197	
	0645	6.93	0.52	100	14.56	6.61	2.37	0.74	15.3	197	
	0650	6.95	0.65	100	14.60	6.61	2.37	0.73	14.6	198	
↓	0655	6.97	0.78	100	14.66	6.61	2.37	0.73	14.2	198	

Colorimeter Results					**No. Containers/Volume/Type**			**Preserv.**	**Filter (Y/N)**	**Method**	**Parameter(s)**
Time	**Analyte**	**Dilution**	**Result**	**Units**		1	125ml PLASTIC	NA	Y		PERCHLORATE

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 04WW07_022924 Sample Time: 0655

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335452

LOCATION	Site: LHAAP - 04	Location ID: 04WW09	Date: 2/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 6.73
	Total Well Depth (ft) (C): 23.48	Water Column Thickness (ft) (C-B): 16.75	2nd Depth to Water(pre-purge): 6.73
	Screened Interval: 13.14-23.14	Weather: CLOUDY / COLD	Well Volume (gal) (A*(C-B)): 10.92
	Pump placement: 18.14	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
2/29/24	0750	6.81	0.13	100	13.88	6.48	0.472	0.77	195	-76	
	0755	6.88	0.26	100	15.05	6.55	0.470	0.39	186	-66	
	0800	6.92	0.39	100	15.20	6.59	0.471	0.21	180	-49	
	0805	6.94	0.52	100	15.25	6.60	0.471	0.20	179	-48	
	0810	6.96	0.65	100	15.31	6.60	0.471	0.19	178	-47	
	0815	6.97	0.78	100	15.36	6.60	0.471	0.19	177	-46	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125ml Plastic	NA	Y		PERCHLORATE

Sample ID: 04WW09_022924

Sample Time: 0815

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335453

LOCATION	Site: LHAAP - 04	Location ID: 04WW10	Date: 2/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 6.98
	Total Well Depth (ft) (C): 22.43	Water Column Thickness (ft) (C-B): 15.45	2nd Depth to Water(pre-purge): 6.98
	Screened Interval: 12.27-22.27	Weather: Cloudy / Cold	Well Volume (gal) (A*(C-B)): 10.07
	Pump placement: 17.27	Well Condition: Good	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
2/29/24	0955	7.06	0.13	100	13.29	6.50	0.752	2.59	50.2	149	
	1000	7.12	0.26	100	14.69	6.44	0.763	2.34	45.7	[redacted]	229
	1005	7.16	0.39	100	14.91	6.30	0.769	2.27	40.9	267	
	1010	7.18	0.52	100	14.96	6.29	0.770	2.25	40.4	269	
	1015	7.20	0.65	100	15.02	6.28	0.770	2.24	39.7	271	
	1020	7.21	0.78	100	15.08	6.28	0.770	2.23	39.3	273	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	1	125ml Plastic	NA	Y		Perchlorate

Sample ID: 04WW10_022924 Sample Time: 1020

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335454

LOCATION	Site: LHAAP - 04	Location ID: 04WW11	Date: 2/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 6.00
	Total Well Depth (ft) (C): 18.45	Water Column Thickness (ft) (C-B): 12.45	2nd Depth to Water(pre-purge): 6.00
	Screened Interval: 8.20 - 18.20	Weather: Cloudy / cold	Well Volume (gal) (A*(C-B)): 8.11
	Pump placement: 13.20	Well Condition: Good	Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
2/29/24	0915	6.07	0.13	100	12.87	7.45	0.152	3.59	18.9	40	
	0920	6.13	0.26	100	13.00	6.88	0.133	3.31	14.5	64	
	0925	6.17	0.39	100	13.05	6.74	0.129	3.25	13.7	74	
	0930	6.20	0.52	100	13.10	6.72	0.128	3.24	13.2	76	
	0935	6.22	0.65	100	13.14	6.71	0.128	3.23	12.6	77	
↓	0940	6.24	0.78	100	13.17	6.70	0.128	3.22	12.1	78	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	3	125ml Plastic	NA	Y		PERCHLORATE

Sample ID: 04WW11_022924 Sample Time: 0940

01335455

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

Page 1 of 1

LOCATION	Site: LHAAP - 04	Location ID: 04WW01	Date: 8/1/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): 9.90
	Total Well Depth (ft) (C): 27.22	Water Column Thickness (ft) (C-B): 17.32	2nd Depth to Water(pre-purge): 9.90
	Screened Interval: 16.73 - 26.73	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 11.29
	Pump placement: 21.73	Well Condition: GOOD	Ferrous Iron: NA

CASING INFO	Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
	Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
8/1/24	1100	9.97	0.13	100	30.36	6.97	2.37	0.80	66.7	[redacted]15	
	1105	10.03	0.26	100	25.81	6.95	3.01	0.29	62.9	-5	
	1110	10.07	0.39	100	24.61	6.92	3.15	0.27	59.8	-18	
	1115	10.10	0.52	100	24.55	6.91	3.16	0.26	59.3	-19	
	1120	10.12	0.65	100	24.50	6.91	3.17	0.26	58.5	-20	
↓	1125	10.14	0.78	100	24.46	6.91	3.18	0.26	57.3	-20	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125 ml Plastic	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 04WW01_080124 Sample Time: 1125

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335456

Page 1 of 1

LOCATION	Site: LHAAP - 04		Location ID: 04WW04		Date: 8/1/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"		Unit Casing Volume (gal/lin ft) (A): 0.160		Initial Depth to Water (ft) (B): 7.18
	Total Well Depth (ft) (C): 21.41		Water Column Thickness (ft) (C-B): 14.23		2nd Depth to Water(pre-purge): 7.18
	Screened Interval: 10.80 - 20.80		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 2.28
	Pump placement: 15.80		Well Condition: GOOD		Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
8/1/24	0900	7.25	0.13	100	26.54	7.13	0.308	3.22	201	-20	
	0905	7.30	0.26	100	25.91	6.97	0.317	3.05	189	-30	
	0910	7.34	0.39	100	25.77	6.93	0.336	3.94	183	-40	
	0915	7.37	0.52	100	25.73	6.93	0.336	3.92	181	-41	
	0920	7.39	0.65	100	25.67	6.92	0.336	3.90	179	-41	
	0925	7.41	0.78	100	25.60	6.92	0.337	2.89	178	-42	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		1	125ml PLASTIC	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 04WW04_080124 Sample Time: 0925

01335457

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

Page 1 of 1

LOCATION	Site: LHAAP - 04		Location ID: 04WW05		Date: 8/1/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"		Unit Casing Volume (gal/lin ft) (A): 0.160		Initial Depth to Water (ft) (B): 9.43
	Total Well Depth (ft) (C): 29.48		Water Column Thickness (ft) (C-B): 20.05		2nd Depth to Water(pre-purge): 9.43
	Screened Interval: 18.70 - 28.70		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 3.21
	Pump placement: 23.70		Well Condition: GOOD		Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
8/1/24	0940	9.50	0.13	100	28.23	6.84	1.08	0.95	70.5	44	
	0945	9.56	0.26	100	28.18	6.93	1.20	0.50	65.1	15	
	0950	9.60	0.39	100	28.30	6.98	1.28	0.40	61.3	8	
	0955	9.62	0.52	100	28.34	6.98	1.29	0.39	60.5	8	
	1000	9.64	0.65	100	28.38	6.99	1.30	0.38	59.7	7	
↓	1005	9.65	0.78	100	28.42	6.99	1.30	0.38	59.0	7	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		3	125ml PLASTIC	NA	Y		PERCHLORATE

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 04WW05_080124 Sample Time: 1005

APPENDIX C
WELL INSPECTION FORMS AND WELL PHOTOGRAPHS

This page intentionally left blank.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log February 2024



Photo 1: 04WW01 has a legible well identification (ID) label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.



Photo 2: 04WW04 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log February 2024



Photo 3: 04WW05 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.



Photo 4: 04WW07 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log February 2024



Photo 5: 04WW09 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.



Photo 6: 04WW10 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log February 2024



Photo 7: 04WW11 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log August 2024



Photo 1: 04WW01 has a legible well identification (ID) label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.



Photo 2: 04WW04 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log August 2024



Photo 3: 04WW05 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.



Photo 4: 04WW07 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log August 2024



Photo 5: 04WW09 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.



Photo 6: 04WW10 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

Longhorn Army Ammunition Plant Site LHAAP-04 Photograph Log August 2024



Photo 7: 04WW11 has a legible well ID label, an operable pad lock, stable bollards, an intact concrete pad, and a well plug in good condition. The paint on the bollards and well casing is also in good condition.

01335468

WELL INSPECTION FORM

Job Name: CHAAP
Job No.: JOPCIBH.0001
Client: ARMY
Site Name: 04

Well ID: 04WW01
Inspection Date: 2/29/24
Well Completion Depth/ Measured Depth: 27.22
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)
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:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: 3 JUPCIBH.000
Client: Army
Site Name: 04
Well ID: 04MW04
Inspection Date: 2/29/24
Well Completion Depth/ Measured Depth: 21.39
Inspector: Scott Beasinger

☒ 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): 2"
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:

01335470

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SUPCI BH.0001
Client: Army
Site Name: 04

Well ID: 04MW05
Inspection Date: 2/29/24
Well Completion Depth/ Measured Depth: 29.60
Inspector: Scott Bassingar

☒ 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): 2"
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:

01335471

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SVPCIBH.0001
Client: ARMY
Site Name: 04

Well ID: 04WW07
Inspection Date: 2/29/24
Well Completion Depth/ Measured Depth: 22.60
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

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:

01335472

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: Army
Site Name: 04
Well ID: 04MW09
Inspection Date: 2/29/24
Well Completion Depth/Measured Depth: 23.48
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

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:

01335473

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARMY
Site Name: D4
Well ID: D4WW10
Inspection Date: 2/29/24
Well Completion Depth/ Measured Depth: 22.43
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)
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:

01335474

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARMY
Site Name: 04

Well ID: 04MW11
Inspection Date: 2/29/24
Well Completion Depth/ Measured Depth: 18.45
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:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: ARMY
Site Name: 04

Well ID: 04WW07
Inspection Date: 8/1/24
Well Completion Depth/Measured Depth: 22.60
Inspector: Scott Bassinger

☒ 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 issues 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:

01335476

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: ARmy
Site Name: 04

Well ID: 04MW10
Inspection Date: 8/1/24
Well Completion Depth/ Measured Depth: 22.52
Inspector: Scott Baggenstoss

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) 4/11
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:

01335477

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCI BH.0001
Client: Army
Site Name: 04
Well ID: 04WW09
Inspection Date: 8/1/24
Well Completion Depth/ Measured Depth: 23.42
Inspector: Scott Baggingard

☒ 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:

01335478

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: ARmy
Site Name: 04

Well ID: 04WW04
Inspection Date: 8/1/24
Well Completion Depth/ Measured Depth: 21.41
Inspector: Scott Baggingar

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 frames that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ New Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 2"
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:

01335479

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: Army
Site Name: 04
Well ID: 04WW05
Inspection Date: 8/1/24
Well Completion Depth/ Measured Depth: 29.48
Inspector: Scott Bassinger

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): 2"
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:

01335480

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: ARMY
Site Name: 04
Well ID: 04WW11
Inspection Date: 8/1/24
Well Completion Depth/ Measured Depth: 18.45
Inspector: Scott Buggs, NG 42

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 frames 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:

01335481

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: J-PCTBA,0001
Client: ARMY
Site Name: 04
Well ID: 04WW01
Inspection Date: 8/1/24
Well Completion Depth/ Measured Depth: 27.22
Inspector: Scott Bassinger

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:

APPENDIX D
LABORATORY ANALYTICAL DATA PACKAGES

This page intentionally left blank.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

March 13, 2024

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS24030040**

Laboratory Results for: **LHAAP-04**

Dear Marcia Olive,

ALS Environmental received 8 sample(s) on Mar 01, 2024 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
James Guin

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Work Order: HS24030040

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS24030040-01	04WW07-022924	Water		29-Feb-2024 06:55	01-Mar-2024 09:25	☐
HS24030040-02	04WW04-022924	Water		29-Feb-2024 07:35	01-Mar-2024 09:25	☐
HS24030040-03	04WW09-022924	Water		29-Feb-2024 08:15	01-Mar-2024 09:25	☐
HS24030040-04	04WW05-022924	Water		29-Feb-2024 08:55	01-Mar-2024 09:25	☐
HS24030040-05	04WW11-022924	Water		29-Feb-2024 09:40	01-Mar-2024 09:25	☐
HS24030040-06	04WW10-022924	Water		29-Feb-2024 10:20	01-Mar-2024 09:25	☐
HS24030040-07	04WW01-022924	Water		29-Feb-2024 11:00	01-Mar-2024 09:25	☐
HS24030040-08	04WW01-022924-a	Water		29-Feb-2024 11:00	01-Mar-2024 09:25	☐

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-04
Work Order: HS24030040

Work Order Comments

- This report was revised 03/13/24 to update the Perchlorate report.

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS High Res Lab Houston, TX. Final report attached.

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Sample ID: 04WW07-022924
Collection Date: 29-Feb-2024 06:55

ANALYTICAL REPORT
WorkOrder:HS24030040
Lab ID:HS24030040-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: LHAAP-04 WorkOrder:HS24030040

Sample ID: 04WW04-022924 Lab ID:HS24030040-02

Collection Date: 29-Feb-2024 07:35 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Sample ID: 04WW09-022924
Collection Date: 29-Feb-2024 08:15

ANALYTICAL REPORT
WorkOrder:HS24030040
Lab ID:HS24030040-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Sample ID: 04WW05-022924
Collection Date: 29-Feb-2024 08:55

ANALYTICAL REPORT
WorkOrder:HS24030040
Lab ID:HS24030040-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Sample ID: 04WW11-022924
Collection Date: 29-Feb-2024 09:40

ANALYTICAL REPORT
WorkOrder:HS24030040
Lab ID:HS24030040-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Sample ID: 04WW10-022924
Collection Date: 29-Feb-2024 10:20

ANALYTICAL REPORT
WorkOrder:HS24030040
Lab ID:HS24030040-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Sample ID: 04WW01-022924
Collection Date: 29-Feb-2024 11:00

ANALYTICAL REPORT
WorkOrder:HS24030040
Lab ID:HS24030040-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
Sample ID: 04WW01-022924-a
Collection Date: 29-Feb-2024 11:00

ANALYTICAL REPORT
WorkOrder:HS24030040
Lab ID:HS24030040-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	06-Mar-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
WorkOrder: HS24030040

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R460630 (0)	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)				**Matrix:** Water	
HS24030040-01	04WW07-022924	29 Feb 2024 06:55			06 Mar 2024 15:49	1
HS24030040-02	04WW04-022924	29 Feb 2024 07:35			06 Mar 2024 15:49	1
HS24030040-03	04WW09-022924	29 Feb 2024 08:15			06 Mar 2024 15:49	1
HS24030040-04	04WW05-022924	29 Feb 2024 08:55			06 Mar 2024 15:49	1
HS24030040-05	04WW11-022924	29 Feb 2024 09:40			06 Mar 2024 15:49	1
HS24030040-06	04WW10-022924	29 Feb 2024 10:20			06 Mar 2024 15:49	1
HS24030040-07	04WW01-022924	29 Feb 2024 11:00			06 Mar 2024 15:49	1
HS24030040-08	04WW01-022924-a	29 Feb 2024 11:00			06 Mar 2024 15:49	1

Revision: 1

ALS Houston, US Date: 13-Mar-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-04
WorkOrder: **HS24030040**

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	88-00356	27-Mar-2024
California	2919; 2024	30-Apr-2024
Dept of Defense	L22-90-R2	31-Mar-2024
Florida	E87611-38	30-Jun-2024
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352 2023-2024	31-Jul-2024
Louisiana	03087 2023-2024	30-Jun-2024
Maryland	343; 2023-2024	30-Jun-2024
North Carolina	624 - 2024	31-Dec-2024
North Dakota	R-193 2023-2024	30-Apr-2024
Oklahoma	2023-140	31-Aug-2024
Texas	T104704231-23-32	30-Apr-2024
Utah	TX026932023-14	31-Jul-2024

ALS Houston, US Date: 13-Mar-24

Sample Receipt Checklist

Work Order ID: HS24030040 **Date/Time Received:** **01-Mar-2024 09:25**

Client Name: Bhate Environmental **Received by:** **Belinda Gomez**

Completed By:	/S/ Kaycee Rogers	01-Mar-2024 15:49	**Reviewed by:**	/S/ luis.aguilar	01-Mar-2024 17:11
	eSignature	Date/Time		eSignature	Date/Time

Matrices: **W** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
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 ☐	
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):	1.8UC/1.7C	31
Cooler(s)/Kit(s):	BLUE	
Date/Time sample(s) sent to storage:	03-01-2024 15:54	

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:

HS24030040

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

Bhate Environmental Associates, Inc.

LHAAP-04

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of (

Page: of 01335499

Project/Phase No: JVPCIBH.0001

COC Number(1):

LIMS Number:

Facility/Base I.D.: LHAAP / **BILL to PCI**

Project/Site Name: LHAAP / LHAAP - 04

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Charecters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	PERCHLORATE	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
04WW07_022924	29 FEB 2024	0855	-	N		WG	1	X				
04WW04_022924	29 FEB 2024	0735	-	N		WG	1	X				
04WW09_022924	29 FEB 2024	0815	-	N		WG	1	X				
04WW05_022924	29 FEB 2024	0855		N		WG	1	X				
04WW11_022924	29 FEB 2024	0940		N		WG	1	X				
04WW11_022924_MS	29 FEB 2024	0940	-	MS		WG	1	X				
04WW11_022924_MSD	29 FEB 2024	0940	-	SD		WG	1	X				
04WW10_022924	29 FEB 2024	1020	-	N		WG	1	X				
04WW01_022924	29 FEB 2024	1100	-	N		WG	1	X				
04WW01_022924_A	29 FEB 2024	1100	-	FD		WG	1	X				
			-									

Quality Assurance Samples (6)

COMMENTS: STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	2/29/24	1430	1.		
2.			2.		
3.			3. 3/1/24 0900		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

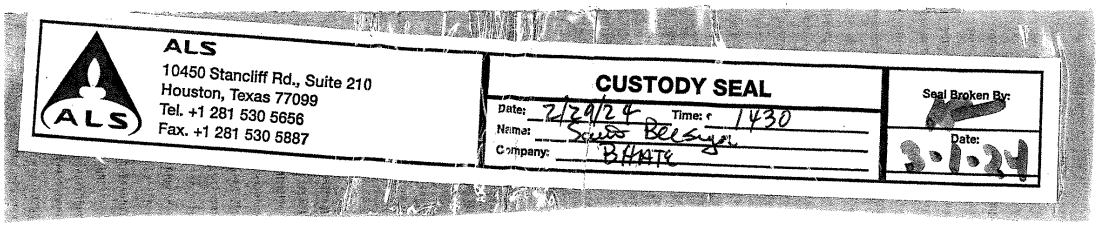
3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

IR31 1.8 BLW



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 2/29/24 Time: 1430
Name: Scott Beesinger
Company: BHATE

Seal Broken By:
Date: 3.1.24



ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINGER
APTIM ENVIROMENTAL & INFASTRUCTURE
1203-B EAST GRAND AVE
PMB 202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 02AUG23
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3709
DIMS: 19x16x13 IN

TO SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF RD
SUITE 210
HOUSTON TX 77099
(281) 530-5666
REF: LHAAP 04-BO 94678-JG

RMA:

FedEx Express

FedEx
TRK# 0221 6230 3003 4970

FRI - 01 MAR AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

4230674 29Feb2024 GGGA 581G6/194B/C0B8

March 06, 2024 Service Request No:E2400211

James Guin
ALS Environmental - US
10450 Stancliff Rd #210
Houston, TX 77099

Laboratory Results for: HS24030040

Dear James,

Enclosed are the results of the sample(s) submitted to our laboratory March 01, 2024
For your reference, these analyses have been assigned our service request number **E2400211.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental



Hussam Kelany
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	ALS Environmental - US	**Service Request No.:**	E2400211
Project:	HS24030040	**Date Received:**	03/01/24
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight samples were received for analysis at ALS Environmental in Houston on 03/01/24.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory. This report was revised 03/13/24 to correct sample IDs.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2400120: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined on an unrelated sample in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: ALS Environmental - US **Service Request:**E2400211

Project: HS24030040

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2400211-001	04WW07-022924	2/29/2024	0655
E2400211-002	04WW04-022924	2/29/2024	0735
E2400211-003	04WW09-022924	2/29/2024	0815
E2400211-004	04WW05-022924	2/29/2024	0855
E2400211-005	04WW11-022924	2/29/2024	0940
E2400211-006	04WW10-022924	2/29/2024	1020
E2400211-007	04WW01-022924	2/29/2024	1100
E2400211-008	04WW01-022924-a	2/29/2024	1100

Service Request Summary

01335505

10 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 9E

Pressure Gas:

Folder #: **E2400211**
Client Name: ALS Environmental - US
Project Name: HS24030040
Project Number:

Report To: James Guin
ALS Environmental - US
10450 Stancliff Rd #210
Houston, TX 77099
USA
Phone Number: 281-530-5656
Cell Number:
Fax Number:
E-mail: james.guin@alsglobal.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: JCORONADO2
Date Received: 03/01/24
Internal Due Date: 3/12/2024
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: BASIC_WQC_CASNo, EQUIS APTIM LONGHORN EFWEDD

Lab Samp No.	Client Samp No	Matrix	Collected	Semivoa GCMS ClO4 DOD/6850
E2400211-001	04WW07-022924	Water	02/29/24 0655	**IV**
E2400211-002	04WW04-022924	Water	02/29/24 0735	**IV**
E2400211-003	04WW09-022924	Water	02/29/24 0815	**IV**
E2400211-004	04WW05-022924	Water	02/29/24 0855	**IV**
E2400211-005	04WW11-022924	Water	02/29/24 0940	**IV**
E2400211-006	04WW10-022924	Water	02/29/24 1020	**IV**
E2400211-007	04WW01-022924	Water	02/29/24 1100	**IV**
E2400211-008	04WW01-022924-a	Water	02/29/24 1100	**IV**

Service Request Summary

Folder #:	**E2400211**
Client Name:	ALS Environmental - US
Project Name:	HS24030040
Project Number:	

Report To:	James Guin ALS Environmental - US 10450 Stancliff Rd #210 Houston, TX 77099 USA
Phone Number:	281-530-5656
Cell Number:	
Fax Number:	
E-mail:	james.guin@alsglobal.com

Project Chemist:	Hussam Kelany
Originating Lab:	HOUSTON
Logged By:	JCORONADO2
Date Received:	03/01/24
Internal Due Date:	3/12/2024
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	
EDD:	BASIC_WQC_CASNo, EQUIS APTIM LONGHORN EFWEDD

01335506

10 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 9E

Pressure Gas:

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of 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.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

Data Qualifiers

Lab Standard

M1 Matrix interference due to coelution with a non-target compound; results may be biased high.
N Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N The Matrix Spike sample recovery is not within control limits. See case narrative.
O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R Duplicate Precision not met.
R1 Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S Surrogate recovery not within specified limits.
S The reported value was determined by the Method of Standard Additions (MSA).
T Analyte is a tentatively identified compound, result is estimated.
U Compound was analyzed for, but was not detected (ND).
V1 The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2 The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W Result quantified, but the corresponding peak was detected outside the generated retention time window.
W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X See case narrative.
Y Recovery outside limits
Y The chromatogram resembles a petroleum product but does not match the calibration standard.
Z The chromatogram does not resemble a petroleum product.
i The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793_2024	5/27/2024
Arkansas Department of Environmental Quality	88-00356	3/27/2024
California State Environmental Laboratory Accreditation Program	2919	4/30/2024
Department of Defense	L22-90	3/31/2024
Department of Defense	L23-358	5/31/2025
Florida Department of Health	E87611-38	6/30/2024
Illinois Environmental Protection Agency	2000322023-11	6/30/2024
Kansas Department of Health and Environment	E-10352 2023-2024	7/31/2024
Louisiana Department of Environmental Quality	03087-2023	6/30/2024
Louisiana Department of Health and Hospitals	LA028-2024	12/31/2024
Maine Department of Health and Human Services	2022017	6/5/2024
Maryland Department of the Environment	343-2023	6/30/2024
Michigan Depratment of Environmental Quality	9971-2023	4/30/2024
Minnesota Department of Health	2645386	12/31/2024
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2024
Nevada Division of Environmental Protection	TX026932024-1	7/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209423	4/24/2024
New Jersey Department of Environmental Protection	TX008-2024	6/30/2024
New York Department of Health	11707	3/31/2024
Oklahoma Department of Environmental Quality	2023-140	8/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-011	5/15/2024
Pennsylvania Department of Environmental Protection	68-03441-017	6/30/2024
Perry Johnson Laboratory Accreditation	L22-91	3/31/2024
Tennessee Department of Environment and Concervation	TN04016-2023	4/30/2024
Texas Commision on Environmental Quality	T104704231-23-30	4/30/2024
Utah Department of Health Environmental Laboratory Certification	TX026932023-14	7/31/2024
Washington Department of Ecology	C819-23	11/14/2024

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

01335512

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: **Colorado** **COC ID:** **24911**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084 **Phone:** +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	James Guin
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	James.Guin@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:	HS24030040
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS24030040-01**	**04WW07_022924**	**Water**	**29 Feb 2024 06:55**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024
2.	**HS24030040-02**	**04WW04_022924**	**Water**	**29 Feb 2024 07:35**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024
3.	**HS24030040-03**	**04WW09_022924**	**Water**	**29 Feb 2024 08:15**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024
4.	**HS24030040-04**	**04WW05_022924**	**Water**	**29 Feb 2024 08:55**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024
5.	**HS24030040-05**	**04WW11_022924**	**Water**	**29 Feb 2024 09:40**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024
6.	**HS24030040-06**	**04WW10_022924**	**Water**	**29 Feb 2024 10:20**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024
7.	**HS24030040-07**	**04WW01_022924**	**Water**	**29 Feb 2024 11:00**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024
8.	**HS24030040-08**	**04WW01_022924_a**	**Water**	**29 Feb 2024 11:00**
	6850 DOD Level II & Level IV PDF, LHAAP EQUIS EDD			15 Mar 2024

Subcontract Chain of Custody

SAMPLING STATE: **Colorado**

COC ID: **24911**

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: _____

Received By: JC Date/Time: 3/1/24 1549

Cooler ID(s): _____ Temperature(s): _____

E2400211 5

ALS Environmental - US
HS24030040

01335514

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Sample Receipt Checklist

Work Order ID: HS24030040 **Date/Time received:** 01 Mar 2024 09:25

Client name: Bhate Environmental Associates, Inc. **Received by:** Belinda Gomez

Completed/By: 01 Mar 2024 15:49 Kaycee Rogers **Reviewed/By:** _____

Date/Time eSignature Date/Time eSignature

Matrices: W **Carrier name:** FedEx

Shipping container/cooler in good condition?	☑ Yes	☐ No	☐ Not Present	
Custody seals intact on shipping container/cooler?	☑ Yes	☐ No	☐ Not Present	
Custody seals intact on Sample bottles?	☐ Yes	☐ No	☑ Not Present	
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 ID(s):	
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): 1.8UC/1.7C 31

Cooler Information: 1 Cooler(s), BLUE

Date/Time sample(s) sent to storage: 03-01-2024 15:54

Water - VOA vials have zero headspace?	☐ Yes	☐ No	☑ No VOA vials submitted
Water - pH acceptable upon receipt?	☐ Yes	☐ No	☑ Not Applicable
pH adjusted?	☐ Yes	☐ No	☑ Not Applicable

pH adjusted by: _____

Login notes: _____

Client contacted: _____ **Date contacted:** _____ **Person contacted:** _____

Contacted by: _____ **Regarding:** _____

Comments: _____

Corrective action: _____

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Preparation Information Benchsheet

01335517

Prep Run#: 434953 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 3/5/24 08:42

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2400192-001	Well3_0124	.01	6850/ClO4 DOD			Water	10mL	
2	E2400198-001	ADA9088	.01	6850/ClO4 DOD			Water	10mL	
3	E2400199-001	LGAC-INF-022624	.01	6850/ClO4 DOD			Water	10mL	
4	E2400206-001	LH18/24-SP650_022924_Between	.01	6850/ClO4 DOD			Water	10mL	
5	E2400206-002	LH18/24-SP650_022924_Air	.01	6850/ClO4 DOD			Water	10mL	
6	E2400211-001	04WW07-022924	.01	6850/ClO4 DOD			Water	10mL	
7	E2400211-002	04WW04-022924	.01	6850/ClO4 DOD			Water	10mL	
8	E2400211-003	04WW09-022924	.01	6850/ClO4 DOD			Water	10mL	
9	E2400211-004	04WW05-022924	.01	6850/ClO4 DOD			Water	10mL	
10	E2400211-005	04WW11-022924	.02	6850/ClO4 DOD			Water	10mL	
11	E2400211-006	04WW10-022924	.01	6850/ClO4 DOD			Water	10mL	
12	E2400211-007	04WW01-022924	.01	6850/ClO4 DOD			Water	10mL	
13	E2400211-008	04WW01-022924-a	.01	6850/ClO4 DOD			Water	10mL	
14	EQ2400120-01	MB		6850/ClO4 DOD			Liquid	10mL	
15	EQ2400120-02	LCS		6850/ClO4 DOD			Liquid	10mL	
16	EQ2400120-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
17	EQ2400120-04	ICS		6850/ClO4 DOD			Liquid	10mL	
18	EQ2400120-05	04WW11-022924 MS	.02	6850/ClO4 DOD			Liquid	10mL	
19	EQ2400120-06	04WW11-022924 DMS	.02	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock 2 Inventory ID 233555 Logbook Ref: Perchlorate INT. Stock2 Expires On: 08/05/2024

EQ2400120-02 10.00µL EQ2400120-03 10.00µL EQ2400120-04 10.00µL EQ2400120-05 10.00µL EQ2400120-06 10.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 233561 Logbook Ref: Perchlorate Internal Standard Expires On: 08/05/2024

E2400192-001 100.00µL E2400198-001 100.00µL E2400199-001 100.00µL E2400206-001 100.00µL E2400206-002 100.00µL E2400211-001 100.00µL
E2400211-002 100.00µL E2400211-003 100.00µL E2400211-004 100.00µL E2400211-005 100.00µL E2400211-006 100.00µL E2400211-007 100.00µL
E2400211-008 100.00µL EQ2400120-01 100.00µL EQ2400120-02 100.00µL EQ2400120-03 100.00µL EQ2400120-04 100.00µL EQ2400120-05 100.00µL
EQ2400120-06 100.00µL

Name: Perchlorate Anion Spiking Soln. 25,000 ppm Inventory ID 233595 Logbook Ref: Expires On: 08/04/2024

EQ2400120-04 20.00µL

Preparation Information Benchsheet

01335518

Prep Run#: 434953 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** **Prep Date/Time:** 3/5/24 08:42

Preparation Materials

6850 0.45um syringe filters	6850 0.45 SYRING FILTER (229979)	6850 20mM amonium acetate in H2O	(233412)	6850 Luer-Lok Syringes	Luer Lok Syringes (231696)

Preparation Steps

Step: Preparation
Started: 3/5/24 08:42
Finished: 3/5/24 12:58
By: JOSEL.JUAREZ
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined
Yes No

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 0655
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW07-022924	**Units:**	µg/L
Lab Code:	E2400211-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 11:06	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 0735
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW04-022924	**Units:**	µg/L
Lab Code:	E2400211-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0510**	J	0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 11:11	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 0815
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW09-022924	**Units:**	µg/L
Lab Code:	E2400211-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 11:17	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 0855
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW05-022924	**Units:**	µg/L
Lab Code:	E2400211-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0474**	J	0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 11:22	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 0940
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW11-022924	**Units:**	µg/L
Lab Code:	E2400211-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.148**		0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 11:28	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 1020
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW10-022924	**Units:**	µg/L
Lab Code:	E2400211-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0558**	J	0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 11:33	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 1100
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW01-022924	**Units:**	µg/L
Lab Code:	E2400211-007	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	3/ 5/24	3/6/24 12:33	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 1100
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW01-022924-a	**Units:**	µg/L
Lab Code:	E2400211-008	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	1.00	0.500	0.250	10	3/ 5/24	3/6/24 12:38	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2400120-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 10:21	434953	834220	

Accuracy & Precision

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client: ALS Environmental - US
Project: HS24030040
Sample Matrix: Water

Service Request: E2400211
Date Analyzed: 3/ 6/24

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 434953

	Lab Control Sample EQ2400120-02			Duplicate Lab Control Sample EQ2400120-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.112	0.100	112	0.0966	0.100	97	84 - 119	14	15

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

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

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400120-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.112**		0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 09:54	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400120-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0966**	J	0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 09:59	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24
Sample Matrix:	Water	**Date Received:**	3/1/24
		Date Analyzed:	3/ 6/24

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	04WW11-022924	**Units:**	µg/L
Lab Code:	E2400211-005	**Basis:**	NA

Analytical Method: 6850

		04WW11-022924MS **Matrix Spike** EQ2400120-05			04WW11-022924DMS **Duplicate Matrix Spike** EQ2400120-06					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.148	0.238	0.100	89	0.236	0.100	87	84 - 119	<1	15

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.

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 0940
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW11-022924	**Units:**	µg/L
Lab Code:	EQ2400120-05	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.238**		0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 10:10	434953	834220	

Client:	ALS Environmental - US	**Service Request:**	E2400211
Project:	HS24030040	**Date Collected:**	2/29/24 0940
Sample Matrix:	Water	**Date Received:**	3/ 1/24
Sample Name:	04WW11-022924	**Units:**	µg/L
Lab Code:	EQ2400120-06	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.236**		0.100	0.0500	0.0250	1	3/ 5/24	3/6/24 10:16	434953	834220	

August 18, 2024 Service Request No:E2400895

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Suite 129
Lakewood, CO 80228

Laboratory Results for: LHAAP/LHAAP-04

Dear Marcia,

Enclosed are the results of the sample(s) submitted to our laboratory August 03, 2024
For your reference, these analyses have been assigned our service request number **E2400895.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Please contact me if you have any questions. My extension is 2190. You may also contact me via email at hussam.kelany@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

H Kelany

Hussam Kelany
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Client:	Bhate Environmental Associates, Inc.	**Service Request No.:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Received:**	08/02/24
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eight samples were received for analysis at ALS Environmental in Houston on 08/02/24.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2400439: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch.

The batch precision (MS/DMS) measurements were determined on an unrelated sample in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: Bhate Environmental Associates, Inc. **Service Request:**E2400895

Project: LHAAP/LHAAP-04

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2400895-001	04WW07_080124	8/1/2024	0725
E2400895-002	04WW07_080124_a	8/1/2024	0725
E2400895-003	04WW10_080124	8/1/2024	0805
E2400895-004	04WW09_080124	8/1/2024	0845
E2400895-005	04WW04_080124	8/1/2024	0925
E2400895-006	04WW05_080124	8/1/2024	1005
E2400895-007	04WW11_080124	8/1/2024	1045
E2400895-008	04WW01_080124	8/3/2024	1125

Service Request Summary

01335540

10 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 2C

Pressure Gas:

Folder #: **E2400895**
Client Name: Bhate Environmental Associates, Inc.
Project Name: LHAAP/LHAAP-04
Project Number:

Report To: Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd
Lakewood, CO 80228
USA
Phone Number: 303-597-2450
Cell Number:
Fax Number:
E-mail: molive@bhate.com

Project Chemist: Hussam Kelany
Originating Lab: HOUSTON
Logged By: MONICA.SMITH
Date Received: 08/02/24 - 08/03/24
Internal Due Date: 8/16/2024
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number:
EDD: BASIC_WQC_CASNo_LOD

Lab Samp No.	Client Samp No	Matrix	Collected	Semivoa GCMS: ClO4 DOD/6850
E2400895-001	04WW07_080124	Water	08/01/24 0725	**IV**
E2400895-002	04WW07_080124_a	Water	08/01/24 0725	**IV**
E2400895-003	04WW10_080124	Water	08/01/24 0805	**IV**
E2400895-004	04WW09_080124	Water	08/01/24 0845	**IV**
E2400895-005	04WW04_080124	Water	08/01/24 0925	**IV**
E2400895-006	04WW05_080124	Water	08/01/24 1005	**IV**
E2400895-007	04WW11_080124	Water	08/01/24 1045	**IV**
E2400895-008	04WW01_080124	Water	08/03/24 1125	**IV**

Service Request Summary

Folder #:	**E2400895**
Client Name:	Bhate Environmental Associates, Inc.
Project Name:	LHAAP/LHAAP-04
Project Number:	

Report To:	Marcia Olive Bhate Environmental Associates, Inc. 445 Union Blvd Lakewood, CO 80228 USA
Phone Number:	303-597-2450
Cell Number:	
Fax Number:	
E-mail:	molive@bhate.com

Project Chemist:	Hussam Kelany
Originating Lab:	HOUSTON
Logged By:	MONICA.SMITH
Date Received:	08/02/24 - 08/03/24
Internal Due Date:	8/16/2024
QAP:	LAB QAP
Qualifier Set:	Lab Standard
Formset:	Lab Standard
Merged?:	Y
Report to MDL?:	Y
P.O. Number:	
EDD:	BASIC_WQC_CASNo_LOD

01335541

10 120 mL-Plastic Bottle Natural WM Unpreserved

Location: EHRMS-WIC 2C

Pressure Gas:

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of 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.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
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.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

Data Qualifiers

Lab Standard

M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.
S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arkansas Department of Environmental Quality	88-00356	3/28/2025
California State Environmental Laboratory Accreditation Program	2919-2024	4/30/2025
Department of Defense	L24-240	4/30/2026
Hawaii Department of Health	2024	4/30/2025
Louisiana Department of Health and Hospitals	LA028-2024	12/31/2024
Minnesota Department of Health	2645386	12/31/2024
New Hampshire Environmental Laboratory Accreditation Program	209424-A	4/24/2025
Oklahoma Department of Environmental Quality	2023-140	8/31/2024
Oregon Environmental Laboratory Accreditation Program	TX200002-2024	5/15/2025
Tennessee Department of Environment and Conservation	04016-2024	4/30/2025
Texas Commision on Environmental Quality	TX-C24-00130	4/30/2025
Washington Department of Ecology	C819-23	11/14/2024

Chain of Custody

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

bhate ENVIRONMENTAL CONSTRUCTION ENERGY

E2400895 5

Bhate Environmental Associates, Inc.
LHAAP/LHAAP-04

Page: of 01335547

Project/Phase No: JVPCIBH.0001

COC Number(1):

LIMS Number:

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP /

Project/Site Name: LHAAP / LHAAP - 04

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Sample Analysis Requested (5): Number of containers	PERCHLORATE	Quality Assurance Samples (6): Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
04ww07_080124	01 AUG 2024	0725	-	N		wb	1	X				
04ww07_080124_a	01AUG2024	0725	-	FD		wb	1	X				
04ww10_081024	01 AUG 2024	0805	-	N		wb	1	X				
04ww09_080124	01 AUG 2024	0845		N		wb	1	X				
04ww04_080124	01 AUG 2024	0925		N		wb	1	X				
04ww05_080124	01 AUG 2024	1005	-	N		wb	1	X				
04ww05_080124_ms	01 AUG 2024	1005	-	MS		wb	1	X				
04ww05_080124_msD	01 AUG 2024	1005	-	SD		wb	1	X				
04ww11_080124	01 AUG 2024	1045	-	N		wb	1	X				
04ww01_080124	01 AUG 2024	1125	-	N		wb	1	X				
			-									

COMMENTS: STANDARD TAT Coolers 080624 Temps 1.1 2RM34 CLP 0.D

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	8/1/24	1400	1.		
2.			2.		
3.			3. GM	08/02/24	09:10

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: Shipped No.:

Method of Shipment:

Fed Ex Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

E2400895 5
Bhate Environmental Associates, Inc.
LHAAP/LHAAP-04

10450 Stancliff Road, Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Client: bhate Date: AUG 0 2 2024 WO#:

Time Received: 09:10 Received by: SM BO#: 101948

Matrices: Solid/Sludge Water Oil Wipes Hydrocarbon Liquid Other

Kit ID/Cooler ID	Trip Blank ID	Cooler Temp (C) Observed/Corrected	IR #	Temp BLK Present?
40624	—	1.1 / 1.1	#34	Y N
		/		Y N
		/		Y N
		/		Y N
		/		Y N

Delivery Method: FedEx UPS Greyhound ALS Client Other

Date/Time of Unpacking: AUG 0 2 2024 1:40pm Unpacked by: SM

Shipping container/cooler in good condition?	Yes	No	Not Present
Custody seals intact on shipping container/cooler?	Yes	No	Not Present
Custody seals intact on sample bottles?	Yes	No	Not Present
Chain of Custody present?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of Custody - Sampler's name present?	Yes	No	
Chain of Custody agrees with sample labels?	Yes	No	
Samples in proper container/bottle?	Yes	No	
VOA/TX1005/1006 Solids in hermetically Sealed Vials:	Yes	No	No VOA/TX1005/1006 Solid
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	
Water - VOA vials have zero headspace?	Yes	No	N/A No VOA submitted
Non-VOA waters preserved with HCl, H2SO4, HNO3 are pH <2?			Yes No N/A
Waters preserved with NaOH/Ascorbic acid are pH>12?	Yes	No	N/A
pH adjusted?	Yes*	No	N/A *See Preservation Logbook

pH adjusted by: _____ **pH Paper Lot:** _____

10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Preparation Information Benchsheet

01335551

Prep Run#: 443089 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 8/13/24 13:34

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2400894-016	16PM02-240724	.01	6850/ClO4 DOD			Water	10mL	
2	E2400894-017	16PM03-240724	.01	6850/ClO4 DOD			Water	10mL	
3	E2400895-001	04WW07_080124	.01	6850/ClO4 DOD			Water	10mL	
4	E2400895-002	04WW07_080124_a	.01	6850/ClO4 DOD			Water	10mL	
5	E2400895-003	04WW10_080124	.01	6850/ClO4 DOD			Water	10mL	
6	E2400895-004	04WW09_080124	.01	6850/ClO4 DOD			Water	10mL	
7	E2400895-005	04WW04_080124	.01	6850/ClO4 DOD			Water	10mL	
8	E2400895-006	04WW05_080124	.01	6850/ClO4 DOD			Water	10mL	
9	E2400895-007	04WW11_080124	.01	6850/ClO4 DOD			Water	10mL	
10	E2400895-008	04WW01_080124	.01	6850/ClO4 DOD			Water	10mL	
11	EQ2400439-01	MB		6850/ClO4 DOD			Liquid	10mL	
12	EQ2400439-02	LCS		6850/ClO4 DOD			Liquid	10mL	
13	EQ2400439-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
14	EQ2400439-04	ICS		6850/ClO4 DOD			Liquid	10mL	
15	EQ2400439-05	04WW05_080124 MS	.01	6850/ClO4 DOD			Liquid	10mL	
16	EQ2400439-06	04WW05_080124 DMS	.01	6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 236095 Logbook Ref: Perchlorate IS cg7/3/24 Expires On: 11/24/2024

E2400894-016	100.00µL	E2400894-017	100.00µL	E2400895-001	100.00µL	E2400895-002	100.00µL	E2400895-003	100.00µL	E2400895-004	100.00µL
E2400895-005	100.00µL	E2400895-006	100.00µL	E2400895-007	100.00µL	E2400895-008	100.00µL	EQ2400439-01	100.00µL	EQ2400439-02	100.00µL
EQ2400439-03	100.00µL	EQ2400439-04	100.00µL	EQ2400439-05	100.00µL	EQ2400439-06	100.00µL				

Name: Perchlorate Intermediate Stock 3 Inventory ID 236096 Logbook Ref: Perchlorate Inter. Stock 3 cg7 Expires On: 10/25/2024

EQ2400439-02	100.00µL	EQ2400439-03	100.00µL	EQ2400439-04	100.00µL	EQ2400439-05	100.00µL	EQ2400439-06	100.00µL

Name: Perchlorate Anion Spiking Soln. 25,000 ppm Inventory ID 236634 Logbook Ref: Expires On: 02/04/2025

EQ2400439-04 20.00µL

Preparation Materials

6850 Luer-Lok Syringes Luer Lok Syringes (235268)

Preparation Information Benchsheet

01335552

Prep Run#: 443089 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/JOSEL.JUAREZ **Prep Method:** Method **Prep Date/Time:** 8/13/24 13:34

Preparation Steps

Step: Preparation
Started: 8/13/24 13:34
Finished: 8/13/24 14:30
By: JOSEL.JUAREZ
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By:		Date:		Extracts Examined
Received By:		Date:		Yes No

Analytical Results

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 0725
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW07_080124	**Units:**	µg/L
Lab Code:	E2400895-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/13/24	8/14/24 18:47	443089	850921	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 0725
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW07_080124_a	**Units:**	µg/L
Lab Code:	E2400895-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/13/24	8/14/24 18:52	443089	850921	

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 0805
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW10_080124	**Units:**	µg/L
Lab Code:	E2400895-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/13/24	8/14/24 18:58	443089	850921	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 0845
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW09_080124	**Units:**	µg/L
Lab Code:	E2400895-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/13/24	8/14/24 19:04	443089	850921	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 0925
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW04_080124	**Units:**	µg/L
Lab Code:	E2400895-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0947**	J	0.100	0.0500	0.0250	1	8/13/24	8/14/24 19:20	443089	850921	

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 1005
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW05_080124	**Units:**	µg/L
Lab Code:	E2400895-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/13/24	8/14/24 19:26	443089	850921	

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 1045
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW11_080124	**Units:**	µg/L
Lab Code:	E2400895-007	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/13/24	8/14/24 19:42	443089	850921	

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 3/24 1125
Sample Matrix:	Water	**Date Received:**	8/ 3/24
Sample Name:	04WW01_080124	**Units:**	µg/L
Lab Code:	E2400895-008	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0860**	J	0.100	0.0500	0.0250	1	8/13/24	8/14/24 19:48	443089	850921	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2400439-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	8/13/24	8/14/24 18:14	443089	850921	

Accuracy & Precision

ALS Environmental - Houston Specialties Laboratory
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (281)530-5656 Fax (281)530-5887
www.alsglobal.com

QA/QC Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Analyzed:**	08/15/24 - 08/16/24
Sample Matrix:	Water	**Date Extracted:**	08/13/24

Duplicate Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analysis Method:	6850	**Units:**	ug/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	850939

	Lab Control Sample EQ2400439-02			Duplicate Lab Control Sample EQ2400439-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.114	0.100	114	0.114	0.100	114	84-119	<1	15

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	08/01/24
Sample Matrix:	Water	**Date Received:**	08/02/24
		Date Analyzed:	08/14/24
		Date Extracted:	08/13/24

Duplicate Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	04WW05_080124	**Units:**	ug/L
Lab Code:	E2400895-006	**Basis:**	NA
Analysis Method:	6850		
Prep Method:	Method		

		Matrix Spike EQ2400439-05			Duplicate Matrix Spike EQ2400439-06					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	ND U	0.125	0.100	125 *	0.136	0.100	136 *	84-119	9	15

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.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400439-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.114**		0.100	0.0250	1	8/13/24	8/16/24 11:09	443089	850941	

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2400439-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.114**		0.100	0.0250	1	8/13/24	8/15/24 14:16	443089	850939	

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 1005
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW05_080124	**Units:**	µg/L
Lab Code:	EQ2400439-05	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.125**		0.100	0.0250	1	8/13/24	8/14/24 19:31	443089	850921	

Analytical Report

Client:	Bhate Environmental Associates, Inc.	**Service Request:**	E2400895
Project:	LHAAP/LHAAP-04	**Date Collected:**	8/ 1/24 1005
Sample Matrix:	Water	**Date Received:**	8/ 2/24
Sample Name:	04WW05_080124	**Units:**	µg/L
Lab Code:	EQ2400439-06	**Basis:**	NA
Run Type:	Duplicate Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.136**		0.100	0.0250	1	8/13/24	8/14/24 19:37	443089	850921	

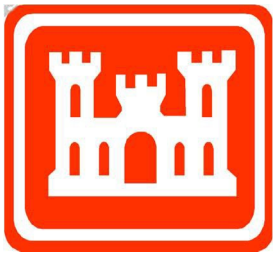
APPENDIX E
QUALITY CONTROL SUMMARY REPORT

This page intentionally left blank.

QUALITY CONTROL SUMMARY REPORT
2024 LHAAP 04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:





U.S. Army Corps of Engineers

Prepared By:

bhate

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

January 2025

Table of Contents

1 INTRODUCTION 1
1.1 Intended Use of Data 1
1.2 Preservation and Holding Times 1
1.3 Calibrations 1
1.3.1 Continuing Calibration Verifications (CCV) 1
1.4 Blanks 1
1.5 Laboratory Control Sample(LCS)/Laboratory Control Sample Duplicate(LCSD) 2
1.6 Matrix Spike (MS)/Matrix Spike Duplicate Sample (MSD) 2
1.7 Internal Standards 2
1.8 Field Precision 2
2 DATA USABILITY SUMMARY 2

List of Tables

Table 1: Field Sample Identification and Laboratory Identification
Table 2: Qualified Analytical Data
Table 3: Completeness by Method

1 INTRODUCTION

Bhate reviewed two data packages from ALS Environmental, Houston, Texas collected on February 29th and August 1st, 2024 at site LHAAP 04 at the Longhorn Army Ammunition Plant (LHAAP), Karnack, TX. Data were reviewed for conformance to the requirements of the following guidance documents: *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, November 2020) and the *Final Basewide Uniform Federal Policy* [UFP] – *Quality Assurance Project Plan* [QAPP] *Longhorn Army Ammunition Plant* which is in Appendix C of the *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas* (Bhate, May 2018).

1.1 Intended Use of Data

Analyses requested included:

- SW6850 – Perchlorate

Table 1 lists the sample identification (ID) numbers and their associated laboratory ID numbers.

Table 2 lists qualified results with the associated quality control parameter that was exceeded.

1.2 Preservation and Holding Times

Sample ID data were evaluated for agreement with the chain-of-custody (COC). All samples were received in appropriate containers, within the proper temperature range, in good condition, and with the required signatures.

1.3 Calibrations

Initial calibration acceptance criteria are specified in Worksheet 24 of the project-specific QAPP. For perchlorate, the methods criteria are a relative standard deviation (RSD) less than or equal to 20 percent (%) or a correlation coefficient (r^2) $\geq$ 0.99.

All calibrations met the method criteria.

1.3.1 Continuing Calibration Verifications (CCV)

The continuing calibration verification (CCV) acceptance criteria are specified in Worksheet 24 of the project-specific QAPP. For perchlorate, the methods criteria are if the CCV is outside $\pm$15% difference (%D), the lab will reanalyze all samples since last acceptable CCV. If reanalysis cannot be performed, all results for perchlorate in all samples since last acceptable CCV are qualified J or UJ.

All CCVs were within the acceptance criteria.

1.4 Blanks

If the sample result for an associated sample was non-detect or less than 5X (10X for common laboratory contaminants) the analyte concentration in the blank, the corresponding sample result for the analyte was qualified UB. Where the sample result for the affected analyte was greater than 5X (10X) the amount in the blank, no qualifier was applied.

Perchlorate was not detected in the blanks.

1.5 Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

LCS/LCSD recoveries were evaluated using limits defined for each method in Worksheet 15 of the project-specific QAPP.

All LCS/LCSD recoveries were within the control limits.

1.6 Matrix Spike (MS)/Matrix Spike Duplicate Sample (MSD)

MS/MSD recoveries were evaluated using limits defined in Worksheet 15 of the project-specific QAPP. When sample results were greater than 4x the spike amount, control limits were not applicable and require no qualification. Furthermore, if MS/MSD analyses were performed on a batched (unrelated) sample, no qualification was made to the sample data.

The project MS/MSD recoveries were within the control limits.

1.7 Internal Standards

When the percent recovery for an internal standard in a sample is outside the laboratory limits, the associated sample is qualified for the analytes associated with the internal standard(s) outside of the acceptance criteria.

Internal standard recoveries were within the acceptance criteria.

1.8 Field Precision

Precision is the measure of variability of individual sample measurements. Evaluation of field duplicates for precision was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD limits were set at <30% for groundwater matrices.

Field duplicate RPDs were within control limits.

2 DATA USABILITY SUMMARY

The data are usable for the intended purposes of the project (see Table 3). The data quality objectives have been met for the project.

Table 1: Field Sample Identification and Laboratory Identification

Client Sample Identification	Laboratory Package	Perchlorate
04WW07_022924	HS24030040	X
04WW04_022924		X
04WW09_022924		X
04WW05_022924		X
04WW11_022924		X
04WW10_022924		X
04WW01_022924		X
04WW01_022924-a		X
04WW07_080124	E2400895	X
04WW07_080124_a		X
04WW10_080124		X
04WW09_080124		X
04WW04_080124		X
04WW05_080124		X
04WW11_080124		X
04WW01_080124		X

Notes:

SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, X – Sample analyzed for indicated parameter

Table 2: Qualified Analytical Data

Client Sample Identification	Laboratory Package	Analyte Name	Data Validation Qualifier	Reason for Qualification
No flags were applied				

Table 3: Completeness by Method

Analysis	No. of Rejected Results	% Completeness
Perchlorate	0	100

This page intentionally left blank.

Response to Comments on
Draft Technical Memorandum
Draft 2024 Remedial Action Operation Report, LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, March 2025

Document Date: 28 March 2025
Comment Date: 29 April 2025

Reviewers: Brian Follin - EPA
Respondent: Aaron Williams - USACE

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 #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
1.	General	Are there updated cross sections from WW01 through WW09 and WW12	C	There are no updated cross sections for the site as there has been no additional investigation that has occurred at the site. However, additional investigation is included as part of the follow-on work under the new contract and will be addressed in a Contingency Remedial Design/Remedial Action Work Plan.	
2.	General	03WW01 was ND when the ROD was written in 2010 and has always remained low. Is this due to the fat clays in at this location but with the lean clays toward 03WW09 and beyond there are still increasing numbers. Does this again show a source that has not been identified since the ROD days?	C	The source for LHAAP-58 has not been identified. However, additional investigation is included as part of the follow-on work under the new contract.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
3.	3-1, 3.0	Rationale for removal of MNA parameters do not need to be consistent across the site, but rather tailored to each site's CSM and data for reaching the RAOs at each OU. I will agree that some of the parameters are no longer being met but it would be premature to remove these without knowing if MNA will achieve the RAOs in the designated timeframes. MNA parameters should be consistent across the entire OU. With questions about source and TCA still at the site, we need as many data points to identify the path forward.	C	Additional injections will occur under the follow-on contract for this site. As such, sampling parameters will be re-evaluated as a part of the Contingency Remedial Design/Remedial Action Work Plan.	
4.	4-1, 4.1	Trend analysis is from the ROD to current date. Can you run analysis for wells at the point of inject to the current date. This might change the trend statistics and show a different story.	C	The trend analysis has been changed so that it analyzes data from the last sampling event prior to the last round of injections in 2018 to the 2024 sampling event. The text has also been updated accordingly.	
5.	4-5, 4.4 first line on page 4-5	"March 219" should be March 2019.	C	The text has been revised as requested.	
6.	Appendix H	Add second axis for GW levels on Mann-kendall graphs	C	(Now Appendix G) Groundwater levels have been added as a second axis on the Mann-Kendall graphs.	
7.	Figure 8	Can you add GW flow lines to figure 8	C	Potentiometric flow arrows have been added to Figure 8 as suggested.	

Response to Comments on
Draft Technical Memorandum
Draft 2024 Remedial Action Operation Report, LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas, March 2025

Document Date: 28 March 2025
Comment Date: 25 April 2025

Reviewers: April Palmie - TCEQ
Respondent: Aaron Williams - USACE

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 #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
1.	Cover letter	Correct site number to 35A (58).	C	The site name has been corrected on the cover letter.	
2.	General	Consider revising the Year 9 and Year 10 references throughout to 2023 and 2024 (or revise next year).	C	The document has been updated so that all references to "Years 9-11" are now 2023-2025.	
3.	General – Adobe Bookmarks	Add complete titles to figures, tables, and appendices adobe bookmarks. See Year 9 for example. Appendices (several) - Nested bookmarks for each well are also helpful.	C	Complete titles have been added to the PDF.	
4.	1.2, 1-2	2nd paragraph – remove the last sentence about the fourth Five-Year Review.	C	This sentence has been removed.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
5.	1.4, 1-4	Please revise the first sentence to something more general, rather than a reference to the year 2 report. Next year, consider reducing the content in this section to the essential CSM information.	C	The first two sentences have been deleted so that the section does not begin with a reference to the Year 2 RAO Report. Next year's report will have a condensed CSM as requested.	
6.	2.1.2, 2-1	Please revise the repairs sentence to this (or similar): "These repairs will be made before the 2025 sampling event."	C	The sentence has been revised accordingly.	
7.	2.2.3, 2-2	2nd paragraph, 1st sentence, please revise to: "The MNA analyte lists follows the recommendations put forth…"	C	The sentence has been revised accordingly.	
8.	2.5	If there is no intention to abandon the wells, could this text be removed or clarified?	C	This paragraph has been shortened to clarify that no wells were recommended for abandonment during this reporting period.	
9.	3, 3-1	1st and 2nd paragraphs, near the end, both need to be revised to indicate end of semi-annual sampling and beginning of annual sampling. In 2nd paragraph, the sentence beginning "Within the western groundwater plume" about quarterly monitoring should be past tense. Last paragraph, consider removing the lists of analytes removed several years ago. You could generally state the analyte list complies with the TM.	C	Additional information about the transition from semiannual to annual sampling has been added to these two paragraphs. The language for the quarterly sampling in the western plume has been adjusted to be in past tense. The last paragraph has been edited to reflect that the analyte list complies with the TM.	
10.	3.2, 3-4	Last sentence, should read <50 millivolts (mV) – highlighted text copied directly from Table 2.3 of the guidance. If the symbol (<) causes problems, you could say "less than 50 millivolts". This should also be corrected in ORP discussion on page 4-7 and in Tables 2 & 3 shading criteria.	C	This has been corrected in both locations in the text and in the table. The discussion has been modified to address this as well.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
11.	4	Next year, would it be possible to streamline the content in this section? There is repeated and perhaps unnecessary information, especially since two plumes are discussed.	C	This section will be reorganized and written in a way to streamline the discussion.	
12.	Conclusion	In two different paragraphs, the conclusion states additional treatment may be needed. Given that both plumes are stable or shrinking and well within the LUC boundary, how likely is it the Army would fund additional injections at LHAAP-58 or that the injections are necessary to achieve ROD RAOs? Consider adding a clarification near those statements to address the likelihood or necessity of any additional injections. Next year please consider condensing the conclusion section to focus on the big picture for each plume with less repetition of report details at the per well or per COC level.	C	Additional injections were recommended as the result of the Five-Year Review to address the stalling reductive dechlorination occurring at the site. References to additional injections have been added to the text. A Contingency ESD, Contingency Remedial Design/Remedial Action Work Plan and RACR for additional EISB treatment in the vicinity of LHSMW06 and 35AWW09 and potentially 35AWW20 are anticipated deliverables/actions under a new contract. Next year, the conclusion will be condensed to include only plume discussions.	
13.	Recommendations	Last bullet – see comment 11 and provide clarification on injections.	C	Additional injections were recommended as the result of the Five-Year Review to address the stalling reductive dechlorination occurring at the site. This information has been added to the bullet for clarification.	
14.	Figures 5 and 6	For the non-detect wells, please add ND to the well labels. The legend indicates the black wells are ND, but something by the well labels would also help.	C	Figure 5 has been modified so that wells labeled with a black and white symbol had non-detect results for all COCs, wells labeled with an orange and white symbol show wells that had low level detections of some COCs below MCLs, and wells with a green and white symbol show wells with detections exceeding MCLs.	
15.	Table 7	Is it necessary to include the prior year columns? On many other LHAAP sites there is a table for the current year and the next year. You could delete the Years 6-9 columns and keep only current and next year going forward.	C	The table has been adjusted accordingly.	

Comment #	Section/ Page/ Paragraph	Comment	C, D, E, or X[1]	Response	A or D[2]
16.	Appendix D	Is it necessary to include the 2019 Tech Memo in every RAO report for all applicable sites going forward? It was included previously and is referenced and available in the admin record. You could retain Table 2 if that seemed necessary.	C	This document has been removed as an attachment.	
17.	Appendix F	For the Draft Final, please include the lab packages with the report (retaining the adobe bookmarks for each lab package). The whole file will only be about 100 MB.	C	Lab packages have been added to the report.	
18.	Appendix G	1 – first sentence add 2024. 1.1 - references June 2023 semiannual event. The objective is to monitor performance.	C	These edits have been incorporated into the text.	

DRAFT FINAL
2024 REMEDIAL ACTION OPERATION REPORT
LHAAP-35A (58) SHOPS AREA
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

June 2025

Prepared For:





U.S. Army Corps of Engineers
Tulsa District
1645 S 101 E Avenue
Tulsa, Oklahoma 74128-4609

Contract No: W912BV23C0007
Bhate Project No.: JVPCIBH.0001.0010.01

Prepared By:

PCIbhate

11921 Freedom Drive, Suite 550
Reston, VA 20190
1-251-333-1127

This page intentionally left blank.

TABLE OF CONTENTS

Acronyms and Abbreviations v

1 Introduction 1-1

1.1 Remedial Action Objectives 1-1
1.2 Performance Objectives 1-2
1.3 Site Description 1-3
1.4 Conceptual Site Model 1-4

2 Site Activities At LHAAP-35A (58) 2-1

2.1 Annual LUC Compliance Inspection, Maintenance, and Repairs 2-1
2.1.1 Annual LUC Compliance Inspection 2-1
2.1.2 Well Field Operation & Maintenance 2-1
2.2 Groundwater Monitoring for RA-O 2-1
2.2.1 Eastern Plume Monitoring 2-2
2.2.2 Western Plume Monitoring 2-2
2.2.3 Sampling Procedures and Analysis 2-2
2.2.4 Groundwater Elevation and Flow Direction 2-3
2.2.5 Vertical Gradient 2-3
2.3 Groundwater Analytical Results 2-4
2.3.1 Shallow Zone 2-4
2.3.2 Intermediate Zone 2-4
2.3.3 Arsenic Monitoring 2-4
2.4 Surface Water Sampling 2-5
2.5 Well Abandonment 2-6

3 Performance Monitoring of EISB 3-1

3.1 Analysis of VOCs 3-1
3.1.1 Eastern Plume 3-1
3.1.2 Western Plume 3-3
3.2 Analysis of Field Parameters 3-4
3.3 TOC Levels 3-4
3.3.1 Eastern Plume 3-4
3.3.2 Western Plume 3-5
3.4 Analysis of Anions 3-5
3.4.1 Eastern Plume 3-5
3.4.2 Western Plume 3-6
3.5 Dissolved Gases 3-6
3.5.1 Eastern Plume 3-6
3.5.2 Western Plume 3-6
3.6 Dechlorinating Bacteria 3-7
3.6.1 Eastern Plume 3-7
3.6.2 Western Plume 3-7

3.7 EISB Performance Monitoring Summary 3-8

4 Natural Attenuation Evaluation 4-1

4.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance 4-1
4.1.1 Eastern Plume 4-2
4.1.2 Western Plume 4-4
4.1.3 Plume Stability 4-5
4.2 Second Line of Evidence: Geochemical Indicators 4-7
4.2.1 Eastern Plume 4-7
4.2.2 Western Plume 4-8
4.3 Third Line of Evidence: Microbial Analysis 4-10
4.3.1 Eastern Plume 4-10
4.3.1 Western Plume 4-11

5 Conclusions and Recommendations 5-1

5.1 Conclusions 5-1
5.2 Recommendations 5-3

6 References 6-1

Figures

Figure 1 Longhorn Army Ammunition Plant Location and Site Vicinity Map
Figure 2 Monitoring Well Location Map
Figure 3 Conceptual Site Model
Figure 4 May 2024 Shallow Potentiometric Map
Figure 5 COC Exceedances in Shallow Groundwater (May 2024)
Figure 6 COC Exceedances in Intermediate Groundwater (May 2024)
Figure 7a COC Concentration Trends 03WW01
Figure 7b COC Concentration Trends 35AWW08
Figure 7c COC Concentration Trends 35AWW09
Figure 7d COC Concentration Trends 35AWW20
Figure 7e COC Concentration Trends LHSMW07
Figure 8 Lateral Extent of Plume Comparison (October 2016 and May 2024)

Tables

Table 1 Groundwater Elevation Data
Table 2 Eastern Plume Semiannual Analytical Data, May 2024
Table 3 Western Plume Analytical Data, May 2024
Table 4 Historical Monitoring Well COC Concentrations
Table 5 Enhanced In-Situ Bioremediation Performance Data Summary - Eastern Plume
Table 6 Enhanced In-Situ Bioremediation Performance Data Summary - Western Plume
Table 7 2025 RA-O Groundwater Monitoring Plan

Appendices

Appendix A Annual Land Use Control Compliance Certification Document
Appendix B Photographic Log
Appendix C Well Inspection Forms
Appendix D Monitoring Well Sample Collection Forms
Appendix E Laboratory Analytical Results (Provided Electronically)
Appendix F Quality Control Summary Report
Appendix G Mann-Kendall Trend Test Results

This page intentionally left blank.

ACRONYMS AND ABBREVIATIONS

<	Less than
>	Greater than
%	Percent
AECOM	AECOM Technical Services, Inc.
amsl	Above mean sea level
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
COC(s)	Contaminant(s) of concern
CVOC(s)	Chlorinated volatile organic compound(s)
DCA	Dichloroethane
DCE	Dichloroethene
DHBt	Dehalobacter
DHC	Dehalococcoides
DO	Dissolved oxygen
EISB	Enhanced In-situ Bioremediation
ESD	Explanation of Significant Differences
ft	Feet (or foot)
HPLC	High Performance Liquid Chromatography
IWWP	Installation-Wide Work Plan
J	Data qualifier denoting an estimated concentration
LHAAP	Longhorn Army Ammunition Plant
LUC(s)	Land Use Control(s)
MC	Methylene chloride
MCL(s)	Maximum contaminant level(s)
µg/L	Micrograms per liter
mg/L	Milligrams per liter
mL	Milliliter
MNA	Monitored Natural Attenuation

MSC	Medium-specific concentration
mV	Millivolts
No.	Number
ORP	Oxidation-reduction potential
PBJV	Poarch Creek Indians, Government Services, LLC (PCI-GS)/Bhate Environmental Associates, Inc. (Bhate) 8(a) Joint Venture
PCI-GS	The Poach Creek Indians, Government Services, LLC
PCE	Tetrachloroethene
pH	Negative log of the hydrogen ion concentration
RA-O(s)	Remedial Action Operation(s)
RAO(s)	Remedial Action Objective(s)
RACR	Remedial Action Completion Report
RAWP	Remedial Action Work Plan
RD	Remedial Design
ROD	Record of Decision
s.u.	Standard units
Shaw	Shaw Environmental, Inc.
SVOC(s)	Semi-volatile Organic Compound(s)
TCA	Trichloroethane
TCE	Trichloroethene
TM	Technical Memorandum
TOC	Total Organic Carbon
U	Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection.
UJ	Estimated undetected
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	Vinyl chloride
VFA	Volatile Fatty Acids
VOC(s)	Volatile Organic Compound(s)

This page intentionally left blank.

1 INTRODUCTION

The Poarch Creek Indians, Government Services, LLC (PCI-GS)/Bhate Environmental Associates, Inc. (Bhate) 8(a) Joint Venture, herein referred to as PBJV, was awarded a solicitation number W912BV23R0022, under United States [U.S.] Army Corps of Engineers (USACE) contract number W912BV23C0007. PBJV is performing groundwater and surface water monitoring as part of Remedial Action Operation (RA-O) for the Enhanced In-situ Bioremediation (EISB) and Monitored Natural Attenuation (MNA) groundwater remedy at Longhorn Army Ammunition Plant (LHAAP)-35A (58). Remedial activities are required under the Record of Decision (ROD) issued for LHAAP-35A (58) in September 2010 (Shaw Environmental, Inc. [Shaw], September 2010).

The Remedial Action Work Plan (RAWP) for the entire site was prepared in August 2013 in accordance with the ROD and was implemented in September 2013 (AECOM Technical Services, Inc. [AECOM], August 2013). Within the eastern plume, EISB was performed in September 2013. The MNA remedy for the western plume at this site, as presented in the ROD, calls for an evaluation of the remedy after 2 years of implementation. The ROD also provides an implementation of a contingency remedy to enhance MNA if it has been found to be ineffective. RA-O implementation for the western plume was conducted between October 2013 and October 2015 and the Year 2 RA-O Report was finalized in May 2016 (AECOM, May 2016). After 2 years of MNA, the Year 2 RA-O Report concluded that MNA was ineffective, and implementation of a contingency remedy was appropriate. A RAWP for the contingency remedy for the western plume was developed and finalized (Bhate, January 2018). The contingency remedy for the western plume is EISB injections, which was implemented in March and April 2018, as documented in the Remedial Action Completion Report (RACR) (Bhate, August 2018).

Groundwater monitoring at LHAAP-35A (58) was conducted quarterly following EISB injections at the eastern plume for 2 years, semi-annually for 3 years, and now is performed annually. This RA-O report documents the 2024 RA-O implementation and summarizes the Land Use Control (LUC) compliance inspection; monitoring well inspection, maintenance, and repair activities; results of groundwater and surface water sampling completed in May 2024; and an evaluation of EISB and MNA based on the sampling event.

LHAAP is 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**). 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 border (AECOM, May 2016).

1.1 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for LHAAP-35A (58), consistent with the reasonably anticipated future use of the site as a national wildlife refuge, as presented in the ROD (Shaw, September 2010) 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.

An Explanation of Significant Differences (ESD) was prepared and finalized for LHAAP-35A (58), Shops Area, Group 4 (Bhate, July 2018) to formalize that the LUCs and groundwater monitoring required for LHAAP-03, a small site entirely contained in the LHAAP-35A (58) eastern volatile organic compound (VOC) plume and LUC boundaries (**Figure 2**), will be captured under LHAAP-35A (58). The 2018 ESD (Bhate, July 2018) specified that well 03WW01 be sampled for arsenic within the LHAAP-35A (58) RA-O and clarified that LUCs will remain in place until the levels of the contaminants of concern (COCs) in soil and groundwater allow for unrestricted use and unlimited exposure.

1.2 Performance Objectives

The LHAAP-35A (58) site has two distinct groundwater plumes: 1) the eastern plume and 2) the western plume. The current remedies selected for the two areas are: LUC; EISB in the area of highest levels of contamination; and MNA for the remainder of the plume, beyond the influence of the EISB treatment area. EISB was implemented as a contingency remedy within the western plume in 2018 as presented in the Final ESD ROD (Bhate, March 2018) and documented in the RACR for the Western Plume Contingency Remedy at LHAAP-35A (58) Shops Area (Bhate, August 2018). EISB was previously conducted in the eastern plume in 2013.

The performance objectives at LHAAP-35A (58) consist of two components: physical inspections and groundwater/surface water monitoring. As a component of the LUC implementation, a civil survey of the LUC boundary was conducted in November 2014 and recorded in the Harrison County Courthouse in March 2015 (AECOM, May 2016). Physical inspections are conducted annually to confirm compliance with the LUC objectives. These objectives include 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 [MCLs]) are attained.

Groundwater and surface water monitoring are being performed to demonstrate that EISB in conjunction with MNA of the eastern and western plumes are effective remedies to:

- Detect changes in environmental conditions that may reduce the efficacy of the remedial processes,
- Identify potentially toxic and/or mobile transformation products,
- Verify that the plumes are not expanding,
- Verify that no unacceptable impacts to downgradient receptors are occurring, such as discharges of contaminated groundwater to surface water,

- Detect new releases of contaminants to the environment that could impact the effectiveness of the remedies, and
- Verify attainment of the RAOs.

Groundwater monitoring completed as part of the 2024 RA-O activities consisted of one annual groundwater sampling event conducted in May 2024 as specified in the Eastern Plume RAWP (AECOM, August 2013) and the Western Plume RAWP (Bhate, January 2018). Annual surface water sampling at 35ASW03, located adjacent to the western groundwater plume in a ditch that runs parallel to 4th Street, was performed 30 May 2024.

1.3 Site Description

The LHAAP-35A (58) site, also known as the Shops Area, is in the north-central portion of LHAAP and currently covers an area of approximately 11 acres (**Figure 1**) (Shaw, September 2010). The surface features include asphalt-paved roads, a parking area, and areas that are wooded and overgrown with grasses and other vegetation (**Figure 2**). The topography is relatively flat with the surface drainage flowing into the tributaries of Goose Prairie Creek to the west and southwest, which eventually discharges into Caddo Lake.

The Shops Area was established in 1942 as part of the installation's initial construction (Shaw, September 2011). The facility was used to provide plant-operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical services. The site was active throughout the LHAAP's mission and was deactivated along with the rest of the installation between 1996-1997. The LHAAP-35A (58) site boundary has changed over the years. Earlier investigations for LHAAP-35A (58) were performed in areas to the south that are no longer included within the site boundary (AECOM, May 2016).

The following sites were located within the historical LHAAP-35A (58) site boundary, but are not included within the current site boundary:

- LHAAP-04, former Pilot Wastewater Treatment Plant;
- LHAAP-56, a vehicle wash rack and oil/water separator, Building 744-A;
- LHAAP-59, Storage Building 725;
- LHAAP-61, Water Treatment Plant; and
- LHAAP-66, 405-L Transformer Yard.

LHAAP-60, Building 411, which is located within the historical site boundary of LHAAP-35A (58) is included within the LUC boundary for LHAAP-04.

The current site boundary for LHAAP-35A (58) encompasses the following sites:

- LHAAP-02, vacuum truck overnight parking;
- LHAAP-03, the Paint Shop Building 722 (waste collection);
- LHAAP-60, Former Storage Building 714;

- LHAAP-68, a mobile storage tank parking area; and
- LHAAP-69, service station with underground storage tanks.

The following sites are located within the LUC boundary (groundwater use restrictions area) for LHAAP-35A (58):

- LHAAP-02, vacuum truck overnight parking;
- LHAAP-03, the Paint Shop Building 722 (waste collection);
- LHAAP-56, a vehicle wash rack and oil/water separator, Building 744-A;
- LHAAP-59, Storage Building 725;
- LHAAP-60, Former Storage Building 714;
- LHAAP-65, Former Building 209 (flammable materials storehouse);
- LHAAP-68, a mobile storage tank parking area; and
- LHAAP-69, service station with underground storage tanks.

1.4 Conceptual Site Model

Between 1992 and 2008, multiple investigations were conducted in a phased approach to evaluate the nature and extent of contamination at the LHAAP-35A (58) site. The findings from these investigations were that the shallow zone groundwater was impacted with VOCs, while the soil and former sump/waste rack sump areas (LHAAP-56) posed no unacceptable threat to human health or the environment (Shaw, September 2011). **Figure 2** shows the locations of all the shallow, intermediate, and deep zone monitoring wells, as well as surface water sampling locations, present at the site. The sources of contamination at LHAAP-35A (58) were surface spills associated with the various support services that occurred in the area. The spilled COCs migrated downward through the soil and subsequently leached into the groundwater, resulting in groundwater contamination and minor soil contamination.

Overland flow does not appear to be a complete pathway for migration of contaminants to surface water, as none of the COCs (VOCs, semi-volatile organic compounds [SVOCs], explosives, pesticides, or polychlorinated biphenyls) were detected in water samples from the on-site ditch during the 2024 RA-O sampling event. Likewise, no VOCs, SVOCs, explosives, or pesticides were detected in samples of the ditch sediment during previous sampling events (as discussed in the 2023 LHAAP 35A (58) RA-O Report).

Investigation results indicate that the shallow zone groundwater is impacted with VOCs, but soil and former sump/waste rack areas pose no unacceptable risk to human health or the environment (Shaw, September 2011). The nearest surface water body to LHAAP-35A (58) is a ditch which runs parallel to 4th Street on the western boundary of the site and flows to the southeast. The depth of groundwater in wells adjacent to the ditch is well below the bottom of the ditch at 18 to 25 feet (ft) below ground surface (bgs) (e.g., in wells 35AWW16, 35AWW18, and LHSMW07).

The potentially complete exposure pathways are groundwater use as drinking water and potential 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. **Figure 2** shows the groundwater use restrictions area established for this site.

The hydrogeology beneath the site, as presented in the Draft Final RACR (AECOM, October 2015), consists of three aquifers identified as shallow, intermediate, and deep. The shallow aquifer extends to approximately 40 ft bgs. The lithology of the shallow zone is characterized by discontinuous layers of fine-grained soils consisting of interbedded silt, sand, and clay. According to the groundwater gauging data conducted in October 2013 (First Performance Monitoring Sampling Event), groundwater elevations in the shallow zone in October 2013 ranged from 184.21 ft above mean sea level (amsl) to 202.32 ft amsl.

Data from boring log 35AWW02, which was drilled in the deep zone to a depth of 140 ft bgs (75.06 ft amsl), and 35AWW05, which was drilled in the intermediate zone to a depth of 72 ft bgs (147.01 ft amsl), indicate the soils in the intermediate and deep zones consist mostly of clay with the occasional presence of silt and sand layers. The occurrence of predominantly clay soil beneath the shallow zone impedes the vertical migration of groundwater, which is corroborated by the difference in groundwater elevations between the shallow zone and the intermediate and deep zones (AECOM, May 2016). Based on groundwater level measurements obtained in October 2013, groundwater elevation for the intermediate zone was approximately 178 ft amsl, and the elevation of deep zone groundwater was 175.75 ft amsl.

Based on previous investigations, the shallow groundwater COCs at LHAAP-35A (58) are tetrachloroethene (PCE); trichloroethene (TCE); 1,1,2-trichloroethane (TCA); 1,1-dichloroethene (DCE); 1,2-dichloroethane (DCA); cis-1,2-DCE; trans-1,2-DCE; vinyl chloride (VC); methylene chloride (MC); and benzene. In addition, low concentrations of 1,1-DCA were detected in the shallow zone groundwater but were below the groundwater medium-specific concentration (MSC); therefore, 1,1-DCA is not considered a groundwater COC at this site. No COCs were detected in samples collected from the intermediate and deep groundwater zones.

Within the eastern plume, EISB was performed in September 2013. Upon implementation of EISB upgradient of wells 03WW01 and 35AWW08, PCE concentrations decreased while concentrations of daughter products increased, indicating reductive dechlorination had occurred. Meanwhile, PCE concentrations increased at 35AWW09, which is located 75 to 150 ft downgradient of the EISB injection points and beyond the radius of influence of the injected reagents. TCE concentrations increased to a lesser degree, indicating some natural attenuation occurs in the eastern plume.

The MNA remedy for the western plume at this site, as presented in the ROD, called for an evaluation of the MNA remedy after 2 years of implementation. After 2 years of MNA, the Year 2 RA-O Report (AECOM, May 2016) concluded that MNA was ineffective, and implementation of a contingency remedy was appropriate. A RAWP for the contingency remedy for the western

plume was developed and finalized (Bhate, January 2018). The contingency remedy for the western plume is EISB injections, which was implemented in March and April 2018, as documented in the RACR (Bhate, August 2018). Immediately after EISB injections, concentrations of TCE and 1,1-DCE declined in 35AWW20, followed by a transitory increase in TCE that demonstrates the biosurfactant properties of EISB results in desorption of TCE from the soil to the dissolved phase. Shortly thereafter, reductive dechlorination occurs as TCE degrades into daughter products 1,1-DCE and VC. At LHSMW07, the concentration of 1,1-DCE is reduced, with no increase in TCE or VC. This is likely indicative that no TCE was sorbed to the soil in this area and VC was reduced quickly. As of May 2024, COCs persist at concentrations that exceed MCLs at wells 35AWW18, 35AWW20, 35AWW26, LHSMW06, and LHSMW07 in the western plume and wells 03WW01, 35AWW08, 35AWW09, 35AWW14 in the eastern plume.

Although arsenic has not been designated as a COC, it is included in the shallow zone groundwater monitoring program in accordance with the Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03/LHAAP-58 (AECOM, November 2012); the ESD for LHAAP-03 groundwater and LUCs (Bhate, July 2018); and the 2013 RAWP (AECOM, August 2013). Four quarters of arsenic monitoring were completed to be compliant with the Eastern Plume RAWP (AECOM, August 2013). However, per the Year 2 RA-O Report (AECOM, May 2016), arsenic monitoring was recommended for additional wells located within the eastern plume (03WW01, 35AWW08, and 35AWW09). Continuation of the arsenic sampling program during the period of implementation and monitoring of EISB effectiveness within the western plume was also recommended to implement EISB for the western plume.

Arsenic was reported at concentrations above the MCL of 0.010 milligrams per liter (mg/L) during the Year 1 RA-O monitoring period and during the July 2015 sampling event of the Year 2 RA-O monitoring period in wells 03WW01, 1004TW001, 1004TW006, 35AWW08, 35AWW20, and LHSMW07 (AECOM, May 2016). Background concentrations of arsenic at Site LHAAP-58 were reported up to 0.0621 mg/L for perimeter well 110 in a filtered sample that was collected on 16 December 2004 (Shaw, June 2007). The location of perimeter well 110 is displayed on **Figure 1**. Since implementation of EISB, arsenic has exceeded the background concentration once at 35AWW08 (0.148 mg/L) in November 2017.

As presented in Section 1.1, sampling at well 03WW01 will continue to be conducted per the ESD for LHAAP-35A (58) that requires the groundwater underlying LHAAP-03 be included with the LHAAP-35A (58) groundwater remedy. Based on historical arsenic results and the ESD (Bhate, July 2018), the Year 4 RA-O Report (Bhate, October 2018) recommended to continue monitoring arsenic in eastern plume monitoring wells 03WW01, 35AWW08, and 35AWW09 and western plume monitoring wells 35AWW20 and LHSMW06.

2 SITE ACTIVITIES AT LHAAP-35A (58)

2.1 Annual LUC Compliance Inspection, Maintenance, and Repairs

2.1.1 Annual LUC Compliance Inspection

The objectives of the LUCs at LHAAP-35A (58) are to prevent human exposure to groundwater contamination presenting an unacceptable risk to human health, and to ensure that there is no withdrawal or use of groundwater beneath the site for any purpose other than environmental monitoring and testing until the cleanup levels are attained (AECOM, August 2013). The ESD for LHAAP-03 groundwater and LUCs formally changed the duration of the LUCs, which will remain in effect until COC concentrations in groundwater and soil are reduced to levels that allow unrestricted use and unlimited exposure (Bhate, July 2018).

As shown on **Figure 2**, the sites that are included in the LUC boundary under LHAAP-35A (58) include LHAAP-02, LHAAP-03, LHAAP-35A (58), LHAAP-56, LHAAP-59, LHAAP-60, LHAAP-65, LHAAP-68, and LHAAP-69. Notices of the groundwater use restrictions accompany all property transfer documents and were recorded at the Harrison County Courthouse in March 2015 in accordance with the Texas Administrative Code Title 30, §335.566. Additional details regarding the implementation of the LUCs are presented in the RACR (AECOM, October 2015).

The annual LUC compliance inspection was conducted for LHAAP-35A (58) on 15 November 2024. The Annual Land Use Control Compliance Certification Documentation form for the 2024 RA-O period is presented in **Appendix A**. No compliance issues or concerns were noted during the November 2024 annual inspection.

2.1.2 Well Field Operation & Maintenance

Inspection of the condition/integrity of the monitoring wells were conducted in May 2024 during the sampling event, and this was documented in both a photographic log (**Appendix B**) and the sample collection form. As noted during the inspection, wells 35AWW10, 35AWW12, 35AWW15, 35AWW17, 35AWW19, 35AWW21, and 35AWW22 had broken hinges. This shows that the rust that was being monitored during previous years' inspections has progressed and new hinges are required. Well 35AWW15 was also observed to need paint. These repairs will be made before the 2025 sampling event. Mowing was conducted prior to the groundwater sampling event in May 2024. **Appendix B** provides photos of May 2024 monitoring well conditions and **Appendix C** provides the Well Inspections Forms, which contain information about the individual well surface conditions observed during the 2024 sampling event.

2.2 Groundwater Monitoring for RA-O

Groundwater monitoring at LHAAP-35A (58) was conducted quarterly following EISB injections at the eastern plume for 2 years, then semi-annually, but is now conducted on an annual basis. The contingency remedy was implemented within the western plume in March 2018 and required that quarterly sampling be conducted at select performance monitoring wells for 2 years, which was completed in March 2020. Groundwater monitoring is now conducted annually

at the western plume. During the 2024 RA-O, groundwater sampling was completed annually for both the eastern and western plumes in May 2024.

2.2.1 Eastern Plume Monitoring

In accordance with the RAWP (AECOM, August 2013), the following shallow zone wells located within the eastern and western plumes are sampled annually in May 2024: 03WW01, 35AWW08, 35AWW09, 35AWW10, 35AWW12, 35AWW13, 35AWW14, 35AWW15, 35AWW16, 35AWW17, 35AWW18, 35AWW21, 35AWW22, 35AWW24, and LHSMW06. Several of these wells also help define the western plume.

Monitoring well LHSMW04 was dry in May 2024 and, therefore, was not sampled during the 2024 RA-O. Intermediate groundwater zone well 35AWW01 was also sampled in May 2024. Monitoring well 35AWW02 (**Figure 2**), which is the only well screened in the deep groundwater zone, was not included in the sampling program, in accordance with the RAWP (AECOM, August 2013). Therefore, this monitoring well was not gauged or sampled during the 2024 RA-O sampling events.

2.2.2 Western Plume Monitoring

Six shallow wells located within the western plume were required to be sampled quarterly for 2 years post injection. Per the Western Plume RAWP (Bhate, January 2018), the wells include 35AWW06, 35AWW11, 35AWW19, 35AWW20, 35AWW23, and LHSMW07. The eighth and final quarterly event was completed in March 2020. Semiannual sampling occurred during the 2023 sampling event. The 2024 sampling event was an annual sampling event. Although not considered performance monitoring wells for the Western Plume RAWP, LHSMW06, 35AWW14, 35AWW15, 35AWW16, 35AWW17, 35AWW18, and 35AWW24 which are sampled as part of the eastern plume monitoring, also help define the western plume.

2.2.3 Sampling Procedures and Analysis

Before collecting groundwater samples, the wells were gauged using a water level probe and the depth to water was recorded to the nearest 0.01 ft from the top of casing. During the 2024 RA-O period, groundwater samples were collected using the low-flow sampling technique described in the Groundwater Sampling Procedures in the IWWP (Bhate, May 2018). After water quality parameters stabilized and were within acceptable ranges, samples were collected at the same low flow rate.

The MNA analyte list follows the recommendations put forth in the Final Technical Memorandum (TM) – MNA Parameters (Bhate, February 2019). The TM modified the MNA analyte list for consistency across several sites and to reduce redundant or non-essential parameters. Analytes eliminated in the 2024 RA-O sampling events were alkalinity; nitrite; sulfide; total iron; dissolved iron and manganese; and total phosphorus. For the eastern plume only, chloride, nitrate, sulfate, dissolved gases, total organic carbon (TOC), dechlorinating bacteria, and volatile fatty acids (VFAs) were also eliminated. Groundwater samples collected from each well during 2024 (May 2024) were analyzed by ALS Environmental for VOCs (SW8260). Selected wells were also analyzed by ALS Environmental for dissolved gases (RSK-175); VFAs (High Performance Liquid

Chromatography-METACIDS); and/or dechlorinating bacteria (dehalococcoides [DHC]/dehalobacter [DHBt]) (CENSUS ® quantitative polymerase chain reaction).

The LHAAP-35A (58) monitoring wells are shown on **Figure 2**. **Table 1** presents the monitoring wells that were gauged during the 2024 RA-O period. Each of the monitoring wells was secure and sampled with no technical issues encountered. However, during 2024, monitoring well LHSMW04 was noted as dry. Monitoring well LHSMW04, located to the east of the eastern groundwater plume, has been periodically dry. Monitoring well LHSMW04 is located between 35AWW09 and 35AWW12 and the sampling results for these two wells provide ample data to evaluate this area.

Groundwater Sample Collection Forms are presented in **Appendix D.** Chain of custody forms, laboratory reports, and quality control summary reports are presented in **Appendices E and F**.

2.2.4 Groundwater Elevation and Flow Direction

2.2.4.1 Shallow Groundwater Zone

Groundwater levels for the 2024 RA-O were measured in May 2024. The groundwater flow direction in the shallow zone during the 2024 RA-O monitoring period at LHAAP-35A (58) is interpreted to be towards the southeast in the western portion of the site and to the east-southeast in the eastern portion of the site (see **Figures 4** and **5**). This corresponds well with the flow directions presented in the Remedial Design (RD) document (Shaw, September 2011), which was interpreted to the southeast in the western area and to the east for the remainder of the site.

At several wells throughout the site, the groundwater elevations remained within a foot of their elevation in the June 2023 sampling event. However, two wells that were previously gauged as being dry (35AWW04 and 35AWW25) had water in them during the May 2024 sampling event. The greatest groundwater elevation increase in the shallow was a 0.84 ft increase at LHSMW07. In contrast, the greatest elevation decrease was a 0.28 ft decrease observed in well 35AWW13.

2.2.4.2 Intermediate Groundwater Zone

Monitoring wells 35AWW01 and 35AWW05 both had a substantial increase in groundwater elevation during the May 2024 sampling event when compared to the June 2023 sampling event. Well 35AWW01 had a 3.27 ft elevation increase while well 35AWW05 had a 1.55 ft elevation increase. A potentiometric surface map cannot be constructed to determine groundwater flow direction based on only two monitoring wells. The groundwater elevations are presented in **Table 1**.

2.2.5 Vertical Gradient

There are two pairs of shallow and intermediate zone co-located wells, which include monitoring wells 35AWW08 (shallow) and 35AWW01 (intermediate), and LHSMW07 (shallow) and 35AWW05 (intermediate). **Figure 2** presents the locations of these co-located wells. During the 2024 monitoring period, the elevation difference between wells 35AWW08 and 35AWW01 was

12.05 ft in May 2024. The elevation difference between wells LHSM07 and 35AWW05 was 28.38 ft in May 2024. These elevation differences are consistent with those observed in the first 9 years of RA-O monitoring. This difference in elevation between the shallow and intermediate groundwater zones indicates that there is hydraulic separation between these two zones. Because the shallow zone groundwater elevations are higher than the intermediate zone groundwater elevations, a downward vertical gradient appears to exist at the site.

2.3 Groundwater Analytical Results

2.3.1 Shallow Zone

The COCs for the shallow zone groundwater are PCE; TCE; cis-1,2-DCE; trans-1,2-DCE; MC; VC; 1,1,2-TCA; 1,2-DCA; 1,1-DCE; and benzene (AECOM, May 2016). Analytical results for the May 2024 annual sampling event in the eastern plume are presented in **Table 2.** The analytical results for the May 2024 annual sampling event in the western plume are presented in **Table 3. Figure 5** presents the analytical data for COCs that exceeded MCLs during the May 2024 sampling event.

Twenty-four shallow wells were sampled for COCs during the 2024 RA-O, not including well LHSMW04, which was dry during the May 2024 sampling event. Select wells were also sampled for MNA parameters per the RAWP (AECOM, August 2013) and the Technical Memorandum [TM]-MNA Parameters (Bhate, February 2019).

During the May 2024 sampling event, monitoring wells 03WW01, 35AWW06, 35AWW08, 35AWW09, 35AWW11, 35AWW14, 35AWW18, 35AWW19, 35AWW20, 35AWW23, 35AWW26, LHSMAW06, and LHSMW07 had one or more COCs at concentrations above laboratory detection limits. Additionally, monitoring wells 03WW01, 35AWW08, 35AWW09, 35AWW14, 35AWW18, 35AWW20, 35AWW26, LHSMW06, and LHSMW07 had one or more COCs at concentrations exceeding the MCLs, which are posted on **Figure 5**.

Groundwater monitoring well sampling forms were completed for each well sampled and are included in **Appendix D**. The laboratory analytical results and the quality control summary report are included in **Appendices E and F**.

2.3.2 Intermediate Zone

Wells 35AWW01 (eastern plume) and 35AWW05 (western plume) (**Figure 6**), which are completed in the intermediate groundwater zone, were sampled during the 2024 RA-O monitoring period. Analytical results for both intermediate groundwater zone wells were below laboratory detection limits for all analytes. The laboratory analytical results are shown in **Table 2** (35AWW01) and **Table 3** (35AWW05). Groundwater monitoring well sampling forms were completed for each well sampled and are included in **Appendix D**. The laboratory analytical reports and the quality control summary report are included in **AppendicesE and F**. **Figure 6** shows that neither had concentrations of COCs exceeding the MCLs.

2.3.3 Arsenic Monitoring

During the 2024 RA-O monitoring period, arsenic analysis was completed in select monitoring wells in accordance with the Revised Technical Memorandum, Steps to Remedy-in-Place for

LHAAP-03/LHAAP-58 (AECOM, November 2012); the ESD for LHAAP-03 groundwater and LUCs (Bhate, July 2018); the 2013 RAWP (AECOM, August 2013); and the 4th Annual RA-O Report (Bhate, October 2018). The 4th Annual RA-O Report recommended continued arsenic monitoring in the eastern plume monitoring wells 03WW01, 35AWW08, and 35AWW09 and western plume monitoring wells 35AWW20 and LHSMW06. 03WW01 is included as outlined in the ESD for LHAAP-03 (Bhate, July 2018).

In May 2024, groundwater from monitoring wells were analyzed for arsenic: 03WW01, 35AWW01, 35AWW08, 35AWW09, 35AWW20, and LHSMW06. Monitoring of arsenic at 35AWW01 is included as this well is an intermediate groundwater well evaluated for MNA. Analytical results for the May 2024 sampling event in the eastern plume are presented in **Table 2**. The analytical results for May 2024 sampling event for the western plume are presented in **Table 3**.

In May 2024, arsenic was detected in the groundwater above the MCL of 0.010 mg/L in only one well: 35AWW08. The concentration of arsenic in 35AWW08 was 0.0266 mg/L, which, although exceeding the MCL, is below the site background level of 0.0621 mg/L (Shaw, June 2007). Monitoring wells 03WW01, 35AWW01, 35AWW09, and 35AWW20 had detections of arsenic above laboratory detection limits but below the MCL and background concentrations of the site. Arsenic was not detected in LHSMW06. Arsenic in groundwater has been generally declining in the last 5 years at 35AWW08 within the EISB remedy area of influence. The declining arsenic detections indicate the presence of arsenic is transitory; as the aquifer recovers from the reducing conditions caused by the EISB remedy, arsenic concentrations recover to background levels. The laboratory analytical reports are included in **Appendix E**.

2.4 Surface Water Sampling

The Eastern Plume RAWP (AECOM, August 2013) specifies that surface water monitoring for COCs (1,1,2-TCA; 1,1-DCA, 1,1-DCE; 1,2-DCA; benzene; cis-1,2-DCE; TCE; PCE; and VC) be performed at surface water sample location 35ASW03, which is located in a ditch that runs parallel to 4th Street, on the western boundary of the site, adjacent to the western groundwater plume. **Figure 2** shows the surface water sampling location.

The Draft Final RACR for LHAAP-35A (58) (AECOM, October 2015) states that *"the water level in 35AWW18 will be gauged for comparison with the ditch bottom elevation at 35ASW03."* The surveyed bottom of the ditch at the lowest point is 213.58 ft amsl. The gauged water level in the nearest upgradient monitoring well 35AWW18 in May 2024 was 198.02 ft amsl.

Surface water samples are collected to evaluate the potential effect of the plume on surface water. During the May 2024 sampling event, no COC was detected in the surface water sample collected at 35ASW03. However, due to the elevation difference between the ditch bottom and the gauged water level in the nearest upgradient well, it is likely that the surface water and groundwater are not hydrologically connected at the time of measurement. Because no COCs were detected in the sample and because there appears to be no hydrological connection between the groundwater and surface water, it is not likely that groundwater at LHAAP-58 is

contributing to nearby surface water. The laboratory analytical results are included in **Appendix E**.

2.5 Well Abandonment

No additional wells are recommended for abandonment for this reporting period.

3 PERFORMANCE MONITORING OF EISB

The EISB target area within the eastern groundwater plume is located within the vicinity of wells 03WW01 and 35AWW08. **Figure 5** presents the 2013 injection locations within the eastern groundwater plume. Well 35AWW10 is considered an upgradient clean well and well 35AWW09 is located downgradient of the EISB area, but within the eastern groundwater plume. Groundwater monitoring was performed in August 2013 prior to EISB implementation (baseline event), in October 2013 after the EISB injections, quarterly for 2 years and was semiannual between October 2016 and June 2023. Sampling of the eastern plume has now been changed to annual sample events. The EISB performance in the eastern groundwater plume and key parameters are discussed below and much of the information is provided in **Tables 2**, **4**, and **5**.

The EISB target area within the western groundwater plume is located within the vicinity of wells 35AWW06, 35AWW20, and LHSMW07 (Bhate, January 2018). EISB injections were also implemented near monitoring wells 35AWW11, 35AWW14, and 35AWW23. **Figure 5** presents the EISB injection point locations within the western groundwater plume. Monitoring well 35AWW15 is considered an upgradient clean well, and 35AWW24 is located downgradient of the EISB treatment area and defines the downgradient edge of the western groundwater plume. Within the western groundwater plume, a total of six monitoring wells (LHSMW07, 35AWW06, 35AWW11, 35AWW19, 35AWW20, 35AWW23) were evaluated via a total of eight quarterly performance monitoring events over the 2 years following injections to assess the EISB in the western plume (Bhate, January 2018). The quarterly groundwater performance monitoring was completed in March 2020 when monitoring was reduced to semiannual. The first semiannual sampling event was completed in June 2020 in the Year 6 monitoring period. Semiannual sampling ceased in June 2023 and the site moved to annual sampling. This 2024 RA-O report presents the results of the sampling event conducted in May 2024. The EISB performance in the western groundwater plume and key parameters are discussed below. Information pertinent to the discussion is provided in **Tables 3**, **4**, and **6**.

The monitoring program is intended to track the biologic degradation of the chlorinated solvents from PCE through VC and finally to ethene (PCE to TCE to cis-1,2-DCE to VC and finally ethene), while also monitoring the in-situ conditions for favorable biologic activity. Several analytes were eliminated in March and June 2019 per the Final TM – MNA Parameters (Bhate, February 2019).

3.1 Analysis of VOCs

VOCs that exceeded the MCL during the May 2024 sampling event in shallow groundwater are shown in **Figure 5**. No VOCs exceeded the MCL during the reporting period in the intermediate groundwater zone, as indicated in **Figure 6**. **Figures 7a-7e** includes COC concentration over time trend graphs at key monitoring wells within the EISB treatment zone.

3.1.1 Eastern Plume

PCE concentrations in the eastern two monitoring wells were slightly reduced from the June 2023 sampling event. Between August 2013 (baseline sampling event) and May 2024, PCE

concentrations detected for well 35AWW08 have decreased from 1,640 µg/L to non-detect, with concentrations below the MCL during the 2024 RA-O reporting period (**Table 4**). This difference in PCE concentrations in well 35AWW08 corresponds to a 99.9 percent (%) reduction since the remedy was implemented. PCE concentrations in well 35AWW08 remained below the MCL of 5 µg/L in nine of the past 10 sampling events, with only a single measurement in exceedance with a concentration of 6.7 µg/L detected in June 2020. PCE concentrations in well 35AWW08 has remained below the MCL of 5 µg/L in the six sampling events following June 2020.

From August 2013 to May 2024, PCE concentrations in well 03WW01 decreased from 368 µg/L to non-detect, with concentrations below the MCL during the 2024 RA-O reporting period. PCE was non-detect at a limit of detection of 1 µg/L (**Table 4**). This is a decrease of approximately 99.7% of PCE in well 03WW01. PCE concentrations in well 03WW01 have fluctuated over the previous five years, ranging from non-detect to 11.0 µg/L. However, PCE has been below the MCL since June 2023.

Between August 2013 (baseline sampling event) and May 2024, PCE concentrations detected for well 35AWW09 have increased from 21.9 µg/L to 430 µg/L (**Table 4**). This difference in PCE concentrations in well 35AWW09 corresponds to a 1863% increase since the remedy was implemented. However, the concentration of PCE within monitoring well 35AWW09 has remained stable since the December 2019 sample event with concentrations increasing with groundwater levels decreasing.

TCE, a degradation product of PCE, initially decreased in monitoring well 03WW01 between August 2013 and October 2013 (following EISB injections), but subsequently increased (due to reduction of PCE into TCE) indicating the occurrence of early stages of dechlorination (**Table 4** and **Figure 8**). TCE detected in monitoring well 03WW01 dropped below the MCL of 5 µg/L in October 2016 and has remained below the MCL through June 2021, except for reported concentrations above the MCL of 5.7 µg/L in December 2018 and 24 µg/L in December 2020. In June 2022, TCE increased above the MCL of 5 µg/L to 9.9 µg/L. In May 2024, PCE was not detected in well 03WW01.

The maximum concentration of TCE detected during the May 2024 sampling event was in well 35AWW09, at a concentration of 190 µg/L (duplicate). Over the last seven sampling events, TCE at 35AWW09 has remained relatively consistent from December 2019 (160 µg/L) through May 2024 (190 µg/L [duplicate]) (**Table 4** and **Figure 5**).

The concentrations of cis-1,2-DCE remained below the MCL of 70 µg/L in the eastern plume monitoring wells (**Table 4**) during the May 2024 sampling event. VC was detected in one sample within the eastern plume (03WW01) above the MCL during the May 2024 sampling event at 7.6 µg/L. In part, the low concentrations of degradation daughter products cis-1,2-DCE and VC present during the 2024 RA-O reporting period are a result of the minimal amount of parent compounds remaining at the site.

3.1.2 Western Plume

PCE was not detected above the MCL of 5 µg/L in the western plume during the 2024 RA-O sampling event (**Table 3**). PCE has not been detected above the MCL in the western plume since December 2008, when it was detected at monitoring well 35AWW06 (**Table 4**).

In May 2024, well 35AWW20 had detected concentrations of 1,1,2-TCA; 1,1-DCE; 1,2-DCA; benzene; cis-1,2-DCE; TCE; and VC above MCLs (**Table 3**). During 2024, TCE decreased from 180 µg/L to 130 µg/L. The TCE concentrations have historically fluctuated seasonally and with groundwater elevation. The results of the May 2024 sampling event continue to have the inverse relationship between TCE concentration and groundwater elevation, with groundwater elevation increasing from the June 2023 sampling event and the TCE concentration decreasing.

TCE has remained below the MCL in monitoring well 35AWW23 since June 2019 and was not detected in May 2024. TCE was detected above the MCL in LHSMW06 during the May 2024 sampling event, however, with concentrations of 19 µg/L. LHSMW06 is outside the treatment area and cross-gradient of 35AWW20. A new monitoring well (35AWW26) was installed upgradient of 35AWW20 and LHSMW06 in November 2022 to better understand the increasing chlorinated volatile organic compound (CVOC) concentrations at LHSMW06. TCE was not detected in monitoring well 35AWW26 in May 2024.

The TCE daughter product, cis-1,2-DCE, was detected in well 35AWW20 above the MCL (5 µg/L) during the May 2024 sampling event with a concentration of 73 µg/L, representing a decrease in the cis-1,2-DCE from the June 2023 sampling event (**Table 4**). The daughter product VC is also above the MCL with a concentration of 480 µg/L, though this represents a decrease from the 2023 RA-O sampling event of 990 µg/L in January 2023 and 940 µg/L in June 2023 (**Table 4**). This high concentration of VC might indicate continued degradation of cis-1,2-DCE or 1,1-DCE. 1,1-DCE in 35AWW20 was detected at a concentration of 1,100 µg/L, which is slightly lower than the concentrations detected for the 2023 RA-O reporting period.

1,1-2-TCA, one of the parent compounds of 1,1-DCE, was only detected in one well, 35AWW20, in the western plume with a concentration of 56 µg/L. 1,1-DCE, the daughter product of TCE and 1,1,2-TCA, was also detected in exceedance in LHSMW07 with a concentration of 99 µg/L. The daughter product VC was also detected in LHSMW07 with a concentration of 47 µg/L. As with 35AWW20, LHSMW07 may demonstrate that degradation of 1,1-DCE to VC. The plume of 1,1-DCE extends south to 35AWW18, where the concentration was measured as 22 µg/L.

In general, the western TCE plume remained consistent with the June 2023 sample results, encompassing wells 35AWW20 and LHSMW06. However, the VC plume was found to be smaller than what was measured in the June 2023 sampling event, as VC was not detected in LHSMW06 (**Figure 8)**.

All COCs remain below the respective MCLs in upgradient well 35AWW15 and downgradient wells 35AWW06, 35AWW11, 35AWW19, 35AWW23, and 35AWW24.

3.2 Analysis of Field Parameters

The field parameters (pH, dissolved oxygen [DO], oxidation-reduction potential [ORP], temperature, and specific conductivity) were measured in the LHAAP-35A (58) wells during the 2024 RA-O monitoring event. **Table 5** contains the 2024 RA-O field parameters for monitoring wells 03WW01 and 35AWW08, located in the eastern plume. In May 2024, pH at 03WW01 and 35AWW08 were within the range of 6.0 to 8.5 standard units (s.u.) generally required to support microbial populations responsible for reductive dechlorination, but below the optimal range of 6.8 to 7.5 s.u. The pH in these two wells were generally more acidic following EISB treatment performed in September 2013, potentially related to substrate fermentation and organic acid production. Anaerobic conditions were observed in both wells with DO less than (<) 0.5 mg/L and a negative ORP.

Table 6 contains the 2024 RA-O field parameters for wells located in the western plume. During the reporting period, pH was generally in the range of 6.0 to 8.5 s.u. except for 35AWW19 and 35AWW24. All other wells were within the range generally required to support microbial populations responsible for reductive dechlorination. However, both wells that were outside the 6.0 to 8.5 s.u. range had detected COC concentrations below MCLs. Most wells also detected a DO of < 0.5 mg/L except for 35AWW23, which had a DO of 1.85 mg/L. Several wells also had higher ORP readings than those measured in June 2023, with most wells (LHSMW07, 35AWW11, 35AWW19, 35AWW20, and 35AWW24) reporting a positive ORP value. Per the *Technical Protocol for Evaluating Attenuation of Chlorinated Solvents in Ground Water*, ORP must be < 50 millivolts (mV) for the reductive pathway to be possible (U.S. Environmental Protection Agency [USEPA], September 1998), indicating that only the groundwater at 35AWW23 is reducing enough to allow reductive dechlorination to occur.

3.3 TOC Levels

TOC is an indicator of the presence of carbon substrate. The level of TOC is typically < 10 mg/L in areas outside of the EISB treatment area (AECOM, May 2016). Therefore, TOC present above 10 mg/L is indicative of the presence of substrates in groundwater near the sampled monitoring well.

3.3.1 Eastern Plume

After injection of the carbon substrate in October 2013, there was an initial spike of the TOC levels in both wells (03WW01 and 35AWW08), indicating effective substrate distribution from the injection points to the impacted zone. Over the course of the first 8 years of monitoring, the TOC levels have decreased, which is expected as the carbon substrate is consumed and due to migration away from the injection area. The most recent residual TOC levels (June 2021) of 103 mg/L in 03WW01 and 119 mg/L in 35AWW08 indicate that TOC remains at sufficiently high concentrations to support reductive dechlorination (i.e., greater than 10 mg/L), albeit at lower amounts compared to the period immediately after injection in October 2013 (**Table 5**). TOC analysis was not performed in 2024. Groundwater monitoring performed at the eastern plume

was reduced to VOC analysis only on an annual basis for the 2024 RA-O in compliance with the Eastern Plume RAWP (AECOM, August 2013).

3.3.2 Western Plume

Within the western plume, TOC increased in the sampled monitoring wells following the March/April 2018 contingency EISB injections when compared to the baseline sampling results (November 2017) within the influence of the injection points except for 35AWW19. The greatest increases were observed in 35AWW06 and 35AWW11 after injection. TOC was consumed and fell below the level generally required to support microbial growth (i.e., < 10 mg/L) in all wells by June 2020 except for wells 35AWW06, 35AWW20, and 35AWW23. The May 2024 data indicates that the highest TOC observed in the western plume is located at well 35AWW20 with a concentration of 40.3 mg/L. Wells 35AWW23, 35AWW11, and LHSMW07 also detected TOC concentrations above the required 10 mg/L, with concentrations of 37.0 mg/L, 30.8 mg/L, and 12.4 mg/L, respectively (**Table 6**). Historically, EISB injections increased TOC in 35AWW20 to a maximum of 53 mg/L in September 2018, indicating distribution of electron donor in this area was successful, but not ideal.

3.4 Analysis of Anions

Although sulfate reduction occurs through competing reactions to reductive dechlorination, the decrease in sulfate concentration is indicative of reducing aquifer conditions. Nitrate is not naturally occurring in either plume area; therefore, nitrate is also not observed as an artifact of reductive dechlorination.

3.4.1 Eastern Plume

Decreased sulfate concentrations in October 2014 through October 2016 in the two EISB wells (03WW01 and 35AWW08) relative to levels in nearby wells outside of the EISB treatment (35AWW09 and 35AWW10), indicate the development of reducing conditions conducive to reductive dechlorination that occurred following initial injections (AECOM, November 2015; AECOM, May 2016; Bhate, April 2018). Note that the largest reductions in COC concentrations occur at the same time the largest reductions in sulfate concentrations are observed. Sulfate concentrations in 03WW01 reduced from an August 2013 baseline concentration of 534 mg/L to non-detectable levels (<0.5 mg/L) in October 2016. Since then, sulfate concentrations increased in monitoring well 03WW01 to 180 mg/L in June 2021, which is likely due to untreated groundwater moving through the eastern plume. In monitoring well 35AWW08, data trends show that sulfate was reduced from an August 2013 baseline concentration of 1,480 mg/L to < 10 mg/L in October 2016 because of EISB (**Table 5**). Sulfate analysis was not conducted in 2024. Groundwater monitoring performed at the eastern plume was reduced to VOC analysis only on an annual basis for the 2024 RA-O in compliance with the Eastern Plume RAWP (AECOM, August 2013).

3.4.2 Western Plume

Sulfate decreased in each of the wells influenced by the 2018 EISB injections by approximately 50% immediately after injections, except for well 35AWW19. Sulfate reduction was observed in 35AWW19 to a lesser extent, presumably due to poor distribution of TOC in areas where COCs are historically below MCLs. In May 2024, sulfate concentrations at the center of the western plume (i.e., 35AWW20) remained depressed at 1,400 mg/L compared to pre-injection sulfate concentrations of 2,150 mg/L in November 2017 (**Table 6**). Sulfate concentrations have returned to pre-injection levels in well LHSMW07 (3,520 mg/L). While sulfate concentrations greater than 20 mg/L can be a potential cause of concern for reductive dechlorination, there is evidence that it is not inhibitory at the site where VC daughter products are generated.

3.5 Dissolved Gases

3.5.1 Eastern Plume

Dissolved gas analyses were not conducted in 2024. Groundwater monitoring performed at the eastern plume was reduced to VOC analysis only on an annual basis for the 2024 RA-O in compliance with the Eastern Plume RAWP (AECOM, August 2013). Historical concentrations of methane, ethane, ethene, and carbon dioxide are summarized in **Table 5**.

3.5.2 Western Plume

Methane following the EISB treatment of the western plume increased within 6 to 9 months of implementation. In 35AWW20, the well with the highest COC concentrations in the western plume, methane decreased to 473 µg/L in May 2024 from 3,350 µg/L in June 2023. The highest methane concentration detected in the western plume during the 2024 RA-O reporting period was 1,830 µg/L in 35AWW06. Methane is one line of evidence that methanogenesis is occurring. Methane concentrations were notably lower during the 2024 RA-O when compared to the 2023 results.

Carbon dioxide levels generally increased in monitoring wells influenced by the EISB treatment (**Table 6**). However, fluctuating trends in carbon dioxide levels have been observed since December 2018 in the western plume monitoring wells. During the May 2024 sampling event, carbon dioxide concentrations were measured anywhere between 59,000 µg/L (35AWW06) to 810,000 µg/L (35AWW11).

Ethene production is one line of evidence that complete reduction of the COCs is occurring, although ethene may volatilize quickly through the vadose zone and is not retained by groundwater for long periods of time. Ethene was detected in two wells: LHSMW07 and 35AWW20. Ethene concentrations decreased in LHSMW07 to 15.5 µg/L in May 2024 from 20.9 µg/L in June 2023. Similarly, ethene concentrations decreased in 35AWW20 to 6.89 µg/L in May 2024 from 38.9 µg/L in June 2023.

3.6 Dechlorinating Bacteria

3.6.1 Eastern Plume

The DHBt population increased significantly, within 3 to 6 months, after injection in the eastern plume in the two monitoring wells influenced by the EISB treatment. DHBt population in the eastern plume peaked in October 2014 in groundwater collected from monitoring well 35AWW08 and in May 2014 in groundwater collected from monitoring well 03WW01. As of June 2021, the DHBt population in the eastern plume was < 5,000 cells per milliliter (mL) in either monitoring well.

Bacterial cultures containing DHC species, the bacteria responsible for degrading cis-1,2-DCE to VC, were introduced during the bioaugmentation event in October 2013. During the Year 3 RAO sampling event (October 2016), DHC species spiked to the highest levels observed to 9,460,000 cells/mL in 03WW01 and to 25,600,000 cells/mL in 35AWW08, indicating effective distribution of the introduced culture within the eastern plume per the RAWP. Since the Year 3 RA-O sampling event (July 2018), DHC concentrations have generally decreased, which is anticipated as the concentration of CVOCs decreases to below 50 µg/L. Concentrations of DHC in the Year 7 RA-O in June 2021 were 196 cells/mL in 03WW01 and 122,000 cells/mL in 35AWW08 (**Table 5**). DHC species counts were still adequate in June 2021 for the continued degradation of PCE/TCE to VC, however, DHC was not analyzed during the current reporting period.

Microbial analyses were not conducted in 2024. Groundwater monitoring performed at the eastern plume was reduced to VOC analysis only on an annual basis during the 2024 RA-O in compliance with the Eastern Plume RAWP (AECOM, August 2013).

3.6.2 Western Plume

The DHBt population increased significantly within 3 to 6 months after injections in the western plume in each of the monitoring wells influenced by EISB treatment. DHBt populations have since decreased, ranging from 900 cells/mL in 35AWW20 to 9,200 cells/mL in LHSMW07. This corresponds to a substantial decrease in populations particularly when compared to the results immediately following the EISB injections, where populations reached over 5 million cells/mL in well 35AWW20.

DHC increased within 6 months to a year in most of the monitoring wells, but not to the degree DHBt populations increased. The critical performance monitoring well in the western plume, 35AWW20, indicated an increasing trend of DHC population to 115,000 cells/mL through June 2020. DHC populations have fluctuated through the years, with the latest population measuring 3,600 cells/mL in 35AWW20. This represents a decrease in DHC population when compared to the populations in January and June 2023, which measured at 91,800 and 40,800 cells/mL, respectively.

BAV1 vinyl chloride reductase populations were mostly undetected in monitoring wells around the western plume. However, monitoring well 35AWW20 had the highest population of BAV1 VC

reductase measuring 660 cells/mL. This corresponds to a decrease in BAV1 VC reductase cell count when compared to the June 2023 sample, with a population of 8,330 cells/mL.

The increase in dechlorinating bacteria populations corresponds with the reduction of TCE and increase of VC in well 35AWW20 since the EISB injections. This indicates that reductive dechlorination is not stalling at cis-1,2-DCE even though the observed cis-1,2-DCE is only slightly decreasing. The DHC and BAV1 VC reductase populations at 35AWW20 presented a sufficient population to reduce TCE and VC to ethene completely via reductive dechlorination.

3.7 EISB Performance Monitoring Summary

In summary, the EISB treatment has been effective in reducing the VOC concentrations for both the western and eastern plumes, with PCE being reduced by as much as 100%. However, field parameters show that environmental conditions may not be conducive for continued reductive dechlorination. Positive ORP values indicate that the environment has turned from a reducing to an oxidizing environment. Despite the non-ideal conditions for reductive dechlorination, slowed biological activity, and decrease in substrate mass, the overall COC mass requiring treatment has diminished. Reductions of VOCs (**Figures 7a-7e**) and continued production of ethene (**Tables 5** and **6**) have been observed throughout both the eastern and western plume areas. The individual COC lateral extents comparing October 2016 MCL exceedances and those documented in May 2024 show a greatly contracted plume footprint (**Figure 8**). Combining the reduction in maximum concentrations and the reduction in the aerial extent indicate significant remediation progress.

4 NATURAL ATTENUATION EVALUATION

This section presents the results of the natural attenuation evaluation in accordance with the three lines of evidence discussed in the Final RD (Shaw, September 2011) for LHAAP-35A (58) groundwater COCs. The discussion below pertains only to the shallow zone where COCs are detected above cleanup levels. Analytes eliminated from the sampling and analysis plan starting in 2019, per the Draft TM – MNA Parameters (Bhate, February 2019) were alkalinity, nitrite, sulfide, total iron, dissolved manganese, total phosphorous, and dissolved iron (lab analysis). For the eastern plume only, chloride, nitrate, sulfate, dissolved gasses, TOC, dechlorinating bacteria, and VFAs were also eliminated.

Per the August 2013 RAWP (AECOM, August 2013), 18 shallow monitoring wells were included in the MNA monitoring program for VOCs (35AWW06, 35AWW08, 35AWW10, 35AWW11, 35AWW12, 35AWW13, 35AWW14, 35AWW15, 35AWW16, 35AWW17, 35AWW18, 35AWW19, 35AWW20, 35AWW21, 35AWW22, LHSMW04, LHSMW06, and LHSMW07). Well 35AWW01 is the intermediate groundwater well evaluated for MNA. Note that LHSMW04 was not sampled because it was dry. Following the 2018 EISB treatment within the western plume, wells 35AWW20, LHSMW07, 35AWW19, 35AWW23 and 35AWW24 became performance monitoring wells for the contingency remedy.

4.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance

Natural attenuation is the combination of multiple mechanisms, including biodegradation, volatilization, dilution, advection, and absorption that reduce contaminant concentrations. The decrease of COC concentrations over time and distance in the absence of any other treatment is evidence of natural attenuation (AECOM, May 2016). The change in groundwater COC concentrations over time and with distance was evaluated at LHAAP-35A (58). COC exceedances for the 2024 RA-O monitoring period are presented on **Figure 5**.

The only wells where COCs were detected above their respective MCLs during the 2024 RA-O groundwater sampling events are 03WW01, 35AWW09, 35AWW14, 35AWW18, 35AWW20, 35AWW26, LHSMW06, and LHSMW07 (**Tables 2** and **3**). VOCs that exceed their respective MCLs are shown in **Figure 5**.

The Draft Final RACR for LHAAP-35A (58) (AECOM, October 2015) states that historical groundwater data indicates that monitoring wells 35AWW20 and LHSMW07 in the western plume, and wells 35AWW08 and 35AWW09 in the eastern plume will be the primary focus of COC trend analysis as they represent the highest relative COC concentrations. Additionally, COCs exceeded MCLs in well 03WW01, located in the eastern plume, during this monitoring period and is therefore discussed herein.

Mann-Kendall analysis for the available historical data in each well (typically starting in 2017) from just prior to the last round of injections in 2018 through the end of the 2024 RA-O period (May 2024) was completed for various COCs for monitoring wells 03WW01, 35AWW08,

35AWW09, 35AWW20, LHSMW06, and LHSMW07. The results are presented in **Appendix G** in tables and graphs with statistical results presented on the lower left-hand side of the table. The GSI Environmental, Inc., Mann-Kendall Toolkit, Version 1.0 software was used for this analysis. Data used to generate the Mann-Kendall analysis is presented in **Table 4**. A summary table of the Mann-Kendall results is presented below.

Mann-Kendall Trend Summary

Monitoring Well	PCE	TCE	cis-1,2-DCE	1,1-DCE	VC
03WW01	No Trend*	Increasing	Decreasing*	--	--
35AWW08	Stable*	Prob. Decreasing*	Prob. Decreasing*	--	--
35AWW09	No Trend	No Trend	Increasing*	--	--
35AWW20	--	Decreasing	Increasing	Stable	Increasing
LHSMW06	--	Increasing	--	No Trend	No Trend*
LHSMW07	--	Decreasing*	--	No Trend	Prob. Increasing
Note: * Most recent concentrations are below MCLs					

4.1.1 Eastern Plume

Figures 7a, 7b, and 7c show COC concentration profiles in wells 03WW01, 35AWW08, and 35AWW09, and the table above summarizes the Mann-Kendall trend results for these same wells.

Well 03WW01

This well is located within the September 2013 EISB. PCE has decreased 99.7% between August 2013 (368 µg/L) and May 2024 (1 U [undetected] µg/L) and TCE has decreased 96.5% between October 2014 (223 µg/L) and May 2024 (7.8 µg/L). Degradation of TCE resulted in the maximum concentration of cis-1,2-DCE at 117 µg/L in April 2016 and subsequent decline in the 2024 RA-O to 1 U µg/L in May 2024.

The Mann-Kendall trend analysis in 03WW01 was conducted for PCE, TCE, and cis-1,2-DCE for analytical results from November 2017 through the end of the 2024 RA-O period (May 2024) (**Appendix G**). The Mann-Kendall showed no trend in concentrations for PCE (confidence factor 70.3%). PCE was below the MCL of 5 µg/L from June 2019 through December 2020 but increased

above the MCL between June 2021 and June 2022. The concentration decreased to below the MCL again in June 2023 and was not detected in the May 2024 sampling event. TCE in 03WW1 shows an increasing trend with a 98.4% confidence factor. There is a decreasing trend for daughter product cis-1,2-DCE with a 99.2% confidence factor, and cis-1,2-DCE was not detected during the May 2024 sampling event.

Well 35AWW08

This well is located within the September 2013 EISB area. PCE concentrations decreased rapidly after the introduction of the carbon substrate and bacterial augmentation, and the PCE concentration as of May 2024 was below the detection limit (1 U µg/L). TCE concentrations increased after substrate injection and more rapidly after bioaugmentation, reaching a peak of 953 µg/L in May 2014 followed by a decrease to below the detection limit (2.5 U µg/L) in December 2019. In May 2024, TCE was detected below the MCL at 2.8 µg/L, which represents a 99.7% decrease from May 2014. The initial increase in TCE concentration is an indication of PCE degradation. Degradation of TCE resulted in a temporary increase in cis-1,2-DCE concentrations, especially during the Year 2 monitoring period, reaching a high of 79.6 µg/L in October 2015. In May 2024, cis-1,2-DCE was not detected at the detection limit of 1 U µg/L.

The Mann-Kendall trend analysis of 35AWW08 was conducted for PCE, TCE, and cis-1,2-DCE for analytical results from November 2017 through the end of the 2024 RA-O (May 2024) (**Appendix G**). The results provide statistical evidence of a stable trend in concentrations for PCE (confidence factor 66.8%) and a probably decreasing trend for TCE (confidence factor 92.9%). PCE continued to not be detected in 35AWW08, as has been the case since December 2020. TCE fell below the MCL during the May 2024 sampling event. The trend for the daughter product cis-1,2-DCE is probably decreasing with a 92.9% confidence factor, with concentrations continuing to remain below the MCL since April 2016.

Well 35AWW09

This well is located downgradient of the September 2013 EISB area. PCE concentrations remained high with a concentration of 430 (duplicate) µg/L after steadily increasing from 57.6 J µg/L in October 2013 to 460 µg/L in June 2023. TCE concentrations remained stable with the concentrations measured during the June 2023 sampling event with a concentration of 180 µg/L measured in May 2024. Daughter product cis-1,2-DCE was detected at low levels 1.5 µg/L. Likewise, VC was not detected during the 2024 RA-O period.

The Mann-Kendall trend analysis in 35AWW09 was conducted for PCE, TCE, and cis-1,2-DCE for analytical results from November 2017 through the end of the 2024 RA-O monitoring period (May 2024) (**Appendix G**). The results provide statistical evidence of no trend in PCE (77.7% confidence factor) and TCE (87.5% confidence factor). Likewise, the cis-1,2-DCE results indicate an increasing trend with confidence factor of 99.0% despite the low level detection during the May 2024 sampling event and remaining below the MCL during previous sampling events.

The cause of the increase in COCs in well 35AWW09 appears to be migration of COCs in groundwater from the upgradient contaminated area (e.g., 35AWW08 and 03WW01). The initial

increase in concentrations in 35AWW09 is likely associated with continued plume migration of contaminants downgradient of the EISB injection locations. COCs observed in well 35AWW09 in May 2024 are lower than pre-EISB concentrations observed in wells 03WW01 and 35AWW08 prior to implementation of EISB, indicating natural attenuation processes, including dispersion and dilution, were already occurring. The influence of biodegradation associated with EISB appears to remain within the area targeted for EISB (immediately upgradient of monitoring wells 35AWW08 and 03WW01) with little to no influence observed in 35AWW09.

4.1.2 Western Plume

Figures 7d and **7e** shows COC concentration profiles in wells 35AWW20 and LHSMW07 respectively, and the table above summarizes the Mann-Kendall trend results for these same wells.

Well 35AWW20

Well 35AWW20 is located downgradient of the March 2018 EISB area that included KB-1 Plus™ inoculation. The concentrations of TCE, cis-1,2-DCE, 1,1-DCE, and VC were detected in this well above their MCLs during the 2024 RA-O monitoring event (**Table 3**). EISB injections were completed in the western plume in March and April 2018 (Bhate, August 2018). Concentrations of TCE have decreased by approximately 59.4% between November 2017 (320 µg/L) to May 2024 (130 µg/L). Concentrations of 1,1-DCE also decreased by 42.1% between November 2017 (2,000 [duplicate] µg/L) to May 2024 (1,100 µg/L). Concentrations cis-1,2-DCE slightly increased over the same time period as TCE, its parent product, decreased, changing from 53 µg/L in November 2017 to 73 µg/L in May 2024. Similarly, the daughter product of cis-1,2-DCE and 1,1-DCE has increased over the same time period, from 78 µg/L in November 2017 to 480 µg/L in May 2024.

The Mann-Kendall trend analysis in 35AWW20 was conducted for TCE, cis-1,2-DCE, 1,1-DCE, and VC for analytical results from November 2017 through the end of the 2024 RA-O period (May 2024) (**Appendix G**). The results indicate evidence of a decreasing trend over time at 35AWW20 for TCE (confidence factor 96.5%), increasing trend for cis-1,2-DCE (confidence factor of 96.9%), and stable trend for 1,1-DCE (confidence factor 81.6%). Conversely, VC concentrations indicate an increasing trend over the same time period (confidence factor of 98.3%), supporting that reductive dechlorination is occurring in the vicinity of 35AWW20. PCE trends were not evaluated at 35AWW20 because it has been non-detect or below the MCL since 2013.

In addition to the above COCs, 1,1,2-TCA (56 µg/L), 1,2-DCA (15 µg/L), and benzene (6.0 µg/L) concentrations exceeded the MCLs in 35AWW20 during the 2024 RA-O (**Table 3**). Prior to EISB treatment, 1,1,2-TCA fluctuated between a minimum of 48.3 µg/L in February 2014 and a maximum of 82.7 µg/L in October 2016. Additionally, the 1,1,2-TCA daughter product, 1,2-DCA, fluctuated between a minimum of 38 J µg/L in February 2014 and a maximum of 20.3 µg/L in October 2013. During the period following EISB treatment (March 2018 through May 2024), 1,1,2-TCA fluctuated between a minimum of 38 J µg/L in March 2019 and a maximum of 88 µg/L in December 2018. 1,2-DCA fluctuated between a minimum of 8.7 µg/L (duplicate) in November 2017 and a maximum of 26 µg/L in December 2018.

Well LHSMW06

Well LHSMW06 is not located within an EISB injection area. 1,1-DCE, cis-1,2-DCE, and TCE all exceeded their MCL during the May 2024 sampling event (**Table 3**). The Mann-Kendall trend analysis for LHSMW06 was conducted for TCE, 1,1-DCE, and VC with analytical results from November 2017 through the end of the 2024 RA-O period (May 2024). The results indicate an increasing trend for TCE (confidence factor 99.2%), no trend for 1,1-DCE (confidence factor 66.6%), and no trend for VC (confidence factor 50.0%).

Well LHSMW07

Well LHSMW07 is located downgradient of the March 2018 EISB area that included KB-1 Plus™ inoculation. During the initial 3-year monitoring period, the COCs 1,1-DCE, TCE, and VC were detected in this well at concentrations above their respective MCLs. These exceedances were also observed at the first sampling event in Year 4 (November 2017). During the 2024 RA-O sampling events, only 1,1-DCE and VC were detected in exceedance of their respective MCLs. TCE was detected in LHSMW07, but below the MCL with a concentration of 2 µg/L during the May 2024 sampling event.

The Mann-Kendall trend analysis in LHSMW07 was conducted for TCE, 1,1-DCE, and VC using the analytical results from November 2017 through the end of the 2024 RA-O period (May 2024). The results indicate a decreasing trend in concentrations for TCE (confidence factor of 96.1%), and no trend for 1,1-DCE (confidence factor of 77.5%). Analysis of the results for VC indicates that the trend is probably increasing with a confidence factor of 93.0%.

4.1.3 Plume Stability

Figure 7 shows trends associated with key wells located in the eastern and western plume cores and leading edges. **Figure 8** compares the extent of the plumes associated with each COC in October 2016 compared to May 2024. The stability of each plume with regards to these COCs is evaluated through these figures in conjunction with the analyses presented in the sections above.

4.1.3.1 Eastern Plume

Based on the southeasterly direction of groundwater flow over the 10-year RA-O monitoring period, the following wells are along the groundwater flow path: 35AWW10, 35AWW08, 03WW01, 35AWW09, and 35AWW21. The COC concentrations in the upgradient well, 35AWW10, and downgradient well, 35AWW21, remained below detection limits during 2024 RA-O event. **Table 4** presents historical monitoring well COC concentrations for these monitoring wells.

Figure 7 provides plots of groundwater COC concentrations and groundwater elevation changes over time in wells 35AWW08, 03WW01, and 35AWW09. Monitoring well 35AWW08 has a Mann-Kendall decreasing trend for PCE, TCE, and cis-1,2-DCE. Similarly, monitoring well 03WW01 has a Mann-Kendall decreasing trend for PCE and TCE, though there was no trend observed for cis-1,2-DCE.

Monitoring well 35AWW09 is located approximately 75 ft downgradient from 03WW01. There was an increasing trend observed for PCE, TCE, and cis-1,2-DCE in 35AWW09. The increase in concentrations in 35AWW09 is likely associated with downgradient dissolved phase migration from areas of higher concentration observed in 2008 and 2011 wells 35AWW08 and 03WW01. A review of the historical data for 35AWW09 does not indicate any correlation between groundwater elevations and COC concentrations.

The concentrations of COCs in downgradient wells 35AWW12 and 35AWW21 remained below the detection limits. No increased concentrations or detections of new COCs at boundary area wells 35AWW10, 35AWW12, 35AWW13, and 35AWW22 occurred. Therefore, plume expansion is not occurring, and the extent of the plume is stable.

4.1.3.2 Western Plume

Based on the southeasterly direction of groundwater flow, the following wells are considered to be along the groundwater flow path from 35AWW20, 35AWW23, and 35AWW19, with a more southerly component from LHSMW07 to 35AWW06 and 35AWW17. Groundwater also flows southeasterly from LHSMW06 towards 35AWW14 and 35AWW27. The COC concentrations in upgradient well 35AWW15 have remained below detection limits throughout the 2024 reporting period. The in-plume well (35AWWW20) exhibits the highest levels of COCs, which have, based on the Mann-Kendall analysis, shown decreasing trends for TCE, 1,1-DCE, and cis-1,2-DCE. Only VC is showing an increasing trend, indicating that ongoing reductive dechlorination is occurring at 35AWW20.

The 1,1-DCE concentration in monitoring well 35AWW19, located in a downgradient direction of the western plume, has decreased from above the MCL in January 2014 through December 2018 to below the MCL of 7 µg/L in March 2019. Detections of 1,1-DCE in monitoring well 35AWW19 remained below the MCL in the 2024 RA-O sampling event, suggesting that migration of the plume is no longer occurring in this portion of the western plume. However, 1,1-DCE detected at monitoring well 35AWW18 has increased from 4.1 µg/L in December 2019 to above the MCL in June 2020 (18 µg/L) and has remained above the MCL through May 2024 (22 µg/L) (**Table 4**). Monitoring well 35AWW18 is downgradient of 35AWW20 indicating plume migration in a southernly direction in this portion of the western plume. Monitoring wells 35AWW04 and 35AWW25, which are downgradient of 35AWW18 and define the downgradient edge of the western plume, did not have any COC detections, indicating that the plume has not reached this point. This demonstrates that the downgradient edge of the western plume is defined.

Notably, TCE was detected in cross-gradient well LHSMW06 above the MCL in the May 2024 sampling event. Downgradient of LHSMW06, 35AWW14 had detections of both 1,1-DCE and TCE. However, no detections of COCs have been observed at boundary area wells 35AWW15, 35AWW16, 35AWW17, and 35AWW24. Therefore, plume expansion is not occurring along the western and southern extent of the western plume.

4.2 Second Line of Evidence: Geochemical Indicators

Tables 2 and **3** include the geochemical indicator parameters that are useful for MNA evaluation. Some geochemical parameters are measured in the field and are recorded during sampling events. The field parameters for LHAAP-35A (58) wells include: DO, ORP, pH, conductivity, turbidity, and temperature. The other geochemical indicators analyzed in the laboratory include: alkalinity, chloride, nitrate, nitrite, iron, sulfate, sulfide, methane, ethane, ethene, TOC, phosphorus, manganese, and dechlorinating bacteria. Analytes eliminated in 2019 per the Draft TM – MNA Parameters (Bhate, February 2019) were alkalinity, nitrite, sulfide, total iron, dissolved manganese, total phosphorous, and dissolved iron (lab analysis). For the eastern plume only, chloride, nitrate, sulfate, dissolved gases, TOC, dechlorinating bacteria, and VFAs were also eliminated. TOC continues to be evaluated due to the March/April 2018 EISB treatment with the western plume.

A summary of the geochemical aquifer conditions following EISB injections in each plume area is presented in **Tables 5** and **6**. The following discussion examines the geochemical indicators recorded during the 2024 RA-O monitoring period.

4.2.1 Eastern Plume

- pH – Neutral pH (6.0 to 8.5 standard units) is desirable for MNA. During the 2024 monitoring period, groundwater was observed within this range at 03WW01 (6.34 s.u.), 35AWW08 (6.56 s.u.), and 35AWW09 (6.52 s.u.). Monitoring well 35AWW14, which lies west of the eastern plume, had a pH of 5.98 s.u., which is just below the desired pH for MNA. Outside the plume, the pH ranged from 5.43 s.u. in 35AWW10 to 6.62 s.u. in 34AWW17 in the shallow zone, indicating the decline in pH has occurred site-wide and is not attributed to EISB. The pH was 7.49 s.u. in the intermediate well 35AWW01.
- Dissolved Oxygen – DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA, September 1998). Anaerobic bacteria generally cannot function at DO concentrations > 0.5 mg/L and hence, reductive dechlorination will not occur. In May 2024, eastern plume treatment area wells 03WW01, 35AWW08, and 35AWW09 had DO measurements ranging from 0.11 mg/L to 1.21 mg/L. Only wells 03WW01 and 35AWW08 had DO measurements conducive to reductive dechlorination, while well 35AWW09 had a DO concentration that does not support anaerobic bacteria. The DO levels observed in the eastern wells outside the treatment area range from 0.06 mg/L to 2.14 mg/L in May 2024 (**Table 2**), with most wells above the 0.5 mg/L threshold for anaerobic bacteria. Thus, the conditions do not support anaerobic conditions outside the EISB treatment area.
- Oxidation-Reduction Potential – The ORP levels indicate how oxidative or reductive the groundwater is in the aquifer matrix and provide real-time data to determine if conditions are conducive for anaerobic biodegradation. When ORP values are < 50 mV, the anaerobic biodegradation pathway is considered possible in accordance with the biodegradation scoring criteria presented in the *Technical Protocol for Evaluating Attenuation of Chlorinated*

Solvents in Ground Water (USEPA, September 1998). In May 2024, ORP measurements in wells 03WW01 (-79 mV) and 35AWW08 (-95 mV) indicated a reducing environment that was conductive to reductive dechlorination within the treatment area. Additionally, well 35AWW14 had an ORP < 50 mV, indicating that reductive dechlorination was still possible (**Tables 2** and **5**). The ORP measured downgradient of the EISB area in May 2024 was 144 mV in 35AWW09 and was positive in all other wells outside the immediate treatment area (**Table 2**). This strongly positive ORP indicates that conditions in the eastern plume outside the EISB treatment area are generally aerobic and not supportive of reductive dechlorination.

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP 35A (58) indicates naturally occurring geochemical conditions outside the EISB treatment zone are not supportive of MNA via biodegradation. However, the areas influenced by the EISB treatment continue to allow for MNA.

4.2.2 Western Plume

- pH – Neutral pH (6.0 to 8.5 standard units) is desirable for MNA. During the 2024 RA-O period, groundwater pH ranged from 6.48 s.u. (LHSMW06) to 6.90 s.u. (LHSMW07) throughout the impacted areas of the western plume. Outside the plume, the pH ranged from 4.72 s.u. (35AWW24) to 7.52 s.u. (35AWW06) in the shallow zone, indicating the decline in pH is occurring site-wide and is not attributed to EISB.
- Chloride – During biodegradation of chlorinated hydrocarbons in groundwater, chloride is released to groundwater. This results in higher chloride concentrations in the contaminant plume as compared to background levels in upgradient wells or in unimpacted downgradient wells (USEPA, September 1998). Prior to EISB injection, the chloride levels in the shallow zone detected in November 2017 ranged from 1,040 mg/L in 35AWW06 to 2,650 mg/L in 35AWW11 (**Table 6**). Chloride levels in 35AWW11 were slightly lower in May 2024 when compared with the pre-EISB injection results but were still elevated (1,890 mg/L) (**Table 3**). Chloride levels in the shallow zone were also elevated in LHSMW07 with a concentration of 2,110 mg/L in May 204. Additionally, chloride levels within the other western plume EISB treatment area wells provide evidence of biodegradation in the western plume. Although chloride was not analyzed in any wells outside the treatment area in 2024, the May 2024 chloride levels can be compared to the background chloride concentration in downgradient wells such as 35AWW24, which had chloride concentrations below 120 mg/L in March 2018 through June 2019 (**Table 6**).
- Dissolved Oxygen – DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA, September 1998). Anaerobic bacteria generally cannot function at DO concentrations > 0.5 mg/L and hence, reductive dechlorination will not occur. The DO levels observed in most western plume wells near the March 2018 EISB locations (35AWW06, 35AWW20, and LHSMW07) were conducive to reductive dechlorination with DOs below 0.5 mg/L. However, monitoring well 35AWW23 had a DO concentration of 1.85 mg/L, which is too high for anaerobic bacteria to function. Outside the wells immediately affected by EISB, DO concentrations ranged from 0.04 mg/L (35AWW11) to 1.97 mg/L (35AWW15).

- Oxidation-Reduction Potential – The ORP levels indicate how oxidative or reductive the groundwater is in the aquifer matrix and provide real-time data to determine if conditions are conducive for anaerobic biodegradation. ORP values < 50 mV indicate that the aquifer is sulfate-reducing, and values < -200 mV are required before anaerobic conditions are favorable for the complete biological reductive dechlorination of chlorinated ethenes. Half of the wells that are located in the EISB influence area (35AWWW06, 35AWW2035AWW23) had ORP values low enough to facilitate reductive dechlorination. The other wells within the plume and near injection sites (e.g., 35AWW18, 35AWW26, and LHSMW06) all had positive ORP values, indicating oxidizing environments that are not conducive to reductive dechlorination. No well had an ORP value low enough to facilitate the complete biological reductive dechlorination of chlorinated ethenes. These results indicate that conditions in the western plume outside the EISB treatment area are not supportive of reductive dechlorination.
- Nitrate – After DO has been depleted in the microbiological treatment zone, nitrate may be used as an electron acceptor for anaerobic biodegradation of organic carbon by denitrification. For reductive dechlorination to occur, nitrate concentrations in the contaminated portion of the aquifer must be < 10.0 mg/L (USEPA, September 1998). Nitrate concentrations were non-detect in the western plume monitoring wells during the 2024 RA-O monitoring period (**Table 3**). Based on these observations, nitrate reduction in the shallow zone is not a likely mode of microbial respiration at the site, and the lack of nitrate is favorable for achieving the reducing conditions ideal for anaerobic reductive dechlorination.
- Sulfate – After DO and nitrate have been depleted in the microbiological treatment zone, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed “sulfate reduction” and results in the production of sulfide. Concentrations of sulfate > 20 mg/L may cause competitive exclusion of dechlorination. However, in many plumes with high concentrations of sulfate, reductive dechlorination still occurs (USEPA, September 1998). Concentrations have fluctuated within the plume. Sulfate concentrations initially decreased in 35AWW06 downgradient of the main plume from 1,560 mg/L in November 2017 to 197 mg/L in June 2021. Since the concentration of sulfate has increased to 1,020 mg/L in May 2024 (**Table 3**). Similarly, concentrations decreased in 35AWW20 from 2,150 mg/L in November 2017 to 882 mg/L in July 2018. As with 35AWW06, the concentration of sulfate in 35AWW20 has since increased to 1,400 mg/L.
- Dissolved gases – Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, and sulfate have been depleted. Ethane and ethene are the end products of reductive dechlorination of CVOCs and their levels increase if complete reductive dechlorination takes place. Methane levels above 500 µg/L are considered to indicate methanogenic conditions (USEPA, September 1998). In May 2024, methane concentrations above 500 µg/L were present in wells 35AWW06, 35AWW11, 35AWW23, and LHSMW07 (**Tables 3** and **6**). Ethene was detected within the western plume in wells 35AWW20 (6.89 µg/L) and LHSMW07 (15.5 µg/L) in May 2024. The presence of ethene indicates complete

degradation of VOCs within the wells containing the highest VOC detections in the western plume.

- 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 a carbon and energy source to support the reductive dechlorination of the chlorinated COCs. TOC concentrations > 20 mg/L are considered adequate to support microbial activity (USEPA, September 1998). TOC concentrations in the western plume increased following EISB injections, which is to be expected. Wells 35AWW11 (30.8 mg/L), 35AWW20 (40.3 mg/L), and 35AWW23 (37 mg/L) all had TOC values above 20 mg/L. All other wells had TOC values below 20 mg/L.
- VFAs – The presence of VFAs (**Table 3**) confirms the fermentation of carbon substrates and should be observed with elevated TOC. Acetic acid was detected in well LHSMW07 during the 2024 reporting period with a concentration of 0.81 J mg/L in May 2024. This confirms that some fermentation is occurring even though TOC concentrations are below the 20 mg/L concentration needed to support microbial growth. All other VFAs were non-detect, indicating fermentation was not occurring where remedial action was required.

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP-35A (58) indicates that geochemical conditions in one location within the plume (35AWW06) is supportive of MNA. All other locations have geochemical parameters that do not support the growth of anaerobic bacteria and reductive dechlorination.

4.3 Third Line of Evidence: Microbial Analysis

If the first two lines of evidence for MNA are deemed inadequate or inconclusive, and/or if the need for a contingency remedy is evaluated, data from field or microcosm studies will be necessary to establish the third line of evidence for MNA.

Dechlorinating bacteria, DHC ethenogenes, and associated functional genes have been analyzed in wells within and outside the eastern and western plumes. Microbial population analyses were discontinued during the Year 7 reporting period (September 2020 through August 2021) at wells 35AWW09, 35AWW10 and 35AWW24, located outside of the EISB areas as recommended in the Year 5 RA-O Report. It has been established that the microbial populations are limited and unaffected by the EISB injections in these areas. Microbial population analyses were eliminated for all eastern plume wells during the 2023 reporting period (September 2022 through August 2023) per the Draft TM – MNA Parameters (Bhate, February 2019).

4.3.1 Eastern Plume

Dechlorinating bacteria, DHC and DHBt, BAV1 VC reductase, and associated functional genes were analyzed in groundwater samples from wells 03WW01, 35AWW08, and 35AWW09, within and outside the eastern plume. Generally, the microbial population counts, and the functional gene counts have been at or below the laboratory reporting limits in areas not influenced by bioaugmentation such as at 35AWW09, indicating a limited natural population of the bacteria

and the absence of gene expression necessary for anaerobic biological degradation of the COCs. After the September 2013 EISB injection event, microbial populations increased; as COC concentrations declined to levels that no longer supported these specific bacteria, population counts also declined. Microbial analyses were not performed in 2023 in the eastern plume; however, historical results for dechlorinating bacteria are summarized in **Table 5**.

4.3.1 Western Plume

Dechlorinating bacteria, DHC ethenogenes, DHBt, BAV1 VC reductase, and associated functional genes were analyzed in groundwater samples from wells within and outside the western plume in the 2024reporting period. The highest microbial populations of DHBt detected at the site were recorded during the 2024 reporting period in LHSMW07 with a concentration of 9,200 cells/mL. The highest concentrations of DHC and BAV1 VC reductase were detected in well 35AWW20, with concentrations of 3,600 cells/mL and 660 cells/mL, respectively. The presence of BAV1 VC reductase indicates that complete reductive dechlorination can occur to allow VC to reduce to ethene over time (**Table 6**).

This page intentionally left blank.

5 CONCLUSIONS AND RECOMMENDATIONS

COC concentration data and geochemical indicator measurements were collected over the course of the monitoring period at LHAAP-35A (58) to evaluate the effectiveness of the EISB and MNA groundwater remedy. A tiered approach based on assessment of three lines of evidence was used to evaluate the occurrence of natural attenuation in groundwater. The first line of evidence evaluated reductions in COC concentrations over time and with increasing distance from source areas, including evaluation of Mann-Kendall tests for trends; the second line of evidence evaluated geochemical indicators; and the third line of evidence evaluated microbial conditions in the aquifer. The results of the tiered evaluation and the conclusions are summarized below.

5.1 Conclusions

During the 2024 reporting period (September 2023 through August 2024), groundwater data was collected that indicated groundwater flow in the western portion of the site was to the south-southeast and to the southeast in the eastern portion of the site (**Figures 4** and **5**). The EISB treatment in the eastern and western plume area appears to be effectively reducing the VOC concentrations. **Figures 7a-e** presents graphical depiction of the trends of the COCs of various monitoring wells withing LHAAP-35A (58). Except for 35AWW09, the trend plots display decreasing overall COC trends in both the eastern and western plumes. **Figure 8** presents the change in the plumes from October 2016 to May 2024, which demonstrates the reduced lateral extent of the plumes.

The primary influence of EISB within the eastern plume was a reduction of PCE in 03WW01 and 35AWW08. TCE concentrations were observed to increase at each well after the September 2013 substrate injection, as PCE was degraded to TCE, followed by a decrease in concentration as the rate of TCE formation became lower than the rate of TCE biodegradation. PCE concentrations in 03WW01 decreased to below detection limits in May 2024, while TCE concentrations decreased to 7.8 µg/L, indicating reductive dechlorination was occurring. Daughter product cis-1,2-DCE was also below the detection limit in 03WW01, while its daughter product, VC, was detected above its MCL at 7.6 µg/L. All COCs were below their respective MCLs in well 35AWW08 in May 2024 (**Table 2**).

Concentrations of PCE and TCE in 35AWW09, located within the eastern plume but outside the EISB area, have increasing concentration trends based on Mann-Kendall analysis. Due to the aquifer geochemical conditions outside of the EISB area that are unfavorable to reductive dechlorination, additional treatment near 35AWW09 may need to be considered. Additional injections are anticipated in response to Five-Year Review recommendations. The concentrations of COCs in downgradient well 35AWW21, which is located outside the eastern plume, have remained below the detection limits. Therefore, based on the inferred southeastern groundwater flow path (**Figure 6**), COC levels are not migrating beyond the original plume boundaries. Since COCs have not appeared at 35AWW21, other natural attenuation properties, such as dilution, dispersion, sorption, and volatilization appear to be occurring at a rate sufficient

to mitigate off-site migration. Concentrations of COCs downgradient of monitoring wells 35WW08 and 03WW01 have exhibited no increase in COC concentrations or new detections of COCs. Specifically, the boundary area wells 35AWW10, 35AWW12, 35AWW13, 35AWW21, and 35AWW22 do not have increasing COC trends. Therefore, it appears that the lateral extent of the eastern plume is stable.

In the western plume, EISB treatment was completed in March and April 2018 per the Final RAWP (Bhate, January 2018). The concentrations of COCs (PCE, TCE, cis-1,2-DCE, and VC) in upgradient well 35AWW15 remained below detection limits during this monitoring period. Concentrations of COCs in perimeter wells 35AWW15, 35AWW16, and 35AWW17, which are located away from the most impacted area, remain non-detect or below MCLs. Perimeter well 35AWW18 had concentrations of 1,1-DCE above the MCL during this monitoring period. Downgradient monitoring well 35AWW04 was sampled during this monitoring period and all COCs were below laboratory detection limits. Likewise, shallow monitoring well 35AWW25 did not have any detections of COCs above laboratory detection limits.

PCE concentrations in LHSMW07 and 35AWW20, wells within the influence of the EISB treatment, have remained well below the MCL since the EISB treatment through May 2024. While TCE, 1,1-DCE, and cis-1,2-DCE exceeded their respective MCLs at 35AWW20 during the current reporting period, there are strong decreasing trends based on the Mann-Kendall analysis. Conversely, VC has an increasing trend at 35AWW20 based on the Mann-Kendall analysis. However, VC decreased from 2,800 µg/L in December 2019 to 480 µg/L in May 2024. Over the same time, ethene has also increased at 35AWW20 from 6.3 µg/L in December 2019 to 6.89 µg/L in May 2024, indicating complete reductive dechlorination occurring.

Concentrations of TCE and cis-1,2-DCE have been non-detect or below MCLs since September 2018 in LHSMW07. LHSMW07 exhibits a decreasing trend for 1,1-DCE, and the concentration detected in May 2023 (99 µg/L) is much lower than pre-EISB treatment, when 1,1-DCE was as high as 2,100 µg/L in July 2015. VC was also detected in LHSMW07 at 47 µg/L in May 2024, indicating a probably increasing trend according to Mann-Kendall analysis.

Despite the decreasing trends observed for some COCs within the western plume, 1,1-DCE, TCE, cis-1,2-DCE, and VC continue to exceed their respective MCLs at 35AWW20 in May 2024. 1,1-DCE, cis-1,2-DCE, and TCE concentrations also continued to exceed MCLs at LHSMW06, and Mann-Kendall analysis shows an increasing trend. Thus, additional treatment upgradient of 35AWW20 and LHSMW06 may need to be considered to ensure complete degradation of TCE and the associated daughter products to ethene. Additional injections are anticipated in response to Five-Year Review recommendations.

The qualitative assessment of geochemical indicators and the absence of dechlorinating bacteria in the shallow groundwater zone (outside of the EISB zone) at LHAAP 35A (58) indicates current naturally occurring geochemical conditions are not optimal for, but may not preclude, MNA.

A LUC compliance inspection was conducted on 15 November 2024. No change in land or groundwater uses has occurred at the site, and current land use complies with the ROD (Bhate/APTIM Federal Services, LLC, June 2018). No compliance issues or concerns were noted during the annual inspection (**Appendix A**) based on the well inspections completed in May 2024.

5.2 Recommendations

Based on the 2024 RA-O activities and evaluation, recommendations for the 2025 RA-O activities are as follows:

- The 2025 groundwater monitoring plan is presented in **Table 7**. It is recommended that groundwater monitoring of the eastern and western plume continue for VOC analysis on an annual basis, in compliance with the RAWP Contingency Remedy for the Western Plume (Bhate, January 2018).
- Maintenance of wells 35AWW10, 35AWW12, 35AWW15, 35AWW17, 35AWW19, 35AWW21, and 35AWW22 should be conducted to address broken hinges and paint issues observed during the 2024 RA-O sampling event.
- Surface water sampling will be conducted in May 2025 if groundwater elevation in 35AWW18 is at or above the surveyed ditch elevation.
- Additional arsenic sampling will continue at select wells in May 2025.
- Based on the upgradient VOC concentrations at new monitoring well 35AWW26, additional PCE/TCE mass has not been identified and the upgradient extent of PCE/TCE has not been fully defined. The upgradient VC concentration has not been defined on the northern side of the western plume. A well installed upgradient of LHSMW06 could provide a northern boundary for TCE and VC concentrations.
- Reductive dechlorination and the production of ethene continues at 35AWW20 based on decreasing concentrations of COCs. However, geochemical conditions are unfavorable for MNA outside of the EISB treatment zone in the eastern plume. Per recommendations given in the Five-Year Review, additional EISB injections in the western plume upgradient of monitoring wells 35AWW09, 35AWW20, and LHSMW06 are recommended. Additional injections are anticipated in response to the Five-Year Review recommendations. Ongoing monitoring of both COC concentrations and geochemical conditions is advised.

This page intentionally left blank.

6 REFERENCES

AECOM. November 2012. *Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03/LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas*.

AECOM. August 2013. *Final Remedial Action Work Plan LHAAP-35A (58), Shops Area, Group 4 Longhorn Army Ammunition Plant, Karnack, Texas*.

AECOM. October 2015. *Draft Final Remedial Action Completion Report, LHAAP-35A (58), Former Sump Water Tank, Longhorn Army Ammunition Plant, Karnack, Texas*.

AECOM. November 2015. *Draft Final 1st Annual Remedial Action Operation Report (October 2013 – October 2014), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas*.

AECOM. May 2016. *Draft Final 2nd Annual Remedial Action Operation Report (January 2015 – October 2015), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. January 2018. *Revised Final Remedial Action Work Plan Contingency Remedy for Western Plume LHAAP-35A (58), Shops Area, Group 4 Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. March 2018. *Final Explanation of Significant Differences Record of Decision (ROD) for Western Plume Contingency Remedy at LHAAP-35A (58), Shops Area, Longhorn Army Ammunition Plant Karnack, Texas.*

Bhate. April 2018. *Draft Final 3rd Annual Remedial Action Operation Report (March 2016 – October 2016), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. May 2018. *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas.*

Bhate/APTIM Federal Services, LLC. June 2018. *Final Record of Decision (ROD), LHAAP-03, Former Waste Collection Pad, Building 722-Paint Shop, Longhorn Army Ammunition Plant, Karnack, Texas.*

Bhate. July 2018. *Final Explanation of Significant Differences, LHAAP-35A (58), Shops Area, Group 4 Record of Decision dated September 2010, Longhorn Army Ammunition Plant Karnack, Texas.*

Bhate. October 2018. *Draft Final 4th Annual Remedial Action Operation Report (November 2017 and June/July 2018), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. August 2018. *Draft Final Remedial Action Completion Report, Contingency Remedy for Western Plume, LHAAP-35A (58), Shops Area, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas*.

Bhate. February 2019. *Final Technical Memorandum - Monitored Natural Attenuation Monitoring Parameters, Longhorn Army Ammunition Plant, Karnack, Texas.*

Shaw. June 2007. *Evaluation of Perimeter Well Data for Use as Groundwater Background, Karnack, Texas*.

Shaw. September 2010. *Record of Decision, LHAAP-35A (58), Shops Area, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas*.

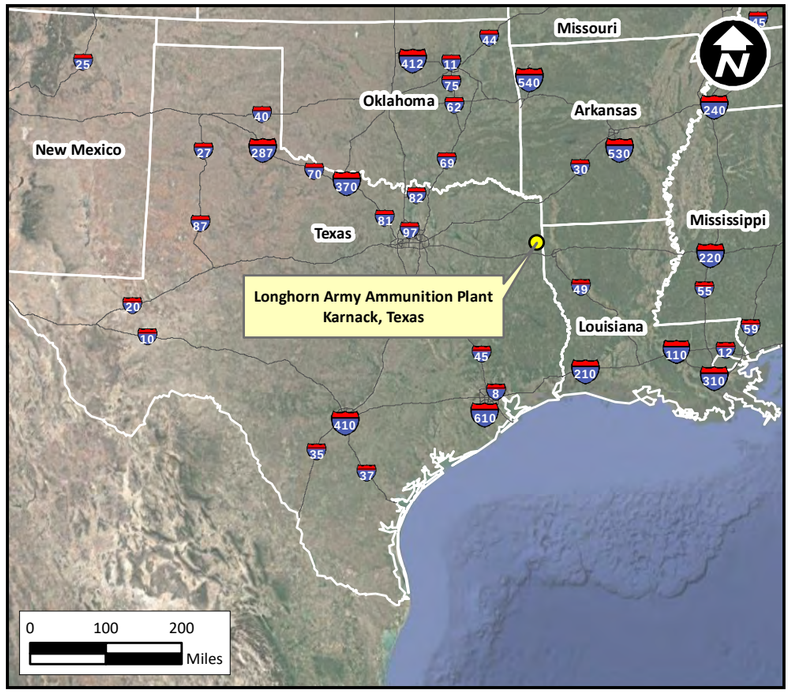
Shaw. September 2011. *Final Remedial Design, LHAAP-35A (58), Shop Area, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas*.

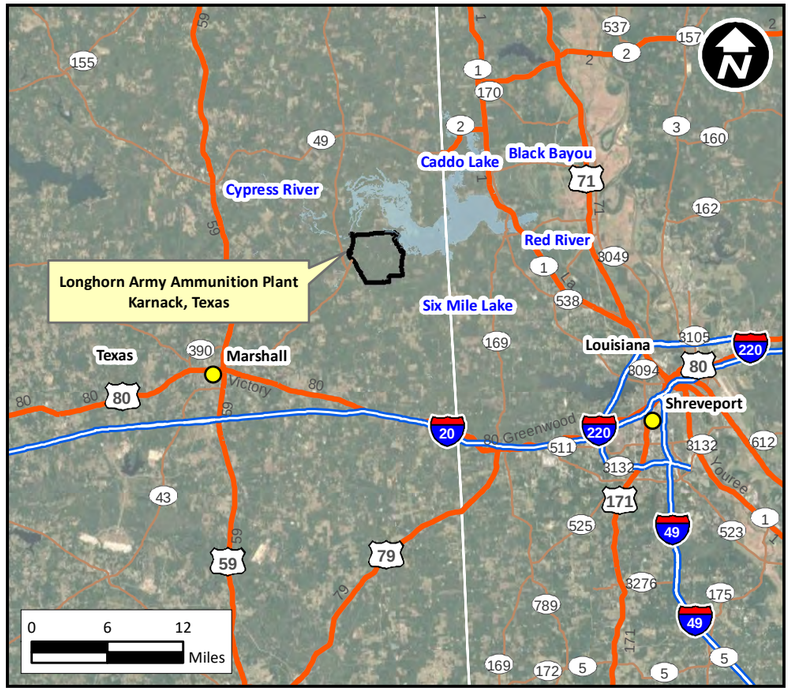
USEPA. September 1998. *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater, EPA/600/R-98/128*.

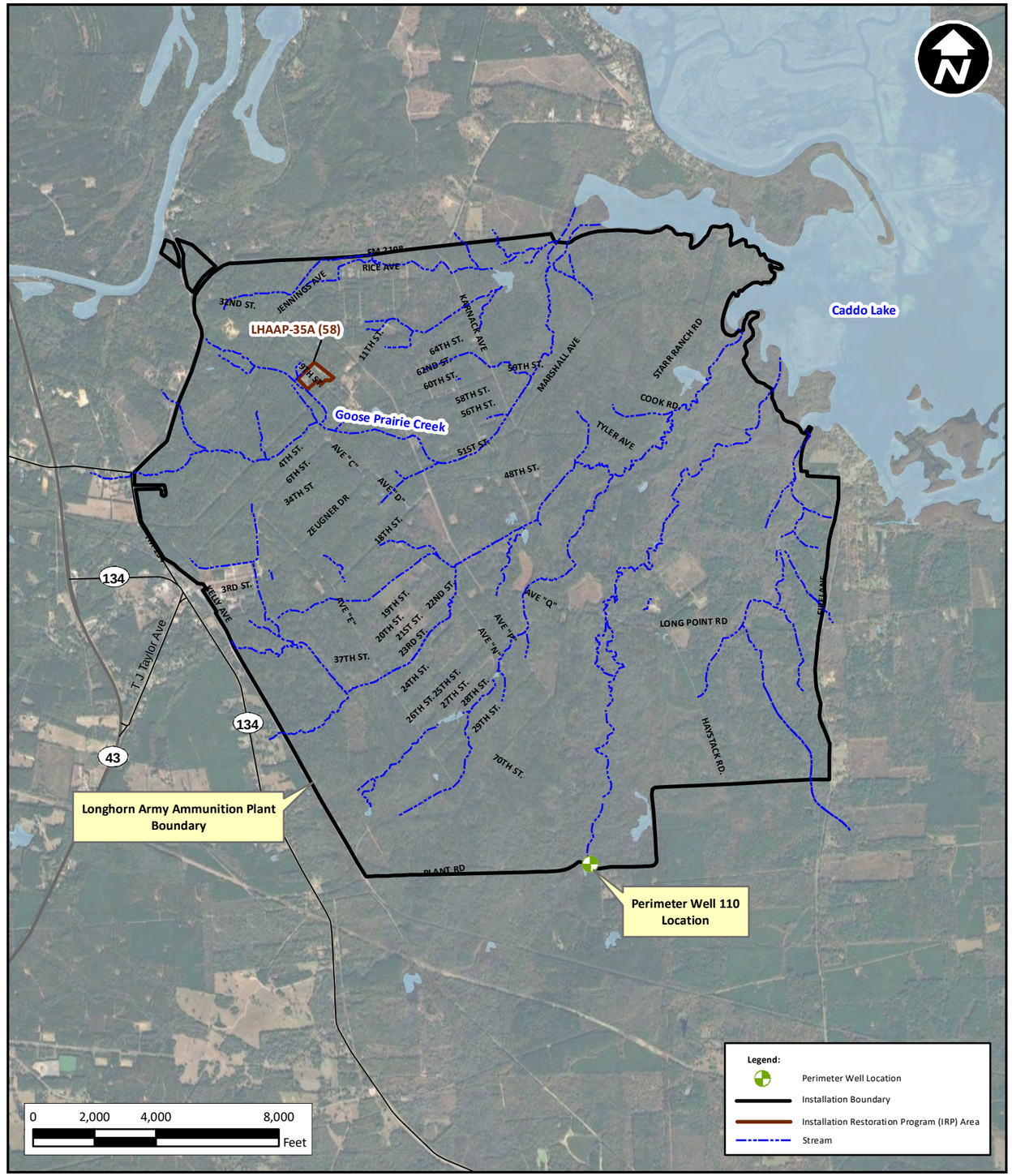
FIGURES

This page intentionally left blank.

Figures







01335634

Longhorn Army Ammunition Plant
Location and Site Vicinity Map

Figure 1

2024 Remedial Action Operation Report
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 3/27/2025

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0010.02

PCIbhate

01335635

Monitoring Well Location Map

Figure 2

2024 Remedial Action Operation Report
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 3/27/2025

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0010.02

PCIbhate

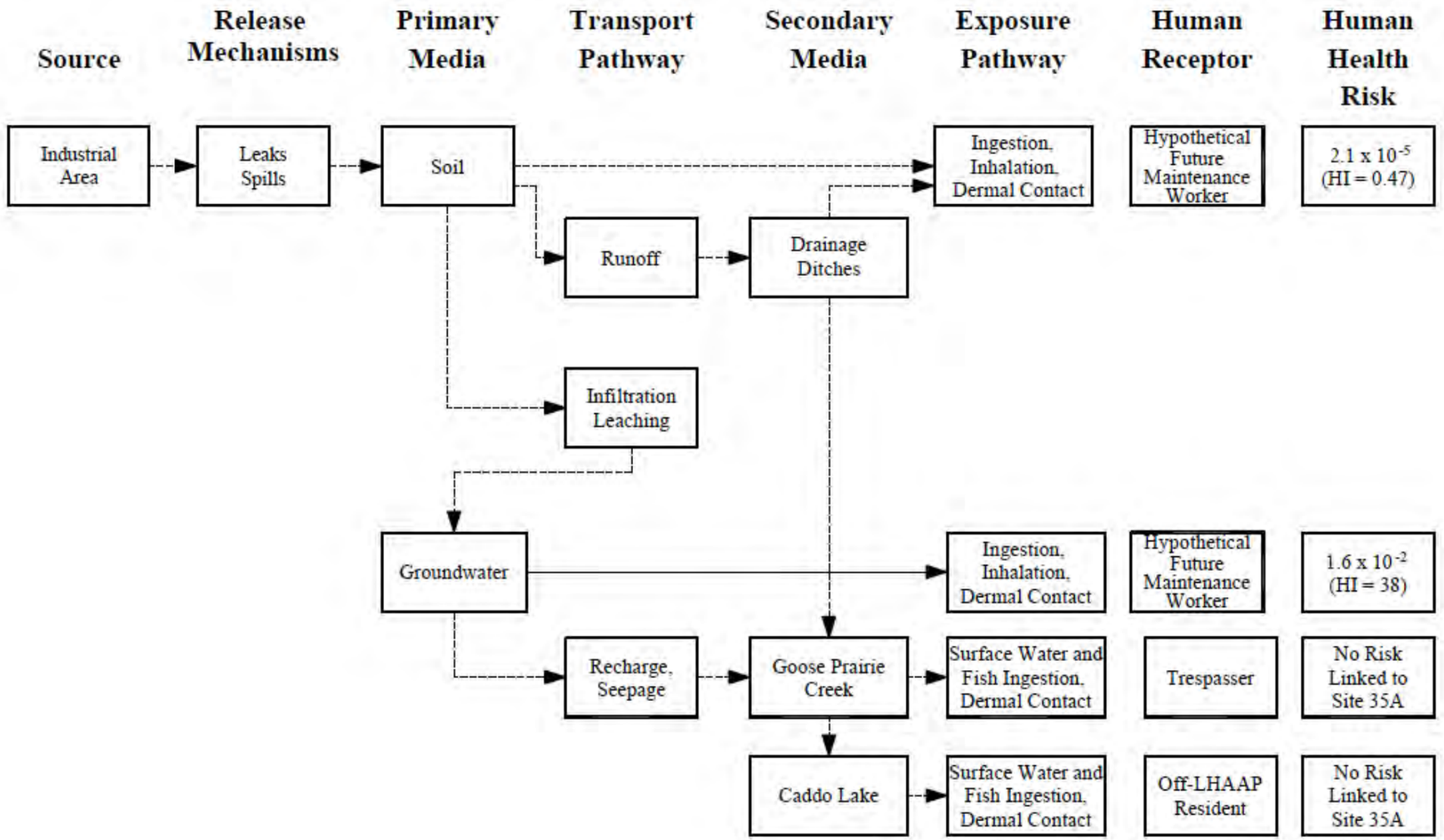
LHAAP-61
LHAAP-02
LHAAP-35A (58)
LHAAP-03
LHAAP-60
LHAAP-68
LHAAP-69
LHAAP-56
LHAAP-59
LHAAP-65
32ND ST.
TACKET DR
AVE F
AVE G
10TH ST.
9TH ST.
8TH ST.
11TH ST.
6TH ST.
4TH ST.
Goose Prairie Creek
35AWW01
35AWW02
35AWW03
35AWW04
35AWW05
35AWW06
35AWW07
35AWW07R
35AWW08
35AWW09
35AWW10
35AWW11
35AWW12
35AWW13
35AWW14
35AWW15
35AWW16
35AWW17
35AWW18
35AWW19
35AWW20
35AWW21
35AWW22
35AWW23
35AWW24
35AWW25
35AWW26
35AWW27
03WW01
1004TW001
1004TW006
35ASW03
LHSMW03
LHSMW04
LHSMW05
LHSMW06
LHSMW07

Aerial Photography Source: Google Earth, April 2018

0 75 150 300 Feet

Legend:

- 35AWW06 — Sampled Well Locations
- Shallow Monitoring Well Location
- Shallow Temporary Monitoring Well Location
- Intermediate Monitoring Well Location
- Deep Monitoring Well Location
- Surface Water Sample Location
- Groundwater Use Restrictions Area
- Installation Restoration Program (IRP) Area
- Direction of Groundwater Flow (May 2024)
- Stream
- 401 — Building Number



Source: Shaw, May 2010

Conceptual Site Model

Figure 3

2024 Remedial Action Operation Report
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 3/27/2025

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0010.02

PCIbhate

01335637

May 2024
Shallow Potentiometric Map

Figure 4

2024 Remedial Action Operation Report
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 3/27/2025

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0010.02

PCIbhate

LHAAP-35A (58)

32ND ST.
TACKET DR
AVE "F"
AVE "G"
18TH ST.
10TH ST.
9TH ST.
11TH ST.
6TH ST.
4TH ST.

35AWW03 (NM)
35AWW13 (195.39)
35AWW22 (186.19)
35AWW07R (NM)
35AWW15 (204.64)
35AWW10 (204.11)
LHSMW05 (NM)
LHSMW04 (Dry)
35AWW12 (186.72)
35AWW26 (204.97)
03WW01 (186.97)
35AWW09 (186.11)
LHSMW06 (205.52)
35AWW08 (188.35)
35AWW21 (187.36)
35AWW20 (205.05)
1004TW001 (NM)
1004TW006 (NM)
35AWW11 (192.34)
LHSMW03 (NM)
35AWW16 (203.56)
35AWW14 (188.77)
35AWW27 (NM)
LHSMW07 (204.42)
35AWW23 (200.84)
35AWW06 (201.62)
35AWW18 (198.02)
35AWW17 (198.11)
35AWW19 (195.53)
35AWW24 (195.77)
35AWW04 (197.18)
35AWW25 (199.34)

204.00
202.00
200.00
198.00
196.00
194.00
192.00
190.00
188.00

Aerial Photography Source: Google Earth, April 2018

0 75 150 300 Feet

Legend:

- Shallow Monitoring Well Location
- Shallow Temporary Monitoring Well Location
- (188.77) Potentiometric Surface Elevation in Feet Above Mean Sea Level
- (NM) Not Measured
- Potentiometric Surface Contour
- Direction of Groundwater Flow
- Installation Restoration Program (IRP) Area
- *401* Building Number

Legend
J = Estimated value
COC = Contaminant of Concern
USEPA = United States Environmental Protection Agency
MCL = Maximum Contaminant Level
DCA = Dichloroethane
DCE = Dichloroethene
PCE = Tetrachloroethene
TCA = Trichloroethane
TCE = Trichloroethene
VC = Vinyl Chloride
Bold Red values exceed the USEPA MCL
All results and MCLs are reported in micrograms per liter (µg/L)

COCs shown on this figure	
COC	MCL
1,1-DCE	7
1,1,2-TCA	5
1,2-DCA	5
Benzene	5
cis-1,2-DCE	70
PCE	5
trans-1,2-DCE	100
TCE	5
VC	2

LHSMW06		5/28/2024	5/28/204
COC	MCL	Result	Dup. Result
1,1-DCE	7	**12**	**12**
cis-1,2-DCE	70	**160**	**160**
TCE	5	**19**	**19**

35AWW26		5/29/2024
COC	MCL	Result
1,1-DCE	7	**180**
VC	2	**15**

03WW01		5/28/2024
COC	MCL	Result
TCE	5	**7.8**
VC	2	**7.6**

35AWW20		5/23/2024
COC	MCL	Result
1,1,2-TCA	5	**56**
1,1-DCE	7	**1,100**
1,2-DCA	5	**15**
Benzene	5	**6.0**
cis-1,2-DCE	70	**73**
TCE	5	**130**
VC	2	**480**

35AWW09		5/29/2024	5/29/2024
COC	MCL	Result	Dup. Result
PCE	5	**380**	**430**
TCE	5	**180**	**190**

LHSMW07		5/23/2024
COC	MCL	Result
1,1-DCE	7	**99**
VC	2	**47**

35AWW14		5/30/2024
COC	MCL	Result
1,1-DCE	7	**34 J**
TCE	5	**28**

35AWW18		5/23/2024
COC	MCL	Result
1,1-DCE	7	**22**

HARRELL ST
TACKET DR
AVE "F"
AVE "G"
AVE "P"
8TH ST.
9TH ST.
10TH ST.
11TH ST.
6TH ST.
LHAAP-35A (58)
Goose Prairie Creek
35AWW03 (NS)
35AWW13
35AWW22
35AWW07R (NS)
35AWW15
35AWW10
35AWW08
LHSMW05 (NS)
LHSMW04 (NS, Dry)
35AWW12
1004TW006 (NS)
1004TW001 (NS)
35AWW11
35AWW21
LHSMW03 (NS)
35AWW16
35AWW27
35AWW23
35AWW06
35AWW17
35AWW19
35AWW24
35AWW04
35AWW25
207
102
102-R
L-6
101
103
GH-1

Aerial Photography Source: Google Earth, April 2018

0 100 200 400 Feet

Legend:
- Shallow Monitoring Well Location
- Shallow Temporary Monitoring Well Location
- Shallow Monitoring Well Location — No exceedances above MCLs for listed COCs
- Shallow Monitoring Well Location - Removed from RA(O)
- KB1® Plus Injection Point Locations (March 2018)
- KB1® Injection Point Locations (March 2018)
- Injection Locations (2013)
- (NS) Not Sampled
- Installation Restoration Program (IRP) Area
- Direction of Groundwater Flow (May 2024)
- Stream
- 401 Building Number

01335638

COC Exceedances in Shallow Groundwater (May 2024)

Figure 5

2024 Remedial Action Operation Report
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM
DATE: 3/27/2025
SCALE: As Shown
PROJECT NO: JVPCIBH.0001.0010.02

PCIbhate

Legend
COC = Contaminant of Concern
MCL = Maximum Contaminant Level
DCA = Dichloroethane
DCE = Dichloroethene
PCE = Tetrachloroethene
TCA = Trichloroethane
TCE = Trichloroethene
VC = Vinyl Chloride
All results and MCLs are reported in micrograms per liter (µg/L)

COCs shown on this figure

COC	MCL
1,1-DCE	7
1,1,2-TCA	5
1,2-DCA	5
Benzene	5
cis-1,2-DCE	70
PCE	5
trans-1,2-DCE	100
TCE	5
VC	2

HARRELL ST.
32ND ST.
TACKET DR
AVE "F"
AVE "P"
AVE "G"
8TH ST.
9TH ST.
10TH ST.
11TH ST.
6TH ST.
4TH ST.
LHAAP-35A (58)
35AWW01
35AWW05
Goose Prairie Creek
207
102
102
102-R
103
L-6
101
GH-1
401

Aerial Photography Source: Google Earth, April 2018

0 100 200 400 Feet

Legend:
- Intermediate Monitoring Well Location
  No exceedances above MCLs for listed COCs
- Installation Restoration Program (IRP) Area
- Stream
- *401* Building Number

01335639

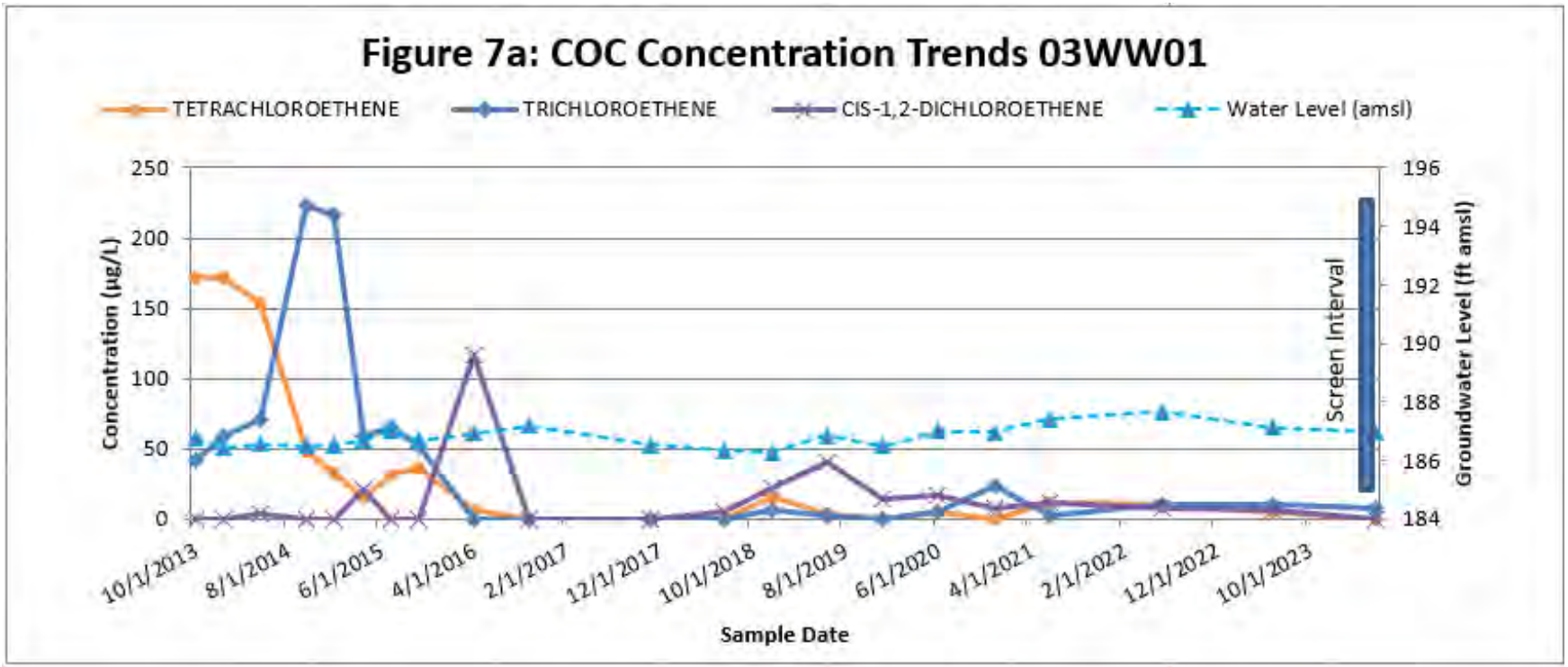
COC Exceedances in Intermediate Groundwater (May 2024)

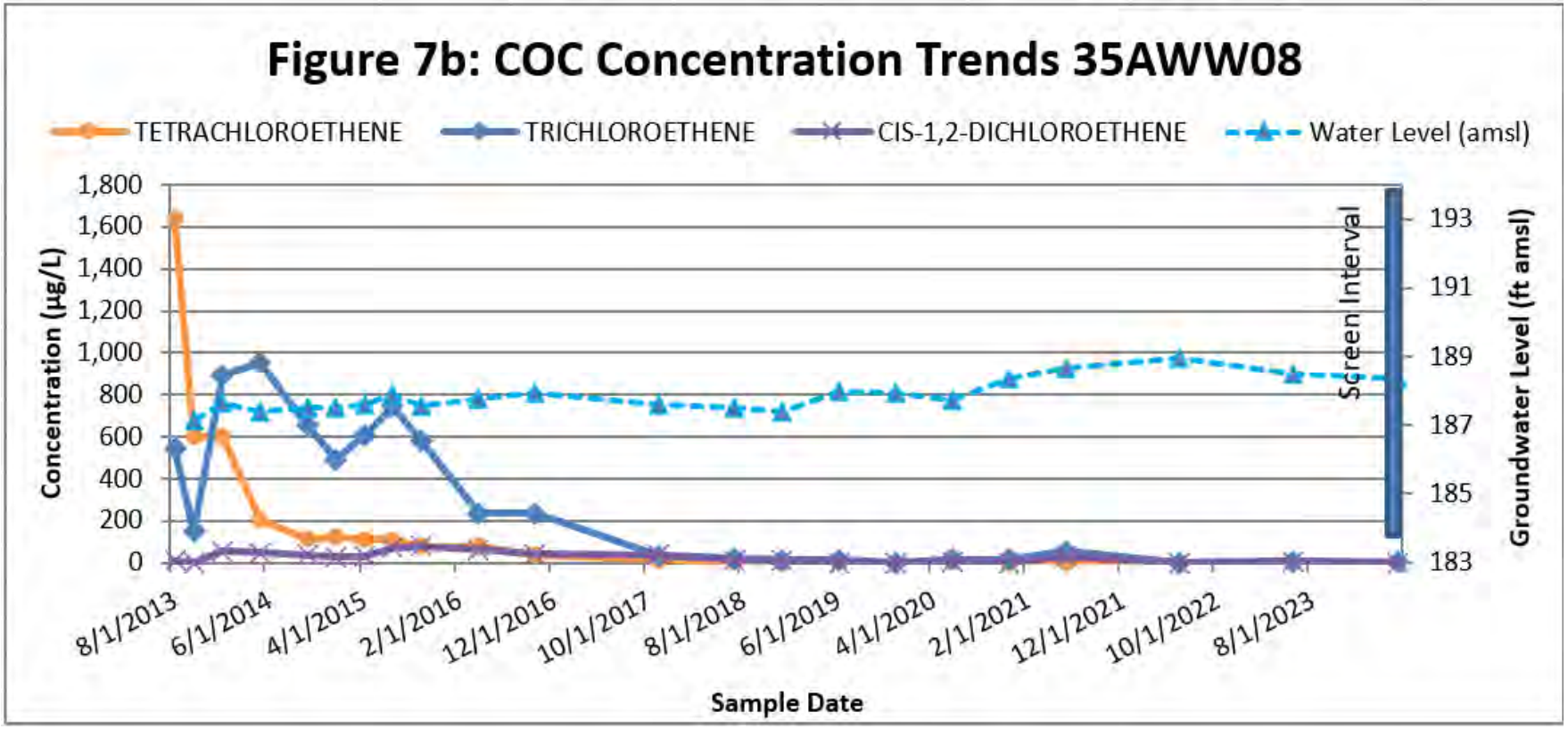
Figure 6

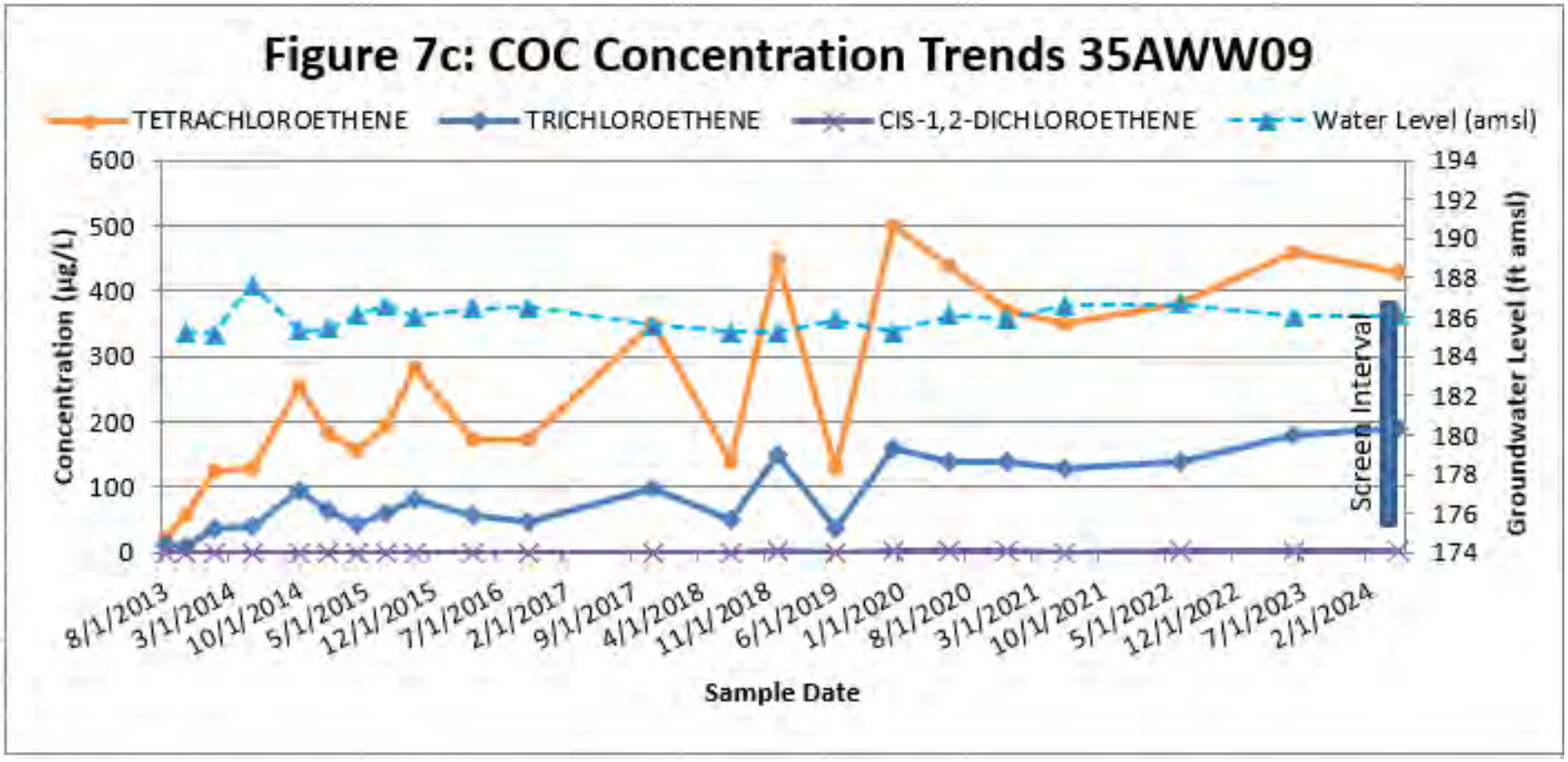
2024 Remedial Action Operation Report
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

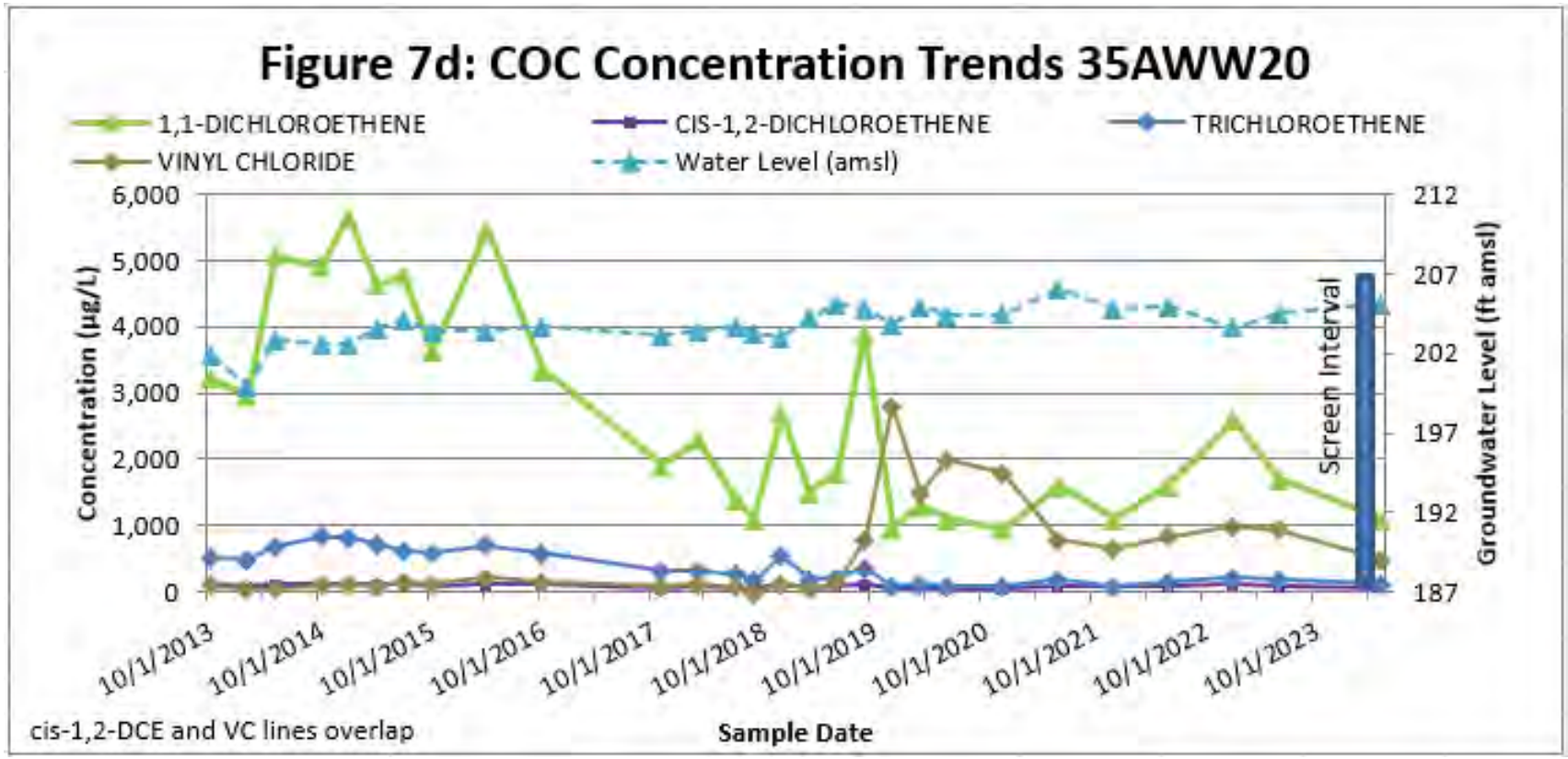
DRAWN BY: MRM
DATE: 3/27/2025
SCALE: As Shown
PROJECT NO: JVPCIBH.0001.0010.02

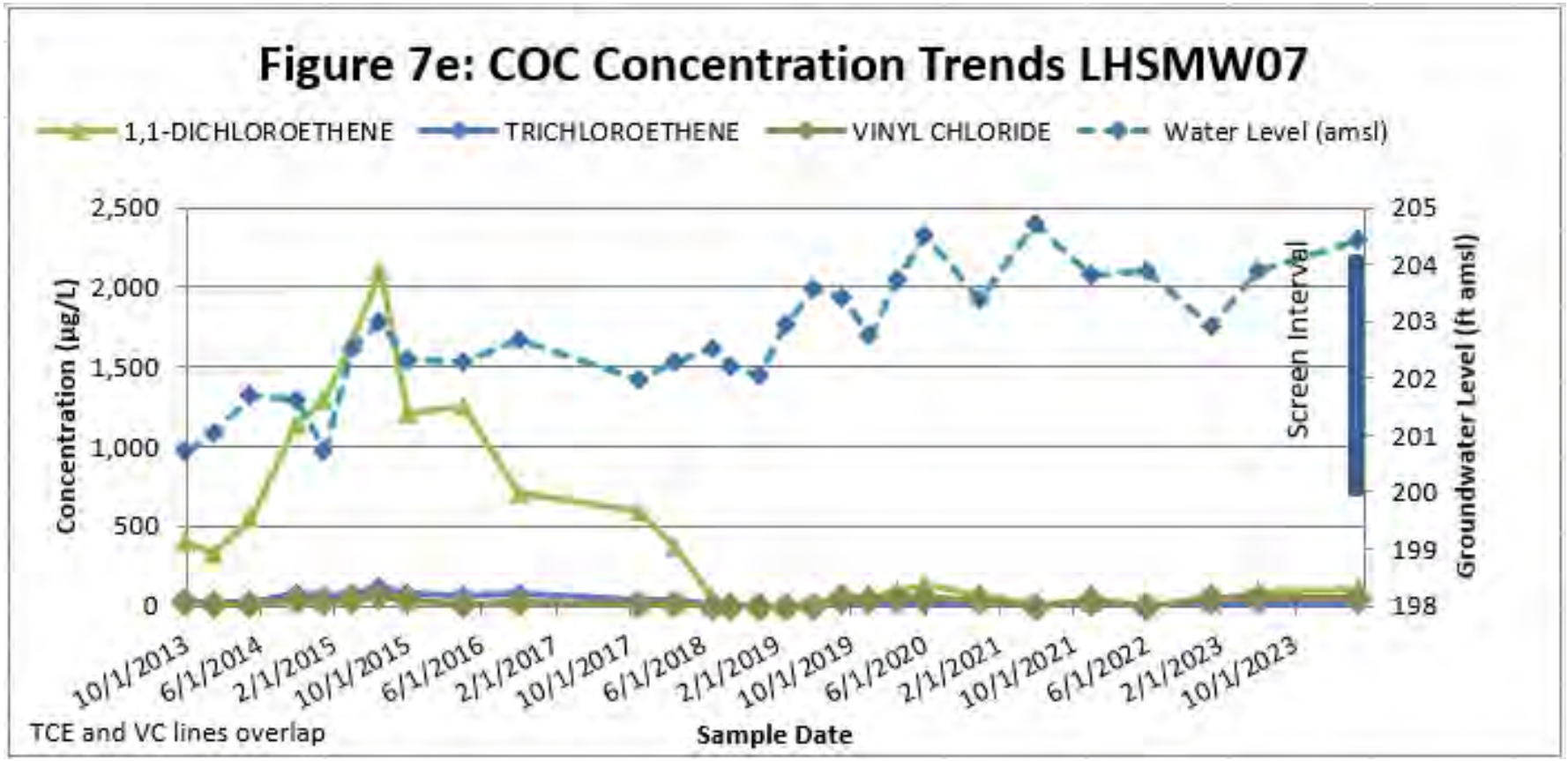
PCIbhate

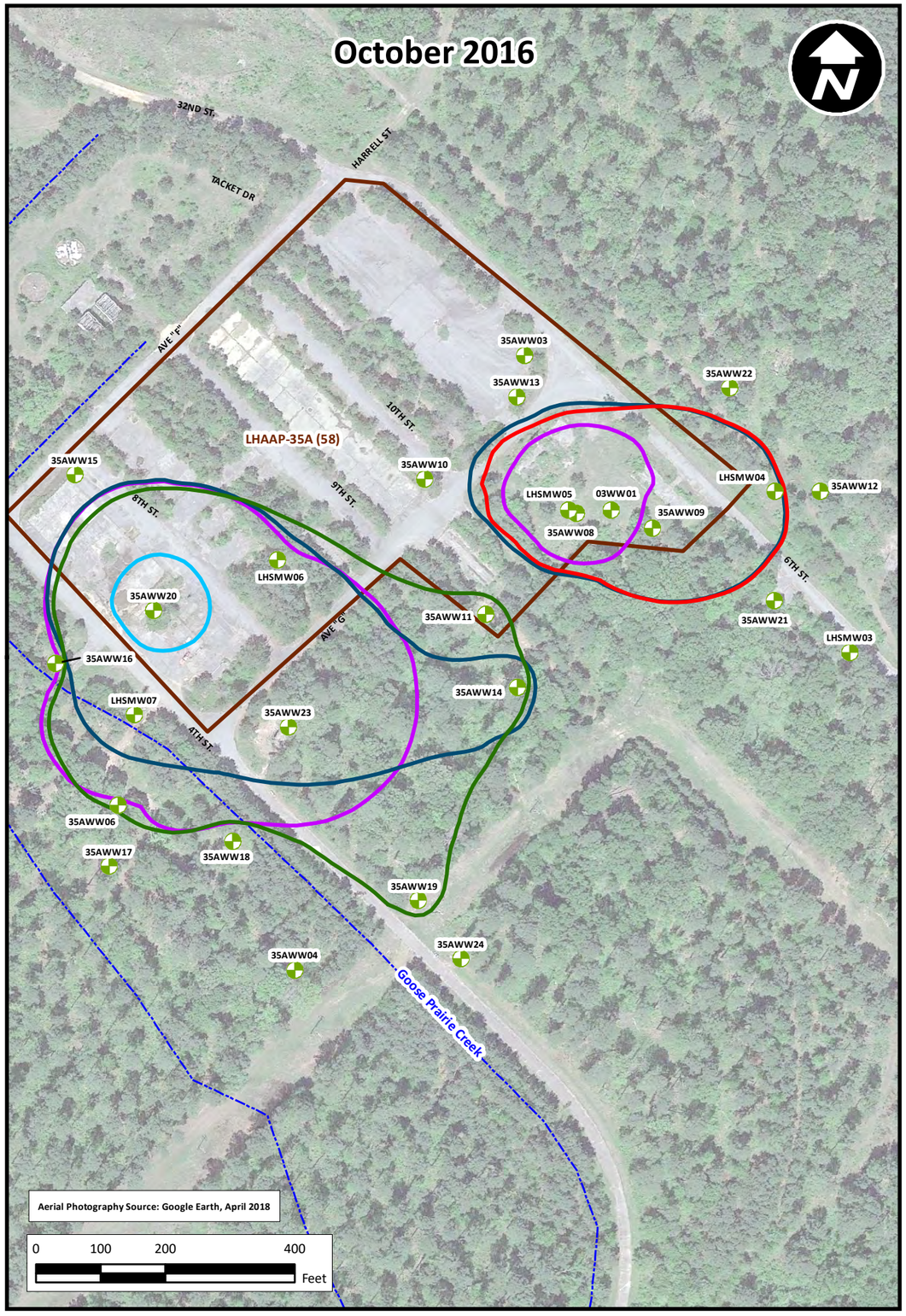

Figure 7a: COC Concentration Trends 03WW01
TETRACHLOROETHENE
TRICHLOROETHENE
CIS-1,2-DICHLOROETHENE
Water Level (amsl)
Concentration (µg/L)
250
200
150
100
50
0
196
194
192
190
188
186
184
Groundwater Level (ft amsl)
Screen Interval
10/1/2013
8/1/2014
6/1/2015
4/1/2016
2/1/2017
12/1/2017
10/1/2018
8/1/2019
6/1/2020
4/1/2021
2/1/2022
12/1/2022
10/1/2023
Sample Date

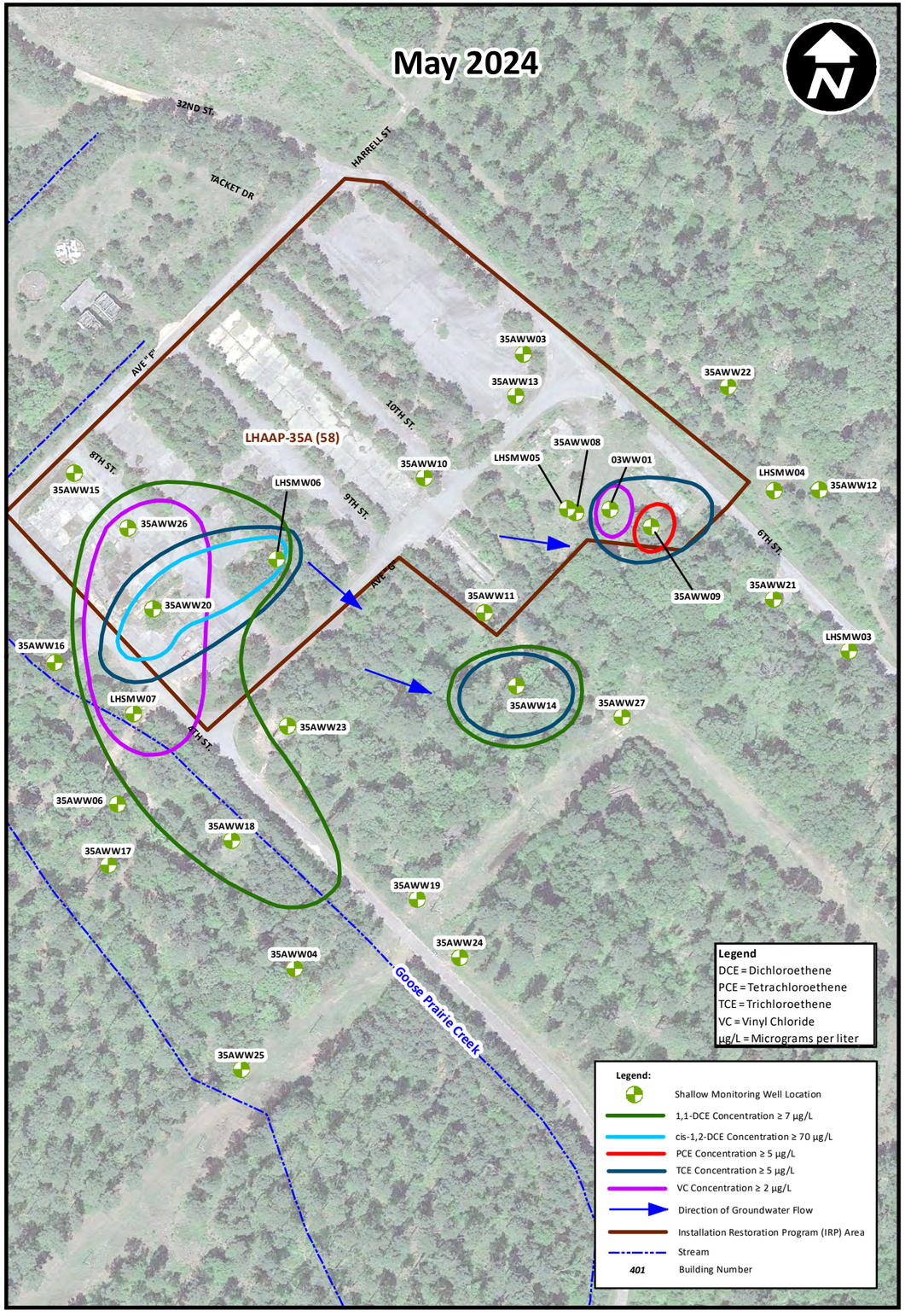

Figure 7b: COC Concentration Trends 35AWW08
TETRACHLOROETHENE
TRICHLOROETHENE
CIS-1,2-DICHLOROETHENE
Water Level (amsl)
Concentration (µg/L)
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Screen Interval
193
191
189
187
185
183
Groundwater Level (ft amsl)
8/1/2013
6/1/2014
4/1/2015
2/1/2016
12/1/2016
10/1/2017
8/1/2018
6/1/2019
4/1/2020
2/1/2021
12/1/2021
10/1/2022
8/1/2023
Sample Date


Figure 7c: COC Concentration Trends 35AWW09
TETRACHLOROETHENE
TRICHLOROETHENE
CIS-1,2-DICHLOROETHENE
Water Level (amsl)
Concentration (µg/L)
600
500
400
300
200
100
0
194
192
190
188
186
184
182
180
178
176
174
Groundwater Level (ft amsl)
Screen Interval
8/1/2013
3/1/2014
10/1/2014
5/1/2015
12/1/2015
7/1/2016
2/1/2017
9/1/2017
4/1/2018
11/1/2018
6/1/2019
1/1/2020
8/1/2020
3/1/2021
10/1/2021
5/1/2022
12/1/2022
7/1/2023
2/1/2024
Sample Date


Figure 7d: COC Concentration Trends 35AWW20
1,1-DICHLOROETHENE
CIS-1,2-DICHLOROETHENE
TRICHLOROETHENE
VINYL CHLORIDE
Water Level (amsl)
Concentration (µg/L)
6,000
5,000
4,000
3,000
2,000
1,000
0
Groundwater Level (ft amsl)
212
207
202
197
192
187
Screen Interval
10/1/2013
10/1/2014
10/1/2015
10/1/2016
10/1/2017
10/1/2018
10/1/2019
10/1/2020
10/1/2021
10/1/2022
10/1/2023
Sample Date
cis-1,2-DCE and VC lines overlap


Figure 7e: COC Concentration Trends LHSMW07
1,1-DICHLOROETHENE
TRICHLOROETHENE
VINYL CHLORIDE
Water Level (amsl)
Concentration (µg/L)
2,500
2,000
1,500
1,000
500
0
Screen Interval
Groundwater Level (ft amsl)
205
204
203
202
201
200
199
198
10/1/2013
6/1/2014
2/1/2015
10/1/2015
6/1/2016
2/1/2017
10/1/2017
6/1/2018
2/1/2019
10/1/2019
6/1/2020
2/1/2021
10/1/2021
6/1/2022
2/1/2023
10/1/2023
TCE and VC lines overlap
Sample Date





01335645

Lateral Extent of Plume Comparison (October 2016 and May 2024)

Figure 8

2024 Remedial Action Operation Report
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 5/13/2025

SCALE: As Shown

PROJECT NO: JVPCIBH.0001.0010.02

PCIbhate

TABLES

This page intentionally left blank.

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
03WW01	Shallow	10/9/2013	22.51-32.51	216.29	29.51	186.78
		1/29/2014	22.51-32.51	216.29	29.86	186.43
		5/20/2014	22.51-32.51	216.29	29.72	186.57
		10/27/2014	22.51-32.51	216.29	29.81	186.48
		1/20/2015	22.51-32.51	216.29	29.75	186.54
		4/14/2015	22.51-32.51	216.29	29.60	186.69
		7/7/2015	22.51-32.51	216.29	29.25	187.04
		10/7/2015	22.51-32.51	216.29	29.60	186.69
		4/12/2016	22.51-32.51	216.29	29.36	186.93
		10/3/2016	22.51-32.51	216.29	29.09	187.20
		12/18/2019	22.51-32.51	216.29	29.80	186.49
		7/18/2018	22.51-32.51	216.29	29.96	186.33
		12/11/2018	22.51-32.51	216.29	30.00	186.29
		6/3/2019	22.51-32.51	216.29	29.45	186.84
		12/18/2019	22.51-32.51	216.29	29.80	186.49
		6/23/2020	22.51-32.51	216.29	29.30	186.99
		12/1/2020	22.51-32.51	216.29	29.33	186.96
		6/2/2021	22.51-32.51	216.29	28.88	187.41
		6/8/2022	22.51-32.51	216.29	28.62	187.67
		6/6/2023	22.51-32.51	216.29	29.17	187.12
		5/28/2024	22.51-32.51	216.29	29.32	186.97
1004TW001	Shallow	5/28/2014	NA	NM	18.05	NC
		10/30/2014	NA	NM	18.40	NC
		7/8/2015	NA	NM	17.00	NC
		4/14/2016	NA	NM	17.75	NC
		10/4/2016	NA	NM	17.46	NC
		11/17/2017	NA	NM	17.84	NC
1004TW006	Shallow	1/31/2014	NA	NM	19.17	NC
35AWW01	Intermediate	10/11/2013	63.07-73.07	218.03	40.58	177.45
		1/31/2014	63.07-73.07	218.03	40.21	177.82
		5/29/2014	63.07-73.07	218.03	39.31	178.72
		10/31/2014	63.07-73.07	218.03	40.17	177.86
		1/27/2015	63.07-73.07	218.03	39.40	178.63
		4/10/2015	63.07-73.07	218.03	40.06	177.97
		7/10/2015	63.07-73.07	218.03	39.10	178.93
		10/6/2015	63.07-73.07	218.03	39.79	178.24
		4/12/2016	63.07-73.07	218.03	38.86	179.17
		10/5/2016	63.07-73.07	218.03	39.01	179.02
		12/20/2019	63.07-73.07	218.03	45.81	172.22
		7/2/2018	63.07-73.07	218.03	43.00	175.03
		12/13/2018	63.07-73.07	218.03	40.27	177.76
		6/10/2019	63.07-73.07	218.03	44.52	173.51
		12/18/2019	63.07-73.07	218.03	45.18	172.85
		6/25/2020	63.07-73.07	218.03	44.22	173.81
		12/7/2020	63.07-73.07	218.03	44.75	173.28
		6/1/2021	63.07-73.07	218.03	44.50	173.53
		6/6/2022	63.07-73.07	218.03	43.33	174.70
		6/6/2023	63.07-73.07	218.03	45.00	173.03
		5/28/2024	63.07-73.07	218.03	41.73	176.30
35AWW02	Deep	10/22/2013	128.59 - 138.59	218.05	42.30	175.75
		4/13/2016	128.59 - 138.59	218.05	42.26	175.79
		10/4/2016	128.59 - 138.59	218.05	42.70	175.35

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW03	Shallow	2/1/2014	11.93 - 21.93	219.66	DRY	NC
		5/29/2014	11.93 - 21.93	219.66	DRY	NC
		10/30/2014	11.93 - 21.93	219.66	DRY	NC
		7/9/2015	11.93 - 21.93	219.66	DRY	NC
		4/13/2016	11.93 - 21.93	219.66	DRY	NC
		10/4/2016	11.93 - 21.93	219.66	DRY	NC
		11/16/2017	11.93 - 21.93	219.66	DRY	NC
35AWW04	Shallow	4/14/2016	16.51 - 26.51	220.66	DRY	NC
		10/4/2016	16.51 - 26.51	220.66	DRY	NC
		12/2/2001	16.51 - 26.51	220.66	DRY	NC
		6/8/2022	16.51 - 26.51	220.66	DRY	NC
		1/12/2023	16.51 - 26.51	220.66	DRY	NC
		6/6/2023	16.51 - 26.51	220.66	DRY	NC
		5/30/2024	16.51-26.51	220.66	23.48	197.18
35AWW05	Intermediate	10/16/2013	63.4 - 73.4	221.41	43.70	177.71
		2/1/2014	63.4 - 73.4	221.41	37.70	183.71
		5/22/2014	63.4 - 73.4	221.41	43.12	178.29
		10/21/2014	63.4 - 73.4	221.41	43.60	177.81
		1/23/2015	63.4 - 73.4	221.41	42.90	178.51
		4/8/2015	63.4 - 73.4	221.41	42.55	178.86
		7/10/2015	63.4 - 73.4	221.41	42.67	178.74
		10/5/2015	63.4 - 73.4	221.41	43.31	178.10
		4/14/2016	63.4 - 73.4	221.41	41.40	180.01
		10/5/2016	63.4 - 73.4	221.41	42.43	178.98
		11/13/2017	63.4 - 73.4	221.41	45.72	175.69
		7/2/2018	63.4 - 73.4	221.41	45.47	175.94
		12/12/2018	63.4 - 73.4	221.41	43.67	177.74
		6/10/2019	63.4 - 73.4	221.41	46.20	175.21
		12/3/2020	63.4 - 73.4	221.41	46.71	174.70
		6/2/2021	63.4 - 73.4	221.41	46.25	175.16
		12/2/2021	63.4 - 73.4	221.41	47.15	174.26
		6/9/2022	63.4 - 73.4	221.41	45.55	175.86
		1/13/2023	63.4 - 73.4	221.41	47.47	173.94
		6/7/2023	63.4 - 73.4	221.41	46.92	174.49
		5/29/2024	63.4-73.4	221.41	45.37	176.04
35AWW06	Shallow	10/15/2013	19.05 - 29.05	220.43	21.50	198.93
		1/30/2014	19.05 - 29.05	220.43	21.14	199.29
		5/21/2014	19.05 - 29.05	220.43	20.65	199.78
		10/29/2014	19.05 - 29.05	220.43	20.55	199.88
		1/28/2015	19.05 - 29.05	220.43	20.58	199.85
		4/15/2015	19.05 - 29.05	220.43	18.95	201.48
		7/7/2015	19.05 - 29.05	220.43	19.47	200.96
		10/7/2015	19.05 - 29.05	220.43	19.97	200.46
		4/11/2016	19.05 - 29.05	220.43	19.95	200.48
		10/3/2016	19.05 - 29.05	220.43	19.53	200.90
		9/11/2019	19.05 - 29.05	220.43	18.90	201.53
		12/19/2019	19.05 - 29.05	220.43	19.32	201.11
		3/24/2020	19.05 - 29.05	220.43	18.68	201.75
		9/26/2018	19.05 - 29.05	220.43	20.35	200.08
		12/11/2018	19.05 - 29.05	220.43	19.96	200.47
		3/19/2019	19.05 - 29.05	220.43	19.50	200.93
		6/4/2019	19.05 - 29.05	220.43	18.95	201.48
		9/11/2019	19.05 - 29.05	220.43	18.90	201.53
		12/19/2019	19.05 - 29.05	220.43	19.32	201.11
		3/24/2020	19.05 - 29.05	220.43	18.68	201.75
		4/7/2020	19.05 - 29.05	220.43	18.77	201.66
		6/24/2020	19.05 - 29.05	220.43	18.45	201.98
		12/1/2020	19.05 - 29.05	220.43	18.55	201.88
		6/3/2021	19.05 - 29.05	220.43	18.16	202.27
		12/1/2021	19.05 - 29.05	220.43	18.23	202.20
		6/8/2022	19.05 - 29.05	220.43	18.50	201.93
		1/12/2023	19.05 - 29.05	220.43	19.15	201.28
		6/5/2023	19.05 - 29.05	220.43	18.90	201.53
		5/23/2024	19.05-29.05	220.43	18.81	201.62

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW07R	Shallow	10/16/2013	21.55 - 31.25	212.11	27.90	184.21
		2/3/2014	21.55 - 31.25	212.11	28.90	183.21
		5/29/2014	21.55 - 31.25	212.11	25.83	186.28
		10/30/2014	21.55 - 31.25	212.11	26.55	185.56
		7/10/2015	21.55 - 31.25	212.11	24.08	188.03
		4/13/2016	21.55 - 31.25	212.11	24.34	187.77
		10/4/2016	21.55 - 31.25	212.11	24.82	187.29
		11/17/2017	21.55 - 31.25	212.11	26.14	185.97
35AWW08	Shallow	10/9/2013	21.83 - 31.83	216.95	29.80	187.15
		1/29/2014	21.83 - 31.83	216.95	29.30	187.65
		5/20/2014	21.83 - 31.83	216.95	29.55	187.40
		10/27/2014	21.83 - 31.83	216.95	29.43	187.52
		1/20/2015	21.83 - 31.83	216.95	29.45	187.50
		4/14/2015	21.83 - 31.83	216.95	29.35	187.60
		7/7/2015	21.83 - 31.83	216.95	29.05	187.90
		10/7/2015	21.83 - 31.83	216.95	29.41	187.54
		4/12/2016	21.83 - 31.83	216.95	29.20	187.75
		10/3/2016	21.83 - 31.83	216.95	29.00	187.95
		12/18/2019	21.83 - 31.83	216.95	29.00	187.95
		7/18/2018	21.83 - 31.83	216.95	29.45	187.50
		12/11/2018	21.83 - 31.83	216.95	29.55	187.40
		6/3/2019	21.83 - 31.83	216.95	28.95	188.00
		12/18/2019	21.83 - 31.83	216.95	29.00	187.95
		6/23/2020	21.83 - 31.83	216.95	29.22	187.73
		12/1/2020	21.83 - 31.83	216.95	28.58	188.37
		6/2/2021	21.83 - 31.83	216.95	28.28	188.67
		6/8/2022	21.83 - 31.83	216.95	28.00	188.95
		6/6/2023	21.83 - 31.83	216.95	28.45	188.50
		5/28/2024	21.83-31.83	216.95	28.60	188.35
35AWW09	Shallow	10/10/2013	26.69 - 41.29	217.47	32.21	185.26
		1/29/2014	26.69 - 41.29	217.47	32.32	185.15
		5/20/2014	26.69 - 41.29	217.47	29.87	187.60
		10/27/2014	26.69 - 41.29	217.47	32.15	185.32
		1/21/2015	26.69 - 41.29	217.47	32.04	185.43
		4/14/2015	26.69 - 41.29	217.47	31.38	186.09
		7/7/2015	26.69 - 41.29	217.47	30.87	186.60
		10/7/2015	26.69 - 41.29	217.47	31.46	186.01
		4/12/2016	26.69 - 41.29	217.47	31.02	186.45
		10/3/2016	26.69 - 41.29	217.47	31.00	186.47
		12/18/2019	26.69 - 41.29	217.47	32.22	185.25
		7/16/2018	26.69 - 41.29	217.47	32.22	185.25
		12/11/2018	26.69 - 41.29	217.47	32.21	185.26
		6/3/2019	26.69 - 41.29	217.47	31.60	185.87
		12/18/2019	26.69 - 41.29	217.47	32.22	185.25
		6/23/2020	26.69 - 41.29	217.47	31.35	186.12
		12/7/2020	26.69 - 41.29	217.47	31.55	185.92
		6/2/2021	26.69 - 41.29	217.47	30.88	186.59
		6/6/2022	26.69 - 41.29	217.47	30.82	186.65
		6/6/2023	26.69 - 41.29	217.47	31.41	186.06
		5/29/2024	26.69-41.29	217.47	31.36	186.11

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW10	Shallow	10/10/2013	18.16 - 32.76	220.76	20.15	200.61
		1/29/2014	18.16 - 32.76	220.76	18.85	201.91
		5/20/2014	18.16 - 32.76	220.76	17.10	203.66
		10/28/2014	18.16 - 32.76	220.76	19.55	201.21
		1/27/2015	18.16 - 32.76	220.76	17.78	202.98
		4/14/2015	18.16 - 32.76	220.76	16.45	204.31
		7/7/2015	18.16 - 32.76	220.76	17.17	203.59
		10/7/2015	18.16 - 32.76	220.76	19.45	201.31
		4/13/2016	18.16 - 32.76	220.76	17.41	203.35
		10/3/2016	18.16 - 32.76	220.76	18.98	201.78
		12/19/2019	18.16 - 32.76	220.76	19.72	201.04
		7/12/2018	18.16 - 32.76	220.76	18.95	201.81
		12/12/2018	18.16 - 32.76	220.76	18.75	202.01
		6/4/2019	18.16 - 32.76	220.76	16.05	204.71
		12/19/2019	18.16 - 32.76	220.76	19.72	201.04
		6/29/2020	18.16 - 32.76	220.76	17.25	203.51
		12/7/2020	18.16 - 32.76	220.76	18.65	202.11
		6/1/2021	18.16 - 32.76	220.76	15.55	205.21
		6/6/2022	18.16 - 32.76	220.76	17.34	203.42
		6/6/2023	18.16 - 32.76	220.76	17.30	203.46
		5/28/2024	18.16-32.76	220.76	16.65	204.11
35AWW11	Shallow	10/15/2013	22.24 - 36.84	220.15	31.36	188.79
		2/3/2014	22.24 - 36.84	220.15	31.80	188.35
		5/21/2014	22.24 - 36.84	220.15	31.55	188.60
		10/29/2014	22.24 - 36.84	220.15	31.73	188.42
		1/27/2015	22.24 - 36.84	220.15	31.60	188.55
		4/14/2015	22.24 - 36.84	220.15	31.25	188.90
		7/8/2015	22.24 - 36.84	220.15	30.72	189.43
		10/7/2015	22.24 - 36.84	220.15	31.20	188.95
		4/12/2016	22.24 - 36.84	220.15	31.03	189.12
		10/3/2016	22.24 - 36.84	220.15	30.48	189.67
		9/11/2019	22.24 - 36.84	220.15	29.46	190.69
		12/18/2019	22.24 - 36.84	220.15	29.68	190.47
		3/24/2020	22.24 - 36.84	220.15	29.03	191.12
		9/27/2018	22.24 - 36.84	220.15	31.10	189.05
		12/11/2018	22.24 - 36.84	220.15	31.05	189.10
		3/19/2019	22.24 - 36.84	220.15	30.00	190.15
		6/3/2019	22.24 - 36.84	220.15	29.27	190.88
		9/11/2019	22.24 - 36.84	221.15	29.46	191.69
		12/18/2019	22.24 - 36.84	220.15	29.68	190.47
		3/24/2020	22.24 - 36.84	221.15	29.03	192.12
		6/23/2020	22.24 - 36.84	221.15	29.11	192.04
		12/1/2020	22.24 - 36.84	221.15	28.95	192.20
		6/2/2021	22.24 - 36.84	221.15	28.30	192.85
		12/1/2021	22.24 - 36.84	221.15	28.45	192.70
		6/8/2022	22.24 - 36.84	221.15	28.18	192.97
		1/12/2023	22.24 - 36.84	221.15	29.42	191.73
		6/5/2023	22.24 - 36.84	221.15	28.80	192.35
		5/23/2024	22.24-36.84	221.15	28.81	192.34

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW12	Shallow	10/18/2013	22.17 - 36.77	215.99	30.05	185.94
		1/31/2014	22.17 - 36.77	215.99	28.10	187.89
		5/29/2014	22.17 - 36.77	215.99	29.00	186.99
		10/30/2014	22.17 - 36.77	215.99	30.11	185.88
		1/28/2015	22.17 - 36.77	215.99	29.45	186.54
		4/7/2015	22.17 - 36.77	215.99	28.70	187.29
		7/9/2015	22.17 - 36.77	215.99	28.22	187.77
		10/5/2015	22.17 - 36.77	215.99	29.35	186.64
		4/12/2016	22.17 - 36.77	215.99	28.54	187.45
		10/5/2016	22.17 - 36.77	215.99	28.87	187.12
		12/18/2019	22.17 - 36.77	215.99	30.33	185.66
		6/29/2018	22.17 - 36.77	215.99	30.05	185.94
		12/14/2018	22.17 - 36.77	215.99	29.66	186.33
		6/10/2019	22.17 - 36.77	215.99	28.59	187.40
		12/18/2019	22.17 - 36.77	215.99	30.33	185.66
		6/25/2020	22.17 - 36.77	215.99	28.95	187.04
		12/7/2020	22.17 - 36.77	215.99	29.72	186.27
		6/2/2021	22.17 - 36.77	215.99	28.00	187.99
		6/6/2022	22.17 - 36.77	215.99	29.22	186.77
		6/5/2023	22.17 - 36.77	215.99	29.50	186.49
		5/29/2024	22.17-36.77	215.99	29.27	186.72
35AWW13	Shallow	10/11/2013	24.72 - 39.32	219.12	25.07	194.05
		2/3/2014	24.72 - 39.32	219.12	24.91	194.21
		5/22/2014	24.72 - 39.32	219.12	23.80	195.32
		10/21/2014	24.72 - 39.32	219.12	24.85	194.27
		1/23/2015	24.72 - 39.32	219.12	24.70	194.42
		4/8/2015	24.72 - 39.32	219.12	23.72	195.40
		7/9/2015	24.72 - 39.32	219.12	23.39	195.73
		10/6/2015	24.72 - 39.32	219.12	24.61	194.51
		4/13/2016	24.72 - 39.32	219.12	24.10	195.02
		10/6/2016	24.72 - 39.32	219.12	24.41	194.71
		12/18/2019	24.72 - 39.32	219.12	25.05	194.07
		6/29/2018	24.72 - 39.32	219.12	24.37	194.75
		12/11/2018	24.72 - 39.32	219.12	25.03	194.09
		6/7/2019	24.72 - 39.32	219.12	23.08	196.04
		12/18/2019	24.72 - 39.32	219.12	25.05	194.07
		6/29/2020	24.72 - 39.32	219.12	23.32	195.80
		12/7/2020	24.72 - 39.32	219.12	24.61	194.51
		6/1/2021	24.72 - 39.32	219.12	22.95	196.17
		6/6/2022	24.72 - 39.32	219.12	23.63	195.49
		6/6/2023	24.72 - 39.32	219.12	23.45	195.67
		5/28/2024	24.72-39.32	219.12	23.73	195.39

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW14	Shallow	10/18/2013	17.06 - 31.76	218.41	30.80	187.61
		1/31/2014	17.06 - 31.76	218.41	30.95	187.46
		5/28/2014	17.06 - 31.76	218.41	30.57	187.84
		10/29/2014	17.06 - 31.76	218.41	31.00	187.41
		1/20/2015	17.06 - 31.76	218.41	30.85	187.56
		4/7/2015	17.06 - 31.76	218.41	30.48	187.93
		7/8/2015	17.06 - 31.76	218.41	29.75	188.66
		10/1/2015	17.06 - 31.76	218.41	30.19	188.22
		4/12/2016	17.06 - 31.76	218.41	29.67	188.74
		10/5/2016	17.06 - 31.76	218.41	29.31	189.10
		12/19/2019	17.06 - 31.76	218.41	29.55	188.86
		7/18/2018	17.06 - 31.76	218.41	29.58	188.83
		12/13/2018	17.06 - 31.76	218.41	29.55	188.86
		6/7/2019	17.06 - 31.76	218.41	28.65	189.76
		12/19/2019	17.06 - 31.76	218.41	29.55	188.86
		6/25/2020	17.06 - 31.76	218.41	28.77	189.64
		12/7/2020	17.06 - 31.76	218.41	30.75	187.66
		6/1/2021	17.06 - 31.76	218.41	27.80	190.61
		6/6/2022	17.06 - 31.76	218.41	29.41	189.00
		6/7/2023	17.06 - 31.76	218.41	29.92	188.49
		5/30/2024	17.06-31.76	218.41	29.64	188.77
35AWW15	Shallow	10/16/2013	25.67 - 40.37	222.97	20.65	202.32
		2/1/2014	25.67 - 40.37	222.97	20.40	202.57
		5/28/2014	25.67 - 40.37	222.97	19.64	203.33
		10/21/2014	25.67 - 40.37	222.97	20.18	202.79
		1/23/2015	25.67 - 40.37	222.97	20.15	202.82
		4/10/2015	25.67 - 40.37	222.97	19.31	203.66
		7/10/2015	25.67 - 40.37	222.97	18.95	204.02
		10/6/2015	25.67 - 40.37	222.97	19.56	203.41
		4/14/2016	25.67 - 40.37	222.97	19.51	203.46
		10/5/2016	25.67 - 40.37	222.97	19.34	203.63
		12/20/2019	25.67 - 40.37	222.97	19.87	203.10
		7/18/2018	25.67 - 40.37	222.97	19.50	203.47
		12/12/2018	25.67 - 40.37	222.97	16.55	206.42
		6/7/2019	25.67 - 40.37	222.97	17.77	205.20
		12/20/2019	25.67 - 40.37	222.97	19.87	203.10
		6/25/2020	25.67 - 40.37	222.97	17.93	205.04
		12/7/2020	25.67 - 40.37	222.97	17.05	205.92
		6/1/2021	25.67 - 40.37	222.97	16.95	206.02
		12/2/2021	25.67 - 40.37	222.97	22.88	200.09
		6/9/2022	25.67 - 40.37	222.97	18.05	204.92
		1/13/2023	25.67 - 40.37	222.97	19.50	203.47
		6/7/2023	25.67 - 40.37	222.97	18.20	204.77
		5/29/2024	25.67-40.37	222.97	18.33	204.64
35AWW16	Shallow	10/22/2013	21.75 - 36.45	220.88	19.58	201.30
		1/31/2014	21.75 - 36.45	220.88	19.28	201.60
		5/28/2014	21.75 - 36.45	220.88	18.60	202.28
		10/30/2014	21.75 - 36.45	220.88	19.96	200.92
		1/27/2015	21.75 - 36.45	220.88	18.90	201.98
		4/7/2015	21.75 - 36.45	220.88	18.22	202.66
		7/9/2015	21.75 - 36.45	220.88	17.79	203.09
		10/6/2015	21.75 - 36.45	220.88	18.20	202.68
		4/12/2016	21.75 - 36.45	220.88	18.43	202.45
		10/4/2016	21.75 - 36.45	220.88	17.90	202.98
		12/19/2019	21.75 - 36.45	220.88	18.00	202.88
		6/29/2018	21.75 - 36.45	220.88	18.10	202.78
		12/12/2018	21.75 - 36.45	220.88	18.26	202.62
		6/10/2019	21.75 - 36.45	220.88	17.30	203.58
		12/19/2019	21.75 - 36.45	220.88	18.00	202.88
		6/25/2020	21.75 - 36.45	220.88	16.68	204.20
		12/1/2020	21.75 - 36.45	220.88	17.25	203.63
		6/1/2021	21.75 - 36.45	220.88	16.28	204.60
		6/9/2022	21.75 - 36.45	220.88	16.88	204.00
		6/7/2023	21.75 - 36.45	220.88	17.08	203.80
		5/28/2024	21.75-36.45	220.88	17.32	203.56

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW17	Shallow	10/18/2013	26.97 - 41.67	221.44	28.00	193.44
		2/1/2014	26.97 - 41.67	221.44	36.90	184.54
		5/29/2014	26.97 - 41.67	221.44	26.60	194.84
		10/31/2014	26.97 - 41.67	221.44	26.80	194.64
		1/28/2015	26.97 - 41.67	221.44	26.00	195.44
		4/10/2015	26.97 - 41.67	221.44	25.65	195.79
		7/10/2015	26.97 - 41.67	221.44	25.42	196.02
		10/5/2015	26.97 - 41.67	221.44	25.93	195.51
		4/11/2016	26.97 - 41.67	221.44	25.60	195.84
		10/3/2016	26.97 - 41.67	221.44	25.30	196.14
		12/18/2019	26.97 - 41.67	221.44	24.00	197.44
		6/29/2018	26.97 - 41.67	221.44	25.07	196.37
		12/17/2018	26.97 - 41.67	221.44	24.78	196.66
		6/10/2019	26.97 - 41.67	221.44	24.28	197.16
		12/18/2019	26.97 - 41.67	221.44	24.00	197.44
		6/29/2020	26.97 - 41.67	221.44	23.40	198.04
		12/1/2020	26.97 - 41.67	221.44	23.12	198.32
		6/3/2021	26.97 - 41.67	221.44	23.02	198.42
		6/9/2022	26.97 - 41.67	221.44	22.61	198.83
		6/7/2023	26.97 - 41.67	221.44	23.17	198.27
		5/30/2024	26.97-41.67	221.44	23.33	198.11
35AWW18	Shallow	10/18/2013	26.85 - 41.55	221.75	28.35	193.40
		2/1/2014	26.85 - 41.55	221.75	27.90	193.85
		5/29/2014	26.85 - 41.55	221.75	27.65	194.10
		10/31/2014	26.85 - 41.55	221.75	27.50	194.25
		1/28/2015	26.85 - 41.55	221.75	27.11	194.64
		4/10/2015	26.85 - 41.55	221.75	25.90	195.85
		7/10/2015	26.85 - 41.55	221.75	26.42	195.33
		10/5/2015	26.85 - 41.55	221.75	26.67	195.08
		4/11/2016	26.85 - 41.55	221.75	26.40	195.35
		10/5/2016	26.85 - 41.55	221.75	25.93	195.82
		12/18/2019	26.85 - 41.55	221.75	24.82	196.93
		6/29/2018	26.85 - 41.55	221.75	24.55	197.20
		12/17/2018	26.85 - 41.55	221.75	25.59	196.16
		6/4/2019	26.85 - 41.55	221.75	24.85	196.90
		12/18/2019	26.85 - 41.55	221.75	24.82	196.93
		6/25/2020	26.85 - 41.55	221.75	24.17	197.58
		12/1/2020	26.85 - 41.55	221.75	23.95	197.80
		6/1/2021	26.85 - 41.55	221.75	23.63	198.12
		6/9/2022	26.85 - 41.55	221.75	23.27	198.48
		6/7/2023	26.85 - 41.55	221.75	23.59	198.16
		5/23/2024	26.85-41.55	221.75	23.73	198.02
35AWW19	Shallow	10/22/2013	16.89 - 31.39	219.71	30.65	189.06
		1/31/2014	16.89 - 31.39	219.71	30.68	189.03
		5/28/2014	16.89 - 31.39	219.71	30.30	189.41
		10/29/2014	16.89 - 31.39	219.71	30.45	189.26
		1/20/2015	16.89 - 31.39	219.71	30.15	189.56
		4/7/2015	16.89 - 31.39	219.71	29.84	189.87
		7/8/2015	16.89 - 31.39	219.71	29.16	190.55
		10/1/2015	16.89 - 31.39	219.71	29.46	190.25
		4/12/2016	16.89 - 31.39	219.71	28.87	190.84
		10/5/2016	16.89 - 31.39	219.71	28.13	191.58
		9/11/2019	16.89 - 31.39	219.71	25.55	194.16
		12/18/2019	16.89 - 31.39	219.71	25.90	193.81
		3/24/2020	16.89 - 31.39	219.71	26.00	192.34
		9/27/2018	16.89 - 31.39	219.71	27.79	191.92
		12/10/2018	16.89 - 31.39	219.71	27.58	192.13
		3/19/2019	16.89 - 31.39	219.71	27.00	192.71
		6/3/2019	16.89 - 31.39	219.71	26.45	193.26
		9/11/2019	16.89 - 31.39	219.71	25.55	194.16
		12/18/2019	16.89 - 31.39	219.71	25.90	193.81
		3/24/2020	16.89 - 31.39	219.71	26.00	193.71
		6/24/2020	16.89 - 31.39	219.71	24.92	194.79
		12/3/2020	16.89 - 31.39	219.71	24.63	195.08
		6/3/2021	16.89 - 31.39	219.71	23.98	195.73

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
		12/1/2021	16.89 - 31.39	219.71	23.88	195.83
		6/8/2022	16.89 - 31.39	219.71	23.80	195.91
		1/12/2023	16.89 - 31.39	219.71	25.05	194.66
		6/5/2023	16.89 - 31.39	219.71	24.13	195.58
		5/23/2024	16.89-31.39	219.71	24.18	195.53

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW20	Shallow	10/15/2013	20.94 - 35.64	223.05	21.12	201.93
		2/3/2014	20.94 - 35.64	223.05	23.12	199.93
		5/21/2014	20.94 - 35.64	223.05	20.18	202.87
		10/29/2014	20.94 - 35.64	223.05	20.50	202.55
		1/27/2015	20.94 - 35.64	223.05	20.50	202.55
		4/15/2015	20.94 - 35.64	223.05	19.45	203.60
		7/8/2015	20.94 - 35.64	223.05	18.95	204.10
		10/8/2015	20.94 - 35.64	223.05	19.67	203.38
		4/13/2016	20.94 - 35.64	223.05	19.69	203.36
		10/4/2016	20.94 - 35.64	223.05	19.38	203.67
		9/11/2019	20.94 - 35.64	223.05	18.20	204.85
		12/19/2019	20.94 - 35.64	223.05	19.20	203.85
		3/24/2020	20.94 - 35.64	223.05	18.15	204.90
		9/26/2018	20.94 - 35.64	223.05	19.75	203.30
		12/10/2018	20.94 - 35.64	223.05	20.03	203.02
		3/19/2019	20.94 - 35.64	223.05	18.76	204.29
		6/4/2019	20.94 - 35.64	223.05	17.95	205.10
		9/11/2019	20.94 - 35.64	223.05	18.20	204.85
		12/19/2019	20.94 - 35.64	223.05	19.20	203.85
		3/24/2020	20.94 - 35.64	223.05	18.15	204.90
		6/24/2020	20.94 - 35.64	223.05	18.65	204.40
		12/3/2020	20.94 - 35.64	223.05	18.58	204.47
		6/3/2021	20.94 - 35.64	223.05	16.95	206.10
		12/1/2021	20.94 - 35.64	223.05	18.27	204.78
		6/8/2022	20.94 - 35.64	223.05	18.07	204.98
		1/12/2023	20.94 - 35.64	223.05	19.42	203.63
		6/5/2023	20.94 - 35.64	223.05	18.48	204.57
		5/23/2024	20.94-35.64	223.05	18.00	205.05
35AWW21	Shallow	10/16/2013	27.56 - 42.26	219.05	34.36	184.69
		2/4/2014	27.56 - 42.26	219.05	33.55	185.50
		5/22/2014	27.56 - 42.26	219.05	32.40	186.65
		10/21/2014	27.56 - 42.26	219.05	33.90	185.15
		1/23/2015	27.56 - 42.26	219.05	33.06	185.99
		4/8/2015	27.56 - 42.26	219.05	31.73	187.32
		7/9/2015	27.56 - 42.26	219.05	31.11	187.94
		10/6/2015	27.56 - 42.26	219.05	32.74	186.31
		4/13/2016	27.56 - 42.26	219.05	31.44	187.61
		10/4/2016	27.56 - 42.26	219.05	32.10	186.95
		12/20/2019	27.56 - 42.26	219.05	34.18	184.87
		6/29/2018	27.56 - 42.26	219.05	33.77	185.28
		12/13/2018	27.56 - 42.26	219.05	32.90	186.15
		6/10/2019	27.56 - 42.26	219.05	31.38	187.67
		12/20/2019	27.56 - 42.26	219.05	34.18	184.87
		6/29/2020	27.56 - 42.26	219.05	32.28	186.77
		12/7/2020	27.56 - 42.26	219.05	33.33	185.72
		6/1/2021	27.56 - 42.26	219.05	30.70	188.35
		6/9/2022	27.56 - 42.26	219.05	32.70	186.35
		6/6/2023	27.56 - 42.26	219.05	32.48	186.57
		5/29/2024	27.56-42.26	219.05	31.69	187.36

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW22	Shallow	10/22/2013	22.27 - 36.77	219.14	32.13	187.01
		1/31/2014	22.27 - 36.77	219.14	32.08	187.06
		5/28/2014	22.27 - 36.77	219.14	32.00	187.14
		10/29/2014	22.27 - 36.77	219.14	32.45	186.69
		1/20/2015	22.27 - 36.77	219.14	33.32	185.82
		4/8/2015	22.27 - 36.77	219.14	32.09	187.05
		7/9/2015	22.27 - 36.77	219.14	31.72	187.42
		10/5/2015	22.27 - 36.77	219.14	32.30	186.84
		4/12/2016	22.27 - 36.77	219.14	32.00	187.14
		10/5/2016	22.27 - 36.77	219.14	31.91	187.23
		12/18/2019	22.27 - 36.77	219.14	32.87	186.27
		7/18/2018	22.27 - 36.77	219.14	33.80	185.34
		12/14/2018	22.27 - 36.77	219.14	32.72	186.42
		6/10/2019	22.27 - 36.77	219.14	32.40	186.74
		12/18/2019	22.27 - 36.77	219.14	32.87	186.27
		6/24/2020	22.77 - 36.77	219.14	32.20	186.94
		12/7/2020	22.77 - 36.77	219.14	32.27	186.87
		6/2/2021	22.77 - 36.77	219.14	32.10	187.04
		6/6/2022	22.77 - 36.77	219.14	32.08	187.06
		6/5/2023	22.77 - 36.77	219.14	32.79	186.35
		5/29/2024	22.27-36.77	219.14	32.95	186.19
35AWW23	Shallow	7/17/2018	28.2 - 43.2	223.07	23.55	199.52
		12/10/2018	28.2 - 43.2	223.07	20.71	202.36
		6/3/2019	28.2 - 43.2	223.07	23.97	199.10
		9/11/2019	28.2 - 43.2	223.07	22.00	201.07
		12/18/2019	28.2 - 43.2	223.07	23.45	199.62
		3/24/2020	28.2 - 43.2	223.07	22.60	200.47
		6/24/2020	28.2 - 43.2	223.07	22.44	200.63
		12/3/2020	28.2 - 43.2	223.07	22.55	200.52
		6/3/2021	28.2 - 43.2	223.07	23.05	200.02
		12/1/2021	28.2 - 43.2	223.07	22.22	200.85
		6/8/2022	28.2 - 43.2	223.07	22.53	200.54
		1/12/2023	28.2 - 43.2	223.07	23.41	199.66
		6/5/2023	28.2 - 43.2	223.07	22.27	200.80
		5/23/2024	28.2-43.2	223.07	22.23	200.84
35AWW24	Shallow	7/17/2018	25.10 - 35.10	219.04	26.60	192.44
		9/27/2018	25.10 - 35.10	219.04	20.11	198.93
		12/10/2018	25.10 - 35.10	219.04	26.75	192.29
		3/19/2019	25.10 - 35.10	219.04	26.06	192.98
		6/3/2019	25.10 - 35.10	219.04	25.47	193.57
		12/19/2019	25.10 - 35.10	219.04	25.09	193.95
		6/25/2020	25.10 - 35.10	219.04	24.25	194.79
		12/3/2020	25.10 - 35.10	219.04	23.85	195.19
		6/1/2021	25.10 - 35.10	219.04	23.15	195.89
		12/2/2021	25.10 - 35.10	219.04	23.15	195.89
		6/8/2022	25.10 - 35.10	219.04	23.27	195.77
		1/13/2023	25.10 - 35.10	219.04	24.40	194.64
		6/7/2023	25.10 - 35.10	219.04	23.27	195.77
		5/29/2024	25.10-35.10	219.04	23.27	195.77
35AWW25	Shallow	1/13/2023	16.14 - 26.14	220.54	DRY	NC
		6/6/2023	16.14 - 26.14	220.54	DRY	NC
		5/30/2024	13.00-23.00	220.54	21.20	199.34
35AWW26	Shallow	1/13/2023	23.53 - 33.53	223.97	20.44	203.53
		6/6/2023	23.53 - 33.53	223.97	18.79	205.18
		5/29/2024	20.00-30.00	223.97	19.00	204.97
35AWW27	Shallow	8/2/2023	24.19 - 34.19	218.60	28.50	190.10
LHSMW03	Shallow	10/9/2013	24.82 - 34.82	217.26	DRY	NC
		2/3/2014	24.82 - 34.82	217.26	31.00	186.26
		5/28/2014	24.82 - 34.82	217.26	29.40	187.86
		10/29/2014	24.82 - 34.82	217.26	31.20	186.06
		7/8/2015	24.82 - 34.82	217.26	28.21	189.05
		4/13/2016	24.82 - 34.82	217.26	28.75	188.51
		10/4/2016	24.82 - 34.82	217.26	29.51	187.75
		11/17/2017	24.82 - 34.82	217.26	31.36	185.90

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
LHSMW04	Shallow	10/9/2013	21.11 - 31.11	216.95	DRY	NC
		1/31/2014	21.11 - 31.11	216.95	DRY	NC
		5/20/2014	21.11 - 31.11	216.95	DRY	NC
		10/30/2014	21.11 - 31.11	216.95	DRY	NC
		1/20/2015	21.11 - 31.11	216.95	DRY	NC
		4/7/2015	21.11 - 31.11	216.95	DRY	NC
		7/8/2015	21.11 - 31.11	216.95	DRY	NC
		10/1/2015	21.11 - 31.11	216.95	DRY	NC
		3/28/2016	21.11 - 31.11	216.95	29.72	187.23
		4/12/2016	21.11 - 31.11	216.95	29.65	187.30
		10/4/2016	21.11 - 31.11	216.95	DRY	NC
		12/19/2019	21.11 - 31.11	216.95	DRY	NC
		7/17/2018	21.11 - 31.11	216.95	DRY	NC
		12/11/2018	21.11 - 31.11	216.95	DRY	NC
		6/4/2019	21.11 - 31.11	216.95	DRY	NC
		12/19/2019	21.11 - 31.11	216.95	DRY	NC
		6/24/2020	21.11 - 31.11	216.95	DRY	NC
		12/3/2020	21.11 - 31.11	216.95	DRY	NC
		6/3/2021	21.11 - 31.11	216.95	DRY	NC
		12/2/2021	21.11 - 31.11	216.95	DRY	NC
		6/9/2022	21.11 - 31.11	216.95	DRY	NC
		1/12/2023	21.11 - 31.11	216.95	DRY	NC
		6/6/2023	21.11 - 31.11	216.95	DRY	NC
		5/28/2024	21.11-31.11	216.95	DRY	NC
LHSMW05	Shallow	10/9/2013	14.32 - 24.32	217.59	DRY	NC
		1/31/2014	14.32 - 24.32	217.59	DRY	NC
		5/20/2014	14.32 - 24.32	217.59	DRY	NC
		10/30/2014	14.32 - 24.32	217.59	DRY	NC
		1/20/2015	14.32 - 24.32	217.59	DRY	NC
		4/7/2015	14.32 - 24.32	217.59	DRY	NC
		7/10/2015	14.32 - 24.32	217.59	DRY	NC
		10/1/2015	14.32 - 24.32	217.59	DRY	NC
		4/12/2016	14.32 - 24.32	217.59	DRY	NC
		10/4/2016	14.32 - 24.32	217.59	DRY	NC
LHSMW06	Shallow	10/16/2013	13.32 - 23.32	223.18	20.97	202.21
		1/30/2014	13.32 - 23.32	223.18	20.50	202.68
		5/28/2014	13.32 - 23.32	223.18	19.30	203.88
		10/29/2014	13.32 - 23.32	223.18	19.81	203.37
		1/20/2015	13.32 - 23.32	223.18	19.92	203.26
		4/7/2015	13.32 - 23.32	223.18	18.92	204.26
		7/8/2015	13.32 - 23.32	223.18	18.21	204.97
		10/1/2015	13.32 - 23.32	223.18	18.98	204.20
		4/12/2016	13.32 - 23.32	223.18	19.11	204.07
		10/5/2016	13.32 - 23.32	223.18	18.91	204.27
		11/16/2017	13.32 - 23.32	223.18	19.31	203.87
		7/2/2018	13.32 - 23.32	223.18	18.80	204.38
		12/13/2018	13.32 - 23.32	223.18	19.18	204.00
		6/7/2019	13.32 - 23.32	223.18	16.93	206.25
		12/20/2019	13.32 - 23.32	223.18	18.72	204.46
		6/25/2020	13.32 - 23.32	223.18	17.28	205.90
		12/3/2020	13.32 - 23.32	223.18	18.53	204.65
		6/3/2021	13.32 - 23.32	223.18	16.07	207.11
		12/2/2021	13.32 - 23.32	223.18	18.17	205.01
		6/9/2022	13.32 - 23.32	223.18	17.77	205.41
		1/13/2023	13.32 - 23.32	223.18	19.37	203.81
		6/7/2023	13.32 - 23.32	223.18	17.72	205.46
		5/28/2024	13.3223.32	223.18	17.66	205.52

Table 1
Groundwater Elevation Data
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
LHSMW07	Shallow	10/15/2013	19.73 - 29.73	221.27	20.55	200.72
		1/30/2014	19.73 - 29.73	221.27	20.25	201.02
		5/22/2014	19.73 - 29.73	221.27	19.55	201.72
		10/29/2014	19.73 - 29.73	221.27	19.63	201.64
		1/28/2015	19.73 - 29.73	221.27	20.53	200.74
		4/15/2015	19.73 - 29.73	221.27	18.75	202.52
		7/7/2015	19.73 - 29.73	221.27	18.27	203.00
		10/8/2015	19.73 - 29.73	221.27	18.94	202.33
		4/14/2016	19.73 - 29.73	221.27	18.97	202.30
		10/4/2016	19.73 - 29.73	221.27	18.58	202.69
		9/11/2019	19.73 - 29.73	221.27	17.84	203.43
		12/19/2019	19.73 - 29.73	221.27	18.52	202.75
		3/24/2020	19.73 - 29.73	221.27	17.55	202.52
		9/26/2018	19.73 - 29.73	221.27	19.07	202.20
		12/10/2018	19.73 - 29.73	221.27	19.21	202.06
		3/19/2019	19.73 - 29.73	221.27	18.32	202.95
		6/3/2019	19.73 - 29.73	221.27	17.68	203.59
		9/11/2019	19.73 - 29.73	221.27	17.84	203.43
		12/19/2019	19.73 - 29.73	221.27	18.52	202.75
		3/24/2020	19.73 - 29.73	221.27	17.55	203.72
		6/24/2020	19.73 - 29.73	221.27	17.22	204.05
		12/3/2020	19.73 - 29.73	221.27	17.88	203.39
		6/2/2021	19.73 - 29.73	221.27	16.57	204.70
		12/1/2021	19.73 - 29.73	221.27	17.47	203.80
		6/8/2022	19.73 - 29.73	221.27	17.37	203.90
		1/12/2023	19.73 - 29.73	221.27	18.37	202.90
		6/7/2023	19.73 - 29.73	221.27	17.69	203.58
		5/23/2024	19.73-29.73	221.27	16.85	204.42

Notes:
ft - feet
msl = mean sea level
NA - Not available
NC - Not calculated
NM - Not measured

Table 2. Eastern Plume Semiannual Analytical Data, May 2024
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Location ID: / Sample Date:	Units	MCL/PCL	03WW01_052824 5/28/24	35AWW01_052824 5/28/24	35AWW08_052824 5/28/24	35AWW09_052924 5/29/24	35AWW09_052924_a 5/29/24	35AWW10_052824 5/28/24	35AWW12_052924 5/29/24
Location Description			Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary. Field Duplicate	Site 58 - ESE, inside site boundary.	Site 58 - E, outside site boundary.
Location Depth			Shallow	Intermediate	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS24051959	HS24051959	HS24051959	HS24051959	HS24051959	HS24051959	HS24051959
Volatile Organic Compounds (8260C)									
1,1,1,2-Tetrachloroethane	µg/L	110	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,1,1-Trichloroethane	µg/L	200	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1,2,2-Tetrachloroethane	µg/L	14	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1,2-Trichloroethane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethane	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethene	µg/L	7	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloropropene	µg/L	2.9	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,3-Trichlorobenzene	µg/L	310	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,3-Trichloropropane	µg/L	0.041	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,2,4-Trichlorobenzene	µg/L	70	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dibromoethane	µg/L	0.05	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dichlorobenzene	µg/L	600	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,2-Dichloroethane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dichloropropane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,3,5-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,3-Dichlorobenzene	µg/L	3100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,3-Dichloropropane	µg/L	29	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,4-Dichlorobenzene	µg/L	75	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2,2-Dichloropropane	µg/L	42	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Butanone	µg/L	61000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Hexanone	µg/L	6100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Isopropyltoluene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Methyl-2-pentanone	µg/L	8200	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Acetone	µg/L	92000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Benzene	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromobenzene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Bromochloromethane	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromodichloromethane	µg/L	4.6	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Bromoform	µg/L	36	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromomethane	µg/L	140	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon disulfide	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon tetrachloride	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chlorobenzene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Chloroethane	µg/L	41000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chloroform	µg/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chloromethane	µg/L	220	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
cis-1,2-Dichloroethene	µg/L	70	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**1.5**	<1.0 U	<1.0 U
cis-1,3-Dichloropropene	µg/L	5.3	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Dibromochloromethane	µg/L	34	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Dibromomethane	µg/L	380	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Dichlorodifluoromethane	µg/L	20000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Ethylbenzene	µg/L	700	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U

Table 2. Eastern Plume Semiannual Analytical Data, May 2024
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Location ID: / Sample Date:	Units	MCL/PCL	03WW01_052824 5/28/24	35AWW01_052824 5/28/24	35AWW08_052824 5/28/24	35AWW09_052924 5/29/24	35AWW09_052924_a 5/29/24	35AWW10_052824 5/28/24	35AWW12_052924 5/29/24
Location Description			Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary. Field Duplicate	Site 58 - ESE, inside site boundary.	Site 58 - E, outside site boundary.
Location Depth			Shallow	Intermediate	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS24051959	HS24051959	HS24051959	HS24051959	HS24051959	HS24051959	HS24051959
Volatile Organic Compounds (8260C)									
Hexachlorobutadiene	µg/L	20	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Isopropylbenzene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
m,p-Xylene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Methylene chloride	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
n-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
n-Propylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Naphthalene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
o-Xylene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
sec-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Styrene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
tert-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Tetrachloroethene	µg/L	5	<1.0 U	<1.0 U	<1.0 U	**380**	**430**	<1.0 U	<1.0 U
Toluene	µg/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
trans-1,2-Dichloroethene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
trans-1,3-Dichloropropene	µg/L	29	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Trichloroethene	µg/L	5	**7.8**	<1.0 U	**2.8**	**180**	**190**	<1.0 U	<1.0 U
Trichlorofluoromethane	µg/L	31000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Vinyl chloride	µg/L	2	**7.6**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Volatile Fatty Acids (HPLC-METACIDS)									
Acetic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA
Butyric Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA
Lactic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	51	NA	NA	NA	NA	NA	NA	NA
Pyruvic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA
ICP-MS Metals (6020A)									
Arsenic	mg/L	0.01	**0.00894**	**0.000709 J**	**0.0266**	**0.000521 J**	**0.000535 J**	NA	NA
Anions (9056A)									
Chloride	mg/L	NV	NA	NA	NA	NA	NA	NA	NA
Nitrate	mg/L	10	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	NV	NA	NA	NA	NA	NA	NA	NA
Field Parameters		**EISB evaluation criteria**							
Temperature	^{0}C	NV	21.40	19.36	19.56	20.25		20.78	20.21
pH	s.u.	5-9	6.34	7.49	6.56	6.52		5.43	6.15
DO	mg/L	< 0.5	0.16	0.37	0.11	1.21		1.43	0.77
ORP	mV	< 50.0	-79	-29	-95	144		264	206

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.
Green highlighting indicates field parameters outside EISB evaluation criteria
MCL/PCL - Maximum Contaminant Level/Protective Concentration Limit
NA - Not Analyzed
µg/L - micrograms per liter
ID - Identification
DO - Dissolved Oxygen
Bold values - Detected result

mg/L - milligrams per liter
J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain analyte-specific quality control criteria.
U - Undetected: The analyte was analyzed for, but not detected.
UJ - Estimated nondetects
NV - No Value
°C - Celsius
s.u. - standard units
mV - millivolts

Table 2. Eastern Plume Semiannual Analytical Data, May 2024
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Location ID: / Sample Date:	Units	MCL/PCL	35AWW13_052824 5/28/24	35AWW14_053024 5/30/24	35AWW16_052824 5/28/24	35AWW17_053024 5/30/24	35AWW21_052924 5/29/24	35AWW22_052924 5/29/24
Location Description			Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SW, outside site boundary, near Building 744-A.	Site 58 - SW, outside site boundary.	Site 58 - ESE, outside site boundary, beside Building 725.	Site 58 - ENE, outside site boundary.
Location Depth			Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS24051959	HS24052045	HS24051959	HS24052045	HS24051959	HS24051959
Volatile Organic Compounds (8260C)								
1,1,1,2-Tetrachloroethane	µg/L	110	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,1,1-Trichloroethane	µg/L	200	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1,2,2-Tetrachloroethane	µg/L	14	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1,2-Trichloroethane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethane	µg/L	10000	<1.0 U	**31 J**	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethene	µg/L	7	<1.0 U	**34 J**	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloropropene	µg/L	2.9	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,3-Trichlorobenzene	µg/L	310	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,3-Trichloropropane	µg/L	0.041	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trichlorobenzene	µg/L	70	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dibromoethane	µg/L	0.05	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,2-Dichlorobenzene	µg/L	600	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dichloroethane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dichloropropane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,3,5-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,3-Dichlorobenzene	µg/L	3100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,3-Dichloropropane	µg/L	29	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
1,4-Dichlorobenzene	µg/L	75	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2,2-Dichloropropane	µg/L	42	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Butanone	µg/L	61000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Hexanone	µg/L	6100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Isopropyltoluene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Methyl-2-pentanone	µg/L	8200	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Acetone	µg/L	92000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Benzene	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromobenzene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromochloromethane	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Bromodichloromethane	µg/L	4.6	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Bromoform	µg/L	36	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromomethane	µg/L	140	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon disulfide	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon tetrachloride	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chlorobenzene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Chloroethane	µg/L	41000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chloroform	µg/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Chloromethane	µg/L	220	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
cis-1,2-Dichloroethene	µg/L	70	<1.0 U	**14 J**	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
cis-1,3-Dichloropropene	µg/L	5.3	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Dibromochloromethane	µg/L	34	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Dibromomethane	µg/L	380	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Dichlorodifluoromethane	µg/L	20000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Ethylbenzene	µg/L	700	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U

Table 2. Eastern Plume Semiannual Analytical Data, May 2024
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Location ID: / Sample Date:	Units	MCL/PCL	35AWW13_052824 5/28/24	35AWW14_053024 5/30/24	35AWW16_052824 5/28/24	35AWW17_053024 5/30/24	35AWW21_052924 5/29/24	35AWW22_052924 5/29/24
Location Description			Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SW, outside site boundary, near Building 744-A.	Site 58 - SW, outside site boundary.	Site 58 - ESE, outside site boundary, beside Building 725.	Site 58 - ENE, outside site boundary.
Location Depth			Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS24051959	HS24052045	HS24051959	HS24052045	HS24051959	HS24051959
Volatile Organic Compounds (8260C)								
Hexachlorobutadiene	µg/L	20	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Isopropylbenzene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
m,p-Xylene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Methylene chloride	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
n-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
n-Propylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Naphthalene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
o-Xylene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
sec-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Styrene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
tert-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Tetrachloroethene	µg/L	5	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Toluene	µg/L	1000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
trans-1,2-Dichloroethene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
trans-1,3-Dichloropropene	µg/L	29	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Trichloroethene	µg/L	5	<1.0 U	**28 J**	<1.0 U	<1.0 U	<1.0 UJ	<1.0 U
Trichlorofluoromethane	µg/L	31000	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Vinyl chloride	µg/L	2	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Volatile Fatty Acids (HPLC-METACIDS)								
Acetic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA
Butyric Acid	mg/L	NV	NA	NA	NA	NA	NA	NA
Lactic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	51	NA	NA	NA	NA	NA	NA
Pyruvic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA
ICP-MS Metals (6020A)								
Arsenic	mg/L	0.01	NA	NA	NA	NA	NA	NA
Anions (9056A)								
Chloride	mg/L	NV	NA	NA	NA	NA	NA	NA
Nitrate	mg/L	10	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	NV	NA	NA	NA	NA	NA	NA
Field Parameters		**EISB evaluation criteria**						
Temperature	^{0}C	NV	20.73	19.79	19.94	18.48	19.94	20.89
pH	s.u.	5-9	6.55	5.98	6.58	6.62	5.48	6.31
DO	mg/L	< 0.5	0.18	NA	0.06	2.14	1.41	1.62
ORP	mV	< 50.0	137	32	37	30	239	183

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Green highlighting indicates field parameters outside EISB evaluation criteria

MCL/PCL - Maximum Contaminant Level/Protective Concentration Limit

NA - Not Analyzed

µg/L - micrograms per liter

ID - Identification

DO - Dissolved Oxygen

Bold values - Detected result

mg/L - milligrams per liter

J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain analyte-specific quality c

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

NV - No Value

°C - Celsius

s.u. - standard units

mV - millivolts

EISB - Enhanced In-Situ Bioremediation

Table 3. Western Plume Analytical Data, May 2024
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Location ID: / Sample Date:	Units	MCL/PCL	35AWW04_053024 5/30/24	35AWW05_052924 5/29/24	35AWW06_052324 5/23/24	35AWW11_052324 5/23/24	35AWW15_052924 5/29/24
Location Description			Site 58 - inside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - W, inside site boundary.
Location Depth			Shallow	Intermediate	Shallow	Shallow	Shallow
Lab Package			HS24052045	HS24051959	HS24051535	HS24051535	HS24051959
Volatile Organic Compounds (8260C)							
1,1,1,2-Tetrachloroethane	µg/L	110	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,1,1-Trichloroethane	µg/L	200	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,1,2,2-Tetrachloroethane++	µg/L	14	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,1,2-Trichloroethane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,1-Dichloroethane	µg/L	10000	<1.0 U	<1.0 U	**0.53 J**	**1.2**	<1.0 U
1,1-Dichloroethene	µg/L	7	<1.0 U	<1.0 U	**0.95 J**	**2.8**	<1.0 U
1,1-Dichloropropene	µg/L	2.9	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2,3-Trichlorobenzene	µg/L	310	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2,3-Trichloropropane	µg/L	0.041	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2,4-Trichlorobenzene	µg/L	70	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2,4-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2-Dibromoethane	µg/L	0.05	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2-Dichlorobenzene	µg/L	600	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2-Dichloroethane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,2-Dichloropropane	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,3,5-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,3-Dichlorobenzene	µg/L	3100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,3-Dichloropropane	µg/L	29	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
1,4-Dichlorobenzene	µg/L	75	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
2,2-Dichloropropane	µg/L	42	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
2-Butanone	µg/L	61000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
2-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
2-Hexanone	µg/L	6100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
4-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
4-Isopropyltoluene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
4-Methyl-2-pentanone	µg/L	8200	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Acetone	µg/L	92000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Benzene	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Bromobenzene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Bromochloromethane	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Bromodichloromethane	µg/L	4.6	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Bromoform	µg/L	36	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Bromomethane	µg/L	140	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Carbon disulfide	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Carbon tetrachloride	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Chlorobenzene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Chloroethane	µg/L	41000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Chloroform	µg/L	1000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Chloromethane	µg/L	220	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
cis-1,2-Dichloroethene	µg/L	70	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
cis-1,3-Dichloropropene	µg/L	5.3	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Dibromochloromethane	µg/L	34	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Dibromomethane	µg/L	380	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Dichlorodifluoromethane	µg/L	20000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Ethylbenzene	µg/L	700	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Hexachlorobutadiene	µg/L	20	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Isopropylbenzene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U

Location ID: **Sample Date:**	**Units**	**MCL/PCL**	**35AWW04_053024** **5/30/24**	**35AWW05_052924** **5/29/24**	**35AWW06_052324** **5/23/24**	**35AWW11_052324** **5/23/24**	**35AWW15_052924** **5/29/24**
Location Description			Site 58 - inside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - W, inside site boundary.
Location Depth			Shallow	Intermediate	Shallow	Shallow	Shallow
Lab Package			HS24052045	HS24051959	HS24051535	HS24051535	HS24051959
Volatile Organic Compounds (8260C)							
m,p-Xylene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Methylene chloride	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
n-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
n-Propylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Naphthalene	µg/L	2000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
o-Xylene	µg/L	10000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
sec-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Styrene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
tert-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Tetrachloroethene	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Toluene	µg/L	1000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
trans-1,2-Dichloroethene	µg/L	100	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
trans-1,3-Dichloropropene	µg/L	29	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Trichloroethene	µg/L	5	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Trichlorofluoromethane	µg/L	31000	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Vinyl chloride		2	<1.0 U	<1.0 U	<1.0 U	< 1.0 U	<1.0 U
Total Organic Carbon (415.1/SM5310C)							
Total Organic Carbon	mg/L	NV	NA	NA	**13**	**30.8**	NA
Volatile Fatty Acids (HPLC-METACIDS)							
Acetic Acid	mg/L	NV	NA	NA	< 0.56 U	< 0.56 U	NA
Butyric Acid	mg/L	NV	NA	NA	< 5.0 U	< 5.0 U	NA
Lactic Acid	mg/L	NV	NA	NA	< 0.41 U	< 0.41 U	NA
Propionic Acid	mg/L	51	NA	NA	< 1.1 U	< 1.1 U	NA
Pyruvic Acid	mg/L	NV	NA	NA	< 0.19 U	< 0.19 U	NA
ICP-MS Metals (6020A)							
Arsenic	mg/L	0.01	NA	NA	NA	NA	NA
Anions (9056A)							
Chloride	mg/L	NV	NA	NA	**846**	**1,890**	NA
Nitrate	mg/L	10	NA	NA	< 0.0500 U	< 0.100 U	NA
Sulfate	mg/L	NV	NA	NA	**1,020**	**486**	NA
Dissolved Gases (RSK-175)							
Carbon Dioxide	µg/L	NV	NA	NA	**59,000**	**810,000**	NA
Ethane	µg/L	NV	NA	NA	< 0.500 U	< 0.500 U	NA
Ethene	µg/L	NV	NA	NA	< 0.500 U	< 0.500 U	NA
Methane	µg/L	NV	NA	NA	**1,830**	**1,630**	NA
Dechlorinating Bacteria							
BAV1 Vinyl Chloride Reductase	cells/mL	NV	NA	NA	< 0.24 U	< 0.25 U	NA
Dehalobacter spp.	cells/mL	NV	NA	NA	**2,900**	**1,700**	NA
Dehalococoides	cells/mL	NV	NA	NA	**9.1**	**280**	NA
tceA Reductase	cells/mL	NV	NA	NA	< 0.24 U	< 0.25 U	NA
Vinyl Chloride Reductase	cells/mL	NV	NA	NA	< 0.24 U	**76**	NA
Field Parameters		**EISB evaluation criteria**					
Temperature	^{0}C	NV	20.01	19.67	20.93	21.30	20.70
pH	s.u.	5-9	5.77	7.43	7.52	6.44	7.30
DO	mg/L	< 0.5	NA	0.33	0.03	0.04	1.97
ORP	mV	< 50.0	175	-60	-76	9	-110

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.

Green highlighting indicates field parameters outside EISB evaluation criteria

MCL/PCL - Maximum Contaminant Level/Protective Concentration Limit

NA - Not Analyzed

µg/L - micrograms per liter

M - Manual integrated compound

D - The reported value is from a dilution

ID - Identification

Bold Values - Detected result

Table 3. Western Plume Analytical Data, May 2024
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Location ID: / Sample Date:	Units	MCL/PCL	35AWW18_052324 5/23/24	35AWW19_052324 5/23/24	35AWW20_052324 5/23/24	35AWW23_052324 5/23/24	35AWW24_052924 5/29/24	35AWW25_053024 5/30/24	35AWW26_052924 5/29/24	LHSMW06_052824 5/28/24	LHSMW06_052824_a 5/28/24	LHSMW07_052324 5/23/24
Location Description			Site 58 - SSW, outside site boundary.	Site 58 - S, outside site boundary.	Site 58 - SW, inside site boundary.	Site 58 - SW, outside site boundary.	Downgradient Western Plume well	Downgradient Western Plume well	Downgradient Western Plume well	Site 58 - SW, inside site boundary, beside Building 715.	Site 58 - SW, inside site boundary, beside Building 715. Field Duplicate	Site 58 - SW, outside site boundary.
Location Depth			Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS24051535	HS24051535	HS24051535	HS24051535	HS24051959	HS24052045	HS24051959	HS24051959	HS24051959	HS24051535
Volatile Organic Compounds (8260C)												
1,1,1,2-Tetrachloroethane	µg/L	110	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1,1-Trichloroethane	µg/L	200	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1,2,2-Tetrachloroethane++	µg/L	14	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,1,2-Trichloroethane	µg/L	5	<1.0 U	<1.0 U	**56**	<1.0 U	<1.0 U	<1.0 U	**0.63 J**	<1.0 U	<1.0 U	<1.0 U
1,1-Dichloroethane	µg/L	10000	**4.9**	**0.88 J**	**390**	**0.69 J**	<1.0 U	<1.0 U	**84**	**8.8**	**8.7**	**14**
1,1-Dichloroethene	µg/L	7	**22**	**3.8**	**1,100**	<1.0 U	<1.0 U	<1.0 U	**180**	**12**	**12**	**99**
1,1-Dichloropropene	µg/L	2.9	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,3-Trichlorobenzene	µg/L	310	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,3-Trichloropropane	µg/L	0.041	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trichlorobenzene	µg/L	70	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2,4-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dibromoethane	µg/L	0.05	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dichlorobenzene	µg/L	600	<1.0 U	<1.0 U	**26**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dichloroethane	µg/L	5	<1.0 U	**1.7**	**15**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,2-Dichloropropane	µg/L	5	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,3,5-Trimethylbenzene	µg/L	5100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,3-Dichlorobenzene	µg/L	3100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,3-Dichloropropane	µg/L	29	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
1,4-Dichlorobenzene	µg/L	75	<1.0 U	<1.0 U	**4.4 J**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2,2-Dichloropropane	µg/L	42	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Butanone	µg/L	61000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
2-Hexanone	µg/L	6100	<1.0 U	<1.0 U	**19**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Chlorotoluene	µg/L	2000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Isopropyltoluene	µg/L	10000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
4-Methyl-2-pentanone	µg/L	8200	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Acetone	µg/L	92000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Benzene	µg/L	5	<1.0 U	<1.0 U	**6**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromobenzene	µg/L	2000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromochloromethane	µg/L	4100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromodichloromethane	µg/L	4.6	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromoform	µg/L	36	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Bromomethane	µg/L	140	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon disulfide	µg/L	10000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Carbon tetrachloride	µg/L	5	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chlorobenzene	µg/L	100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chloroethane	µg/L	41000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chloroform	µg/L	1000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Chloromethane	µg/L	220	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
cis-1,2-Dichloroethene	µg/L	70	<1.0 U	<1.0 U	**73**	**0.69 J**	<1.0 U	<1.0 U	**7.1**	**160**	**160**	**1.1**
cis-1,3-Dichloropropene	µg/L	5.3	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Dibromochloromethane	µg/L	34	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Dibromomethane	µg/L	380	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Dichlorodifluoromethane	µg/L	20000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Ethylbenzene	µg/L	700	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Hexachlorobutadiene	µg/L	20	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Isopropylbenzene	µg/L	10000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U

Table 3. Western Plume Analytical Data, May 2024
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

01335667

Location ID: / Sample Date:	Units	MCL/PCL	35AWW18_052324 5/23/24	35AWW19_052324 5/23/24	35AWW20_052324 5/23/24	35AWW23_052324 5/23/24	35AWW24_052924 5/29/24	35AWW25_053024 5/30/24	35AWW26_052924 5/29/24	LHSMW06_052824 5/28/24	LHSMW06_052824_a 5/28/24	LHSMW07_052324 5/23/24
Location Description			Site 58 - SSW, outside site boundary.	Site 58 - S, outside site boundary.	Site 58 - SW, inside site boundary.	Site 58 - SW, outside site boundary.	Downgradient Western Plume well	Downgradient Western Plume well	Downgradient Western Plume well	Site 58 - SW, inside site boundary, beside Building 715.	Site 58 - SW, inside site boundary, beside Building 715. Field Duplicate	Site 58 - SW, outside site boundary.
Location Depth			Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS24051535	HS24051535	HS24051535	HS24051535	HS24051959	HS24052045	HS24051959	HS24051959	HS24051959	HS24051535
Volatile Organic Compounds (8260C)												
m,p-Xylene	µg/L	10000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Methylene chloride	µg/L	5	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
n-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
n-Propylbenzene	µg/L	4100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Naphthalene	µg/L	2000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
o-Xylene	µg/L	10000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
sec-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Styrene	µg/L	100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
tert-Butylbenzene	µg/L	4100	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Tetrachloroethene	µg/L	5	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**2.6**	**2.6**	<1.0 U
Toluene	µg/L	1000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
trans-1,2-Dichloroethene	µg/L	100	<1.0 U	<1.0 U	**4.8 J**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**2.2**	**2.3**	<1.0 U
trans-1,3-Dichloropropene	µg/L	29	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Trichloroethene	µg/L	5	<1.0 U	<1.0 U	**130**	<1.0 U	<1.0 U	<1.0 U	<1.0 U	**19**	**19**	**2**
Trichlorofluoromethane	µg/L	31000	<1.0 U	<1.0 U	< 5.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U
Vinyl chloride		2	<1.0 U	<1.0 U	**480**	<1.0 U	<1.0 U	<1.0 U	**15**	<1.0 U	<1.0 U	**47**
Total Organic Carbon (415.1/SM5310C)												
Total Organic Carbon	mg/L	NV	NA	**9.02 J**	**40.3**	**37**	NA	NA	NA	NA	NA	**12.4**
Volatile Fatty Acids (HPLC-METACIDS)												
Acetic Acid	mg/L	NV	NA	< 0.56 U	< 0.56 U	< 0.56 U	NA	NA	NA	NA	NA	**0.81 J**
Butyric Acid	mg/L	NV	NA	< 5.0 U	< 5.0 U	< 5.0 U	NA	NA	NA	NA	NA	< 5.0 U
Lactic Acid	mg/L	NV	NA	< 0.41 U	< 0.41 U	< 0.41 U	NA	NA	NA	NA	NA	< 0.41 U
Propionic Acid	mg/L	51	NA	< 1.1 U	< 1.1 U	< 1.1 U	NA	NA	NA	NA	NA	< 1.1 U
Pyruvic Acid	mg/L	NV	NA	< 0.19 U	< 0.19 U	< 0.19 U	NA	NA	NA	NA	NA	< 0.19 U
ICP-MS Metals (6020A)												
Arsenic	mg/L	0.01	NA	NA	**0.00275 J**	NA	NA	NA	NA	< 0.00125 U	< 0.00125 U	NA
Anions (9056A)												
Chloride	mg/L	NV	NA	**391**	**765**	**656**	NA	NA	NA	NA	NA	**2,110**
Nitrate	mg/L	10	NA	< 0.0500 U	< 0.0500 U	< 0.0500 U	NA	NA	NA	NA	NA	< 0.100 U
Sulfate	mg/L	NV	NA	**436**	**1,400**	**20.3**	NA	NA	NA	NA	NA	**3,520**
Dissolved Gases (RSK-175)												
Carbon Dioxide	µg/L	NV	NA	**250,000**	**800,000**	**230,000**	NA	NA	NA	NA	NA	**140,000**
Ethane	µg/L	NV	NA	**0.691 J**	< 0.500 U	< 0.500 U	NA	NA	NA	NA	NA	**9.8**
Ethene	µg/L	NV	NA	< 0.500 U	**6.89**	< 0.500 U	NA	NA	NA	NA	NA	**15.5**
Methane	µg/L	NV	NA	**1.15**	**473**	**4,150**	NA	NA	NA	NA	NA	**1,490**
Dechlorinating Bacteria												
BAV1 Vinyl Chloride Reductase	cells/mL	NV	NA	< 0.23 U	**660**	**1.2**	NA	NA	NA	NA	NA	< 0.25 U
Dehalobacter spp.	cells/mL	NV	NA	**5,500**	**900**	**1,200**	NA	NA	NA	NA	NA	**9200**
Dehalococoides	cells/mL	NV	NA	**4**	**3,600**	**61**	NA	NA	NA	NA	NA	**610**
tceA Reductase	cells/mL	NV	NA	< 0.23 U	< 0.23 U	**2.6**	NA	NA	NA	NA	NA	**0.43**
Vinyl Chloride Reductase	cells/mL	NV	NA	< 0.23 U	**2.1**	**48**	NA	NA	NA	NA	NA	**230**
Field Parameters		**EISB evaluation criteria**										
Temperature	°C	NV	21.10	19.43	22.07	22.00	19.11	20.17	21.65	18.33		19.86
pH	s.u.	5-9	6.62	5.97	6.56	7.07	4.72	6.03	6.77	6.48		6.90
DO	mg/L	< 0.5	0.68	0.10	0.09	1.85	0.38	NA	0.52	0.34		0.02
ORP	mV	< 50.0	126	138	38	-106	256	129	64	186		75

Notes:

Blue Highlighting Indicates concentrations above the MCL/PCL.
Green highlighting indicates field parameters outside EISB evaluation criteria
MCL/PCL - Maximum Contaminant Level/Protective Concentration Limit
NA - Not Analyzed
µg/L - micrograms per liter
M - Manual integrated compound
D - The reported value is from a dilution
ID - Identification
Bold Values - Detected result

mg/L - milligrams per liter
J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain analyte-specific quality control criteria.
U - Undetected: The analyte was analyzed for, but not detected.
NV - No Value
ORP - Oxidation-Reduction Potential
°C - Celsius
s.u. - standard units
mV - millivolts
EISB - Enhanced In-Situ Bioremediation

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	03WW01-11/24/2008		03WW01-5/9/2011		03WW01-082013 8/20/2013		03WW01-101013 10/10/2013		03WW01-12914 1/29/2014		03WW01-052114 5/21/2014		03WW01-102814 10/28/2014		03WW01-012115 1/21/2015		03WW01-041515 4/15/2015		03WW01-070815 7/8/2015		03WW01-100815 10/8/2015	
1,1-DICHLOROETHENE	µg/L	7	<20	U	<2.5	U	<2	U	<5	U	<10	U	<10	U	<100	U	<100	U	<50	U	<100	U	<100	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<20	U	1.1		0.978		<2.5	U	<5	U	3.3		<50	U	<50	U	21.4		<50	U	<50	U
TETRACHLOROETHENE	µg/L	5	2,570		418		368		172		172		154		48.6		32.8		15.9		31.4		36.4	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<20	U	<2.5	U	<1	U	<2.5	U	<5	U	<5	U	<50	U	<50	U	<25	U	<50	U	<50	U
TRICHLOROETHENE	µg/L	5	196		69.1		94.8		42.1		58.4		71.2		223		216		131		65.6		51.8	
VINYL CHLORIDE	µg/L	2	<20	U	<2.5	U	<1	U	<2.5	U	<5	U	<5	U	<50	U	<50	U	<25	U	<50	U	<50	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCL.
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	03WW01-041316 4/13/2016		03WW01-100416 10/4/2016		03WW01-111517 11/15/2017		03WW01-071818 7/18/2018		03WW01_121218 12/12/2018		03WW01_060419 6/4/2019		03WW01_121819 12/18/2019		03WW01_062320 6/23/2020		03WW01_120120 12/1/20		03WW01_060221 6/02/21	
1,1-DICHLOROETHENE	µg/L	7	<25	U	<10	U	<2.5	U	<0.5	U	<0.5	U	<2.5	U	<5.0	U	< 2.5	U	< 5.0	U	< 5.0	U
CIS-1,2-DICHLOROETHENE	µg/L	70	117		<5	U	<2.5	U	5.3		22		41		14		17		7.2	J	11	
TETRACHLOROETHENE	µg/L	5	6.49		<5	U	<2.5	U	<0.5	U	15		3.2		<5.0	U	4.5	J	< 5.0	U	11	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<12.5	U	<5	U	<2.5	U	<0.5	U	<0.5	U	<2.5	U	<5.0	U	< 2.5	U	< 5.0	U	< 5.0	U
TRICHLOROETHENE	µg/L	5	<12.5	U	<5	U	<2.5	U	<0.5	U	5.7		2.9		<5.0	U	4.5	J	24		3.0	
VINYL CHLORIDE	µg/L	2	<12.5	U	<5	U	<2.5	U	4.8		7.6		11		5.4	J	7.2		< 5.0	U	1.6	

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	03WW01_060622 6/06/22		03WW01_060623 6/6/23		03WW01_052824 5/28/24		35ASW03-101713 10/17/2013		35ASW03-020314 2/3/2014		35ASW03-052814 5/28/2014		35ASW03-012315 1/23/2015		35ASW03-041015 4/10/2015		35ASW03-041316 4/13/2016		35ASW03_060321 6/03/21		35ASW03_053024 5/30/24		35AWW01-981108 11/8/1998	
1,1-DICHLOROETHENE	µg/L	7	< 0.5	U	< 2.5	U	< 1.0	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	< 1.0	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	7.3		6.1		< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<1	U
TETRACHLOROETHENE	µg/L	5	9.9		4.8	J	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<1	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	0.74	J	< 2.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<1	U
TRICHLOROETHENE	µg/L	5	10		10		7.8	J-	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.259	J	<0.5	U	<0.5	U	< 1.0	U	<1	U
VINYL CHLORIDE	µg/L	2	<0.50	U	3.7	J	7.6		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<1	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW01-981108FD 11/8/1998	35AWW01-040909 9/9/2004	35AWW01-020608 2/6/2008	35AWW01-111908 11/19/2008	35AWW01-101113 10/11/2013	35AWW01-013114 1/31/2014	35AWW01FD-013114 1/31/2014	35AWW01-052914 5/29/2014	35AWW01-103114 10/31/2014	35AWW01-012715 1/27/2015
1,1-DICHLOROETHENE	µg/L	7	<1 U	<5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<1 U	<5 U	<1 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	<1 U	<5 U	<1 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	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW01-041015 4/10/2015		35AWW01FD-041015 4/10/2015		35AWW01-071015 7/10/2015		35AWW01FD-071015 7/10/2015		35AWW01-100615 10/6/2015		35AWW01FD-100615 10/6/2015		35AWW01-041216 4/12/2016		35AWW01FD-041216 4/12/2016		35AWW01-100516 10/5/2016		35WW01-111617 11/16/2017	
1,1-DICHLOROETHENE	µg/L	7	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<0.5	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW01-070218 7/2/2018		35AWW01_121318 12/13/2018		35AWW01_061019 6/10/2019		35AWW01_122019 12/20/2019		35AWW01_062520 6/25/2020		35AWW01_062520-a 6/25/2020		35AWW01_120720 12/7/20		35AWW01_060121 6/01/21		35AWW01_060121-a 6/01/21		35AWW01_060622 6/06/22	
1,1-DICHLOROETHENE	µg/L	7	<0.5	UJ	<0.5	U	<0.5	U	<0.5	UJ	<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	UJ	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<1.0	U	<1.0	U	<1.0	U	<1.0	U	<1.0	U	<1.0	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<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	UJ	<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	UJ	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW01_060622-a 6/06/22		35AWW01_060623 6/6/23		35AWW01_052824 5/28/24		35AWW02-981108 11/8/1998		35AWW02-040910 9/10/2004		35AWW02-112608 11/26/2008		35AWW02-112608-FD 11/26/2008		35AWW02-102213 10/22/2013		35AWW04_053024 5/30/24		35AWW05-040908 9/8/2004		35AWW05-112108 11/21/2008		35AWW05-101613 10/16/2013	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	< 1.0	U	<1	U	<5	U	<1	U	<1	U	<1	U	< 1.0	U	<5	U	0.551	J	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	< 1.0	U	<1	U	<5	U	<1	U	<1	U	<0.5	U	<1.0	U	<5	U	<1	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<1.0	U	<0.5	U	< 1.0	U	<1	U	<5	U	<1	U	<1	U	<0.5	U	< 1.0	U	<5	U	<1	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	< 1.0	U	<1	U	<5	U	<1	U	<1	U	<0.5	U	< 1.0	U	<5	U	<1	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	< 1.0	U	<1	U	<5	U	<1	U	<1	U	<0.5	U	< 1.0	U	<5	U	<1	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	< 1.0	U	<1	U	<5	U	<1	U	<1	U	<0.5	U	< 1.0	U	<5	U	<1	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW05-020114 2/1/2014	35AWW05-052214 5/22/2014	35AWW05FD-052214 5/22/2014	35AWW05-102114 10/21/2014	35AWW05-012315 1/23/2015	35AWW05FD-012315 1/23/2015	35AWW05-040815 4/8/2015	35AWW05-071015 7/10/2015	35AWW05-100515 10/2/2015	35AWW05-041416 4/14/2016
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW05-100516 10/5/2016	35AWW05-111317 11/13/2017	35AWW05-070218 7/2/2018	35AWW05-070218_a 7/2/2018	35AWW05_121218 12/12/2018	35AWW05_061019 6/10/2019	35AWW05_120320 12/3/20	35AWW05_060221 6/02/21	35AWW05_120221 12/2/21	35AWW05_060922 6/09/22
1,1-DICHLOROETHENE	µg/L	7	<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
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
TETRACHLOROETHENE	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
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW05_011323 1/13/23		35AWW05_011323_a 1/13/23		35AWW05_060723 6/7/23		35AWW05_052924 5/29/24		35AWW06-120308 12/3/2008		35AWW06-110509 5/9/2011		35AWW06-101513 10/15/2013		35AWW06-013014 1/30/2014		35AWW06-052114 5/21/2014		35AWW06-102914 10/29/2014		35AWW06-012815 1/28/2015	
1,1-DICHLOROETHENE	µg/L	7	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	57.6		21.3		15.8		14.2		12		16		13.5	
CIS-1,2-DICHLOROETHENE	µg/L	70	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	0.37	J	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	7.19		<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<1	U	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	0.811	J	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<1	U	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW06-041515 4/15/2015		35AWW06-070715 7/7/2015		35AWW06-100715 10/7/2015		35AWW06-041116 4/11/2016		35AWW06-100316 10/3/2016		35AWW06-111417 11/14/2017		35AWW06-71818 7/18/2018		35AWW06_092618 9/26/2018		35AWW06_121118 12/11/2018		35AWW06_031919 03/19/2019	
1,1-DICHLOROETHENE	µg/L	7	4.17		18.6		12.8		13		7.48		3.9		<0.5	UJ	<0.5	U	3.4		<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	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<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	UJ	<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	UJ	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW06_031919_a 03/19/2019		35AWW06_060419 6/4/2019		35AWW06_091119 9/11/2019		35AWW06_091119_a 9/11/2019		35AWW06_121919 12/19/2019		35AWW06_032420 03/24/2020		35AWW06_062420 6/24/2020		35AWW06_120120 12/1/20		35AWW06_060321 6/03/21		35AWW06_120121 12/1/21	
1,1-DICHLOROETHENE	µg/L	7	1.4		<0.5	U	0.92	J	0.88	J	<0.5	UJ	0.78	J	0.99	J	0.78	J	0.9	J	1.4	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<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	UJ	<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	UJ	<0.5	U	0.51	J	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW06_060822 6/08/22		35AWW06_011223 1/12/23		35AWW06_060523 6/5/23		35AWW06_052324 5/23/24		35AWW07R-101613 10/16/2013		35AWW08-112408 11/24/2008		35AWW08-110509 5/9/2011		35AWW08-082013 8/20/2013		35AWW08-101013 10/10/2013		35AWW08-012914 1/29/2014		35AWW08-052014 5/20/2014	
1,1-DICHLOROETHENE	µg/L	7	1	J	1.0		1.2		0.95	J	<1	U	<100	U	<25	U	<10	U	<10	U	<10	U	<10	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	0.709	J	<100	U	13.4	J	9.35	J	<5	U	55.9		47.2	
TETRACHLOROETHENE	µg/L	5	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	0.586	J	9,590		6,480		1,640		603	J	599		204	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<100	U	<25	U	<5	U	<5	U	<5	U	2.82	J
TRICHLOROETHENE	µg/L	5	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	1.03		675		1,150		544		149	J	895		953	
VINYL CHLORIDE	µg/L	2	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<100	U	<25	U	<5	U	<5	U	<5	U	<5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW08-102714 10/27/2014		35AWW08-012115 1/21/2015		35AWW08-041515 4/15/2015		35AWW08-070815 7/8/2015		35AWW08-100815 10/8/2015		35AWW08-041316 4/13/2016		35AWW08-100416 10/4/2016		35AWW08-111517 11/15/2017		35AWW08-071818 7/18/2018		35AWW08-111517 12/12/2018	
1,1-DICHLOROETHENE	µg/L	7	<50	U	<50	U	<50	U	<100	U	<25	U	<25	U	<10	U	<5	U	<2.5	UJ	<0.5	U
CIS-1,2-DICHLOROETHENE	µg/L	70	38.6	J	27.2	J	30.7	J	73.5	J	79.6		60.9		41.7		38		12	J	8.9	J
TETRACHLOROETHENE	µg/L	5	112		119		110		110		79		80.1		36.9		12		<2.5	UJ	< 5.0	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<25	U	<25	U	<25	U	<50	U	<12.5	U	<12.5	U	<5	U	<5	U	<2.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	653		491		607		746		581		234		235		33		19	J	12	
VINYL CHLORIDE	µg/L	2	<25	U	<25	U	<25	U	<50	U	<12.5	U	14.2	J	7.46	J	<5	U	9.0	J	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW08-071818 6/4/2019		35AWW08_121819 12/18/2019		35AWW08_062320 6/23/2020		35AWW08_120120 12/1/20		35AWW08_060221 6/02/21		35AWW08_060622 6/06/22		35AWW08_060623 6/6/23		35AWW08_052824 5/28/24		35AWW09-082913 8/29/2013		35AWW09-101013 10/10/2013		35AWW09-012914 1/29/2014	
1,1-DICHLOROETHENE	µg/L	7	<2.5	U	< 5.0	U	< 2.5	U	< 5.0	U	< 12	U	< 2.5	U	< 2.5	U	< 1.0	U	<1	U	<1	UJ	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<2.5	U	< 5.0	U	7.3		18		30		< 2.5	U	5.2		< 1.0	U	<0.5	U	<0.5	UJ	0.317	J
TETRACHLOROETHENE	µg/L	5	4.8	J	< 5.0	U	6.7		< 5.0	U	< 25	U	< 5.0	U	< 2.5	U	< 1.0	U	21.9		57.6	J	125	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<2.5	U	< 5.0	U	4.5	J	< 5.0	U	< 12	U	3.9	J	< 2.5	U	< 1.0	U	<0.5	U	<0.5	UJ	<0.5	U
TRICHLOROETHENE	µg/L	5	13		< 5.0	U	17		< 5.0	U	53		< 2.5	U	5.2		2.8	J-	11.9		8.97	J	37.3	
VINYL CHLORIDE	µg/L	2	<2.5	U	< 5.0	U	<2.5	U	6.1	J	24	J	< 2.5	U	2.6	J	2.6	J	<0.5	U	<0.5	UJ	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW09-052014 5/20/2014		35AWW09-102714 10/27/2014		35AWW09-012115 1/21/2015		35AWW09-041415 4/14/2015		35AWW09-070715 7/7/2015		35AWW09-100715 10/7/2015		35AWW09-041216 4/12/2016		35AWW09-100316 10/3/2016		35AWW09-111517 11/15/2017		35AWW09-071618 7/12/2018	
1,1-DICHLOROETHENE	µg/L	7	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<0.5	U	2.7	
CIS-1,2-DICHLOROETHENE	µg/L	70	0.502	J	0.703	J	0.486	J	0.483	J	0.622	J	0.717	J	0.515	J	0.437	J	0.78	J	0.94	J
TETRACHLOROETHENE	µg/L	5	128		254		183		155		194		283		172		173		450		130	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	41.7		93		64.3		45		59.5		81.3		55.7		48.2		150		38	
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW09_121118 12/11/2018		35AWW09_060319 6/3/2019		35AWW09_121819 12/18/2019		35AWW09_062320 6/23/2020		35AWW09_120720 12/7/20		35AWW09_060221 6/02/21		35AWW09_060221-a 6/02/21		35AWW09_060622 6/06/22		35AWW09_060623 6/6/23		35AWW09_060623_a 6/6/23		35AWW09_052924 5/29/24		35AWW09_05292 4A 5/29/24	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 5.0	U	< 5.0	U	< 5.0	U	< 5.0	U		U	<0.5	U	< 1.0	U	< 1.0	U
CIS-1,2-DICHLOROETHENE	µg/L	70	0.94	J	<0.5	U	1.1		1.1		1.1		0.88	J	0.89	J	1.1		1.3		1.6		< 1.0	U	< 1.0	U
TETRACHLOROETHENE	µg/L	5	150		130		500		440		370		350		310		380		450		460		380		430	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	< 1.0	U
TRICHLOROETHENE	µg/L	5	150		38		160		140		140		130	J	130	J	140		180		180		180		190	
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	< 1.0	U	< 1.0	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW10-082913 8/29/2013	35AWW10-101013 10/10/2013	35AWW10-012914 1/29/2014	35AWW10-052014 5/20/2014	35AWW10-102814 10/28/2014	35AWW10-012715 1/27/2015	35AWW10-041415 4/14/2015	35AWW10-070715 7/7/2015	35AWW10-100715 10/7/2015	35AWW10-041316 4/13/2016
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	0.401 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW10-100316 10/3/2016		35AWW10-111517 11/15/2017		35AWW10-071218 07/12/2018		35AWW10_121218 12/12/18		35AWW10_121218_a 12/12/2018		35AWW10_060419 6/4/2019		35AWW10_060419_a 6/4/2019		35AWW10_121919 12/19/2019		35AWW10_121919-a 12/19/2019		35AWW10_062920 6/29/2020	
1,1-DICHLOROETHENE	µg/L	7	<1	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	UJ	<0.5	U
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	UJ	<0.5	UJ	<0.5	U
TETRACHLOROETHENE	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	UJ	<0.5	UJ	<1.0	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	UJ	<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	UJ	<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	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	UJ	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW10_12072012/7/20		35AWW10_12072-a12/7/20		35AWW10_06012116/01/21		35AWW10_060622 6/06/22		35AWW10_060623 6/6/23		35AWW10_052824 5/28/24		35AWW11-101513 10/15/2013		35AWW11-020314 2/3/2014		35AWW11-052114 5/21/2014		35AWW11-102914 10/29/2014		35AWW11-012715 1/27/2015	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	7.7		10.1		11.6		21.9		12.5	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<1.0	U	<1.0	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	0.442	J	<0.5	U	<0.5	U	0.369	J	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW11-041415 4/14/2015		35AWW11-070815 7/8/2015		35AWW11-100715 10/7/2015		35AWW11-041216 4/12/2016		35AWW11-100316 10/3/2016		35AWW11-111417 11/14/2017		35AWW11-071618 07/16/2018		35AWW11_092718 9/27/2018		35AWW11_121118 12/11/2018		35AWW11_031919 03/19/2019	
1,1-DICHLOROETHENE	µg/L	7	13.5		16.8		14.7		21.3		16		12		9		2.3		1.6		<0.5	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	0.292	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	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
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<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
VINYL CHLORIDE	µg/L	2	0.273	J	<0.5	U	<0.5	U	0.532	J	0.328	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW11_060319 6/3/2019		35AWW11_091119 9/11/2019		35AWW11_121819 12/18/2019		35AWW11_032420 03/24/2020		35AWW11_032420-a 03/24/2020		35AWW11_062320 6/23/2020		35AWW11_120120 12/1/20		35AWW11_120120_a 12/1/20		35AWW11_060221 6/02/21		35AWW11_120121 12/1/21	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.53	J	<0.5	U	0.62	J	1.5	
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
TETRACHLOROETHENE	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	<1.0	U	<1.0	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	1.4		<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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW11_060822 6/08/22		35AWW11_011223 1/12/23		35AWW11_060523 6/5/23		35AWW11_052324 5/23/24		35AWW12-101813 10/18/2013		35AWW12FD-101813 10/18/2013		35AWW12-013114 1/31/2014		35AWW12FD-013114 1/31/2014		35AWW12-052914 5/29/2014		35AWW12-103014 10/30/2014		35AWW12-012815 1/28/2015	
1,1-DICHLOROETHENE	µg/L	7	2.1	J	2.5		2.6		2.8		<0.5	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.343	J	0.326	J
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<1.0	U	<0.5	U	< 1.0	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	<1.0	U	<0.5	U	< 1.0	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	<1.0	U	0.61	J	< 1.0	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 Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW12-040715 4/7/2015	35AWW12FD-040715 4/7/2015	35AWW12-070915 7/9/2015	35AWW12-100515 10/5/2015	35AWW12FD-100515 10/5/2015	35AWW12-041216 4/12/2016	35AWW12-100516 10/5/2016	35AWW12FD-100516 10/5/2016	35AWW12-111617 11/16/2017	35AWW12-062918 06/29/2018
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ
TETRACHLOROETHENE	µg/L	5	0.279 J	0.251 J	<0.5 U	0.511 J	0.426 J	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ
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 UJ	<0.5 UJ
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW12_121418 12/14/2018		35AWW12_121418 12/14/2018		35AWW12_061019a 6/10/2019		35AWW12_121819 12/18/2019		35AWW12_062520 6/25/2020		35AWW12_120720 12/7/20		35AWW12_060221 6/02/21		35AWW12_060622 06/06/22		35AWW12_060622-a 6/06/22		35AWW12_060523 6/5/23	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<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	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	<1.0	U	<0.5	U	<1.0	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW12_060523_a 6/5/23		35AWW12_052924 5/29/24		35AWW13-101113 10/11/2013		35AWW13FD-101113 10/11/2013		35AWW13-020314 2/3/2014		35AWW13-052214 5/22/2014		35AWW13-102114 10/21/2014		35AWW13FD-102114 10/21/2014		35AWW13-012315 1/23/2015		35AWW13-040815 4/8/2015		35AWW13-070915 7/9/2015	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	< 1.0	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW13-100615 10/6/2015	35AWW13-041316 4/13/2016	35AWW13-100616 10/6/2016	35AWW13-111617 11/16/2017	35AWW13-062818 06/29/2018	35AWW13_121118 12/11/2018	35AWW13_060719 6/7/2019	35AWW13_121819 12/18/2019	35AWW13_062920 6/29/2020	35AWW13_120720 12/7/20
1,1-DICHLOROETHENE	µg/L	7	<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
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
TETRACHLOROETHENE	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
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW13_060121 6/01/21		35AWW13_060622 6/06/22		35AWW13_060623 6/6/23		35AWW13_052824 5/28/24		35AWW14-101813 10/18/2013		35AWW14-013114 1/31/2014		35AWW14-052814 5/28/2014		35AWW14FD-052814 5/28/2014		35AWW14-103014 10/30/2014		35AWW14-012115 1/21/2015		35AWW14-040715 4/7/2015	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	1.63	J	1.63	J	1.22	J	1.07	J	1.57	J	1.8	J	1.78	J
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	2.04		1.75		1.46		1.47		1.94		1.91		2.08	
TETRACHLOROETHENE	µg/L	5	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	< 1.0	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	< 1.0	U	0.663	J	0.669	J	0.612	J	0.565	J	0.806	J	0.707	J	0.786	J
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	0.272	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW14-070915 7/9/2015		35AWW14-100215 10/2/2015		35AWW14-041316 4/13/2016		35AWW14-100616 10/6/2016		35AWW14-111717 11/17/2017		35AWW14-071818 07/18/2018		35AWW14_121318 12/13/2018		35AWW14_060719 6/7/19		35AWW14_121919 12/19/2019		35AWW14_062520 6/25/2020	
1,1-DICHLOROETHENE	µg/L	7	1.7	J	2.47		3.25		10.4		8.7		9.7	J	10		12		15	J	9.3	
CIS-1,2-DICHLOROETHENE	µg/L	70	1.7		1.96		1.78		5.09		3.5		4.0	J	4.6		5.2		3.7	J	4.6	
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	UJ	<1.0	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U
TRICHLOROETHENE	µg/L	5	0.632	J	1.06		1.79		10.2		7.4		8.4	J	9.4		12		11	J	11	
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	0.303	J	0.303	J	<0.5	UJ	1.3		<0.5	U	0.75	J	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW14_120720 12/7/20		35AWW14_060121 6/01/21		35AWW14_060622 6/06/22		35AWW14_060723 6/7/23		35AWW14_053024 5/30/24		35AWW15-101613 10/16/2013		35AWW15FD-101613 10/16/2013		35AWW15-020114 2/1/2014		35AWW15-052814 5/28/2014		35AWW15-102114 10/21/2014		35AWW15-012315 1/23/2015	
1,1-DICHLOROETHENE	µg/L	7	9.4		10		9.6		9.3		34		<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	4.5		5.0		5.0		4.3		14		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	11		14		13		10		28		<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	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW15-041015 4/10/2015	35AWW15-071015 7/10/2015	35AWW15-100615 10/6/2015	35AWW15-041416 4/14/2016	35AWW15-100516 10/5/2016	35AWW15-111617 11/16/2017	35AWW15-071818 07/18/2018	35AWW15-071818_a 07/18/2018	35AWW15_121218 12/12/2018	35AWW15_060719 6/7/2019
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 UJ	<0.5 UJ	<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	<0.5 UJ	<0.5 UJ	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<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 UJ	<0.5 UJ	<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 UJ	<0.5 UJ	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW15_122019 12/20/2019		35AWW15_062520 6/25/2020		35AWW15_120120 12/1/20		35AWW15_060121 6/01/21		35AWW15_120221 12/2/21		35AWW15_060922 6/09/22		35AWW15_011323 1/13/23		35AWW15_060723 6/7/23		35AWW15_052924 5/29/24		35AWW16-102213 10/22/2013		35AWW16-013114 1/31/2014	
1,1-DICHLOROETHENE	µg/L	7	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	UJ	<1.0	U	<0.5	U	<1.0	U	<0.5	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW16-052814 5/28/2014	35AWW16-103014 10/30/2014	35AWW16-012715 1/27/2015	35AWW16FD-012715 1/27/2015	35AWW16-040715 4/7/2015	35AWW16-070915 7/9/2015	35AWW16FD-070915 7/9/2015	35AWW16-100615 10/6/2015	35AWW16-041216 4/12/2016	35AWW16-100416 10/4/2016
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW16FD-100416 10/4/2016	35AWW16-111317 11/13/2017	35AWW16-111317_a 11/13/2017	35AWW16-062918 06/29/2018	35AWW16-062918_a 06/29/2018	35AWW16_121218 12/12/2018	35AWW16_061019 6/10/2019	35AWW16_121919 12/19/2019	35AWW16_062520 6/25/2020	35AWW16_120120 12/1/20
1,1-DICHLOROETHENE	µg/L	7	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	1.4	<0.5 UJ	<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	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<1.0 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<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 UJ	<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 UJ	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW16_060121 6/01/21	35AWW16_060922 6/09/22	35AWW16_060723 6/7/23	35AWW16_052824 5/28/24	35AWW17-101813 10/18/2013	35AWW17-020114 2/1/2014	35AWW17-052914 5/29/2014	35AWW17-103114 10/31/2014	35AWW17-012815 1/28/2015	35AWW17-041015 4/10/2015	35AWW17-071015 7/10/2015
1,1-DICHLOROETHENE	µg/L	7	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 UJ
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TETRACHLOROETHENE	µg/L	5	<1.0 U	<1.0 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW17-100515 10/2/2015		35AWW17-041116 4/11/2016		35AWW17-100316 10/3/2016		35AWW17-111317 11/13/2017		35AWW17-062918 06/29/2018		35AWW17_121718 12/17/2018		35AWW17_061019 6/10/2019		35AWW17_121819 12/18/2019		35AWW17_062920 6/29/2020		35AWW17_120120 12/1/20	
1,1-DICHLOROETHENE	µg/L	7	<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
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
TETRACHLOROETHENE	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	<1.0	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW17_060321 6/03/21	35AWW17_060922 6/09/22	35AWW17_060723 6/7/23	35AWW17_053024 5/30/24	35AWW18-101813 10/18/2013	35AWW18-020114 2/1/2014	35AWW18-052914 5/29/2014	35AWW18-103114 10/31/2014	35AWW18-012815 1/28/2015	35AWW18-041015 4/10/2015	35AWW18-071015 7/10/2015
1,1-DICHLOROETHENE	µg/L	7	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<1 U	<1 U	<1 U	0.792 J	0.726 J	0.78 J	<1 UJ
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TETRACHLOROETHENE	µg/L	5	<1.0 U	<1.0 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	< 1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW18-100515 10/2/2015		35AWW18-041116 4/11/2016		35AWW18FD-041116 4/11/2016		35AWW18-100516 10/5/2016		35AWW18-111317 11/13/2017		35AWW18-062918 06/29/2018		35AWW18_121718 12/17/2018		35AWW18_121718_a 12/17/2018		35AWW18_060419 6/4/2019		35AWW18_121819 12/18/2019	
1,1-DICHLOROETHENE	µg/L	7	<1	U	2.13		2.09		0.97	J	<0.5	U	1.2		2		2.3		3.5		4.1	
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
TETRACHLOROETHENE	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
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW18_062520 6/25/2020		35AWW18_120120 12/1/20		35AWW18_120120_a 12/1/20		35AWW18_060121 6/01/21		35AWW18_060922 6/09/22		35AWW18_060723 6/7/23		35AWW18_052324 5/23/24		35AWW19-102213 10/22/2013		35AWW19-013114 1/31/2014		35AWW19-052814 5/28/2014		35AWW19-103014 10/30/2014	
1,1-DICHLOROETHENE	µg/L	7	18		22		22		20		15		29		22		6.45		9.31		9.98		10.9	
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	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	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	< 1.0	U	0.379	J	0.619	J	0.596	J	0.81	J
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW19-012115 1/21/2015		35AWW19-040715 4/7/2015		35AWW19-070915 7/9/2015		35AWW19FD-070915 7/9/2015		35AWW19-100215 10/2/2015		35AWW19-041216 4/13/2016		35AWW19-100616 10/6/2016		35AWW19-111717 11/17/2017		35AWW19-071818 07/18/2018		35AWW19_092718 9/27/2018	
1,1-DICHLOROETHENE	µg/L	7	17.4		17.5		13.4		11.7		14.7		13.5		12.9		7.7		13	J	8.8	
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	UJ	<0.5	U
TETRACHLOROETHENE	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	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	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U
TRICHLOROETHENE	µg/L	5	0.941	J	1.13		0.807	J	0.751	J	0.939	J	0.899	J	0.754	J	<0.5	U	<0.5	UJ	0.59	J
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	UJ	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW19_121018 12/10/2018		35AWW19_031919 03/19/2019		35AWW19_060319 6/3/2019		35AWW19_091119 9/11/2019		35AWW19_121819 12/18/2019		35AWW19_032420 03/24/2020		35AWW19_062420 6/24/2020		35AWW19_120320 12/3/20		35AWW19_060321 6/03/21		35AWW19_120121 12/1/21	
1,1-DICHLOROETHENE	µg/L	7	7.5		3.6		2.6		5.3		4.5		4.4		4.6		3.2		2.9		2.4	
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
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	<1.0	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	0.59	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW19_060822 6/08/22		35AWW19_011223 1/12/23		35AWW19_060523 6/5/23		35AWW19_052324 5/23/24		35AWW20-101513 10/15/2013		35AWW20-020314 2/3/2014		35AWW20-052114 5/21/2014		35AWW20-102914 10/29/2014		35AWW20-012715 1/27/2015		35AWW20-041515 4/15/2015		35AWW20-070815 7/8/2015	
1,1-DICHLOROETHENE	µg/L	7	2.9		5.0		4.8		3.8		3,230		2,950		5,060		4,910		5,660		4,640		4,780	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	110		87.7		110		119		123		120		118	
TETRACHLOROETHENE	µg/L	5	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	1.65		1.53		<10	U	<10	U	<10	U	<12.5	U	<12.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	3.77		3.52		<10	U	<10	U	<10	U	<12.5	U	<12.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<1.0	U	1.1		< 1.0	U	513		479		695		843		820		718		636	
VINYL CHLORIDE	µg/L	2	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	105		62.4		65.7		102		122		90.6		151	

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW20-100815 10/8/2015		35AWW20-041316 4/13/2016		35AWW20-100416 10/4/2016		35AWW20-111417 11/14/2017		35AWW20-111417_a 11/14/2017		35AWW20-071618 07/16/2018		35AWW20_092618 9/26/2018		35AWW20_092618-a 9/26/2018		35AWW20_121018 12/10/2018		35AWW20_031919 03/19/2019	
1,1-DICHLOROETHENE	µg/L	7	3,630		5,460		3,440		1,900		2,000		1,400		1,100		970		2,700		1,500	
CIS-1,2-DICHLOROETHENE	µg/L	70	105		126		115		53		50		69		45		40		120		49	J
TETRACHLOROETHENE	µg/L	5	<12.5	U	<12.5	U	<10	U	0.80	J	0.77	J	<0.5	U	0.81	J	0.71	J	1.3		<0.5	UJ
TRANS-1,2-DICHLOROETHENE	µg/L	100	<12.5	U	5.16	J	<10	U	6.7		5.6		2.9		1.8		1.7		6.1		4.9	J
TRICHLOROETHENE	µg/L	5	582		707		594		320		320		270		170		140		570		180	
VINYL CHLORIDE	µg/L	2	126		216		166		78		75		71		<0.5	U	<0.5	U	110		54	J

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW20_060419 6/4/2019		35AWW20_091119 9/11/2019		35AWW20_121919 12/19/2019		35AWW20_032420 03/24/2020		35AWW20_062420 6/24/2020		35AWW20_120320 12/3/20		35AWW20_060321 6/03/21		35AWW20_120121 12/1/21		35AWW20_060822 6/08/22		35AWW20_011223 1/12/23	
1,1-DICHLOROETHENE	µg/L	7	1,800		3,900		970	J	1,300		1,100		950		1,600		1,100		1,600		2,600	
CIS-1,2-DICHLOROETHENE	µg/L	70	79		110		70	J	71		63		63		87		86		89		110	
TETRACHLOROETHENE	µg/L	5	<2.5	U	<0.5	U	<5.0	UJ	<2.5	U	0.61	J	<0.5	U	<10	U	0.66	J	<0.5	U	0.6	J
TRANS-1,2-DICHLOROETHENE	µg/L	100	13		14		9.1	J	6.6		7.2		6.7		<5.0	U	4.9		6.4	U	9.2	
TRICHLOROETHENE	µg/L	5	230		350		99	J	120		94		91		190		100		150		220	
VINYL CHLORIDE	µg/L	2	140		790		2,800	J	1,500		2,000		1,800		780		650		840		990	

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW20_060523 6/5/23		35AWW20_052324 5/23/24		35AWW21-101613 10/16/2013		35AWW21-020414 2/4/2014		35AWW21-052214 5/22/2014		35AWW21-102114 10/21/2014		35AWW21-012315 1/23/2015		35AWW21-040815 4/8/2015		35AWW21-070915 7/9/2015		35AWW21-100615 10/6/2015		35AWW21-041316 4/13/2016	
1,1-DICHLOROETHENE	µg/L	7	1,700		1,100		<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	85		73		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	< 5.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	7.5	U	4.8	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	180		130		<0.5	U	<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	940		480		<0.5	U	<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 Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW21FD-041316 4/13/2016	35AWW21-100416 10/4/2016	35AWW21FD-100416 10/4/2016	35AWW21-111317 11/13/2017	35AWW21-062918 06/29/2018	34AWW21_121318 12/13/2018	35AWW21_060419 6/4/2019	34AWW21_122019 12/20/2019	34AWW21_122019-a 12/20/2019	34AWW21_062920 6/29/2020
1,1-DICHLOROETHENE	µg/L	7	<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
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
TETRACHLOROETHENE	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	<1.0 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<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
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

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	34AWW21_062920_a 6/29/2020		34AWW21_120720 12/7/20		34AWW21_060121 6/01/21		34AWW21_060922 6/09/22		35AWW21_060623 6/6/23		35AWW21_052924 5/29/24		35AWW22-102213 10/22/2013		35AWW22-013114 1/31/2014		35AWW22-052914 5/29/2014		35AWW22-103014 10/30/2014		35AWW22FD-103014 10/30/2014	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	1.1		< 1.0	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<1.0	U	<0.5	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW22-012115 1/21/2015	35AWW22FD-012115 1/21/2015	35AWW22-040715 4/7/2015	35AWW22-070915 7/9/2015	35AWW22-100515 10/5/2015	35AWW22-041316 4/13/2016	35AWW22-100616 10/6/2016	35AWW22-111717 11/17/2017	35AWW22-071818 07/18/2018	35AWW22_121418 12/14/2018
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 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 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 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 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 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 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW22_061019 6/10/2019		35AWW22_121819 12/18/2019		35AWW22_062420 6/24/2020		35AWW22_120720 12/7/20		35AWW22_060221 6/02/21		35AWW22_060622 6/06/22		35AWW22_060623 6/06/23		35AWW22_052924 5/29/24		35AWW23-071718 07/17/2018		35AWW23_121018 12/10/2018		35AWW23_060319 6/3/2019	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	U	2.1		2.5		<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	<0.5	U	< 1.0	U	12		20		4.3	
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<1.0	U	<0.5	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 1.0	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	< 1.0	U	2.6		5.3		1.8	
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	< 1.0	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW23_091119 9/11/2019	35AWW23_121819 12/18/2019	35AWW23_032420 03/24/2020	35AWW23_062420 6/24/2020	35AWW23_120320 12/3/20	35AWW23_060321 6/03/21	35AWW23_120221 12/2/21	35AWW23_060822 6/08/22	35AWW23_011223 1/12/23	35AWW23_060523 6/5/23	35AWW23_052324 5/23/24
1,1-DICHLOROETHENE	µg/L	7	0.7 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	< 1.0 U
CIS-1,2-DICHLOROETHENE	µg/L	70	7.8	7.6	6.5	5.0	2.7	1.0	0.63 J	<0.5 U	<1.0 U	<0.5 U	0.69 J
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	<1.0 U	<1.0 U	<0.5 U	< 1.0 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	< 1.0 U
TRICHLOROETHENE	µg/L	5	3.8	2.7	1.3	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	< 1.0 U
VINYL CHLORIDE	µg/L	2	<0.5 U	1.1	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	< 1.0 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW24-071718 07/17/2018		35AWW24_092718 9/27/2018		35AWW24_121018 12/10/2018		35AWW24_031919 03/19/2019		35AWW24_060319 6/3/2019		35AWW24_121919 12/19/2019		35AWW24_062520 6/25/2020		35AWW24_062520-a 6/25/2020		35AWW24_120320 12/3/20		35AWW24_060121 6/01/21	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	0.81	J	<0.5	U	<0.5	UJ	<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	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<1.0	U	<1.0	U	<0.5	U	<1.0	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<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	UJ	<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	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	35AWW24_060121-a 6/01/21		35AWW24_120221 12/2/21		35AWW24_060822 6/08/22		35AWW24_060822-a 6/08/22		35AWW24_011323 1/13/23		35AWW24_060723 6/7/23		35AWW24_052924 5/29/24		35AWW25_053024 5/30/24		35AWW26_011323 1/13/23		35AWW26_011323_a 1/13/23		35AWW26_060623 6/6/23		35AWW26_060623 5/29/24		35AWW27_080223 8/2/23	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	< 1.0	U	72		76		94		< 1.0	U	2.2	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	< 1.0	U	1.5		1.4		1.9		7.1		0.62	J
TETRACHLOROETHENE	µg/L	5	<1.0	U	<0.5	U	<1.0	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	< 1.0	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	< 1.0	U	<1.0	U	<1.0	U	0.48	J	< 1.0	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	< 1.0	U	<1.0	U	<1.0	U	<0.5	U	< 1.0	U	1.7	
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	< 1.0	U	< 1.0	U	12		12		7.4		15		<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW04-941201 12/1/1994	LHSMW04-960812 8/12/1996	LHSMW04-980513 5/13/1998	LHSMW04-040909 9/9/2004	LHSMW04-FEB2007 2/20/2007	LHSMW04-013008 1/30/2008	LHSMW04-112508 11/25/2008	LHSMW04-032916 3/29/2016	LHSMW04-041316 4/13/2016	LHSMW05-941201 12/1/1994
1,1-DICHLOROETHENE	µg/L	7	<5 U	<0.2 U	<1 U	<5 U	<2 U	<1 U	<1 U	<1 U	<2.5 U	<5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	NA	<0.2 U	<1 U	<5 U	<2 U	<1 U	0.292 J	0.666 J	0.851 J	NA
TETRACHLOROETHENE	µg/L	5	<5 U	<0.25 U	<1 U	<5 U	6.4	8.74	25.7	419	397	870
TRANS-1,2-DICHLOROETHENE	µg/L	100	NA	<0.29 U	<1 U	<5 U	<2 U	<1 U	<1 U	<0.5 U	<1.25 U	NA
TRICHLOROETHENE	µg/L	5	<5 U	<0.25 U	<1 U	<5 U	4.6	5.74	11.3	106	86.1	49
VINYL CHLORIDE	µg/L	2	NA	<0.24 U	<1 U	<5 U	<2 U	<1 U	<1 U	<0.5 U	<1.25 U	NA

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW05-960131 1/31/1996		LHSMW05-960812 8/12/1996		LHSMW05-980513 5/13/1998		LHSMW05-040909 9/9/2004		LHSMW06-941201 12/1/1994		LHSMW06-960813 8/13/1996		LHSMW06-980513 5/13/1998		LHSMW06-040908 9/8/2004		LHSMW06-FEB2007 2/21/2007		LHSMW06-111908 11/19/2008	
1,1-DICHLOROETHENE	µg/L	7	<1	U	<0.2	U	<40	U	<5	U	<5	U	2		1.3		<5	U	<2	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<1	U	0.21		<40	U	<5	U	NA		0.98		1.4		<5	U	5.1		2.26	
TETRACHLOROETHENE	µg/L	5	4,884		2,700		4,900		5,100	J	<5	U	0.27		0.69		2	J	<2	U	<1	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<1	U	<0.29	U	<40	U	<5	U	NA		<0.29	U	<1	U	<5	U	<2	U	<1	U
TRICHLOROETHENE	µg/L	5	99		39.7		160		230	J	<5	U	0.43		0.53		<5	U	0.77	J	0.486	J
VINYL CHLORIDE	µg/L	2	<1	U	<0.24	U	<40	U	<5	U	NA		0.62		<1	U	<5	U	<2	U	<1	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW06-101713 10/17/2013		LHSMW06-013114 1/31/2014		LHSMW06-052814 5/28/2014		LHSMW06-103014 10/30/2014		LHSMW06-012115 1/21/2015		LHSMW06-040715 4/7/2015		LHSMW06-070915 7/9/2015		LHSMW06-100215 10/2/2015		LHSMW06-041316 4/13/2016		LHSMW06-100616 10/6/2016	
1,1-DICHLOROETHENE	µg/L	7	1.23	J	0.884	J	1.68	J	4.03		3.28		5.95		8.2		12.1		13.7		19.2	
CIS-1,2-DICHLOROETHENE	µg/L	70	4.01		1.85		2.59		5.2		3.25		5.52		7.24		10.4		11.9		19	
TETRACHLOROETHENE	µg/L	5	0.663	J	<0.5	U	0.255	J	0.381	J	0.255	J	0.454	J	0.443	J	0.518	J	0.563	J	0.9	J
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.391	J
TRICHLOROETHENE	µg/L	5	1.87		0.751	J	1.41		2.77		1.75		3.02		3.23		5.66		6.5		9.06	
VINYL CHLORIDE	µg/L	2	0.627	J	0.5	J	0.597	J	1.15		0.924	J	0.967	J	1.36		2.1		2.38		2.94	

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.

UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW06-111717 11/17/2017		LHSMW06-070218 07/02/2018		LHSMW06_121318 12/13/2018		LHSMW06_121318_a 12/13/2018		LHSMW06_060719 6/7/2019		LHSMW06_122019 12/20/2019		LHSMW06_122019_a 12/20/2019		LHSMW06_062520 6/25/2020		LHSMW06_120320 12/3/20		LHSMW06_060321 6/03/21	
1,1-DICHLOROETHENE	µg/L	7	12.0		2.3		19.0		20.0		4.3		19	J	20	J	22		14		11	
CIS-1,2-DICHLOROETHENE	µg/L	70	14		12		55		55		29		68	J	68	J	65		62		71	
TETRACHLOROETHENE	µg/L	5	<0.5	U	1.6		1.5		1.4		<0.5	U	1.9	J	1.9	J	2.1		1.6		2.9	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	1.4	J	1.5	J	1.4		1.3		1.2	
TRICHLOROETHENE	µg/L	5	5.8		2.8		16.0		16.0		7.5		17	J	17	J	16		14		19	
VINYL CHLORIDE	µg/L	2	2.2		<0.5	U	5.0		5.0		1.2		5.7	J	5.6	J	5.5		4.8		3.2	

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW06_120221 12/02/21	LHSMW06_120221-a 12/2/21	LHSMW06_060922 6/09/22	LHSMW06_011323 1/13/23	LHSMW06_060723 6/7/23	LHSMW06_060723_a 6/7/23	LHSMW06_052824 5/28/24	LHSMW06_052824A 5/28/24	LHSMW07-941201 12/1/1994	LHSMW07-941201FD 12/1/1994	LHSMW07-960131 1/31/1996	LHSMW07-960812 8/12/1996
1,1-DICHLOROETHENE	µg/L	7	12	12	9.1	22	21	21	8.8	8.7	750	660	1,341	311
CIS-1,2-DICHLOROETHENE	µg/L	70	140	130	81	130	120	120	160	8.8	NA	NA	NA	2.5
TETRACHLOROETHENE	µg/L	5	3	3.2	1.9	4.3	4.1	3.0	2.6	2.6	<5 U	<5 U	7	2.7
TRANS-1,2-DICHLOROETHENE	µg/L	100	1.9	1.9	1.3	2.7	2.2	2.3	< 1.0 U	< 1.0 U	NA	NA	NA	<0.29 U
TRICHLOROETHENE	µg/L	5	21	20	13	24	21	20	19	19	16	19	24	5.9
VINYL CHLORIDE	µg/L	2	4.2	4.3	2.3	7.6	6.6	6.7	< 1.0 U	< 1.0 U	NA	NA	10	1.1

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW07-980513 5/13/1998		LHSMW07-040908 9/8/2004		LHSMW07-FEB2007 2/21/2007		LHSMW07-111908 11/21/2008		LHSMW07-110509 5/9/2011		LHSMW07-101513 10/15/2013		LHSMW07-013014 1/30/2014		LHSMW07-052214 5/22/2014		LHSMW07-102914 10/29/2014		LHSMW07-012815 1/28/2015	
1,1-DICHLOROETHENE	µg/L	7	950		590	J	394		576		669		396		334		558	J	1,140		1,300	
CIS-1,2-DICHLOROETHENE	µg/L	70	11		6		3.6		7.96		10.1		6.1		4.66		7.17		21		19.3	
TETRACHLOROETHENE	µg/L	5	<1	U	<5	U	<2	U	<1	U	0.253	J	<0.5	U	<1	U	<0.5	U	<1	U	<2.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	0.73		<5	U	<2	U	0.421	J	0.384	J	0.282	J	<1	U	0.296	J	1.06	J	<2.5	U
TRICHLOROETHENE	µg/L	5	25		24		15.8		25		41.3		23.9		17.6		23.1		78.1		64.3	
VINYL CHLORIDE	µg/L	2	7.2		9		3		14.4		9.47		15.9		5.43		7.98		35.4		28.8	

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW07-041515 4/15/2015		LHSMW07-070715 7/7/2015		LHSMW07-100815 10/8/2015		LHSMW07-041416 4/14/2016		LHSMW07-100416 10/4/2016		LHSMW07-111417 11/14/2017		LHSMW07-071718 07/17/2018		LHSMW07_092618 9/26/2018		LHSMW07_121018 12/10/2018		LHSMW07_031919 03/19/2019	
1,1-DICHLOROETHENE	µg/L	7	1,660		2,100		1,210		1,250		701		600		56		3.1		<0.5	U	<0.5	U
CIS-1,2-DICHLOROETHENE	µg/L	70	31.4		32.4		22.5		19.6		22.1		11		5.0		1.1		<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<5	U	<2.5	U	<2.5	U	0.397	J	<2.5	U	<0.5	U	<0.5	U	0.397	J	<2.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<5	U	1.29	J	<2.5	U	0.681	J	<2.5	U	<0.5	U	<0.5	U	0.681	J	<2.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	82.1		118		84.9		67.5		71.6		39.0		12		2.4		<0.5	U	1.1	
VINYL CHLORIDE	µg/L	2	34.1		69.4	J	37.1		10.8		21.8		15.0		<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

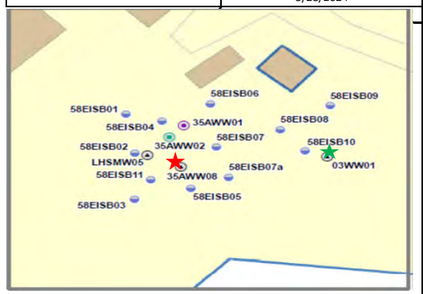
Table 4
Historical Monitoring Well COC Concentrations
LHAAP-35A (58), Longhorn Army Ammunition Plan, Karnack, Texas
2024 RA-O Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW07_060319 6/3/2019		LHSMW07_091119 9/11/2019		LHSMW07_121919 12/19/2019		LHSMW07_032420 03/24/2020		LHSMW07_062420 6/24/2020		LHSMW07_120320 12/3/20		LHSMW07_060221 6/02/21		LHSMW07_120121 12/01/21		LHSMW07_060822 6/08/22		LHSMW07_011223 1/12/23		LHSMW07_060523 6/5/23	
1,1-DICHLOROETHENE	µg/L	7	16		46		46	J	94		130		64		12		22		8.8		17		93.0	
CIS-1,2-DICHLOROETHENE	µg/L	70	0.7	J	1.1		1.2	J	1.0		1.0		<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.96	J	1.2	
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<1.0	U	<1.0	U	<1.0	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U
TRICHLOROETHENE	µg/L	5	1.8		3.1		3.1	J	2.8		2.5		2.1		0.91	J	0.97	J	0.71	J	2.0		2.4	
VINYL CHLORIDE	µg/L	2	<0.5	U	49		42	J	46		44		42		<0.5	U	35		<0.5	U	56		54	

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 5
Enhanced In-Situ Bioremediation Performance Data Summary - Eastern Plume
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Monitoring Location	Sample Date	Field Parameters					Electron Donor [1]	cVOCs				Dissolved Gases				Wet Chemistry						Dechlorinating Bacteria [2]	
		pH	DO	ORP	Spec Cond	Turb	TOC	PCE	TCE	cDCE	VC	Ethane	Methane	Ethene	CO_2	Fe^{2+}	NO_3	NO_2	SO_4	Cl^-	Alk	DHC	DHBt
		SU	mg/L	mV	mS/cm	NTU	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	cells/mL	cells/mL
35AWW08	8/20/2013	6.05	NR	NR	8.23	26.9	16.5	1,640	544	9.35 J	< 5 U	< 2 U	10.1	< 2 U	143,000	0.04	< 4 U	< 4 U	1,480	2,510	174	< 0.9 U	< 5.3 U
	10/10/2013	6.7	NR	NR	47.7	4.1	66,400	603 J	149 J	<5	< 5 U	< 2 U	5.38	< 2 U	NA	52.4	12.3 J	<20	703	905	35,600	3.6	1,300
	1/29/2014	6.68	NR	NR	23.4	79.8	43,500	599	895	55.9	< 5 U	< 2 U	345	< 2 U	428,000	144	< 10 U	< 10 U	285	2,190	27,700	< 0.8 U	12,900
	5/20/2014	5.57	NR	NR	18.2	90.4	16,900	204	953	47.2	< 5 U	< 2 U	NA	< 2 U	NA	< 800 U	< 10 U	< 10 U	262	1,590	18,300	4,880	574,000
	10/27/2014	6.86	NR	NR	19.5	213	13,900	112	653	38.6 J	< 25 U	< 2 U	4,420	< 2 U	505,000	478	< 20 U	< 20 U	< 100 U	2,020	11,800 J	70.4	3,050,000 J
	1/21/2015	6.82	NR	NR	18.1	225	6,030	119	491	27.2 J	< 25 U	< 40 U	2,540	< 40 U	152,000 J	10.9 J	< 3 U	< 3 U	< 15 U	1,900	20,400	NA	NA
	4/15/2015	8.06	NR	NR	16.4	448	8,330	110	607	30.7 J	< 25 U	< 20 U	3,380	< 20 U	249,000	< 80 U	< 2 U	< 2 U	< 10 U	2,250	18,800 J	NA	NA
	7/8/2015	8.07	NR	NR	13.9	325	2,540	110	746	73.5 J	< 50 U	< 20 U	5,600	< 20 U	370,000	123	< 2 U	< 2 U	< 10 U	2,250	10,100 J	NA	NA
	10/8/2015	7.22	NR	NR	11.3	300	2,240	79	581	79.6	< 12.5 U	< 20 U	5,510	< 20 U	374,000	21.1	< 5 U	< 5 U	< 25 U	2,130 J	20,600	448	72,900
	4/13/2016	6.86	NR	-162	13.9	74.6	NA	80.1	234	60.9	14.2 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/4/2016	6.92	NR	NR	11.8	50.4	918	36.9	235	41.7	7.46 J	< 20 U	7,350	< 20 U	424,000	17.6	< 2 U	< 2 U	< 10 U	2,000	9,160 J	25,600,000	625,000
	11/15/2017	6.58	NR[3]	NR[3]	11.8	63.6	581	12	33	38	< 5 U	< 0.23 U	670	0.56 J	190,000	17.4 J	0.249	< 0.05 U	2.03	2,060	4,360	3,060,000	< 38.5 U
	7/18/2018	7.15	NR[3]	NR[3]	14.9	31.4	484 J	< 2.5 UJ	19 J	12 J	9.0 J	< 0.47 U	920	0.49 J	350,000	13.7 J	< 0.200 UJ	< 0.200 UJ	0.9	2460	3,050 J	1,410,000	47,000
	12/11/2018	7.28	NR[3]	NR[3]	10.9	82.5	392	< 0.5 U	12	8.9 J	< 0.5 U	< 0.47 U	< 1.0 U	< 0.55 U	290,000	21 J	0.147 J	< 0.100 U	4.76	2,240	3,420	1,200,000	173,000
	6/3/2019	8.67	NR[3]	NR[3]	9.93	86.9	306	4.8 J	13	< 2.5 U	< 2.5 U	< 0.47 U	3,000	4.1	260,000	2.03	0.219 J	NA	1.42 J	2,510	NA	3,790,000	139,000
	12/18/2019	6.65	0.04	-161	9.62	60.5	291	<5.0 U	<5.0 U	<5.0 U	<5.0 U	< 0.47 U	760	6.2	240,000	2.55	0.704	NA	<2.5 U	2,290	NA	NA	NA
	6/23/2020	6.77	0.07	-172	8.54	27.3	208	6.7	17	7.3	<2.5 U	< 0.47 U	1,500	12	230,000	NA	< 0.200 U	NA	15.5	2,510	NA	594,000	29,500
	12/1/2020	6.05	0.08	-25	9.67	63.2	165	< 5.0 U	< 5.0 U	18	6.1 J	< 0.47 U	320	5.6	830,000	NA	0.188 J	NA	63.0	2,480	NA	920,000	77,400
	6/2/2021	6.64	0.04	-144	9.29	3.2	119	< 25 U	53	30	24 J	< 0.47 U	1,600	33	430,000	NA	< 0.500 U	NA	148	2430	NA	122,000	4,500
	6/9/2022	6.24	0.05	-74	9.36	18.1	NA	< 5.0 U	< 2.5 U	<2.5 U	<2.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/6/2023	6.75	0.03	-111	11.3	0.0	NA	< 2.5 U	5.2	5.2	2.6 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/28/2024	6.56	0.11	-95	9.09	50.1	NA	< 1.0 U	2.8	1.5	<1.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
03WW01	8/20/2013	6.18	NR	NR	3.64	33	10.5	368	94.8	0.978 J	< 1 U	< 2 U	3.22	< 2 U	143,000	0.04	< 1 U	< 1 U	534	892	142	1.2	0.4 J
	10/10/2013	6.55	NR	NR	39.2	10	49,200	172	42.1	< 2.5 U	< 2.5 U	< 2 U	4.35	< 2 U	NA	35.4	< 20 U	< 20 U	487	398	39,700	< 2.1 U	15.7 J
	1/29/2014	6.58	NR	NR	20.2	256	30,200	172	58.4	< 5 U	< 5 U	< 2 U	5.09	< 2 U	337,000	110	< 10 U	< 10 U	457	906	27,500	< 0.9 U	639,000
	5/21/2014	5.52	NR	NR	16	152	29,100	154	71.2	3.3 J	< 5 U	< 2 U	479	< 2 U	564,000	0.0217	< 10 U	< 10 U	376	780	25,700	2,870	2,700,000
	10/28/2014	5.87	NR	NR	14.2	171	8,440	48.6 J	223	< 50 U	< 50 U	< 2 U	910	< 2 U	564,000 J	107	< 1 U	< 1 U	11	940	12,300 J	10.9	192,000
	1/21/2015	6.51	NR	NR	13.6	93.3	7,720	32.8 J	216	< 50 U	< 50 U	< 10 U	393	< 10 U	333,000	40.6	< 2 U	< 2 U	10.2	881	19,000 J	NA	NA
	4/15/2015	7.11	NR	NR	12.8	387	7,800	15.9 J	131	21.4 J	< 25 U	< 20 U	3,170	< 20 U	396,000	27.8 J	< 1 U	< 1 U	18	976	24,100	NA	NA
	7/8/2015	7.62	NR	NR	11.8	847	3,640	31.4 J	65.6 J	< 50 U	< 50 U	< 20 U	16,100	< 20 U	408,000	96.1	< 1 U	< 1 U	3.62 J	1,020	12,400 J	NA	NA
	10/8/2015	6.65	NR	NR	11.4	525	1,700	36.4 J	51.8 J	< 50 U	< 50 U	< 20 U	5,880	< 20 U	500,000	0.835	< 5 U	< 5 U	< 25 U	1,200	20,300	78	8,800
	4/13/2016	7.19	NR	-127	7.99	127	NA	6.49 J	<12.5U	117	< 12.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/4/2016	6.81	NR	NR	6.38	70	292	< 5 U	< 5 U	< 5 U	< 5 U	<20	5,950	< 20 U	657,000	8.02	< 1 U	< 1 U	< 5 U	762	5,500 J	9,460,000	53,300
	11/15/2017	7.25	NR[3]	NR[3]	6.59	135	191	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 0.23 U	620	1.2	310,000	18.9 J	< 0.05 U	< 0.05 U	40.8	1,020	3,310	35,300	< 20.8 U
	7/18/2018	6.8	NR[3]	NR[3]	6.23	9.5	118 J	< 0.5 UJ	< 0.5 UJ	5.3 J	4.8 J	< 0.47 U	590	0.89 J	490,000	40 J	< 0.200 UJ	< 0.200 UJ	161	977	2,290	7.5	6
	12/11/2018	6.24	NR[3]	NR[3]	2	54.1	42	15	5.7	22	7.6	< 0.47 U	1,800	2.3	390,000	27.5 J	< 0.100 U	< 0.100 U	42.8	336	862	10,100	599
	6/3/2019	8.1	NR[3]	NR[3]	4.95	14.8	66	3.2 J	2.9 J	41	11	< 0.47 U	2,900	1.6	520,000	0.84	0.196 J	NA	239	809	NA	6,040	292
	12/18/2019	6.41	0.05	-128	5.62	24.8	92	< 5 U	< 5 U	14	5.4 J	< 0.47 U	540	0.61 J	340,000	3.15	<0.500 U	NA	155	940	NA	22,240	2,480
	6/25/2020	6.44	0.04	-139	4.68	6.3	69.8	4.5 J	4.5 J	17	7.2	< 0.47 U	640	0.46	300,000	1.74	< 0.200 U	NA	231	965	NA	6,500	699
	12/1/2020	6.17	0.10	-50	4.89	10.7	99.9	< 5.0 U	24	7.2 J	< 5.0 U	< 0.47 U	1,700	1.1	460,000	NA	0.069 J	NA	82.7	870	NA	26,600	1,610
	6/2/2021	6.25	0.27	-99	5.24	158	103	11	3.0	11	1.6	< 0.47 U	420	< 0.55 U	830,000	NA	< 0.500 U	NA	180	945	NA	196	249
	6/6/2022	5.95	0.03	-50	4.72	18	NA	9.9	10	7.3	< 5.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/6/2023	6.52	0.07	-89	6.38	0	NA	4.8 J	10	6.1	3.7 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/28/2024	6.34	0.16	-79	5.33	29	NA	< 1.0 U	7.8	< 1.0 U	7.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA



Slight decrease in pH noted during May 2014 sampling event, potentially related to excessive substrate fermentation and organic acid production, need to monitor closely. System has continued to self buffer over time.

-Initial spike in TOC indicates effective substrate distribution.
-Residual electron donor present to support desired biogeochemical reactions.
-Declining TOC concentrations over time indicative of substrate consumption.
-Electron donor nearly depleted.
-TOC sampling discontinued in June 2022.

PCE is degrading fully to VC. Residual degradation products of TCE, cDCE, and VC continue to degrade.

Reduced methane and ethene indicates slowing of reductive dechlorination due to limited substrate and electron acceptors remaining.
Dissolved gas monitoring discontinued in June 2022.

Increasing sulfate concentration indicates that reductive dechlorination is starting to stall.
Wet chemistry parameters analysis discontinued in June 2022.

-Initial spike in dechlorinating bacteria counts suggest effective distribution of the bioaugmentation culture.
-Elevated dechlorinating bacteria counts in 2016 indicated rapid proliferation.
-Since 2016 generally declining bacteria counts.
-Dechlorinating bacteria analysis discontinued in June 2022.

Notes:
1. Electron donor injections completed in Sept. 2013.
2. Bioaugmentation performed in Nov. 2013.
3. Data recorded but not used since bailer was used to collect the sample.
pH = negative log of the hydrogen ion concentration
SU = standard units
DO = dissolved oxygen
mg/L = milligrams per liter
ORP = oxidation-reduction potential
mV = millivolts
Spec Cond = specific conductivity
mS/cm = millisiemens per centimeter
Turb = turbidity
NTU = nephelometric turbidity units
TOC = total organic carbon
cVOCs = chlorinated volatile organic compounds
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
µg/L = micrograms per liter
CO_2 = carbon dioxide
Fe^{2+} = ferrous iron
NO_3 = nitrate
NO_2 = nitrite
SO_4 = sulfate
Cl^- = chloride
Alk = alkalinity
DHC = dehalococcoides
DHBt = dehalobacter spp.
cells/mL = cells per milliliter
NA = not analyzed
NR = not recorded
U - Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection
analyte-specific quality control criteria.
J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain
analyte-specific quality control criteria.

Table 6
Enhanced In-Situ Bioremediation Performance Data Summary-Western Plume
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

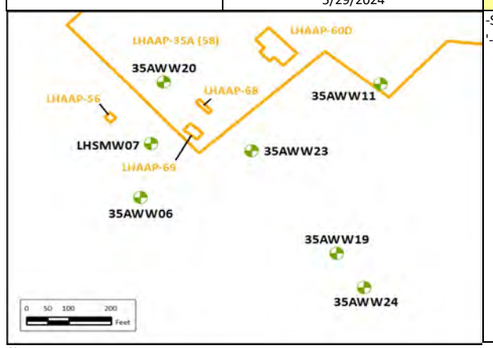
Monitoring Location	Sample Date	Field Parameters					Electron Donor	cVOCs				Dissolved Gases				Wet Chemistry						Dechlorinating Bacteria		
		pH	DO	ORP	Spec Cond	Turb	TOC	PCE	TCE	cDCE	VC	Ethane	Methane	Ethene	CO_2	Fe^{2+}	NO_3	NO_2	SO_4	Cl^-	Alk	DHC	DHBt	BAV1 VC
		SU	mg/L	mV	mS/cm	NTU	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	cells/mL	cells/mL	cells/mL
LHSMW07	11/14/2017	5.94	0.09	159	11	40.9	6.81	< 0.5 U	39	11	15	< 0.23 U	18	< 0.22 U	220,000	0.4 J	< 0.0500 U	< 0.100 U	2,940	2,540	750	NA	NA	NA
	3/7/2018	6.1	0.65	180	12.1	5.1	6.67	< 1.0 U	34	11	5	< 0.47 U	3	< 0.55 U	350,000	0.07 J	< 0.0500 U	< 0.0500 U	2,700	2,420	757	11.8	< 4.8 U	NA
	7/17/2018	6.23	0	-389	14.1	13.2	321	< 0.5 U	12	5	< 0.5 U	< 0.47 U	1.4	< 0.55 U	540,000	2.58 J	< 0.200 U	< 0.200 U	1,090	2,270	1,990	17.2	6,570,000	NA
	9/26-27/2018	5.99	0	-222	9.24	20.3	14.2	< 0.50 U	2.4	1.1	< 0.50 U	< 0.47 U	27	4.0	760,000	0.93 J	< 0.200 U	< 0.200 U	1,120	2,180	2,060	11,600	3,540,000	0.8 J
	12/10/2018	6.7	0.02	-324	10.8	10.7	7.53	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	0.46 J	170	28	460,000	0.43 J	< 0.200 U	< 0.200 U	1,530	2,030	1,640	6,080	166,000	<2.1 U
	3/19/2019	6.57	0.17	-311	11	27.5	4.11	< 0.5 U	1.1	< 0.5 U	< 0.5 U	0.52 J	270	25	440,000	0.67	< 0.500 U	NA	2,390	1,980	NA	10,000	61,400	3
	6/3/2019	6.27	0.07	-96	10.4	17.5	4.13	< 0.5 U	1.8	0.70 J	< 0.5 U	0.20 J	78	3.9	660,000	0.25	< 0.500 U	NA	2,470	1,780	NA	7,580	< 9.5 U	<1.0 U
	9/11/2019	6.65	0.05	-48	9.19	5.8	3.42	< 0.5 U	3.1	1.1	49	0.20 J	240	6.1	340,000	1.72	< 0.100 U	< 0.100 U	2,530	1,820	NA	49.8	1,320	<0.5 U
	12/19/2019	6.43	0.09	-47	9.59	6.6	3.48 J	< 0.5 UJ	3.1 J	1.2 J	42 J	< 0.47 U	100	2.8	250,000	1.85	< 0.500 U	NA	2,560	1,770	NA	949	5,230	3
	3/24/2020	6.65	0.06	-87	10.1	0	3.29 J	< 0.5 U	2.8	1.0	46	< 0.47 U	77	2.3	250,000	1.76	< 0.500 U	NA	2,750	1,960	NA	2,280	10,300	5
	6/24/2020	6.37	0.08	-43	9.24	0	3.00	< 1.0 U	2.5	1.0	44	< 0.47 U	140	2.2	250,000	2.07	< 0.100 U	< 0.100 U	3,000	2,010	NA	1,090	42,100	1
	12/3/2020	6.53	0.14	10	9.87	0	2.33	< 0.5 U	2.1	< 0.5 U	42	0.42 J	810	5.9	260,000 J	NA	< 0.200 U	NA	2,650	1,650	NA	7,580	17,500	1
	6/2/2021	6.52	0.13	-144	9.60	0.8	7.94	< 1.0 U	0.91 J	< 0.5 U	< 0.5 U	0.31 J	680	19	300,000	NA	< 0.500 U	NA	2,720	1,760	NA	4,430	3,640	< 0.60 U
	12/1/2021	5.99	0.04	62	9.19	2.1	10.8	< 1.0 U	0.97 J	< 0.5 U	35	<0.250 U	638	6.33	820,000	NA	0.407 J	NA	2,720	1,560	NA	5,720	35,400	0.30 J
	6/8/2022	6.48	0.03	-90	9.69	13.4	6.23	< 1.0 U	0.71 J	< 0.5 U	< 0.5 U	<0.250 U	1,950	38.9	173,000	NA	0.262 J	NA	2,970	1,960	NA	4,680	2,850	0.400 J
	1/12/2023	6.36	0.09	-23	10.2	12.1	6.78	< 1.0 U	2.0	0.96 J	56	<0.500 U	5,950	49.4	160,000	NA	< 0.100 U	NA	3,170	2,030	NA	7,340	15,400	0.8
	6/5/2023	6.84	0.07	52	11.80	0.0	7.25	< 0.5 U	2.4	1.2	54	<0.500 U	2,860	20.9	130,000	NA	< 0.100 U	NA	3,000	1,930	NA	1,120	16,400	0.50 J
	5/23/2024	6.9	0.02	75	9.98	83.4	12.40	< 1.0 U	2.0	1.1	47	9.8	1,490	15.5	140,000	NA	< 0.100 U	NA	3,520	2,110	NA	610	9,200	< 0.25 U
35AWW06	11/14/2017	5.86	0.06	197	5.87	8.7	2.29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.23 U	0.32 J	< 0.22 U	200,000	0.09 J	2.12	< 0.0500 U	1,560	1,040	666	NA	NA	<1.8 U
	3/8/2018	5.67	0.26	136	5.91	4.4	2.32	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	< 1.0 U	< 0.55 U	500,000 J	0.12 J	< 0.0500 U	< 0.0500 U	1,480	1,000	666	1.5	291	<3.8 U
	7/2/2018	4.9	0	-35	5.86	96.7	4,200 J	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.47 U	< 1.0 U	0.58 J	780,000 J	14 J	< 0.200 UJ	< 0.200 UJ	811	904	386	< 1.8 U	52,900	<0.5 U
	9/26-27/2018	4.75	0	78	4.95	55.5	2,860	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 UJ	3.0 J	< 0.55 UJ	860,000	27.8 J	< 0.200 U	< 0.200 U	508	910	775	3.60	705,000	<2.5 U
	12/11/2018	5.90	0.02	-177	5.2	36.8	685	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	890	0.44 J	790,000	88.1 J	< 0.200 U	< 0.200 U	13.4	858	1,210	2.50	144,000	<0.9 U
	3/19/2019	6.39	0.16	-234	5.09	31.8	407	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3,100	< 0.55 U	720,000	0.44	< 0.500 U	NA	2.33 J	919	NA	12.3	21,200	<0.8 U
	6/4/2019	6.61	0.06	-99	5.15	46.1	331	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,500	< 0.55 U	750,000	0.65	0.180 J	NA	2.08 J	964	NA	26.8	159	0.8 J
	9/11/2019	6.99	0.06	-120	4.92	57.6	84.9	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3,300	< 0.55 U	350,000	3.3	<0.100 U	<0.100 U	1.28 J	921	NA	28.6	<25.6 U	0.7 J
	12/19/2019	6.81	0.05	-152	4.97	86	13.8	<0.5 UJ	<0.5 UJ	<0.5 UJ	<0.5 UJ	< 0.47 U	1,500	< 0.55 U	270,000	3.3	<0.100 U	NA	0.845	935	NA	80.3	<10.2 U	30
	3/24/2020	6.83	0.07	-179	5.5	34	15.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,300	< 0.55 U	360,000	2.24	<0.100 U	NA	1.51	968	NA	9.6	1,220	5
	6/24/2020	6.65	0.08	-100	4.93	256	10.2	< 1.0 U	< 0.5 U	< 0.5 U	0.51 J	< 0.47 U	1,400	< 0.55 U	270,000	3.3	< 0.100 U	< 0.100 U	NA	1,080	NA	3.5	1,990	<0.6 U
	12/1/2020	7.03	0.03	-55	5.33	277	8.67 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3,300	< 0.55 U	270,000	NA	< 0.200 U	NA	45.6	937	NA	1,060	3,700	< 1.4 U
	6/3/2021	6.50	0.03	29	5.19	313	14.4	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	2,200	< 0.55 U	490,000	NA	< 0.200 U	NA	197	940	NA	15	4,170	1.50 J
	12/1/2021	6.53	0.06	21	5.16	204	12.1	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	<0.25 U	3,070	<0.50 U	423,000	NA	0.402 J	NA	343	934	NA	34	2,840	2
	6/8/2022	6.50	0.02	25	5.22	135	10.6	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	<0.25 U	2,740	<0.50 U	391,000	NA	0.0666 J	NA	457	938	NA	7.2	1,070	0.400 J
	1/12/2023	7.03	0.04	-59	5.40	50.1	6.28	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	<0.500 U	2,570	<0.500 U	67,000	NA	< 0.0500 U	NA	855	905	NA	14.1	2,270	< 0.50 U
	6/5/2023	7.19	0.09	-54	6.29	0.0	7.23	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	<0.500 U	4,790	<0.500 U	110,000	NA	< 0.0500 U	NA	834	918	NA	11.1	1,230	0.50 J
	5/23/2024	7.52	0.03	-76	5.03	72.2	13	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.500 U	1,830	< 0.500 U	59,000	NA	< 0.0500 U	NA	1,020	846	NA	9.1	2,900	< 0.24 U
35AWW11	11/14/2017	5.64	0.37	278	8.88	65.2	5.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.23 U	< 0.63 U	< 0.22 U	230,000	0.08 J	< 0.0500 U	< 0.0500 U	1,290	2,650	452	NA	NA	NA
	3/7/2018	5.94	0.59	211	9.49	90.8	5.28	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	16	0.38 J	360,000	0.10 J	< 0.0500 U	< 0.0500 U	1,260	2,530	446	0.6	< 5.0 U	NA
	7/16/2018	5.31	0	-56	8.77	15.5	1,650	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	0.80 J	< 0.55 U	450,000	27.6 J	< 0.100 U	< 0.100 U	652	2,440	649	4.60	910,000	0.7 J
	9/26-27/2018	5.64	0	-194	8.40	116	1,120	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	0.63	1,300	2.1	320,000	36.5 J	< 0.200 U	< 0.200 U	285	2,110	1,190	2.10	394,000	<0.7 U
	12/11/2018	6.02	0.05	-247	9.31	14.2	701	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	5.5	< 0.55 U	820,000	20.6 J	< 0.200 U	< 0.200 U	127	2,120	1,430	10.6	220,000	<0.5 U
	3/19/2019	5.92	0.11	-142	9.00	36.2	485	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	450	< 0.55 U	940,000	0.43	< 0.500 U	NA	172	2,150	NA	231	818,000	<0.9 U
	6/3/2019	5.7	0.09	-136	7.81	54.6	94.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	590	< 0.55 U	750,000	1.33	< 0.500 U	NA	210	1,920	NA	2,100	2,570,000	<0.5 U
	9/11/2019	6.23	0.07	-100	7.15	39.6	28 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,300	< 0.55 U	690,000	2.05	< 0.100 U	< 0.100 U	259	1,990	NA	1,240	115,000	<0.9 U
	12/18/2019	6.28	0.09	-95	7.95	22.1	9.94	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	750	< 0.55 U	330,000	3.3	< 0.500 U	NA	192	2,080	NA	900	213,000	<0.6 U
	3/24/2020	6.08	0.08	-100	7.82	7.2	7.86	< 0.5 U	1.4	< 0.5 U	< 0.5 U	< 0.47 U	860	< 0.55 U	510,000	1.41	< 0.500 U	NA	282 J	2,110	NA	940	40,600	20
	6/23/2020	6.10	0.05	-46	6.65	5.4	7.28	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,000	< 0.55 U	390,000	2.45	< 0.100 U	NA	416	2,040	NA	382	41,100	<1.1 U
	12/1/2020	5.99	0.05	4	8.34	21.3	3.81	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	4,400 J	< 0.55 U	610,000	NA	0.284 J	NA	415 J	2,030	NA	368	52,700	< 1.1 U
	6/2/2021	5.96	0.06	-28	6.51	4.3	11	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,000	< 0.55 U	890,000	NA	< 0.500 U	NA	460	1,790	NA	170	5,830	< 1.0 U
	12/1/2021	5.92	0.09	14	7.45	10.5	9.02	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	<0.250 U	986	6.59	778,000	NA	0.814 J	NA	536	1,970	NA	2.3	3,140	<1.1 U
	6/8/2022	5.71	0.04	-8	6.53	21.2	9.72	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	<0.250 U	1,410	<0.50 U	622,000	NA	0.198 J	NA	485	1,880	NA	1,750	137,000	2
	1/12/2023	6.09	1.85	-30	7.50	71.3	6.28	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	<0.500 U	3,220	<0.500 U	430,000 D	NA	< 0.100 U	NA	563	2,090	NA	864	140,000	< 0.60 U
	6/5/2023	7.01	0.09	-36	7.24	0.0	7.35	< 0.5 U	< 0.5 U	< 0.5 U	0.61 J	<0.500 U	6,110	<0.500 U	250,000 M	NA	0.121	NA	1.23	779	NA	416	15,000	0.30 J
	5/23/2024	6.44	0.04	9	6.01	65.2	30.8	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.500 U	1,630	< 0.500 U	810,000	NA	< 0.100 U	NA	486	1,890	NA	280	1,700	< 0.25 U

Table 6
Enhanced In-Situ Bioremediation Performance Data Summary-Western Plume
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Monitoring Location	Sample Date	Field Parameters					Electron Donor	cVOCs				Dissolved Gases				Wet Chemistry						Dechlorinating Bacteria		
		pH	DO	ORP	Spec Cond	Turb	TOC	PCE	TCE	cDCE	VC	Ethane	Methane	Ethene	CO_2	Fe^{2+}	NO_3	NO_2	SO_4	Cl^-	Alk	DHC	DHBt	BAV1 VC
		SU	mg/L	mV	mS/cm	NTU	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	cells/mL	cells/mL	cells/mL
35AWW19	11/17/2017	5.27	NR[3]	NR[3]	5.97	26.5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/8/2018	5.28	NA	NA	6.08	26.4	2.51	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	< 1.0 U	< 0.55 U	97,000	1.10 J	< 0.0500 U	< 0.0500 U	1,220	1,430	159	0.4 J	< 11.9 U	NA
	7/18/2019	6.08	NR[3]	NR[3]	5.67	12	2.38 J	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.47 U	0.65 J	< 0.55 U	180,000 J	2.78 J	< 0.200 UJ	< 0.200 UJ	983	1,370	199	0.30 J	20,400	<0.5 U
	9/26-27/2018	5.77	0.01	42	5.46	36.1	2.21	< 0.5 U	0.59 J	< 0.5 U	< 0.5 U	< 0.47 U	27	0.32 J	250,000	3.99 J	< 0.200 U	< 0.200 U	989	1,230	213	0.8	148,000	<0.5 U
	12/10/2018	5.94	0.04	-72	5.7	5.2	2.17	< 0.5 U	0.59 J	< 0.5 U	< 0.5 U	< 0.47 U	5.7	< 0.55 U	330,000	4.19 J	< 0.200 U	< 0.200 U	998	1,190	198	0.50 J	99,000	<0.5 U
	3/19/2019	5.37	0.14	70	5.67	80.1	2.20	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1.3 J	< 0.55 U	790,000	0.38	< 0.500 U	NA	994	1,140	NA	< 0.50 U	91.5	<0.5 U
	6/3/2019	5.69	0.05	93	5.46	16.6	1.88	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1.4	< 0.55 U	560,000	0	< 0.500 U	NA	966	1,080	NA	3.30	62,700	<0.5 U
	9/11/2019	6.1	0.19	77	4.91	8.8	1.19	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3.0	<0.55 U	230,000	1.62	< 0.100 U	< 0.100 U	1,010	1,050	NA	18.4	23,600	<0.5 U
	12/18/2019	5.97	0.08	37	4.81	73.5	1.75	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	2.0	<0.55 U	160,000	2.08	< 0.500 U	NA	997	979	NA	14.8	12,200	<0.5 U
	3/24/2020	5.97	0.04	46	4.61	25.5	1.79	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3.1	<0.55 U	200,000	1.86	< 0.100 U	NA	989	922	NA	9.4	12,200	2
	6/24/2020	5.89	0.04	56	4.14	34	1.75	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3.0	<0.55 U	160,000	1.97	< 0.100 U	< 0.100 U	1,020	934	NA	2.0	19,700	<0.5 U
	12/3/2020	5.64	0.11	65	4.00	4.5	1.63	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	4.2	<0.55 U	440,000 J	NA	< 0.100 U	NA	860	786	NA	40.2	30,100	5.5
	6/3/2021	5.32	0.11	122	3.92	10.4	2.38	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	2.2	<0.55 U	670,000	NA	< 0.200 U	NA	857	746	NA	16.1	24,900	<0.5 U
	12/1/2021	5.26	0.07	181	3.39	6.6	7.05	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	<0.25 U	2.4	0.929 J	744,000	NA	0.162 J	NA	769	625	NA	276	13,400	<0.5 U
	6/8/2022	5.52	0.04	112	3.10	30.4	2.43	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	2.34	2.9	<0.50 U	520,000	NA	0.0352 J	NA	675	529	NA	138.0	2,960	71
	1/12/2023	5.92	0.30	58	2.68	80.1	2.48	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.500 U	3.37	3.95	110,000	NA	< 0.0500 U	NA	701	456	NA	6.30	6,740	0.10 J
	6/5/2023	6.21	0.05	137	3.19	90.3	1.72	< 0.5 U	1.1	< 0.5 U	< 0.5 U	< 0.500 U	1.28	< 0.500 U	92,000	NA	< 0.0500 U	NA	567	430	NA	1.90	1,120	< 0.60 U
	5/23/2024	5.97	0.1	138	2.24	84	9.02 J	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	0.691 J	1.2	< 0.500 U	250,000	NA	< 0.0500 U	NA	436	391	NA	4.0	5,500	< 0.23 U
35AWW20	11/14/2017	5.97	0.04	138	7.71	27.5	13.8	0.80 J	320	53	78	< 0.23 U	18	0.41 J	230,000	0.45 J	< 0.0500 U	< 0.0500 U	2,150	1,730	834	NA	NA	NA
	3/7/2018	6.16	0.6	106	7.97	21.3	14.5	< 5.0 U	330	76	110	< 0.47 U	< 1.3 U	< 0.55 U	370,000	0.69 J	< 0.0500 U	< 0.0500 U	1,840	1,510	848	5.5	1,120	NA
	7/16/2018	6.18	0	-357	7.19	0.0	43	< 0.5 U	270	69	71	< 0.47 U	0.93 J	< 0.55 U	360,000	1.18 J	< 0.100 U	< 0.100 U	882	1,420	1,450	1.50	5,970,000	<0.9 U
	9/26-27/2018	5.95	0	-206	6.34	11.1	53	0.81 J	170	45	< 0.5 U	< 0.47 U	37	0.66 J	770,000	1.41 J	< 0.200 U	< 0.200 U	922	1,220	1,470	< 1.30 U	3,770,000	<1.3 U
	12/10/2018	6.21	0.07	-270	7.14	48.1	19	1.3	570	120	110	< 0.47 U	440	1.3	720,000	5.01 J	< 0.200 U	< 0.200 U	1,010	1,010	1,190	< 1.90 U	283,000	<1.9 U
	3/19/2019	6.26	0.11	-247	6.94	28.1	12	< 0.5 UJ	180	49 J	54 J	< 0.47 UJ	840	1.94 J	890,000	0.17	< 0.500 U	NA	1,120	1,090	NA	< 1.50 U	14,000	<1.5 U
	6/4/2019	6.65	0.1	-56	6.79	47.1	12.9	< 2.5 U	230	79	140	0.19 J	920	1.3	730,000	0.09	0.194 J	NA	1,240	1,180	NA	15,500	< 21.7 U	2,370
	9/11/2019	6.67	0.03	-45	6.03	9.7	15.0	< 0.5 U	350	110	790	0.24 J	640 J	5.9	290,000 J	1.59	< 0.100 U	< 0.100 U	1,200	902	NA	16,000	386	10,300
	12/19/2019	6.4	0.08	-52	5.78	24.2	13.1	< 5.0 UJ	99 J	70 J	2,800 J	< 0.47 U	310	6.3	270,000	1.34	< 0.100 U	NA	1,170	821	NA	27,800	6,070	49,100
	3/24/2020	6.5	0.05	-94	5.45	7.8	18.3	< 2.5 U	120	71	1,500	< 0.47 U	410	6.0 J	260,000	2.29	< 0.100 UJ	NA	1,020 J	718 J	NA	13,000	954	19,800
	6/24/2020	6.33	0.07	-47	5.45	0.0	13.9	0.61 J	94	63	2,000	< 0.47 U	260	5.5	250,000	2.5	0.747	< 0.100 U	1,270	911	NA	115,000	3,830	18,400
	12/3/2020	6.37	0.61	94	5.14	5.1	12 J	< 0.5 U	91	63	1,800	< 0.47 U	1,000	11.0	370,000 J	NA	< 0.100 U	NA	1070	727	NA	7,800	436	6,550
	6/3/2021	6.25	0.11	84	5.00	13.3	20.5	< 1.0 U	190	87	780	< 0.47 U	1,500	11	690,000	NA	< 0.200 U	NA	955	615	NA	72,200	13,400	55,800
	12/1/2021	6.01	0.05	73	4.73	8.1	19.3	0.66 J	100	86	650	<0.25 U	531	7.5	661,000	NA	0.164 J	NA	963	606	NA	177,000	21,400	41,700
	6/8/2022	6.16	0.02	27	4.87	5.1	17.7	< 5.0 U	150	89	840	<0.25 U	714	16.1	458,000	NA	0.030 J	NA	1,040	668	NA	70,400	18,400	67,400
	1/12/2023	6.43	0.18	-37	5.31	5.1	14.5	0.60 J	220	110	990	<0.500 U	2,600	35.8	330,000 D	NA	0.0452 J	NA	1,180	660	NA	91,800	23,100	15,200
	6/5/2023	6.68	0.08	-17	6.25	0.0	15.9	< 0.50 U	180	85	940	<0.500 U	3,350	38.9	200,000	NA	< 0.0500 U	NA	1,090	661	NA	40,800	43,800	8,330
	5/23/2024	6.56	0.09	38	5.13	49.1	40.3	< 5.0 U	130	73	480	< 0.500 U	473	6.89	800,000	NA	< 0.0500 U	NA	1,400	765	NA	3,600	900	660

Table 6
Enhanced In-Situ Bioremediation Performance Data Summary-Western Plume
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Monitoring Location	Sample Date	Field Parameters					Electron Donor	cVOCs				Dissolved Gases				Wet Chemistry						Dechlorinating Bacteria		
		pH	DO	ORP	Spec Cond	Turb	TOC	PCE	TCE	cDCE	VC	Ethane	Methane	Ethene	CO_2	Fe^{2+}	NO_3	NO_2	SO_4	Cl^-	Alk	DHC	DHBt	BAV1 VC
		SU	mg/L	mV	mS/cm	NTU	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	cells/mL	cells/mL	cells/mL
35AWW23	3/8/2018	5.92	0.76	185	3.58	89.5	3.31	< 1.0 U	27	21	3.1	< 0.47 U	< 1.0 U	< 0.55 U	500,000	0.13 J	1.2	< 0.0500 U	761	487	608	< 0.5 U	< 4.8 U	NA
	7/17/2018	5.67	0	-167	3.4	178	856	< 0.5 U	2.6	12	< 0.5 U	< 0.47 U	49	0.38 J	370,000	25.1 J	< 0.100 U	< 0.100 U	< 0.500 U	482	914	45.1	9,530	1.7 J
	9/26-27/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/10/2018	5.6	0.05	-86	3.99	32.5	879	< 0.5 U	5.3	20	< 0.5 U	< 0.47 U	2,200	< 0.55 U	810,000	50 J	< 0.200 U	< 0.200 U	4.19	578	1,110	149	< 25.0 U	5
	3/19/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/3/2019	5.74	0.02	-50	4.86	47.7	1,360	< 0.5 U	1.8	4.3	< 0.5 U	< 0.47 U	1,300	< 0.55 U	750,000	0.57	< 0.500 U	NA	14.1	732	NA	652	< 38.5 U	2.5 J
	9/11/2019	6.24	0.02	-44	4.76	26.3	108	< 0.5 U	3.8	7.8	<0.5 U	< 0.47 U	2,700	< 0.55 U	590,000	3.3	< 0.100 U	< 0.100 U	4.63	857	NA	326	< 13.9 U	1.1 J
	12/18/2019	6.17	0.02	-104	4.85	43.2	127	< 0.5 U	2.7	7.6	1.1	< 0.47 U	1,400	< 0.55 U	360,000	1.83	<0.500 U	NA	1.62 J	868	NA	689	< 5.6 U	0.4 J
	3/24/2020	6.23	0.05	-102	4.72	28.6	250	< 0.5 U	1.3	6.5	<0.5 U	< 0.47 U	1,400	< 0.55 U	600,000	2.33	< 0.100 U	NA	1.84	925	NA	136	<5.5 U	1
	6/24/2020	6.17	0.04	-117	4.29	22.6	849	< 1.0 U	< 0.5 U	5.0	<0.5 U	< 0.47 U	1,300	< 0.55 U	310,000	3.01	< 0.100 U	< 0.100 U	1.26	1,160	NA	765	< 5.6 U	13
	12/3/2020	6.32	0.07	-41	4.67	11.5	21.4	< 0.5 U	< 0.5 U	2.7	< 0.5 U	< 0.47 U	3,700	< 0.55 U	540,000 J	NA	< 0.100 U	NA	< 0.500 U	958	NA	557	< 5.3 U	< 0.50 U
	6/3/2021	6.44	0.04	-129	4.95	9.7	19.7	< 1.0 U	< 0.5 U	1.0	< 0.5 U	< 0.47 U	3,700	< 0.55 U	540,000	NA	< 0.200 U	NA	0.401 J	846	NA	3,220	8,200	0.30 J
	12/2/2021	6.14	0.08	-48	4.43	34.1	21.2	< 1.0 U	< 0.5 U	0.63 J	< 0.5 U	<0.25 U	2,270	<0.50 U	779,000	NA	0.0811 J	NA	1.68	849	NA	1,030	208	<0.60 U
	6/8/2022	6.33	0.05	-71	4.46	26.2	14.2	< 1.0 U	< 0.5 U	<0.5 U	< 0.5 U	<0.25 U	3,170	<0.50 U	520,000	NA	0.0720 J	NA	1.47	807	NA	158	12,900	3
	1/12/2023	6.54	0.03	-144	4.61	36.0	14.7	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	<0.500 U	4,590	<0.500 U	360,000 D	NA	< 0.0500 U	NA	1.68	792	NA	180	193	0.10 J
	6/5/2023	6.98	0.08	-107	5.36	0.0	12.6	< 0.5 U	< 0.5 U	<0.5 U	< 0.5 U	<0.500 U	7,440	<0.500 U	220,000 M	NA	< 0.100 U	NA	449.00	1,950	NA	82.1	61.9	< 0.60 U
	5/23/2024	7.07	1.85	-106	3.78	73.3	37.0	< 1.0 U	< 1.0 U	0.69 J	< 1.0 U	< 0.500 U	4,150	< 0.500 U	230,000	NA	< 0.0500 U	NA	20.30	656	NA	61.0	1,200	1
35AWW24	3/8/2018	5.31	0.66	224	4.87	99.5	1.45	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	< 1.0 U	< 0.55 U	290,000	0.33 J	0.11	< 0.0500 U	85.7	119	66.5	< 2.0 U	79.9	NA
	7/17/2018	4.98	0	71	4.84	449	1.58	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	< 1.0 U	< 0.55 U	430,000	0.16 J	0.0640 J	< 0.100 U	73.6	117	52.4	< 1.90 U	137	<1.9 U
	9/26-27/2018	4.52	0	252	5.84	352	0.87	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	190	< 0.55 U	330,000	0.31 J	< 0.100 U	< 0.100 U	69.9	110	50.8	< 0.50 U	4.6 J	<0.5 U
	12/10/2018	4.41	0.05	38	4.89	514	1.67	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	68	< 0.55 U	660,000	0.54 J	0.157 J	< 0.100 U	69.9	109	45.9	< 1.20 U	1.50 J	<1.2 U
	3/19/2019	4.79	0.08	154	4.85	213	1.68 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	7.8	< 0.55 U	680,000	1.17	< 0.100 U	NA	70	115	NA	< 0.80 U	< 8.30 U	<0.8 U
	6/3/2019	4.53	0.06	347	5.74	74	1.55 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	4.2	< 0.55 U	530,000	1.17	< 0.100 U	NA	74.9	106	NA	0.90	24.7	<0.5 U
	12/19/2019	5.62	0.03	147	5.51	55.1	NA	< 0.50 UJ	< 0.50 UJ	< 0.50 UJ	< 0.50 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/25/2020	5.55	0.98	143	5.15	25.3	NA	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/3/2020	4.88	0.17	156	4.90	109	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/3/2021	5.66	0.31	166	5.37	71.1	NA	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/2/2021	4.68	0.08	292	4.64	322	NA	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/8/2022	4.53	0.04	318	5.73	33.3	NA	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1/13/2023	5.30	0.82	183	5.27	183	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/7/2023	5.79	0.08	168	6.75	58.0	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	5/29/2024	4.72	0.38	256	0.57	80.3	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA



-Slight increase in pH following injection is favorable.
'-pH has remained favorable.

-Initial spike in TOC indicates effective substrate distribution to several of the areas.
'-TOC is generally low after the initial spikes observed after the injections.

-Decreasing concentrations of cVOCs.
-Additional time/monitoring necessary to observe complete dechlorination at 35AWW20.

-Increased carbon dioxide indicates metabolism of the injected substrate is occurring.
'-The presence of ethene indicates that complete dechlorination is occurring.
-Elevated ethene at 35AWW20 indicates complete reduction continues.

-Decreasing sulfate concentration indicates the onset/development of reducing conditions conducive to reductive dechlorination.

-Initial spike in dechlorinating bacteria counts suggest effective distribution of the bioaugmentation culture.
'-Elevated dechlorinating bacteria still present in the western plume. With the highest levels at 35AWW20.

Notes:

1. Electron donor injections completed in March 2018
2. Bioaugmentation performed in April 2018
3. Data recorded but not used since bailer was used to collect the sample.

pH = negative log of the hydrogen ion concentration
SU = standard units
DO = dissolved oxygen
mg/L = milligrams per liter
ORP = oxidation-reduction potential
M - Manual integrated compound
D - The reported value is from a dilution

mV = millivolts
Spec Cond = specific conductivity
mS/cm = millisiemens per centimeter
Turb = turbidity
NTU = nephelometric turbidity units
TOC = total organic carbon
cVOC = chlorinated volatile organic compounds

PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
µg/L = micrograms per liter
CO_2 = carbon dioxide
Fe^{2+} = ferrous iron

NO_3 = nitrate
NO_2 = nitrite
SO_4 = sulfate
Cl^- = chloride
Alk = alkalinity
DHC = dehalococcoides
DHBt = dehalobacter spp.

cells/mL = cells per milliliter
NA = not analyzed
NR = not recorded
U - Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection analyte-specific quality control criteria.
J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain analyte-specific quality control criteria.

Table 7
2025 RA-O Groundwater Monitoring Plan
LHAAP-35A (58), Longhorn Army Ammunition Plant, Karnack, Texas
2024 RA-O Report

Well Identification	Well description	2024 RA-O May-24	2025 RA-O May-25
LHAAP-35A(58)		**Western/Eastern Plume Annual Sampling**	**Western/Eastern Plume Annual Sampling**
35ASW03	Surface Water Sample	VOCs	VOCs
03WW01	Shallow	VOCs, As	VOCs, As
35AWW01	Intermediate	VOCs, As	VOCs, As
35AWW04	Shallow	VOCs, As	VOCs, As
35AWW05	Intermediate	VOCs	VOCs
35AWW06	Shallow	VOCs	VOCs
35AWW08	Shallow	VOCs, As	VOCs, As
35AWW09	Shallow	VOCs, As	VOCs, As
35AWW10	Shallow	VOCs	VOCs
35AWW11	Shallow	VOCs	VOCs
35AWW12	Shallow	VOCs	VOCs
35AWW13	Shallow	VOCs	VOCs
35AWW14	Shallow	VOCs	VOCs
35AWW15	Shallow	VOCs	VOCs
35AWW16	Shallow	VOCs	VOCs
35AWW17	Shallow	VOCs	VOCs
35AWW18	Shallow	VOCs	VOCs
35AWW19	Shallow	VOCs	VOCs
35AWW20	Shallow	VOCs, As	VOCs, As
35AWW21	Shallow	VOCs	VOCs
35AWW22	Shallow	VOCs	VOCs
35AWW23	Shallow, New Wells South of Avenue G in center of Western Plume	VOCs	VOCs
35AWW24	Shallow, Downgradient Western Plume well	VOCs	VOCs
35AWW25	Proposed -Shallow, Downgradient Western Plume Well	VOCs	VOCs
35AWW26	Proposed-Shallow, Upgradient Western Plume Well	VOCs	VOCs
35AWW27	Proposed -Shallow, Downgradient Western Plume Well	VOCs	VOCs
LHSMW04	Shallow	VOCs, As	VOCs, As
LHSMW06	Shallow	VOCs, As	VOCs, As
LHSMW07	Shallow	VOCs	VOCs

Notes:
VOCs - Volatile Organic Compounds
MNA - Monitored Natural Attenuation (parameters include: total organic carbon, anions [sulfate, chloride, nitrate, and nitrite], and dissolved gases [carbon dioxide, methane, ethan
VFA - Volatile Fatty Acids
DHB - Dehalobacter
DHC - Dehalococcoides
As - Arsenic

This page intentionally left blank.

APPENDIX A
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION DOCUMENTATION

This page intentionally left blank.

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-35A (58) a certification of site was conducted by BHATG [indicate transferee] on 11/15/24.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-35A (58)]

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-35A (58).

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: NOVEMBER 15, 2024

Name/Title: Scott Bess, NB4E / Senior Environmental Tech

Signature: Scott Bess

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

This page intentionally left blank.

APPENDIX B
PHOTOGRAPHIC LOG

This page intentionally left blank.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log May 2024



Photo 1: 03WW01 in good condition.



Photo 2: Surface water sampling location 35ASW03.



Photo 3: 35AWW01 in good condition.



Photo 4: 35AWW04 in good condition.



Photo 5: 35AWW05 in good condition.



Photo 6: 35AWW06 in good condition.



Photo 7: 35AWW08 in good condition.



Photo 8: 35AWW09 in good condition.



Photo 9: 35AWW10 with rusted hinge but overall good condition.



Photo 10: 35AWW11 in good condition.



Photo 11: 35AWW12 with rusted hinge but overall good condition.



Photo 12: 35AWW13 in good condition.



Photo 13: 35AWW14 in good condition.



Photo 14: 35AWW15 in need of paint and has rusted hinge.



Photo 15: 35AWW16 in good condition.



Photo 16: 35AWW17 with rusted hinge but overall good condition.



Photo 17: 35AWW18 in good condition.



Photo 18: 35AWW19 with rusted hinge but overall good condition.



Photo 19: 35AWW20 in good condition.



Photo 20: 35AWW21 with rusted hinge but overall good condition.



Photo 21: 35AWW22 with rusted hinge but overall good condition.



Photo 22: 35AWW23 in good condition.



Photo 25: 35AWW24 in good condition.



Photo 26: 35AWW25 in good condition.



Photo 27: 35AWW26 in good condition.



Photo 28: LHSMW04 in good condition, but dry during the May 2024 sample event.



Photo 29: LHSMW06 in good condition.



Photo 30: LHSMW07 in good condition.

APPENDIX C
WELL INSPECTION FORMS

This page intentionally left blank.

01335756

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SVPCIBH.0001
Client: ARmy
Site Name: 58
Well ID: 03WW01
Inspection Date: 5/28/24
Well Completion Depth/ Measured Depth: 33.33
Inspector: Scott Beasinbar

☒ 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): 2"
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:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCTBH.0001
Client: ARmy
Site Name: 58
Well ID: 35AWW01
Inspection Date: 5/28/24
Well Completion Depth/Measured Depth: 72.60
Inspector: Scott Buesinbar

☒ 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:

01335758

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SVPCI BH. 0001
Client: Army
Site Name: 58

Well ID: 35YAWW04
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 25.40
Inspector: Scott Baggingar

☒ 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:

01335759

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCFBH.0001
Client: ARmy
Site Name: 58
Well ID: BSAWW05
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 73.04
Inspector: Scott Baessler

☒ 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:

01335760

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPC7BH.0001
Client: ARmy
Site Name: 58
Well ID: 35AWW06
Inspection Date: 5/23/24
Well Completion Depth/ Measured Depth: 30.30
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

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:

01335761

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPLI BH.0001
Client: ARMY
Site Name: 58

Well ID: 35AWW08
Inspection Date: 5/28/24
Well Completion Depth/ Measured Depth: 33.30
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): 2"
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:

01335762

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: ARMY
Site Name: SS

Well ID: 35AWW09
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 42.11
Inspector: Scott Baggenstoss

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): 2"
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:

01335763

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCT BH.0001
Client: ARMY
Site Name: 58
Well ID: 35AWW10
Inspection Date: 5/28/24
Well Completion Depth/ Measured Depth: 33.66
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): 2"
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:

01335764

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: ARMY
Site Name: 58
Well ID: 35AWW11
Inspection Date: 5/23/24
Well Completion Depth/ Measured Depth: 37.87
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

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): 2"
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:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SUPCIBH.0001
Client: ARMY
Site Name: 58

Well ID: 35AMW12
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 37.52
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

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): 2"
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:

01335766

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCTBH.0001
Client: ARMY
Site Name: 58
Well ID: 35AWW13
Inspection Date: 5/28/24
Well Completion Depth/ Measured Depth: 40.18
Inspector: Scott Bassinger

☒ 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): 2 11
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:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: ARmy
Site Name: SS

Well ID: 35AWW14
Inspection Date: 5/30/24
Well Completion Depth/ Measured Depth: 32.23
Inspector: Scott Bassinger

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): 2"
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:

01335768

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: Army
Site Name: 58

Well ID: 35AWW15
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 40.83
Inspector: Scott Bassinger

☒ 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): 2"
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:

01335769

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCI BH.0001
Client: Army
Site Name: 58
Well ID: 35AWW16
Inspection Date: 5/20/24
Well Completion Depth/ Measured Depth: 37.37
Inspector: Scott Baggenstoss

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): 2"
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:

01335770

WELL INSPECTION FORM

Job Name: CHAAP
Job No.: JVPCIBH.0001
Client: ARmy
Site Name: 58
Well ID: 35AWW17
Inspection Date: 5/30/24
Well Completion Depth/ Measured Depth: 42.42
Inspector: Scott Bressinger

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): 2"
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:

01335771

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUFCIBH.0001
Client: ARMY
Site Name: 58

Well ID: 35AWW18
Inspection Date: 5/23/24
Well Completion Depth/ Measured Depth: 42.12
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

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): 2"
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:

01335772

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARmy
Site Name: 58
Well ID: 35AWW19
Inspection Date: 5/23/24
Well Completion Depth/ Measured Depth: 32.42
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

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): 2"
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)
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:

01335773

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCTBH.0001
Client: ARmy
Site Name: 58
Well ID: 35AWW20
Inspection Date: 5/23/24
Well Completion Depth/ Measured Depth: 36.05
Inspector: Scott Buesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METALS
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): 2"
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:

01335774

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SVPCIBH.0001
Client: ARMY
Site Name: 58
Well ID: 35AWW21
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 42.78
Inspector: Scott Baggenstoss

☒ 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): 2"
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:

01335775

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCTBH.0001
Client: ARMY
Site Name: 58
Well ID: 35AWW22
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 37.67
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

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): 2"
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:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: IDPETBH.0001
Client: ARMY
Site Name: SS

Well ID: 35AWW23
Inspection Date: 5/23/24
Well Completion Depth/ Measured Depth: 43.70
Inspector: Scott Bassinger

☒ 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): 2"
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:

01335777

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: IVPCIBA.0001
Client: Army
Site Name: 58
Well ID: 35AMW24
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 35.01
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
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): 2"
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:

01335778

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCIBH.0001
Client: Army
Site Name: SS

Well ID: 35AWW25
Inspection Date: 5/30/24
Well Completion Depth/ Measured Depth: 23.72
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): 2"
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?		
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:

01335779

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: SVPCIBH.0001
Client: ARMY
Site Name: 58
Well ID: 35AWW26
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 32.00
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): 2"
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:

01335780

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JOPCTBH-0001
Client: Army
Site Name: 58
Well ID: CHSMW04
Inspection Date: 5/29/24
Well Completion Depth/ Measured Depth: 31.00
Inspector: Scott Bassinger

☒ 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:

01335781

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JUPCIBH.0001
Client: ARMY
Site Name: 58
Well ID: LHSMW06
Inspection Date: 5/28/24
Well Completion Depth/ Measured Depth: 23.48
Inspector: Scott Bessinger

☑ 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:

01335782

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: JVPCFBH.0001
Client: ARmy
Site Name: 58

Well ID: LHSmw07
Inspection Date: 5/23/24
Well Completion Depth/ Measured Depth: 30.42
Inspector: Scott Beasinger

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:

This page intentionally left blank.

APPENDIX D
MONITORING WELL SAMPLE COLLECTION FORMS

This page intentionally left blank.

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335786

LOCATION	Site: LHAAP - 58		Location ID: 35AWW19		Date: 5/23/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"		Unit Casing Volume (gal/lin ft) (A): 0.160		Initial Depth to Water (ft) (B): 24.18
	Total Well Depth (ft) (C): 32.42		Water Column Thickness (ft) (C-B): 8.24		2nd Depth to Water(pre-purge): 24.18
	Screened Interval: 16.89 - 31.39		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 1.32
	Pump placement: 25.00		Well Condition: BROKEN HINGE		Ferrous Iron: 0.75 mg/L

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/23/24	0715	24.25	0.13	100	21.05	6.28	2.20	0.71	95.6	140	
	0720	24.31	0.26	100	19.81	6.20	2.22	0.30	86.5	141	
	0725	24.35	0.39	100	19.57	5.99	2.23	0.11	85.9	140	
	0730	24.38	0.52	100	19.52	5.98	2.24	0.11	85.4	139	
	0735	24.40	0.65	100	19.48	5.98	2.24	0.10	84.5	139	
↓	0740	24.42	0.78	100	19.43	5.97	2.24	0.10	84.0	138	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	3	40ml GLASS	HCL	N		VOC
	3	40ml GLASS	HCL	N		MEE
	2	40ml AMBER	H_2SO_4	N		TOC
	3	40ml AMBER	H_2SO_4	N		VFA
	3	40ml GLASS	NA	N		CO_2
	1	250ml PLASTIC	NA	N		ANIONS
	1	1 Liter PLASTIC	NA	N		DHL/DHB

Sample ID: 35AWW19_052324 Sample Time: 0740

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335787

LOCATION	Site: LHAAP - 58	Location ID: 35AWW20	Date: 5/23/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 18.00
	Total Well Depth (ft) (C): 36.05	Water Column Thickness (ft) (C-B): 18.05	2nd Depth to Water(pre-purge): 18.00
	Screened Interval: 20.94 - 35.64	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 2.89
	Pump placement: 28.29	Well Condition: GOOD	Ferrous Iron: 2.25 mg/L

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/23/24	0855	18.07	0.13	100	21.39	7.93	5.16	0.69	58.6	84	
	0900	18.13	0.26	100	21.59	6.89	5.19	0.25	53.2	35	
	0905	18.17	0.39	100	21.91	6.61	5.15	0.10	50.7	36	
	0910	18.20	0.52	100	21.96	6.60	5.14	0.09	50.3	37	
	0915	18.22	0.65	100	22.02	6.58	5.14	0.09	49.6	38	
	0920	18.24	0.78	100	22.07	6.56	5.13	0.09	49.1	38	

Colorimeter Results				
Time	Analyte	Dilution	Result	Units

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type		Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40ml GLASS	HCL	N		VOC
3	40ml GLASS	HCL	N		MEK
2	40ml AMBER	H2SO4	N		TOC
3	40ml AMBER	H2SO4	N		VFA
3	40ml GLASS	NA	N		CO2
1	125ml PLASTIC	HNO3	N		ARSENIC
1	250ml PLASTIC	NA	N		ANIONS

Sample ID: 35AWW20_052324 Sample Time: 0920

1 1 Liter PLASTIC NA N DHC/DHB

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335788

LOCATION	Site: LHAAP - 58	Location ID: 35AWW21	Date: 5/29/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"	Unit Casing Volume (gal/lin ft) (A): 0.160	Initial Depth to Water (ft) (B): 31.69
	Total Well Depth (ft) (C): 42.78	Water Column Thickness (ft) (C-B): 11.09	2nd Depth to Water(pre-purge): 31.69
	Screened Interval: 27.56 - 42.26	Weather: CLEAR	Well Volume (gal) (A*(C-B)): 1.77
	Pump placement: 34.91	Well Condition: BROKEN HINGE	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/29/24	1000	31.77	0.13	100	20.50	7.00	3.10	1.81	45.7	144	
	1005	31.83	0.26	100	20.38	5.85	3.10	1.58	36.9	209	
	1010	31.87	0.39	100	20.07	5.53	3.09	1.46	33.8	234	
	1015	31.90	0.52	100	20.02	5.51	3.09	1.44	33.4	236	
	1020	31.93	0.65	100	19.97	5.49	3.08	1.42	32.6	238	
	1025	31.96	0.78	100	19.94	5.48	3.08	1.41	32.1	239	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		9	40ml Glass	HCl	N		VOC

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 35AWW21-052924 Sample Time: 1025

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335789

LOCATION	Site: LHAAP - 58		Location ID: 35AWW22		Date: 5/29/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2in		Unit Casing Volume (gal/lin ft) (A): 0.160		Initial Depth to Water (ft) (B): 32.95
	Total Well Depth (ft) (C): 37.67		Water Column Thickness (ft) (C-B): 4.72		2nd Depth to Water(pre-purge): 32.95
	Screened Interval: 22.27 - 36.77		Weather: Cloudy		Well Volume (gal) (A*(C-B)): 0.76
	Pump placement: 33.75		Well Condition: Broken Hinge		Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/29/24	1045	33.03	0.13	100	22.57	5.77	7.25	1.97	42.9	168	
	1050	33.09	0.26	100	21.55	6.10	7.45	1.75	36.7	174	
	1055	33.13	0.39	100	21.04	6.27	7.53	1.66	32.9	181	
	1100	33.17	0.52	100	20.96	6.28	7.54	1.64	32.4	182	
	1105	33.20	0.65	100	20.92	6.30	7.56	1.63	31.8	182	
	1110	33.23	0.78	100	20.89	6.31	7.56	1.62	31.3	183	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		3	40ml Glass	HCL	N		VOC

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: 35AWW22052924 Sample Time: 1110

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335790

LOCATION	Site: LHAAP - 58			Location ID: 35AWW23				Date: 5/23/24			
	Project Name: LHAAP			Project No./Phase: JVPCIBH.0001				Recorded By: Scott Beesinger			
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro			Water Quality Meter/ID#: U-52 Horiba				PID Type/ID#: NA			
	Water Level Indicator Type/ID#: Solinist 101			Other Equipment/ID#: NA				Decon Method: Liquinox & DI water			
	Tubing Type/Diameter (in): 1/4"			Other Equipment/ID#: NA				PPE: Level D			
WELL INFO	Casing Type / ID (in): PVC 2"			Unit Casing Volume (gal/lin ft) (A): 0.160				Initial Depth to Water (ft) (B): 22.23			
	Total Well Depth (ft) (C): 43.70			Water Column Thickness (ft) (C-B): 21.47				2nd Depth to Water(pre-purge): 22.23			
	Screened Interval: 28.20 - 43.20			Weather: CLEAR				Well Volume (gal) (A*(C-B)): 3.44			
	Pump placement: 35.70			Well Condition: GOOD				Ferrous Iron: 4.24 mg/L			

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/23/24	1035	22.30	0.13	100	23.09	7.35	3.82	2.31	84.8	-47	
	1040	22.36	0.26	100	22.31	7.12	3.82	2.01	76.4	-95	
	1045	22.39	0.39	100	22.17	7.08	3.80	1.90	74.8	-104	
	1050	22.42	0.52	100	22.11	7.07	3.79	1.87	74.3	-105	
	1055	22.44	0.65	100	22.06	7.07	3.78	1.86	73.6	-106	
↓	1100	22.46	0.78	100	22.00	7.07	3.78	1.85	73.3	-106	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	3	40ml GLASS	HCL	N		VOC
	3	40ml GLASS	HCL	N		MEE
	2	40ml AMBER	H2SO4	N		TOC
	3	40ml AMBER	H2SO4	N		VFA
	3	40ml GLASS	NA	N		CO2
	1	250ml PLASTIC	NA	N		ANIONS
	1	1 LITER PLASTIC	NA	N		DHC/DHB

Sample ID: 35AWW23_052324 Sample Time: 1100

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335791

LOCATION	Site: LHAAP - 58		Location ID: 35AWW24		Date: 5/29/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"		Unit Casing Volume (gal/lin ft) (A): 0.160		Initial Depth to Water (ft) (B): 23.27
	Total Well Depth (ft) (C): 35.01		Water Column Thickness (ft) (C-B): 11.74		2nd Depth to Water(pre-purge): 23.27
	Screened Interval: 25.10 - 35.10		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 1.88
	Pump placement: 30.10		Well Condition: GOOD		Ferrous Iron: NA

CASING INFO										
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/29/24	0830	23.35	0.13	100	20.45	6.08	0.528	0.88	95.7	180	
	0835	23.41	0.26	100	19.33	5.17	0.573	0.51	86.3	221	
	0840	23.45	0.39	100	19.25	4.77	0.573	0.40	82.4	251	
	0845	23.48	0.52	100	19.20	4.75	0.574	0.39	81.6	253	
	0850	23.51	0.65	100	19.15	4.73	0.574	0.39	80.9	255	
	0855	23.53	0.78	100	19.11	4.72	0.574	0.38	80.3	256	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	3	40ml GLASS	HCL	N		VOC

Sample ID: 35AWW24_052924 Sample Time: 0855

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335792

LOCATION	Site: LHAAP - 58			Location ID: 35AWW25				Date: 5/30/24			
	Project Name: LHAAP			Project No./Phase: JVPCIBH.0001				Recorded By: Scott Beesinger			
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro			Water Quality Meter/ID#: U-52 Horiba				PID Type/ID#: NA			
	Water Level Indicator Type/ID#: Solinist 101			Other Equipment/ID#: NA				Decon Method: Liquinox & DI water			
	Tubing Type/Diameter (in): 1/4"			Other Equipment/ID#: NA				PPE: Level D			
WELL INFO	Casing Type / ID (in): PVC 2"			Unit Casing Volume (gal/lin ft) (A): 0.160				Initial Depth to Water (ft) (B): 21.20			
	Total Well Depth (ft) (C): 23.72			Water Column Thickness (ft) (C-B): 2.52				2nd Depth to Water(pre-purge): 21.20			
	Screened Interval: 13.00 - 23.00			Weather: CLEAR				Well Volume (gal) (A*(C-B)): 0.40			
	Pump placement: BAILER			Well Condition: GOOD				Ferrous Iron: NA			

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
		21.20	NA								
5/30/24	0648	~~23.72~~	~~0.00~~	NA							BAILING WELL
5/30/24	0651	23.68	0.50	NA							BAILED 0.50GAllons RANDRY
5/30/24	1010	21.33	NA	NA	20.17	6.03	2.89	NA	33.1	129	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		3	40ml GLASS	HCL	N		VOC

Conversions	Stabilization Criteria									
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%						
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%						
	Cond	+/- 10%	ORP	+/- 10	Sample ID: 35AWW25_053024			Sample Time: 1010		

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335793

LOCATION	Site: LHAAP - 58		Location ID: 35AWW26		Date: 5/29/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 2"		Unit Casing Volume (gal/lin ft) (A): 0.160		Initial Depth to Water (ft) (B): 19.00
	Total Well Depth (ft) (C): 32.00		Water Column Thickness (ft) (C-B): 13.00		2nd Depth to Water(pre-purge): 19.00
	Screened Interval: 20.00 - 30.00		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 2.08
	Pump placement: 25.00		Well Condition: GOOD		Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/29/24	0705	19.07	0.13	100	20.40	7.52	12.7	0.95	14.8	32	
	0710	19.13	0.26	100	21.29	6.90	13.0	0.69	11.9	48	
	0715	19.17	0.39	100	21.48	6.79	13.0	0.55	9.8	61	
	0720	19.20	0.52	100	21.54	6.78	13.1	0.54	9.4	62	
	0725	19.22	0.65	100	21.60	6.78	13.1	0.53	8.9	63	
	0730	19.24	0.78	100	21.65	6.77	13.2	0.52	8.5	64	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
	3	40ml Glass	HC	N		VOC

Sample ID: 35AWW26.052924 Sample Time: 0730

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335794

LOCATION	Site: LHAAP - 58	Location ID: LHSMW04	Date: 5/2/24
	Project Name: LHAAP	Project No./Phase: JVPCIBH.0001	Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro	Water Quality Meter/ID#: U-52 Horiba	PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101	Other Equipment/ID#: NA	Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"	Other Equipment/ID#: NA	PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"	Unit Casing Volume (gal/lin ft) (A): 0.652	Initial Depth to Water (ft) (B): DRY
	Total Well Depth (ft) (C): 31.00	Water Column Thickness (ft) (C-B): DRY	2nd Depth to Water(pre-purge): DRY
	Screened Interval: 21.11 - 31.11	Weather: Cloudy	Well Volume (gal) (A*(C-B)): NA
	Pump placement: 26.11	Well Condition: Good	Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
			Dry well								

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type	Preserv.	Filter (Y/N)	Method	Parameter(s)
Sample ID:		Sample Time:		

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335795

LOCATION	Site: LHAAP - 58		Location ID: LHSMW06		Date: 5/28/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): SS 4"		Unit Casing Volume (gal/lin ft) (A): 0.652		Initial Depth to Water (ft) (B): 17.66
	Total Well Depth (ft) (C): 23.48		Water Column Thickness (ft) (C-B): 5.82		2nd Depth to Water(pre-purge): 17.66
	Screened Interval: 13.32-23.32		Weather: Cloudy		Well Volume (gal) (A*(C-B)): 3.79
	Pump placement: 18.32		Well Condition: Good		Ferrous Iron: NA

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/28/24	1545	17.73	0.13	100	20.57	5.50	2.25	0.81	17.7	185	
	1550	17.79	0.26	100	18.61	6.51	2.17	0.52	14.5	149	
	1555	17.83	0.39	100	18.47	6.49	2.06	0.36	12.9	182	
	1600	17.86	0.52	100	18.44	6.48	2.05	0.35	12.3	184	
	1605	17.88	0.65	100	18.38	6.48	2.04	0.35	11.7	185	
	1610	17.90	0.78	100	18.33	6.48	2.04	0.34	11.4	186	

Colorimeter Results					No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
Time	Analyte	Dilution	Result	Units		6	40ml Glass	HCL	N		VOC
						2	125ml Plastic	HNO3	N		ARSENIC

Conversions	Stabilization Criteria			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

Sample ID: LHSMW06-052824 Sample Time: 1610

bhate ENVIRONMENT INFRASTRUCTURE

GROUNDWATER SAMPLE COLLECTION FORM

01335796

LOCATION	Site: LHAAP - 58		Location ID: LHSMW07		Date: 5/23/24
	Project Name: LHAAP		Project No./Phase: JVPCIBH.0001		Recorded By: Scott Beesinger
EQUIPMENT	Pump Type/ID#: Bladder Pump / SamplePro		Water Quality Meter/ID#: U-52 Horiba		PID Type/ID#: NA
	Water Level Indicator Type/ID#: Solinist 101		Other Equipment/ID#: NA		Decon Method: Liquinox & DI water
	Tubing Type/Diameter (in): 1/4"		Other Equipment/ID#: NA		PPE: Level D
WELL INFO	Casing Type / ID (in): PVC 4"		Unit Casing Volume (gal/lin ft) (A): 0.652		Initial Depth to Water (ft) (B): 16.85
	Total Well Depth (ft) (C): 30.42		Water Column Thickness (ft) (C-B): 13.57		2nd Depth to Water(pre-purge): 16.85
	Screened Interval: 19.73-29.73		Weather: CLEAR		Well Volume (gal) (A*(C-B)): 8.85
	Pump placement: 24.73		Well Condition: GOOD		Ferrous Iron: 0.52 mg/L

CASING INFO											
Casing ID (in)	0.5	0.75	1.0	1.5	2.0	3.0	4.0	5.0	6.0	8.0
Unit Casing Volume (gal/lin ft)	0.016	0.020	0.043	0.103	0.160	0.378	0.652	1.03	1.48	2.57

DATE	TIME (24 Hr)	Water Level (BTOC)	Volume Removed (Gals)	Pumping Rate (ml/min)	Temp (C)	pH	Cond (mS/cm)	DO (mg/l)	Turb (NTU)	ORP (mV)	Remarks (odor, clarity, etc.)
5/23/24	0805	16.92	0.13	100	21.12	6.31	9.32	0.58	92.7	112	
	0810	16.97	0.26	100	20.29	6.72	9.88	0.19	86.8	85	
	0815	17.01	0.39	100	19.98	6.86	9.96	0.03	85.0	77	
	0820	17.03	0.52	100	19.94	6.88	9.97	0.03	84.5	76	
	0825	17.05	0.65	100	19.90	6.89	9.98	0.03	83.9	75	
	0830	17.06	0.78	100	19.86	6.90	9.98	0.02	83.4	75	

Colorimeter Results

Time	Analyte	Dilution	Result	Units

Conversions	**Stabilization Criteria**			
1 L = 0.26 gals	Temp	+/- 10%	DO	+/- 10%
1 gal = 3.79 L	pH	+/- 0.1	Turb	+/- 10%
	Cond	+/- 10%	ORP	+/- 10

No. Containers/Volume/Type			Preserv.	Filter (Y/N)	Method	Parameter(s)
3	40ml GLASS		HCL	N		VOC
3	40ml GLASS		HCL	N		MEK
2	40ml AMBER		H2SO4	N		TOC
3	40ml AMBER		H2SO4	N		VFA
3	40ml GLASS		NA	N		CO2
1	250ml PLASTIC		NA	N		ANIONS
1	1 LITER PLASTIC		NA	N		DHC/DHB

Sample ID: LHSMW07-052324 Sample Time: 0830

This page intentionally left blank.

APPENDIX E
LABORATORY ANALYTICAL RESULTS
(PROVIDED ELECTRONICALLY)

This page intentionally left blank.

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 10, 2024

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS24051535**

Laboratory Results for: **LHAAP-58**

Dear Marcia Olive,

ALS Environmental received 8 sample(s) on May 24, 2024 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
Luis.Aguilar

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS24051535

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS24051535-01	35AWW19_052324	Groundwater		23-May-2024 07:40	24-May-2024 09:50	☐
HS24051535-02	LHSMW07_052324	Groundwater		23-May-2024 08:30	24-May-2024 09:50	☐
HS24051535-03	35AWW20_052324	Groundwater		23-May-2024 09:20	24-May-2024 09:50	☐
HS24051535-04	35AWW11_052324	Groundwater		23-May-2024 10:10	24-May-2024 09:50	☐
HS24051535-05	35AWW23_052324	Groundwater		23-May-2024 11:00	24-May-2024 09:50	☐
HS24051535-06	35AWW06_052324	Groundwater		23-May-2024 11:50	24-May-2024 09:50	☐
HS24051535-07	35AWW18_052324	Groundwater		23-May-2024 12:40	24-May-2024 09:50	☐
HS24051535-08	Trip Blank	Water		23-May-2024 00:00	24-May-2024 09:50	☐

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS24051535

Work Order Comments

- The analysis for Carbon Dioxide was subcontracted to Eurofins in Lancaster. PA. Final report attached.
- The analysis for DHC/DHB was subcontracted to Microbial Insights in Knoxville, TN. Final report attached.

GC Semivolatiles by Method RSK-175

Batch ID: R468585

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Volatiles by Method SW8260

Batch ID: R468713

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R468115

Sample ID: HS24051490-05MS

- MS and MSD are for an unrelated sample

Metals by Method SW6020A

Batch ID: 213120

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E415.1

Batch ID: R468951

Sample ID: 35AWW19_052324 (HS24051535-01MS)

- 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 recovery of the MS may be due to sample matrix interference.

WetChemistry by Method SW9056

Batch ID: R467693

Sample ID: 35AWW11_052324 (HS24051535-04)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

Sample ID: 35AWW19_052324 (HS24051535-01MS)

- 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. (Sulfate)

Sample ID: LHSMW07_052324 (HS24051535-02)

- The reporting limit is elevated due to dilution for high concentrations of non-target analytes. (Nitrogen, Nitrate (As N))

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_052324
Collection Date: 23-May-2024 07:40

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 18:56
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
1,1-Dichloroethane	**0.88**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 18:56
1,1-Dichloroethene	**3.8**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 18:56
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 18:56
1,2-Dichloroethane	**1.7**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 18:56
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 18:56
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 18:56
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-May-2024 18:56
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-May-2024 18:56
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 18:56
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-May-2024 18:56
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 18:56
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW19_052324
Collection Date: 23-May-2024 07:40

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-May-2024 18:56
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 18:56
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 18:56
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 18:56
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 18:56
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 18:56
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*1*	*30-May-2024 18:56*
Surr: 4-Bromofluorobenzene	*109*			**0**	*85-114*	*%REC*	*1*	*30-May-2024 18:56*
Surr: Dibromofluoromethane	*115*			**0**	*80-119*	*%REC*	*1*	*30-May-2024 18:56*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*30-May-2024 18:56*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: RG
Ethane	**0.691**	J	**0.144**	**0.500**	**1.00**	**ug/L**	1	05-Jun-2024 14:52
Ethene	0.500	U	0.234	0.500	1.00	ug/L	1	05-Jun-2024 14:52
Methane	**1.15**		**0.107**	**0.500**	**0.500**	**ug/L**	1	05-Jun-2024 14:52
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: JAC
Organic Carbon, Total	**9.02**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Jun-2024 17:57
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**391**		**2.00**	**2.50**	**5.00**	**mg/L**	10	24-May-2024 21:31
Nitrogen, Nitrate (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	24-May-2024 21:25
Sulfate	**436**		**2.00**	**2.50**	**5.00**	**mg/L**	10	24-May-2024 21:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: LHAAP-58

WorkOrder:HS24051535

Sample ID: 35AWW19_052324

Lab ID:HS24051535-01

Collection Date: 23-May-2024 07:40

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2024 08:15
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2024 09:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_052324
Collection Date: 23-May-2024 08:30

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:17
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
1,1-Dichloroethane	**14**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 19:17
1,1-Dichloroethene	**99**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 19:17
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:17
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 19:17
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-May-2024 19:17
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-May-2024 19:17
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 19:17
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-May-2024 19:17
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:17
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW07_052324
Collection Date: 23-May-2024 08:30

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
cis-1,2-Dichloroethene	**1.1**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 19:17
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-May-2024 19:17
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 19:17
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 19:17
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:17
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:17
Trichloroethene	**2.0**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 19:17
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:17
Vinyl chloride	**47**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 19:17
Surr: 1,2-Dichloroethane-d4	*117*			**0**	*81-118*	*%REC*	*1*	*30-May-2024 19:17*
Surr: 4-Bromofluorobenzene	*110*			**0**	*85-114*	*%REC*	*1*	*30-May-2024 19:17*
Surr: Dibromofluoromethane	*114*			**0**	*80-119*	*%REC*	*1*	*30-May-2024 19:17*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*30-May-2024 19:17*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: RG
Ethane	**9.80**		**0.144**	**0.500**	**1.00**	**ug/L**	1	05-Jun-2024 15:01
Ethene	**15.5**		**0.234**	**0.500**	**1.00**	**ug/L**	1	05-Jun-2024 15:01
Methane	**1,490**		**5.35**	**25.0**	**25.0**	**ug/L**	50	05-Jun-2024 15:55
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: JAC
Organic Carbon, Total	**12.4**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Jun-2024 18:22
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**2,110**		**10.0**	**12.5**	**25.0**	**mg/L**	50	24-May-2024 21:54
Nitrogen, Nitrate (As N)	0.100	U	0.0600	0.100	0.200	mg/L	2	24-May-2024 21:48
Sulfate	**3,520**		**10.0**	**12.5**	**25.0**	**mg/L**	50	24-May-2024 21:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: LHAAP-58

WorkOrder:HS24051535

Sample ID: LHSMW07_052324

Lab ID:HS24051535-02

Collection Date: 23-May-2024 08:30

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2024 08:15
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2024 09:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_052324
Collection Date: 23-May-2024 09:20

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,1,1-Trichloroethane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
1,1,2,2-Tetrachloroethane	5.0	U	2.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,1,2-Trichloroethane	**56**		**1.5**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
1,1-Dichloroethane	**390**		**1.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
1,1-Dichloroethene	**1,100**		**5.0**	**25**	**25**	**ug/L**	25	06-Jun-2024 13:44
1,1-Dichloropropene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,2,3-Trichlorobenzene	5.0	U	2.0	5.0	5.0	ug/L	5	30-May-2024 21:07
1,2,3-Trichloropropane	5.0	U	2.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,2,4-Trichlorobenzene	5.0	U	2.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,2,4-Trimethylbenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,2-Dibromo-3-chloropropane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
1,2-Dibromoethane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
1,2-Dichlorobenzene	**26**		**2.5**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
1,2-Dichloroethane	**15**		**1.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
1,2-Dichloropropane	5.0	U	2.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,3,5-Trimethylbenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,3-Dichlorobenzene	5.0	U	2.0	5.0	5.0	ug/L	5	30-May-2024 21:07
1,3-Dichloropropane	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
1,4-Dichlorobenzene	**4.4**	J	**2.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
2,2-Dichloropropane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
2-Butanone	5.0	U	2.5	5.0	10	ug/L	5	30-May-2024 21:07
2-Chlorotoluene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
2-Hexanone	**19**		**5.0**	**5.0**	**10**	**ug/L**	5	30-May-2024 21:07
4-Chlorotoluene	5.0	U	2.0	5.0	5.0	ug/L	5	30-May-2024 21:07
4-Isopropyltoluene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
4-Methyl-2-pentanone	5.0	U	3.5	5.0	10	ug/L	5	30-May-2024 21:07
Acetone	5.0	U	2.0	5.0	10	ug/L	5	30-May-2024 21:07
Benzene	**6.0**		**1.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
Bromobenzene	5.0	U	2.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Bromochloromethane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Bromodichloromethane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Bromoform	5.0	U	2.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Bromomethane	5.0	U	2.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Carbon disulfide	5.0	U	3.0	5.0	10	ug/L	5	30-May-2024 21:07
Carbon tetrachloride	5.0	U	2.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Chlorobenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Chloroethane	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Chloroform	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW20_052324
Collection Date: 23-May-2024 09:20

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
cis-1,2-Dichloroethene	**73**		**1.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
cis-1,3-Dichloropropene	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Dibromochloromethane	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Dibromomethane	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Dichlorodifluoromethane	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Ethylbenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Hexachlorobutadiene	5.0	U	5.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Isopropylbenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
m,p-Xylene	5.0	U	2.5	5.0	10	ug/L	5	30-May-2024 21:07
Methylene chloride	5.0	U	2.0	5.0	10	ug/L	5	30-May-2024 21:07
n-Butylbenzene	5.0	U	2.0	5.0	5.0	ug/L	5	30-May-2024 21:07
n-Propylbenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Naphthalene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
o-Xylene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
sec-Butylbenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Styrene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
tert-Butylbenzene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Tetrachloroethene	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Toluene	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
trans-1,2-Dichloroethene	**4.8**	J	**1.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
trans-1,3-Dichloropropene	5.0	U	1.0	5.0	5.0	ug/L	5	30-May-2024 21:07
Trichloroethene	**130**		**1.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
Trichlorofluoromethane	5.0	U	1.5	5.0	5.0	ug/L	5	30-May-2024 21:07
Vinyl chloride	**480**		**1.0**	**5.0**	**5.0**	**ug/L**	5	30-May-2024 21:07
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*5*	*30-May-2024 21:07*
Surr: 1,2-Dichloroethane-d4	*109*			**0**	*81-118*	*%REC*	*25*	*06-Jun-2024 13:44*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*5*	*30-May-2024 21:07*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*25*	*06-Jun-2024 13:44*
Surr: Dibromofluoromethane	*114*			**0**	*80-119*	*%REC*	*5*	*30-May-2024 21:07*
Surr: Dibromofluoromethane	*102*			**0**	*80-119*	*%REC*	*25*	*06-Jun-2024 13:44*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*5*	*30-May-2024 21:07*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*25*	*06-Jun-2024 13:44*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: RG
Ethane	0.500	U	0.144	0.500	1.00	ug/L	1	05-Jun-2024 15:10
Ethene	**6.89**		**0.234**	**0.500**	**1.00**	**ug/L**	1	05-Jun-2024 15:10
Methane	**473**		**2.14**	**10.0**	**10.0**	**ug/L**	20	05-Jun-2024 16:04
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 06-Jun-2024		Analyst: JC
Arsenic	**0.00275**	J	**0.000400**	**0.0100**	**0.00500**	**mg/L**	1	07-Jun-2024 11:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: LHAAP-58

WorkOrder:HS24051535

Sample ID: 35AWW20_052324

Lab ID:HS24051535-03

Collection Date: 23-May-2024 09:20

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: JAC
Organic Carbon, Total	**40.3**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Jun-2024 18:35
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**765**		**4.00**	**5.00**	**10.0**	**mg/L**	20	24-May-2024 22:29
Nitrogen, Nitrate (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	24-May-2024 22:24
Sulfate	**1,400**		**4.00**	**5.00**	**10.0**	**mg/L**	20	24-May-2024 22:29
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2024 08:15
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2024 09:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_052324
Collection Date: 23-May-2024 10:10

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:39
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
1,1-Dichloroethane	**1.2**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 19:39
1,1-Dichloroethene	**2.8**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 19:39
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:39
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 19:39
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-May-2024 19:39
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-May-2024 19:39
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 19:39
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-May-2024 19:39
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 19:39
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW11_052324
Collection Date: 23-May-2024 10:10

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-May-2024 19:39
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 19:39
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 19:39
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 19:39
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 19:39
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 19:39
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*1*	*30-May-2024 19:39*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*30-May-2024 19:39*
Surr: Dibromofluoromethane	*114*			**0**	*80-119*	*%REC*	*1*	*30-May-2024 19:39*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*30-May-2024 19:39*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: RG
Ethane	0.500	U	0.144	0.500	1.00	ug/L	1	05-Jun-2024 15:18
Ethene	0.500	U	0.234	0.500	1.00	ug/L	1	05-Jun-2024 15:18
Methane	**1,630**		**5.35**	**25.0**	**25.0**	**ug/L**	50	05-Jun-2024 16:16
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: JAC
Organic Carbon, Total	**30.8**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Jun-2024 18:48
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**1,890**		**10.0**	**12.5**	**25.0**	**mg/L**	50	24-May-2024 22:41
Nitrogen, Nitrate (As N)	0.100	U	0.0600	0.100	0.200	mg/L	2	24-May-2024 22:35
Sulfate	**486**		**10.0**	**12.5**	**25.0**	**mg/L**	50	24-May-2024 22:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: LHAAP-58

WorkOrder:HS24051535

Sample ID: 35AWW11_052324

Lab ID:HS24051535-04

Collection Date: 23-May-2024 10:10

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2024 08:15
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2024 09:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_052324
Collection Date: 23-May-2024 11:00

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:00
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
1,1-Dichloroethane	**0.69**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 20:00
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:00
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 20:00
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-May-2024 20:00
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-May-2024 20:00
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 20:00
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-May-2024 20:00
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:00
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW23_052324
Collection Date: 23-May-2024 11:00

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
cis-1,2-Dichloroethene	**0.69**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 20:00
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-May-2024 20:00
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 20:00
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 20:00
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:00
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:00
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:00
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*1*	*30-May-2024 20:00*
Surr: 4-Bromofluorobenzene	*107*			**0**	*85-114*	*%REC*	*1*	*30-May-2024 20:00*
Surr: Dibromofluoromethane	*114*			**0**	*80-119*	*%REC*	*1*	*30-May-2024 20:00*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*30-May-2024 20:00*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: RG
Ethane	0.500	U	0.144	0.500	1.00	ug/L	1	05-Jun-2024 15:27
Ethene	0.500	U	0.234	0.500	1.00	ug/L	1	05-Jun-2024 15:27
Methane	**4,150**		**21.4**	**100**	**100**	**ug/L**	200	05-Jun-2024 16:27
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: JAC
Organic Carbon, Total	**37.0**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Jun-2024 19:01
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**656**		**4.00**	**5.00**	**10.0**	**mg/L**	20	24-May-2024 22:53
Nitrogen, Nitrate (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	24-May-2024 22:47
Sulfate	**20.3**		**0.200**	**0.250**	**0.500**	**mg/L**	1	24-May-2024 22:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.

ANALYTICAL REPORT

Project: LHAAP-58

WorkOrder:HS24051535

Sample ID: 35AWW23_052324

Lab ID:HS24051535-05

Collection Date: 23-May-2024 11:00

Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2024 08:15
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2024 09:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_052324
Collection Date: 23-May-2024 11:50

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:22
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
1,1-Dichloroethane	**0.53**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 20:22
1,1-Dichloroethene	**0.95**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 20:22
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:22
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 20:22
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-May-2024 20:22
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-May-2024 20:22
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 20:22
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-May-2024 20:22
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:22
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_052324
Collection Date: 23-May-2024 11:50

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-May-2024 20:22
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 20:22
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 20:22
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:22
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:22
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:22
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*1*	*30-May-2024 20:22*
Surr: 4-Bromofluorobenzene	*109*			**0**	*85-114*	*%REC*	*1*	*30-May-2024 20:22*
Surr: Dibromofluoromethane	*115*			**0**	*80-119*	*%REC*	*1*	*30-May-2024 20:22*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*30-May-2024 20:22*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**						Analyst: RG
Ethane	0.500	U	0.144	0.500	1.00	ug/L	1	05-Jun-2024 15:35
Ethene	0.500	U	0.234	0.500	1.00	ug/L	1	05-Jun-2024 15:35
Methane	**1,830**		**5.35**	**25.0**	**25.0**	**ug/L**	50	05-Jun-2024 16:36
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: JAC
Organic Carbon, Total	**13.0**		**0.500**	**1.00**	**1.00**	**mg/L**	1	08-Jun-2024 19:13
ANIONS BY SW9056A		**Method:SW9056**						Analyst: TH
Chloride	**846**		**4.00**	**5.00**	**10.0**	**mg/L**	20	24-May-2024 23:04
Nitrogen, Nitrate (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	24-May-2024 22:59
Sulfate	**1,020**		**4.00**	**5.00**	**10.0**	**mg/L**	20	24-May-2024 23:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW06_052324
Collection Date: 23-May-2024 11:50

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SUBCONTRACT ANALYSIS - DHC/DHB		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	03-Jun-2024 08:15
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	04-Jun-2024 09:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW18_052324
Collection Date: 23-May-2024 12:40

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:43
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
1,1-Dichloroethane	**4.9**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 20:43
1,1-Dichloroethene	**22**		**0.20**	**1.0**	**1.0**	**ug/L**	1	30-May-2024 20:43
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:43
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 20:43
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-May-2024 20:43
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-May-2024 20:43
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 20:43
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-May-2024 20:43
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 20:43
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW18_052324
Collection Date: 23-May-2024 12:40

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-May-2024 20:43
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 20:43
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 20:43
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 20:43
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 20:43
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 20:43
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*1*	*30-May-2024 20:43*
Surr: 4-Bromofluorobenzene	*109*			**0**	*85-114*	*%REC*	*1*	*30-May-2024 20:43*
Surr: Dibromofluoromethane	*116*			**0**	*80-119*	*%REC*	*1*	*30-May-2024 20:43*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*30-May-2024 20:43*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 23-May-2024 00:00

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 17:08
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 17:08
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 17:08
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	30-May-2024 17:08
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	30-May-2024 17:08
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 17:08
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	30-May-2024 17:08
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	30-May-2024 17:08
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 23-May-2024 00:00

ANALYTICAL REPORT
WorkOrder:HS24051535
Lab ID:HS24051535-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	30-May-2024 17:08
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	30-May-2024 17:08
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	30-May-2024 17:08
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	30-May-2024 17:08
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	30-May-2024 17:08
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	30-May-2024 17:08
Surr: 1,2-Dichloroethane-d4	*117*			**0**	*81-118*	*%REC*	*1*	*30-May-2024 17:08*
Surr: 4-Bromofluorobenzene	*111*			**0**	*85-114*	*%REC*	*1*	*30-May-2024 17:08*
Surr: Dibromofluoromethane	*113*			**0**	*80-119*	*%REC*	*1*	*30-May-2024 17:08*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*30-May-2024 17:08*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

Batch ID: 213120 **Start Date:** 06 Jun 2024 12:30 **End Date:** 06 Jun 2024 12:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS24051535-03		10 (mL)	10 (mL)	1	120 plastic HNO3

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 213120 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Groundwater	
HS24051535-03	35AWW20_052324	23 May 2024 09:20		06 Jun 2024 12:30	07 Jun 2024 11:58	1
Batch ID: R467693 (0)	**Test Name :** ANIONS BY SW9056A				**Matrix:** Groundwater	
HS24051535-01	35AWW19_052324	23 May 2024 07:40			24 May 2024 21:31	10
HS24051535-01	35AWW19_052324	23 May 2024 07:40			24 May 2024 21:25	1
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			24 May 2024 21:54	50
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			24 May 2024 21:48	2
HS24051535-03	35AWW20_052324	23 May 2024 09:20			24 May 2024 22:29	20
HS24051535-03	35AWW20_052324	23 May 2024 09:20			24 May 2024 22:24	1
HS24051535-04	35AWW11_052324	23 May 2024 10:10			24 May 2024 22:41	50
HS24051535-04	35AWW11_052324	23 May 2024 10:10			24 May 2024 22:35	2
HS24051535-05	35AWW23_052324	23 May 2024 11:00			24 May 2024 22:53	20
HS24051535-05	35AWW23_052324	23 May 2024 11:00			24 May 2024 22:47	1
HS24051535-06	35AWW06_052324	23 May 2024 11:50			24 May 2024 23:04	20
HS24051535-06	35AWW06_052324	23 May 2024 11:50			24 May 2024 22:59	1
Batch ID: R468115 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS24051535-08	Trip Blank	23 May 2024 00:00			30 May 2024 17:08	1
Batch ID: R468115 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS24051535-01	35AWW19_052324	23 May 2024 07:40			30 May 2024 18:56	1
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			30 May 2024 19:17	1
HS24051535-03	35AWW20_052324	23 May 2024 09:20			30 May 2024 21:07	5
HS24051535-04	35AWW11_052324	23 May 2024 10:10			30 May 2024 19:39	1
HS24051535-05	35AWW23_052324	23 May 2024 11:00			30 May 2024 20:00	1
HS24051535-06	35AWW06_052324	23 May 2024 11:50			30 May 2024 20:22	1
HS24051535-07	35AWW18_052324	23 May 2024 12:40			30 May 2024 20:43	1
Batch ID: R468276 (0)	**Test Name :** SUBCONTRACT ANALYSIS - DHC/DHB				**Matrix:** Groundwater	
HS24051535-01	35AWW19_052324	23 May 2024 07:40			03 Jun 2024 08:15	1
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			03 Jun 2024 08:15	1
HS24051535-03	35AWW20_052324	23 May 2024 09:20			03 Jun 2024 08:15	1
HS24051535-04	35AWW11_052324	23 May 2024 10:10			03 Jun 2024 08:15	1
HS24051535-05	35AWW23_052324	23 May 2024 11:00			03 Jun 2024 08:15	1
HS24051535-06	35AWW06_052324	23 May 2024 11:50			03 Jun 2024 08:15	1

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R468370 (0)	**Test Name :** SUBCONTRACT ANALYSIS - RSK				**Matrix:** Groundwater	
HS24051535-01	35AWW19_052324	23 May 2024 07:40			04 Jun 2024 09:17	1
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			04 Jun 2024 09:17	1
HS24051535-03	35AWW20_052324	23 May 2024 09:20			04 Jun 2024 09:17	1
HS24051535-04	35AWW11_052324	23 May 2024 10:10			04 Jun 2024 09:17	1
HS24051535-05	35AWW23_052324	23 May 2024 11:00			04 Jun 2024 09:17	1
HS24051535-06	35AWW06_052324	23 May 2024 11:50			04 Jun 2024 09:17	1
Batch ID: R468585 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Groundwater	
HS24051535-01	35AWW19_052324	23 May 2024 07:40			05 Jun 2024 14:52	1
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			05 Jun 2024 15:55	50
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			05 Jun 2024 15:01	1
HS24051535-03	35AWW20_052324	23 May 2024 09:20			05 Jun 2024 16:04	20
HS24051535-03	35AWW20_052324	23 May 2024 09:20			05 Jun 2024 15:10	1
HS24051535-04	35AWW11_052324	23 May 2024 10:10			05 Jun 2024 16:16	50
HS24051535-04	35AWW11_052324	23 May 2024 10:10			05 Jun 2024 15:18	1
HS24051535-05	35AWW23_052324	23 May 2024 11:00			05 Jun 2024 16:27	200
HS24051535-05	35AWW23_052324	23 May 2024 11:00			05 Jun 2024 15:27	1
HS24051535-06	35AWW06_052324	23 May 2024 11:50			05 Jun 2024 16:36	50
HS24051535-06	35AWW06_052324	23 May 2024 11:50			05 Jun 2024 15:35	1
Batch ID: R468713 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS24051535-03	35AWW20_052324	23 May 2024 09:20			06 Jun 2024 13:44	25
Batch ID: R468951 (0)	**Test Name :** TOTAL ORGANIC CARBON BY E415.1				**Matrix:** Groundwater	
HS24051535-01	35AWW19_052324	23 May 2024 07:40			08 Jun 2024 17:57	1
HS24051535-02	LHSMW07_052324	23 May 2024 08:30			08 Jun 2024 18:22	1
HS24051535-03	35AWW20_052324	23 May 2024 09:20			08 Jun 2024 18:35	1
HS24051535-04	35AWW11_052324	23 May 2024 10:10			08 Jun 2024 18:48	1
HS24051535-05	35AWW23_052324	23 May 2024 11:00			08 Jun 2024 19:01	1
HS24051535-06	35AWW06_052324	23 May 2024 11:50			08 Jun 2024 19:13	1

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468585 (0) **Instrument: FID-4** **Method: DISSOLVED GASES BY RSK-175**

MBLK Sample ID: **MBLK-240605** Units: **ug/L** Analysis Date: **05-Jun-2024 12:11**
Client ID: Run ID: **FID-4_468585** SeqNo: **8048932** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	0.500	1.00								U
Ethene	0.500	1.00								U
Methane	0.500	0.500								U

LCS Sample ID: **LCS-240605** Units: **ug/L** Analysis Date: **05-Jun-2024 12:21**
Client ID: Run ID: **FID-4_468585** SeqNo: **8048933** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	15.38	1.00	18.04	0	85.3	74 - 131				
Ethene	15.64	1.00	16.8	0	93.1	72 - 133				
Methane	8.602	0.500	9.647	0	89.2	73 - 125				

LCSD Sample ID: **LCSD-240605** Units: **ug/L** Analysis Date: **05-Jun-2024 12:36**
Client ID: Run ID: **FID-4_468585** SeqNo: **8048934** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	15.71	1.00	18.04	0	87.1	74 - 131	15.38	2.13	30	
Ethene	16.3	1.00	16.8	0	97.0	72 - 133	15.64	4.09	30	
Methane	9.064	0.500	9.647	0	94.0	73 - 125	8.602	5.23	30	

The following samples were analyzed in this batch: HS24051535-01 HS24051535-02 HS24051535-03 HS24051535-04 HS24051535-05 HS24051535-06

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: 213120 (0) **Instrument: ICPMS07** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-213120** Units: **mg/L** Analysis Date: **07-Jun-2024 11:41**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053605** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0100	0.00500								U

LCS Sample ID: **LCS-213120** Units: **mg/L** Analysis Date: **07-Jun-2024 11:43**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053606** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04841	0.00500	0.05	0	96.8	84 - 116				

MS Sample ID: **HS24052045-03MS** Units: **mg/L** Analysis Date: **07-Jun-2024 11:51**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053609** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04828	0.00500	0.05	0.000778	95.0	84 - 116				

MSD Sample ID: **HS24052045-03MSD** Units: **mg/L** Analysis Date: **07-Jun-2024 11:53**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053610** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04861	0.00500	0.05	0.000778	95.7	84 - 116	0.04828	0.683	20	

PDS Sample ID: **HS24052045-03PDS** Units: **mg/L** Analysis Date: **07-Jun-2024 11:56**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053611** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09788	0.00500	0.1	0.000778	97.1	80 - 120				

SD Sample ID: **HS24052045-03SD** Units: **mg/L** Analysis Date: **07-Jun-2024 11:46**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053607** PrepDate: **06-Jun-2024** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.0500	0.0250					0.000778	0	10	U

The following samples were analyzed in this batch: HS24051535-03

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240530** Units: **ug/L** Analysis Date: **30-May-2024 16:25**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040018** 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	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	1.0	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240530** Units: **ug/L** Analysis Date: **30-May-2024 16:25**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040018** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*58.14*	*35*	*50*	*0*	*116*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.36*	*35*	*50*	*0*	*113*	*85 - 114*				
Surr: Dibromofluoromethane	*55.81*	*35*	*50*	*0*	*112*	*80 - 119*				
Surr: Toluene-d8	*55.97*	*35*	*50*	*0*	*112*	*89 - 112*				

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-240530** Units: **ug/L** Analysis Date: **30-May-2024 15:19**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040017** 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	18.08	1.0	20	0	90.4	78 - 124				
1,1,1-Trichloroethane	20.1	1.0	20	0	101	74 - 131				
1,1,2,2-Tetrachloroethane	18.31	1.0	20	0	91.5	71 - 121				
1,1,2-Trichloroethane	19.46	1.0	20	0	97.3	80 - 119				
1,1-Dichloroethane	17.98	1.0	20	0	89.9	77 - 125				
1,1-Dichloroethene	18.85	1.0	20	0	94.2	71 - 131				
1,1-Dichloropropene	19.28	1.0	20	0	96.4	78 - 125				
1,2,3-Trichlorobenzene	18.82	1.0	20	0	94.1	69 - 129				
1,2,3-Trichloropropane	17.62	1.0	20	0	88.1	73 - 122				
1,2,4-Trichlorobenzene	18.4	1.0	20	0	92.0	69 - 130				
1,2,4-Trimethylbenzene	18.1	1.0	20	0	90.5	76 - 124				
1,2-Dibromo-3-chloropropane	17.6	1.0	20	0	88.0	62 - 128				
1,2-Dibromoethane	18.53	1.0	20	0	92.7	77 - 121				
1,2-Dichlorobenzene	18.51	1.0	20	0	92.5	80 - 119				
1,2-Dichloroethane	19.87	1.0	20	0	99.3	73 - 128				
1,2-Dichloropropane	18.31	1.0	20	0	91.6	78 - 122				
1,3,5-Trimethylbenzene	19.28	1.0	20	0	96.4	75 - 124				
1,3-Dichlorobenzene	18.78	1.0	20	0	93.9	80 - 119				
1,3-Dichloropropane	17.96	1.0	20	0	89.8	80 - 119				
1,4-Dichlorobenzene	17.85	1.0	20	0	89.3	79 - 118				
2,2-Dichloropropane	19.26	1.0	20	0	96.3	60 - 139				
2-Butanone	37.31	2.0	40	0	93.3	56 - 143				
2-Chlorotoluene	20.22	1.0	20	0	101	79 - 122				
2-Hexanone	41.34	2.0	40	0	103	57 - 139				
4-Chlorotoluene	18.92	1.0	20	0	94.6	78 - 122				
4-Isopropyltoluene	19.82	1.0	20	0	99.1	77 - 127				
4-Methyl-2-pentanone	37.81	2.0	40	0	94.5	67 - 130				
Acetone	45.96	2.0	40	0	115	39 - 160				
Benzene	18.88	1.0	20	0	94.4	79 - 120				
Bromobenzene	18.26	1.0	20	0	91.3	80 - 120				
Bromochloromethane	19.57	1.0	20	0	97.9	78 - 123				
Bromodichloromethane	17.49	1.0	20	0	87.4	79 - 125				
Bromoform	16.09	1.0	20	0	80.5	66 - 130				
Bromomethane	19.96	1.0	20	0	99.8	53 - 141				

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-240530** Units: **ug/L** Analysis Date: **30-May-2024 15:19**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040017** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.46	2.0	40	0	93.7	64 - 133				
Carbon tetrachloride	18.53	1.0	20	0	92.7	72 - 136				
Chlorobenzene	17.91	1.0	20	0	89.5	82 - 118				
Chloroethane	21.45	1.0	20	0	107	60 - 138				
Chloroform	18.32	1.0	20	0	91.6	79 - 124				
Chloromethane	22.01	1.0	20	0	110	50 - 139				
cis-1,2-Dichloroethene	17.96	1.0	20	0	89.8	78 - 123				
cis-1,3-Dichloropropene	18.17	1.0	20	0	90.8	75 - 124				
Dibromochloromethane	17.18	1.0	20	0	85.9	74 - 126				
Dibromomethane	18.34	1.0	20	0	91.7	79 - 123				
Dichlorodifluoromethane	21.42	1.0	20	0	107	32 - 152				
Ethylbenzene	19.73	1.0	20	0	98.6	79 - 121				
Hexachlorobutadiene	19.39	1.0	20	0	96.9	66 - 134				
Isopropylbenzene	19.42	1.0	20	0	97.1	72 - 131				
m,p-Xylene	37.61	2.0	40	0	94.0	80 - 121				
Methylene chloride	19.82	2.0	20	0	99.1	74 - 124				
Naphthalene	19.07	1.0	20	0	95.3	61 - 128				
n-Butylbenzene	19.73	1.0	20	0	98.7	75 - 128				
n-Propylbenzene	19.17	1.0	20	0	95.9	76 - 126				
o-Xylene	18.8	1.0	20	0	94.0	78 - 122				
sec-Butylbenzene	19.89	1.0	20	0	99.5	77 - 126				
Styrene	18.71	1.0	20	0	93.6	78 - 123				
tert-Butylbenzene	19.96	1.0	20	0	99.8	78 - 124				
Tetrachloroethene	19.75	1.0	20	0	98.7	74 - 129				
Toluene	17.63	1.0	20	0	88.1	80 - 121				
trans-1,2-Dichloroethene	18.26	1.0	20	0	91.3	75 - 124				
trans-1,3-Dichloropropene	18.02	1.0	20	0	90.1	73 - 127				
Trichloroethene	18.26	1.0	20	0	91.3	79 - 123				
Trichlorofluoromethane	20.81	1.0	20	0	104	65 - 141				
Vinyl chloride	20.37	1.0	20	0	102	58 - 137				
Surr: 1,2-Dichloroethane-d4	*55.45*	*35*	*50*	*0*	*111*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.26*	*35*	*50*	*0*	*113*	*85 - 114*				
Surr: Dibromofluoromethane	*56.83*	*35*	*50*	*0*	*114*	*80 - 119*				
Surr: Toluene-d8	*55.47*	*35*	*50*	*0*	*111*	*89 - 112*				

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS24051490-05MS** Units: **ug/L** Analysis Date: **31-May-2024 00:04**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040034** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	172	10	200	0	86.0	78 - 124				
1,1,1-Trichloroethane	197.6	10	200	0	98.8	74 - 131				
1,1,2,2-Tetrachloroethane	154.6	10	200	0	77.3	71 - 121				
1,1,2-Trichloroethane	180.3	10	200	0	90.1	80 - 119				
1,1-Dichloroethane	178.2	10	200	0	89.1	77 - 125				
1,1-Dichloroethene	193.9	10	200	17.9	88.0	71 - 131				
1,1-Dichloropropene	178.9	10	200	0	89.5	78 - 125				
1,2,3-Trichlorobenzene	154.3	10	200	0	77.1	69 - 129				
1,2,3-Trichloropropane	153	10	200	0	76.5	73 - 122				
1,2,4-Trichlorobenzene	155.5	10	200	0	77.8	69 - 130				
1,2,4-Trimethylbenzene	161.6	10	200	0	80.8	76 - 124				
1,2-Dibromo-3-chloropropane	137	10	200	0	68.5	62 - 128				
1,2-Dibromoethane	157.1	10	200	0	78.5	77 - 121				
1,2-Dichlorobenzene	164.5	10	200	0	82.3	80 - 119				
1,2-Dichloroethane	200.6	10	200	13.52	93.5	73 - 128				
1,2-Dichloropropane	177.5	10	200	0	88.7	78 - 122				
1,3,5-Trimethylbenzene	183.6	10	200	0	91.8	75 - 124				
1,3-Dichlorobenzene	171.5	10	200	0	85.8	80 - 119				
1,3-Dichloropropane	166.9	10	200	0	83.4	80 - 119				
1,4-Dichlorobenzene	164.7	10	200	0	82.3	79 - 118				
2,2-Dichloropropane	156.6	10	200	0	78.3	60 - 139				
2-Butanone	325.2	20	400	0	81.3	56 - 143				
2-Chlorotoluene	191.7	10	200	0	95.8	79 - 122				
2-Hexanone	340.3	20	400	0	85.1	57 - 139				
4-Chlorotoluene	176.9	10	200	0	88.5	78 - 122				
4-Isopropyltoluene	186.4	10	200	0	93.2	77 - 127				
4-Methyl-2-pentanone	345.5	20	400	0	86.4	67 - 130				
Acetone	308.1	20	400	0	77.0	39 - 160				
Benzene	174.9	10	200	0	87.5	79 - 120				
Bromobenzene	167.6	10	200	0	83.8	80 - 120				
Bromochloromethane	179.6	10	200	0	89.8	78 - 123				
Bromodichloromethane	174.4	10	200	0	87.2	79 - 125				
Bromoform	146.5	10	200	0	73.3	66 - 130				
Bromomethane	183	10	200	0	91.5	53 - 141				

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS24051490-05MS** Units: **ug/L** Analysis Date: **31-May-2024 00:04**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040034** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	375.1	20	400	0	93.8	64 - 133				
Carbon tetrachloride	190.1	10	200	0	95.0	72 - 136				
Chlorobenzene	172.7	10	200	0	86.4	82 - 118				
Chloroethane	224	10	200	0	112	60 - 138				
Chloroform	180.2	10	200	0	90.1	79 - 124				
Chloromethane	258.1	10	200	0	129	50 - 139				
cis-1,2-Dichloroethene	167.7	10	200	0	83.8	78 - 123				
cis-1,3-Dichloropropene	154.2	10	200	0	77.1	75 - 124				
Dibromochloromethane	159.2	10	200	0	79.6	74 - 126				
Dibromomethane	169.8	10	200	0	84.9	79 - 123				
Dichlorodifluoromethane	246.6	10	200	0	123	32 - 152				
Ethylbenzene	192.7	10	200	0	96.3	79 - 121				
Hexachlorobutadiene	177.4	10	200	0	88.7	66 - 134				
Isopropylbenzene	194.6	10	200	0	97.3	72 - 131				
m,p-Xylene	359.6	20	400	0	89.9	80 - 121				
Methylene chloride	184.9	20	200	0	92.4	74 - 124				
Naphthalene	141.4	10	200	0	70.7	61 - 128				
n-Butylbenzene	185.2	10	200	0	92.6	75 - 128				
n-Propylbenzene	181.7	10	200	0	90.8	76 - 126				
o-Xylene	183.4	10	200	0	91.7	78 - 122				
sec-Butylbenzene	190.7	10	200	0	95.3	77 - 126				
Styrene	185.7	10	200	0	92.8	78 - 123				
tert-Butylbenzene	195.3	10	200	0	97.6	78 - 124				
Tetrachloroethene	196	10	200	0	98.0	74 - 129				
Toluene	173.7	10	200	0	86.8	80 - 121				
trans-1,2-Dichloroethene	178.8	10	200	0	89.4	75 - 124				
trans-1,3-Dichloropropene	152.8	10	200	0	76.4	73 - 127				
Trichloroethene	1232	10	200	1067	82.4	79 - 123				O
Trichlorofluoromethane	229.7	10	200	0	115	65 - 141				
Vinyl chloride	222.7	10	200	0	111	58 - 137				
Surr: 1,2-Dichloroethane-d4	*581.7*	*350*	*500*	*0*	*116*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*586*	*350*	*500*	*0*	*117*	*85 - 114*				S
Surr: Dibromofluoromethane	*580*	*350*	*500*	*0*	*116*	*80 - 119*				
Surr: Toluene-d8	*575.4*	*350*	*500*	*0*	*115*	*89 - 112*				S

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24051490-05MSD** Units: **ug/L** Analysis Date: **31-May-2024 00:26**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040035** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	167.4	10	200	0	83.7	78 - 124	172	2.73	20	
1,1,1-Trichloroethane	192.4	10	200	0	96.2	74 - 131	197.6	2.69	20	
1,1,2,2-Tetrachloroethane	153.1	10	200	0	76.5	71 - 121	154.6	0.989	20	
1,1,2-Trichloroethane	178.5	10	200	0	89.3	80 - 119	180.3	0.987	20	
1,1-Dichloroethane	176.4	10	200	0	88.2	77 - 125	178.2	0.974	20	
1,1-Dichloroethene	191.1	10	200	17.9	86.6	71 - 131	193.9	1.48	20	
1,1-Dichloropropene	180.3	10	200	0	90.1	78 - 125	178.9	0.741	20	
1,2,3-Trichlorobenzene	156	10	200	0	78.0	69 - 129	154.3	1.13	20	
1,2,3-Trichloropropane	155.1	10	200	0	77.5	73 - 122	153	1.32	20	
1,2,4-Trichlorobenzene	153.2	10	200	0	76.6	69 - 130	155.5	1.49	20	
1,2,4-Trimethylbenzene	160.8	10	200	0	80.4	76 - 124	161.6	0.519	20	
1,2-Dibromo-3-chloropropane	126.9	10	200	0	63.5	62 - 128	137	7.64	20	
1,2-Dibromoethane	156.3	10	200	0	78.2	77 - 121	157.1	0.46	20	
1,2-Dichlorobenzene	163.2	10	200	0	81.6	80 - 119	164.5	0.835	20	
1,2-Dichloroethane	192.4	10	200	13.52	89.4	73 - 128	200.6	4.17	20	
1,2-Dichloropropane	169.1	10	200	0	84.6	78 - 122	177.5	4.82	20	
1,3,5-Trimethylbenzene	180.5	10	200	0	90.2	75 - 124	183.6	1.74	20	
1,3-Dichlorobenzene	169.7	10	200	0	84.8	80 - 119	171.5	1.1	20	
1,3-Dichloropropane	165.8	10	200	0	82.9	80 - 119	166.9	0.638	20	
1,4-Dichlorobenzene	162.1	10	200	0	81.1	79 - 118	164.7	1.56	20	
2,2-Dichloropropane	148.6	10	200	0	74.3	60 - 139	156.6	5.2	20	
2-Butanone	316.7	20	400	0	79.2	56 - 143	325.2	2.65	20	
2-Chlorotoluene	189	10	200	0	94.5	79 - 122	191.7	1.42	20	
2-Hexanone	337.6	20	400	0	84.4	57 - 139	340.3	0.778	20	
4-Chlorotoluene	173.2	10	200	0	86.6	78 - 122	176.9	2.11	20	
4-Isopropyltoluene	184	10	200	0	92.0	77 - 127	186.4	1.28	20	
4-Methyl-2-pentanone	343.2	20	400	0	85.8	67 - 130	345.5	0.684	20	
Acetone	333.7	20	400	0	83.4	39 - 160	308.1	8	20	
Benzene	167.4	10	200	0	83.7	79 - 120	174.9	4.38	20	
Bromobenzene	162.8	10	200	0	81.4	80 - 120	167.6	2.9	20	
Bromochloromethane	174	10	200	0	87.0	78 - 123	179.6	3.17	20	
Bromodichloromethane	169.1	10	200	0	84.5	79 - 125	174.4	3.09	20	
Bromoform	146.4	10	200	0	73.2	66 - 130	146.5	0.0593	20	
Bromomethane	178	10	200	0	89.0	53 - 141	183	2.76	20	

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24051490-05MSD** Units: **ug/L** Analysis Date: **31-May-2024 00:26**
Client ID: Run ID: **VOA9_468115** SeqNo: **8040035** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	362.9	20	400	0	90.7	64 - 133	375.1	3.3	20	
Carbon tetrachloride	183.1	10	200	0	91.6	72 - 136	190.1	3.74	20	
Chlorobenzene	168	10	200	0	84.0	82 - 118	172.7	2.75	20	
Chloroethane	216.7	10	200	0	108	60 - 138	224	3.32	20	
Chloroform	175.7	10	200	0	87.9	79 - 124	180.2	2.48	20	
Chloromethane	245.8	10	200	0	123	50 - 139	258.1	4.86	20	
cis-1,2-Dichloroethene	163.4	10	200	0	81.7	78 - 123	167.7	2.59	20	
cis-1,3-Dichloropropene	151.5	10	200	0	75.7	75 - 124	154.2	1.77	20	
Dibromochloromethane	155	10	200	0	77.5	74 - 126	159.2	2.68	20	
Dibromomethane	170.9	10	200	0	85.4	79 - 123	169.8	0.632	20	
Dichlorodifluoromethane	239.1	10	200	0	120	32 - 152	246.6	3.11	20	
Ethylbenzene	183.3	10	200	0	91.6	79 - 121	192.7	4.99	20	
Hexachlorobutadiene	175.2	10	200	0	87.6	66 - 134	177.4	1.22	20	
Isopropylbenzene	187.5	10	200	0	93.8	72 - 131	194.6	3.67	20	
m,p-Xylene	354.3	20	400	0	88.6	80 - 121	359.6	1.46	20	
Methylene chloride	182.4	20	200	0	91.2	74 - 124	184.9	1.32	20	
Naphthalene	145.3	10	200	0	72.6	61 - 128	141.4	2.66	20	
n-Butylbenzene	181.2	10	200	0	90.6	75 - 128	185.2	2.18	20	
n-Propylbenzene	177.6	10	200	0	88.8	76 - 126	181.7	2.3	20	
o-Xylene	180.1	10	200	0	90.0	78 - 122	183.4	1.83	20	
sec-Butylbenzene	186.9	10	200	0	93.4	77 - 126	190.7	2.02	20	
Styrene	181.3	10	200	0	90.6	78 - 123	185.7	2.4	20	
tert-Butylbenzene	196.2	10	200	0	98.1	78 - 124	195.3	0.457	20	
Tetrachloroethene	188.5	10	200	0	94.2	74 - 129	196	3.93	20	
Toluene	166.2	10	200	0	83.1	80 - 121	173.7	4.4	20	
trans-1,2-Dichloroethene	174.4	10	200	0	87.2	75 - 124	178.8	2.46	20	
trans-1,3-Dichloropropene	151.2	10	200	0	75.6	73 - 127	152.8	1.08	20	
Trichloroethene	1172	10	200	1067	52.5	79 - 123	1232	4.97	20	SO
Trichlorofluoromethane	222.3	10	200	0	111	65 - 141	229.7	3.27	20	
Vinyl chloride	213.9	10	200	0	107	58 - 137	222.7	4	20	
Surr: 1,2-Dichloroethane-d4	*582.1*	*350*	*500*	*0*	*116*	*81 - 118*	*581.7*	*0.0697*	*20*	
Surr: 4-Bromofluorobenzene	*592.7*	*350*	*500*	*0*	*119*	*85 - 114*	*586*	*1.13*	*20*	S
Surr: Dibromofluoromethane	*578.8*	*350*	*500*	*0*	*116*	*80 - 119*	*580*	*0.213*	*20*	
Surr: Toluene-d8	*579.6*	*350*	*500*	*0*	*116*	*89 - 112*	*575.4*	*0.725*	*20*	S

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468115 (0)	Instrument: VOA9	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS24051535-01	HS24051535-02	HS24051535-03	HS24051535-04
HS24051535-05	HS24051535-06	HS24051535-07	HS24051535-08

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 12:16**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051733** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*53.89*	*35*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.12*	*35*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*50.98*	*35*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*54.25*	*35*	*50*	*0*	*108*	*89 - 112*				

LCS Sample ID: **VLCSW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:12**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051731** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	19.5	1.0	20	0	97.5	71 - 131				
Surr: 1,2-Dichloroethane-d4	*52.45*	*35*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.8*	*35*	*50*	*0*	*112*	*85 - 114*				
Surr: Dibromofluoromethane	*52.92*	*35*	*50*	*0*	*106*	*80 - 119*				
Surr: Toluene-d8	*54.56*	*35*	*50*	*0*	*109*	*89 - 112*				

LCSD Sample ID: **VLCSDW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:33**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051732** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	17.45	1.0	20	0	87.2	71 - 131	19.5	11.1	20	
Surr: 1,2-Dichloroethane-d4	*51.3*	*35*	*50*	*0*	*103*	*81 - 118*	*52.45*	*2.21*	*20*	
Surr: 4-Bromofluorobenzene	*55.46*	*35*	*50*	*0*	*111*	*85 - 114*	*55.8*	*0.622*	*20*	
Surr: Dibromofluoromethane	*50.86*	*35*	*50*	*0*	*102*	*80 - 119*	*52.92*	*3.97*	*20*	
Surr: Toluene-d8	*54.49*	*35*	*50*	*0*	*109*	*89 - 112*	*54.56*	*0.125*	*20*	

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS24051959-07MS** Units: **ug/L** Analysis Date: **06-Jun-2024 12:59**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051735** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	21.23	1.0	20	3.558	88.4	71 - 131				
Surr: 1,2-Dichloroethane-d4	*53.03*	*35*	*50*	*0*	*106*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.38*	*35*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*51.79*	*35*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*54.39*	*35*	*50*	*0*	*109*	*89 - 112*				

MSD Sample ID: **HS24051959-07MSD** Units: **ug/L** Analysis Date: **06-Jun-2024 13:20**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051736** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	20.22	1.0	20	3.558	83.3	71 - 131	21.23	4.87	20	
Surr: 1,2-Dichloroethane-d4	*52.56*	*35*	*50*	*0*	*105*	*81 - 118*	*53.03*	*0.88*	*20*	
Surr: 4-Bromofluorobenzene	*56.46*	*35*	*50*	*0*	*113*	*85 - 114*	*55.38*	*1.93*	*20*	
Surr: Dibromofluoromethane	*51.79*	*35*	*50*	*0*	*104*	*80 - 119*	*51.79*	*0*	*20*	
Surr: Toluene-d8	*54.73*	*35*	*50*	*0*	*109*	*89 - 112*	*54.39*	*0.621*	*20*	

The following samples were analyzed in this batch: HS24051535-03

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R467693 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY SW9056A**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **24-May-2024 21:13**
Client ID: Run ID: **ICS-Integrion_467693** SeqNo: **8029946** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.250	0.500								U
Nitrogen, Nitrate (As N)	0.0500	0.100								U
Nitrogen, Nitrite (As N)	0.0500	0.100								U
Sulfate	0.250	0.500								U

LCS Sample ID: **LCS** Units: **mg/L** Analysis Date: **24-May-2024 21:19**
Client ID: Run ID: **ICS-Integrion_467693** SeqNo: **8029947** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.06	0.500	20	0	105	80 - 120				
Nitrogen, Nitrate (As N)	4.225	0.100	4	0	106	80 - 120				
Nitrogen, Nitrite (As N)	4.24	0.100	4	0	106	80 - 120				
Sulfate	20.94	0.500	20	0	105	80 - 120				

MS Sample ID: **HS24051535-01MS** Units: **mg/L** Analysis Date: **24-May-2024 21:37**
Client ID: **35AWW19_052324** Run ID: **ICS-Integrion_467693** SeqNo: **8029950** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	472.6	5.00	100	390.9	81.7	80 - 120				
Nitrogen, Nitrate (As N)	19.66	1.00	20	0	98.3	80 - 120				
Nitrogen, Nitrite (As N)	18.7	1.00	20	0	93.5	80 - 120				
Sulfate	487.4	5.00	100	435.7	51.7	80 - 120				SO

MSD Sample ID: **HS24051535-01MSD** Units: **mg/L** Analysis Date: **24-May-2024 21:42**
Client ID: **35AWW19_052324** Run ID: **ICS-Integrion_467693** SeqNo: **8029951** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	472.5	5.00	100	390.9	81.6	80 - 120	472.6	0.0169	20	
Nitrogen, Nitrate (As N)	19.72	1.00	20	0	98.6	80 - 120	19.66	0.315	20	
Nitrogen, Nitrite (As N)	18.76	1.00	20	0	93.8	80 - 120	18.7	0.315	20	
Sulfate	488	5.00	100	435.7	52.3	80 - 120	487.4	0.114	20	SO

The following samples were analyzed in this batch: HS24051535-01 HS24051535-02 HS24051535-03 HS24051535-04 HS24051535-05 HS24051535-06

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051535

QC BATCH REPORT

Batch ID: R468951 (0) **Instrument: TOC_05** **Method: TOTAL ORGANIC CARBON BY E415.1**

MBLK Sample ID: **MBLK-06082024** Units: **mg/L** Analysis Date: **08-Jun-2024 17:19**
Client ID: Run ID: **TOC_05_468951** SeqNo: **8056950** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	1.00	1.00								U

LCS Sample ID: **LCS-06082024** Units: **mg/L** Analysis Date: **08-Jun-2024 17:32**
Client ID: Run ID: **TOC_05_468951** SeqNo: **8056951** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.895	1.00	10	0	99.0	85 - 115				

LCSD Sample ID: **LCSD-06082024** Units: **mg/L** Analysis Date: **08-Jun-2024 17:45**
Client ID: Run ID: **TOC_05_468951** SeqNo: **8056952** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.85	1.00	10	0	98.5	85 - 115	9.895	0.456	20	

MS Sample ID: **HS24051535-01MS** Units: **mg/L** Analysis Date: **08-Jun-2024 18:10**
Client ID: **35AWW19_052324** Run ID: **TOC_05_468951** SeqNo: **8056954** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.39	1.00	10	9.023	43.7	80 - 120				S

The following samples were analyzed in this batch: HS24051535-01 HS24051535-02 HS24051535-03 HS24051535-04 HS24051535-05 HS24051535-06

ALS Houston, US Date: 10-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS24051535**

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

Unit Reported	Description
mg/L	Milligrams per Liter

ALS Houston, US Date: 10-Jun-24

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-00356_2024	27-Mar-2025
California	2919; 2025	30-Apr-2025
Florida	E87611-38	30-Jun-2024
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352 2023-2024	31-Jul-2024
Kentucky	123043	30-Apr-2025
Louisiana	03087 2023-2024	30-Jun-2024
Maryland	343; 2023-2024	30-Jun-2024
North Carolina	624 - 2024	31-Dec-2024
Oklahoma	2023-140	31-Aug-2024
Tennessee	04016	30-Apr-2025
Texas	T104704231 TX-C24-00130	30-Apr-2025
Utah	TX026932023-14	31-Jul-2024

01335845

ALS Houston, US Date: 10-Jun-24

Sample Receipt Checklist

Work Order ID: HS24051535 **Date/Time Received:** **24-May-2024 09:50**

Client Name: Bhate Environmental **Received by:** **Si Ma**

Completed By: /S/ Sonia West (eSignature) 24-May-2024 15:36 (Date/Time) **Reviewed by:** /S/ Alexis Dorenbosch (eSignature) 28-May-2024 14:41 (Date/Time)

Matrices: **Water** Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
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:NA
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):	0.9uc/1.0c	31
Cooler(s)/Kit(s):	49931	
Date/Time sample(s) sent to storage:	5/24/2024 12:00	

Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

bhate

Page: 01335846

Project/Phase

No: JVPCIBH.0001

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205

Chain of Custody and Analytical Request

COC Number(1):

LIMS Number: HS2405 1535

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Dissolved Gases	TOC	Carbon Dioxide	Anions	Arsenic	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW19_052324	23 may 2024	0740	-	N		WG	11	X	X	X	X	X					
LHSMW07_052324	23 May 2024	0830	-	N		WG	11	X	X	X	X	X					
35AWW08_052324	23 may 2024	0920	-	N		WG	12	X	X	X	X	X	X				
35AWW11_052324	23 may 2024	1010		N		WG	11	X	X	X	X	X					
35AWW23_052324	23 may 2024	1100		N		WG	11	X	X	X	X	X					
35AWW06_052324	23 may 2024	1150	-	N		WG	11	X	X	X	X	X					
35AWW18_052324	23 may 2024	1240	-	N		WG	3	X									
TRIP BLANK	23 may 2024		-	TB		WQ	2	X									
			-														
			-														
			-														

HS24051535
Bhate Environmental Associates, Inc.
LHAAP-58

COMMENTS: STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	5/23/24	1430	1.		
2.			2. GM	05/24/24	07:50
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dana Wagaey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

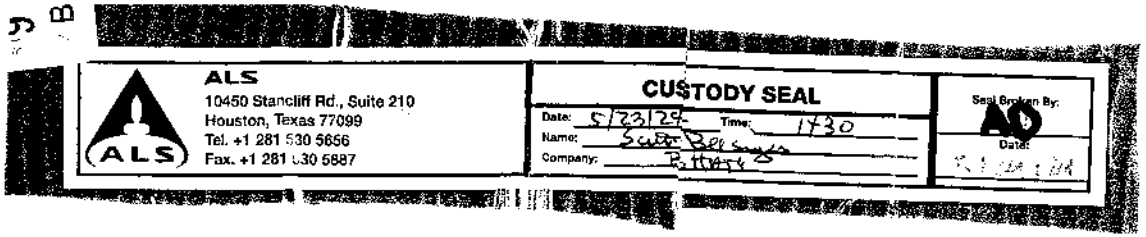
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

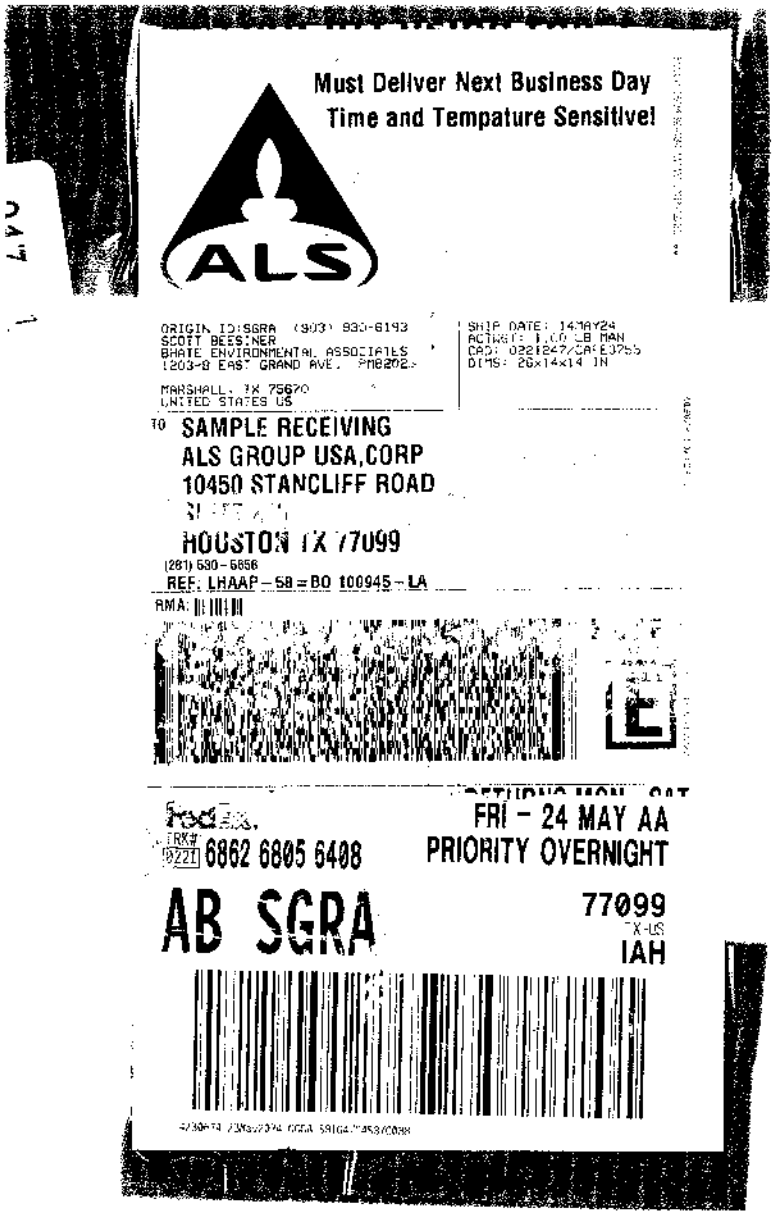
cooler # 4010391 Temp 4°C 1.8 3124 31
CP-10.1

01335847



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 5/23/24 Time: 1430
Name: Scott Beesiner
Company: Pathfx
Seal Broken By: AD
Date: 5/24/24



Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202
MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 14MAY24
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3755
DIMS: 26x14x14 IN

TO SAMPLE RECEIVING
ALS GROUP USA,CORP
10450 STANCLIFF ROAD
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58=BO 100945-LA
RMA:

FedEx
TRK# 9221 6862 6805 6408
FRI - 24 MAY AA
PRIORITY OVERNIGHT

AB SGRA
77099
TX-US
IAH

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Jumoke Lawal
ALS Group USA, Corp
10450 Stancliff Rd.
Suite 210
Houston TX 77099

Generated 06/05/2024

JOB DESCRIPTION

HS24051535

JOB NUMBER

410-174036-1

Eurofins Lancaster Laboratories Environment Testing, LLC
2425 New Holland Pike
Lancaster PA 17601

See page two for job notes and contact information.

myEOL

Eurofins Lancaster Laboratories Environment Testing, LLC

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
06/05/2024

Authorized for release by
Nicole Brown, Project Manager
Nicole.Brown@et.eurofinsus.com
Designee for
Dana Kauffman, Project Manager
Dana.Kauffman@et.eurofinsus.com
717 556-7219

Eurofins Lancaster Laboratories Environment Testing, LLC

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

This report shall not be reproduced except in full, without the written approval of the laboratory.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

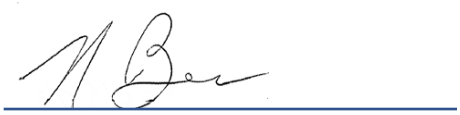


Table of Contents

Cover Page 1
Data Summaries 5
Definitions 5
Case Narrative 6
Detection Summary 7
Client Sample Results 8
Default Detection Limits 9
QC Sample Results 10
QC Association 11
Chronicle 12
Certification Summary 13
Method Summary 14
Sample Summary 15
Manual Integration Summary 16
Reagent Traceability 18
Organic Sample Data 19
GC VOA 19
Method RSK-175 CO2 DOD 19
Method RSK-175 CO2 DOD QC Summary 20
Method RSK-175 CO2 DOD Sample Data 25
Standards Data 45
Method RSK-175 CO2 DOD ICAL Data 45
Method RSK-175 CO2 DOD CCAL Data 62
Raw QC Data 86
Method RSK-175 CO2 DOD Blank Data 86
Method RSK-175 CO2 DOD LCS/LCSD Data 92
Method RSK-175 CO2 DOD Run Logs 101
Method RSK-175 CO2 DOD Prep Data 104
Shipping and Receiving Documents 107
Client Chain of Custody 108
Sample Receipt Checklist 110

Qualifiers

GC VOA

Qualifier	Qualifier Description
D	The reported value is from a dilution.
M	Manual integrated compound.
U	Undetected at the Limit of Detection.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
410-174036-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/31/2024 10:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.7°C.

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

Client Sample ID: 35AWW19_052324 — Lab Sample ID: 410-174036-1

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	250000	M	12000	11000	5600	ug/L	1		RSK-175	Total/NA

Client Sample ID: LHSMW07_052324 — Lab Sample ID: 410-174036-2

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	140000		12000	11000	5600	ug/L	1		RSK-175	Total/NA

Client Sample ID: 35AWW20_052324 — Lab Sample ID: 410-174036-3

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	800000	D	120000	110000	56000	ug/L	10		RSK-175	Total/NA

Client Sample ID: 35AWW11_052324 — Lab Sample ID: 410-174036-4

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	810000	D	120000	110000	56000	ug/L	10		RSK-175	Total/NA

Client Sample ID: 35AWW23_052324 — Lab Sample ID: 410-174036-5

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	230000	M	12000	11000	5600	ug/L	1		RSK-175	Total/NA

Client Sample ID: 35AWW06_052324 — Lab Sample ID: 410-174036-6

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	59000		12000	11000	5600	ug/L	1		RSK-175	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 35AWW19_052324
Lab Sample ID: 410-174036-1
Date Collected: 05/23/24 07:40
Matrix: Water
Date Received: 05/31/24 10:15

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	250000	M	12000	11000	5600	ug/L		06/03/24 11:00	1

Client Sample ID: LHSMW07_052324
Lab Sample ID: 410-174036-2
Date Collected: 05/23/24 08:30
Matrix: Water
Date Received: 05/31/24 10:15

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	140000		12000	11000	5600	ug/L		06/03/24 11:07	1

Client Sample ID: 35AWW20_052324
Lab Sample ID: 410-174036-3
Date Collected: 05/23/24 09:20
Matrix: Water
Date Received: 05/31/24 10:15

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	800000	D	120000	110000	56000	ug/L		06/04/24 12:21	10

Client Sample ID: 35AWW11_052324
Lab Sample ID: 410-174036-4
Date Collected: 05/23/24 10:10
Matrix: Water
Date Received: 05/31/24 10:15

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	810000	D	120000	110000	56000	ug/L		06/04/24 12:29	10

Client Sample ID: 35AWW23_052324
Lab Sample ID: 410-174036-5
Date Collected: 05/23/24 11:00
Matrix: Water
Date Received: 05/31/24 10:15

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	230000	M	12000	11000	5600	ug/L		06/03/24 11:31	1

Client Sample ID: 35AWW06_052324
Lab Sample ID: 410-174036-6
Date Collected: 05/23/24 11:50
Matrix: Water
Date Received: 05/31/24 10:15

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	59000		12000	11000	5600	ug/L		06/03/24 11:39	1

Default Detection Limits

Client: ALS Group USA, Corp
Project/Site: HS24051535

Job ID: 410-174036-1

Method: RSK-175 - Dissolved Gases (GC)

Prep: RSK-175

Analyte	LOQ	DL	Units
Carbon dioxide	12000	5600	ug/L

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 410-512911/1-A
Matrix: Water
Analysis Batch: 512895

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 512911

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	5600	U	12000	11000	5600	ug/L		06/03/24 10:18	1

Lab Sample ID: LCS 410-512911/2-A
Matrix: Water
Analysis Batch: 512895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 512911

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Carbon dioxide			35800	38800		ug/L		108	80 - 122		

Lab Sample ID: MB 410-513397/1-A
Matrix: Water
Analysis Batch: 513353

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 513397

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Carbon dioxide	5600	U	12000	11000	5600	ug/L		06/04/24 10:27	1

Lab Sample ID: LCS 410-513397/2-A
Matrix: Water
Analysis Batch: 513353

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 513397

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Carbon dioxide			35800	39600		ug/L		111	80 - 122		

Lab Sample ID: LCSD 410-513397/3-A
Matrix: Water
Analysis Batch: 513353

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 513397

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Carbon dioxide			35800	40200		ug/L		112	80 - 122	1	20

GC VOA

Analysis Batch: 512895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-174036-1	35AWW19_052324	Total/NA	Water	RSK-175	512911
410-174036-2	LHSMW07_052324	Total/NA	Water	RSK-175	512911
410-174036-5	35AWW23_052324	Total/NA	Water	RSK-175	512911
410-174036-6	35AWW06_052324	Total/NA	Water	RSK-175	512911
MB 410-512911/1-A	Method Blank	Total/NA	Water	RSK-175	512911
LCS 410-512911/2-A	Lab Control Sample	Total/NA	Water	RSK-175	512911

Prep Batch: 512911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-174036-1	35AWW19_052324	Total/NA	Water	RSK-175	
410-174036-2	LHSMW07_052324	Total/NA	Water	RSK-175	
410-174036-5	35AWW23_052324	Total/NA	Water	RSK-175	
410-174036-6	35AWW06_052324	Total/NA	Water	RSK-175	
MB 410-512911/1-A	Method Blank	Total/NA	Water	RSK-175	
LCS 410-512911/2-A	Lab Control Sample	Total/NA	Water	RSK-175	

Analysis Batch: 513353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-174036-3	35AWW20_052324	Total/NA	Water	RSK-175	513397
410-174036-4	35AWW11_052324	Total/NA	Water	RSK-175	513397
MB 410-513397/1-A	Method Blank	Total/NA	Water	RSK-175	513397
LCS 410-513397/2-A	Lab Control Sample	Total/NA	Water	RSK-175	513397
LCSD 410-513397/3-A	Lab Control Sample Dup	Total/NA	Water	RSK-175	513397

Prep Batch: 513397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-174036-3	35AWW20_052324	Total/NA	Water	RSK-175	
410-174036-4	35AWW11_052324	Total/NA	Water	RSK-175	
MB 410-513397/1-A	Method Blank	Total/NA	Water	RSK-175	
LCS 410-513397/2-A	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 410-513397/3-A	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Client Sample ID: 35AWW19_052324 — Lab Sample ID: 410-174036-1

Date Collected: 05/23/24 07:40 — **Matrix: Water**
Date Received: 05/31/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			512911	HQR6	ELLE	06/03/24 09:53
Total/NA	Analysis	RSK-175		1	512895	LXF2	ELLE	06/03/24 11:00

Client Sample ID: LHSMW07_052324 — Lab Sample ID: 410-174036-2

Date Collected: 05/23/24 08:30 — **Matrix: Water**
Date Received: 05/31/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			512911	HQR6	ELLE	06/03/24 09:53
Total/NA	Analysis	RSK-175		1	512895	LXF2	ELLE	06/03/24 11:07

Client Sample ID: 35AWW20_052324 — Lab Sample ID: 410-174036-3

Date Collected: 05/23/24 09:20 — **Matrix: Water**
Date Received: 05/31/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			513397	HQR6	ELLE	06/04/24 10:14
Total/NA	Analysis	RSK-175		10	513353	LXF2	ELLE	06/04/24 12:21

Client Sample ID: 35AWW11_052324 — Lab Sample ID: 410-174036-4

Date Collected: 05/23/24 10:10 — **Matrix: Water**
Date Received: 05/31/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			513397	HQR6	ELLE	06/04/24 10:14
Total/NA	Analysis	RSK-175		10	513353	LXF2	ELLE	06/04/24 12:29

Client Sample ID: 35AWW23_052324 — Lab Sample ID: 410-174036-5

Date Collected: 05/23/24 11:00 — **Matrix: Water**
Date Received: 05/31/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			512911	HQR6	ELLE	06/03/24 09:53
Total/NA	Analysis	RSK-175		1	512895	LXF2	ELLE	06/03/24 11:31

Client Sample ID: 35AWW06_052324 — Lab Sample ID: 410-174036-6

Date Collected: 05/23/24 11:50 — **Matrix: Water**
Date Received: 05/31/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	RSK-175			512911	HQR6	ELLE	06/03/24 09:53
Total/NA	Analysis	RSK-175		1	512895	LXF2	ELLE	06/03/24 11:39

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

01335860

Client: ALS Group USA, Corp
Job ID: 410-174036-1
Project/Site: HS24051535

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24

Method Summary

01335861

Client: ALS Group USA, Corp
Job ID: 410-174036-1
Project/Site: HS24051535

Method	Method Description	Protocol	Laboratory
RSK-175	Dissolved Gases (GC)	RSK	ELLE
RSK-175	Dissolved Gases Prep	RSK	ELLE

Protocol References:

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev 0, 8/11/94, USEPA Research Lab

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

01335862

Client: ALS Group USA, Corp
Job ID: 410-174036-1
Project/Site: HS24051535

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-174036-1	35AWW19_052324	Water	05/23/24 07:40	05/31/24 10:15
410-174036-2	LHSMW07_052324	Water	05/23/24 08:30	05/31/24 10:15
410-174036-3	35AWW20_052324	Water	05/23/24 09:20	05/31/24 10:15
410-174036-4	35AWW11_052324	Water	05/23/24 10:10	05/31/24 10:15
410-174036-5	35AWW23_052324	Water	05/23/24 11:00	05/31/24 10:15
410-174036-6	35AWW06_052324	Water	05/23/24 11:50	05/31/24 10:15

GC VOA MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Instrument ID: 19506-B Analysis Batch Number: 499750

Lab Sample ID: IC 410-499750/13 Client Sample ID:

Date Analyzed: 04/29/24 16:37 Lab File ID: 312024_4_29BB.0013.d GC Column: 19809 ID: 1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Carbon dioxide	1.98	Baseline Smoothing	LXF2	04/30/24 04:03

GC VOA MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Instrument ID: 19506-B Analysis Batch Number: 512895

Lab Sample ID: 410-174036-1 Client Sample ID: 35AWW19_052324

Date Analyzed: 06/03/24 11:00 Lab File ID: 312024_6_3BB.0007.d GC Column: 19809 ID: 1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Carbon dioxide	1.98	Assign Peak	LXF2	06/04/24 04:03

Lab Sample ID: 410-174036-5 Client Sample ID: 35AWW23_052324

Date Analyzed: 06/03/24 11:31 Lab File ID: 312024_6_3BB.0011.d GC Column: 19809 ID: 1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Carbon dioxide	1.99	Assign Peak	LXF2	06/04/24 04:03

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
EPH_CO2ICV_00003	04/01/25	04/01/24	DI Water, Lot In House	1 mL	EPH_CO2XX_00003	0.0018 g	Carbon dioxide	547000 ppb
.EPH_CO2XX_00003	04/01/25	Air Products, Lot A214157			(Purchased Reagent)		Carbon dioxide	30.3889 %
EPH_CO2MS_00006	07/18/24	07/18/23	DI Water, Lot In House	1 g	EPH_CO2CRV_00003	0.0018 g	Carbon dioxide	1791000 ppb
.EPH_CO2CRV_00003	07/18/24	Praxair, Lot 4-11-18			(Purchased Reagent)		Carbon dioxide	99.5 %

Method RSK-175 CO2 DOD

Dissolved Gases (GC) by Method RSK_175_CO2 DOD

FORM III
GC VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 312024_6_3BB.0006.d

Lab ID: LCS 410-512911/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Carbon dioxide	35800	38800	108	80-122	

Column to be used to flag recovery and RPD values

FORM III RSK-175

FORM III
GC VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 312024_6_4BB.0006.d

Lab ID: LCS 410-513397/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Carbon dioxide	35800	39600	111	80-122	

Column to be used to flag recovery and RPD values

FORM III RSK-175

FORM III
GC VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 312024_6_4BB.0007.d

Lab ID: LCSD 410-513397/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Carbon dioxide	35800	40200	112	1	20	80-122	

Column to be used to flag recovery and RPD values

FORM III RSK-175

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab File ID: 312024_6_3BB.0005.d Lab Sample ID: MB 410-512911/1-A

Matrix: Water Heated Purge:(Y/N) N

Instrument ID: 19506-B Date Analyzed: 06/03/2024 10:18

GC Column: 19809 ID: 1(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 410-512911/2-A	312024_6_3BB.0006.d	06/03/2024 10:26
35AWW19_052324	410-174036-1	312024_6_3BB.0007.d	06/03/2024 11:00
LHSMW07_052324	410-174036-2	312024_6_3BB.0008.d	06/03/2024 11:07
35AWW23_052324	410-174036-5	312024_6_3BB.0011.d	06/03/2024 11:31
35AWW06_052324	410-174036-6	312024_6_3BB.0012.d	06/03/2024 11:39

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab File ID: 312024_6_4BB.0005.d Lab Sample ID: MB 410-513397/1-A

Matrix: Water Heated Purge:(Y/N) N

Instrument ID: 19506-B Date Analyzed: 06/04/2024 10:27

GC Column: 19809 ID: 1(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 410-513397/2-A	312024_6_4BB.0006.d	06/04/2024 10:34
	LCSD 410-513397/3-A	312024_6_4BB.0007.d	06/04/2024 10:42
35AWW20_052324	410-174036-3	312024_6_4BB.0017.d	06/04/2024 12:21
35AWW11_052324	410-174036-4	312024_6_4BB.0018.d	06/04/2024 12:29

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: 35AWW19_052324 Lab Sample ID: 410-174036-1

Matrix: Water Lab File ID: 312024_6_3BB.0007.d

Analysis Method: RSK-175 Date Collected: 05/23/2024 07:40

Sample wt/vol: 5(mL) Date Analyzed: 06/03/2024 11:00

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH: 6.0

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 512895 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	250000	M	12000	11000	5600

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: LHSMW07_052324 Lab Sample ID: 410-174036-2

Matrix: Water Lab File ID: 312024_6_3BB.0008.d

Analysis Method: RSK-175 Date Collected: 05/23/2024 08:30

Sample wt/vol: 5(mL) Date Analyzed: 06/03/2024 11:07

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH: 7.0

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 512895 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	140000		12000	11000	5600

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: 35AWW20_052324 Lab Sample ID: 410-174036-3

Matrix: Water Lab File ID: 312024_6_4BB.0017.d

Analysis Method: RSK-175 Date Collected: 05/23/2024 09:20

Sample wt/vol: 5(mL) Date Analyzed: 06/04/2024 12:21

Soil Aliquot Vol: Dilution Factor: 10

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH: 6.0

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 513353 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	800000	D	120000	110000	56000

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: 35AWW11_052324 Lab Sample ID: 410-174036-4

Matrix: Water Lab File ID: 312024_6_4BB.0018.d

Analysis Method: RSK-175 Date Collected: 05/23/2024 10:10

Sample wt/vol: 5(mL) Date Analyzed: 06/04/2024 12:29

Soil Aliquot Vol: Dilution Factor: 10

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH: 6.0

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 513353 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	810000	D	120000	110000	56000

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: 35AWW23_052324 Lab Sample ID: 410-174036-5

Matrix: Water Lab File ID: 312024_6_3BB.0011.d

Analysis Method: RSK-175 Date Collected: 05/23/2024 11:00

Sample wt/vol: 5(mL) Date Analyzed: 06/03/2024 11:31

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH: 7.0

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 512895 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	230000	M	12000	11000	5600

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: 35AWW06_052324 Lab Sample ID: 410-174036-6

Matrix: Water Lab File ID: 312024_6_3BB.0012.d

Analysis Method: RSK-175 Date Collected: 05/23/2024 11:50

Sample wt/vol: 5(mL) Date Analyzed: 06/03/2024 11:39

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH: 7.0

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 512895 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	59000		12000	11000	5600

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1 Analy Batch No.: 499750

SDG No.:

Instrument ID: 19506-B GC Column: 19809 ID: 1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/29/2024 15:57 Calibration End Date: 04/29/2024 16:37 Calibration ID: 61130

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-499750/8	312024_4_29BB.0008.d
Level 2	IC 410-499750/9	312024_4_29BB.0009.d
Level 3	ICRT 410-499750/10	312024_4_29BB.0010.d
Level 4	IC 410-499750/11	312024_4_29BB.0011.d
Level 5	IC 410-499750/12	312024_4_29BB.0012.d
Level 6	IC 410-499750/13	312024_4_29BB.0013.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6					RT WINDOW	AVG RT
Carbon dioxide	2.055	2.051	2.048	2.037	2.020	1.980					2.017 - 2.077	2.032

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1 Analy Batch No.: 499750

SDG No.:

Instrument ID: 19506-B GC Column: 19809 ID: 1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/29/2024 15:57 Calibration End Date: 04/29/2024 16:37 Calibration ID: 61130

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-499750/8	312024_4_29BB.0008.d
Level 2	IC 410-499750/9	312024_4_29BB.0009.d
Level 3	ICRT 410-499750/10	312024_4_29BB.0010.d
Level 4	IC 410-499750/11	312024_4_29BB.0011.d
Level 5	IC 410-499750/12	312024_4_29BB.0012.d
Level 6	IC 410-499750/13	312024_4_29BB.0013.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD /RSE	#	MAX %RSD /RSE	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3	LVL 4		B	M1	M2								
Carbon dioxide	3273.6 2914.8	3533.4 2752.9	3350.9	3001.7	Ave		3137.90247				9.4		20.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type. RSD is calculated for Ave curve types. RSE is used for all other types.

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1 Analy Batch No.: 499750

SDG No.:

Instrument ID: 19506-B GC Column: 19809 ID: 1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/29/2024 15:57 Calibration End Date: 04/29/2024 16:37 Calibration ID: 61130

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 410-499750/8	312024_4_29BB.0008.d
Level 2	IC 410-499750/9	312024_4_29BB.0009.d
Level 3	ICRT 410-499750/10	312024_4_29BB.0010.d
Level 4	IC 410-499750/11	312024_4_29BB.0011.d
Level 5	IC 410-499750/12	312024_4_29BB.0012.d
Level 6	IC 410-499750/13	312024_4_29BB.0013.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
		LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Carbon dioxide	Ave	35178219 986082668	75940683	120029586	268806379	522045301	10746 358200	21492	35820	89550	179100

Curve Type Legend:
Ave = Average by Height

Calibration / Carbon dioxide

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ESTD
Response Base:	HEIGHT
RF Rounding:	0

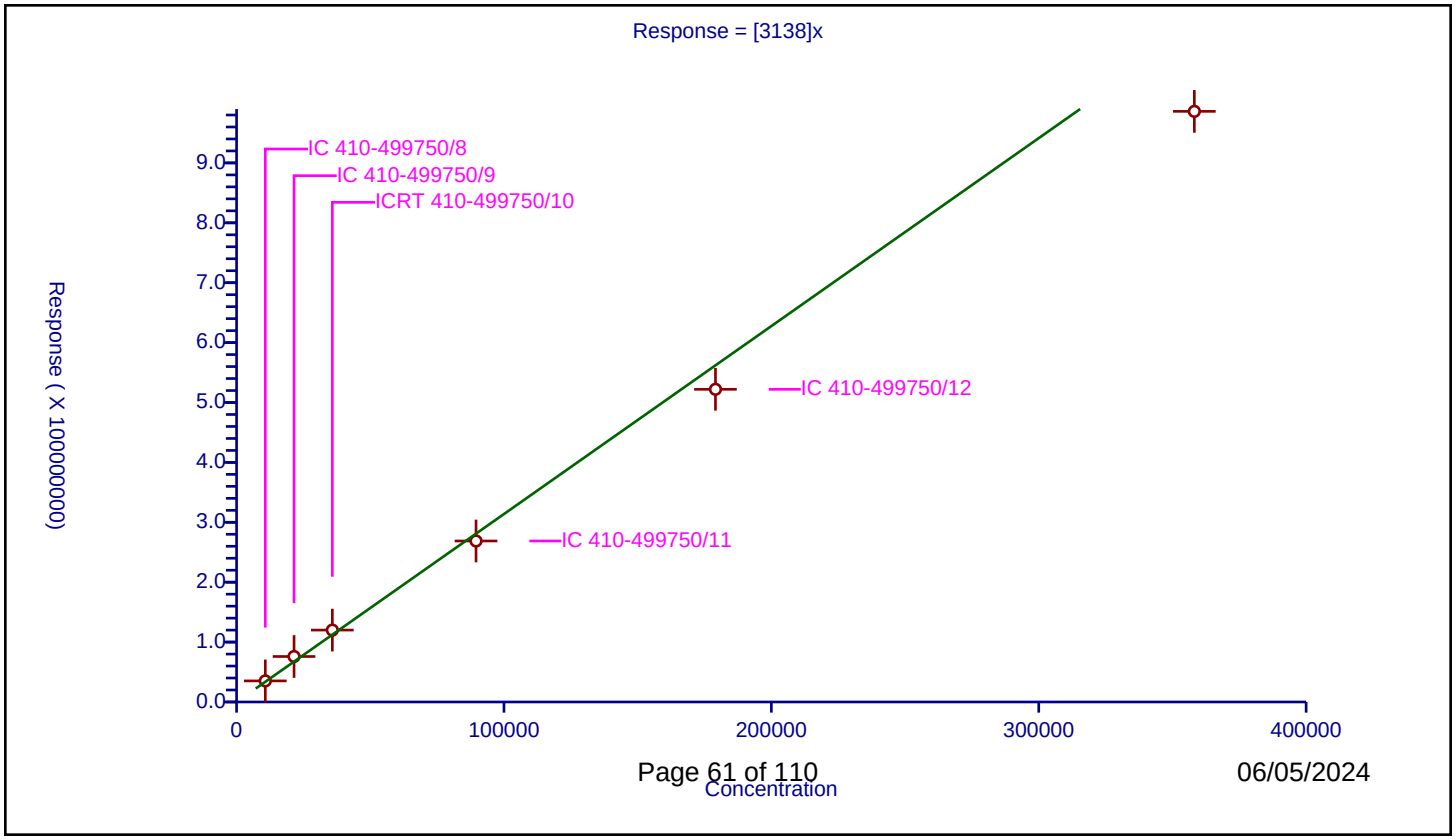
Curve Coefficients

Intercept:	0
Slope:	3138

Error Coefficients

Relative Standard Deviation:	9.4

ID	Level	Concentration	Response	IS Amount	IS Response	RF	Used
1	IC 410-499750/8	10746.0	35178219.0			3273.610553	Y
2	IC 410-499750/9	21492.0	75940683.0			3533.439559	Y
3	ICRT 410-499750/10	35820.0	120029586.0			3350.909715	Y
4	IC 410-499750/11	89550.0	268806379.0			3001.746276	Y
5	IC 410-499750/12	179100.0	522045301.0			2914.825801	Y
6	IC 410-499750/13	358200.0	986082668.0			2752.882937	Y



FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab Sample ID: ICV 410-499750/16 Calibration Date: 04/29/2024 17:01

Instrument ID: 19506-B Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm) Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_4_29BB.0016.d Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Carbon dioxide	Ave	3138	3393		37900	35000	8.1	15.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Lab Sample ID: ICV 410-499750/16
Calibration Date: 04/29/2024 17:01

Instrument ID: 19506-B
Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm)
Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_4_29BB.0016.d
Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Carbon dioxide	2.05	2.02	2.08

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCVRT 410-512895/4 Calibration Date: 06/03/2024 09:57

Instrument ID: 19506-B Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm) Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_3BB.0004.d Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Carbon dioxide	Ave	3138	3535		40300	35800	12.6	15.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCVRT 410-512895/4
Calibration Date: 06/03/2024 09:57

Instrument ID: 19506-B
Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm)
Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_3BB.0004.d
Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Carbon dioxide	2.04	2.01	2.07

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCV 410-512895/15 Calibration Date: 06/03/2024 12:02

Instrument ID: 19506-B Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm) Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_3BB.0015.d Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Carbon dioxide	Ave	3138	3270		37300	35800	4.2	15.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCV 410-512895/15
Calibration Date: 06/03/2024 12:02

Instrument ID: 19506-B
Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm)
Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_3BB.0015.d
Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Carbon dioxide	2.04	2.01	2.07

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCVRT 410-513353/4 Calibration Date: 06/04/2024 10:15

Instrument ID: 19506-B Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm) Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_4BB.0004.d Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Carbon dioxide	Ave	3138	3601		41100	35800	14.8	15.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCVRT 410-513353/4
Calibration Date: 06/04/2024 10:15

Instrument ID: 19506-B
Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm)
Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_4BB.0004.d
Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Carbon dioxide	2.04	2.01	2.07

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCV 410-513353/15 Calibration Date: 06/04/2024 11:45

Instrument ID: 19506-B Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm) Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_4BB.0015.d Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Carbon dioxide	Ave	3138	3412		38900	35800	8.7	15.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCV 410-513353/15
Calibration Date: 06/04/2024 11:45

Instrument ID: 19506-B
Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm)
Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_4BB.0015.d
Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Carbon dioxide	2.04	2.01	2.07

FORM VII
GC VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCV 410-513353/19 Calibration Date: 06/04/2024 12:37

Instrument ID: 19506-B Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm) Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_4BB.0019.d Conc. Units: ug/L Heated Purge: (Y/N) N

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Carbon dioxide	Ave	3138	3352		38300	35800	6.8	15.0

FORM VII
GC VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Lab Sample ID: CCV 410-513353/19
Calibration Date: 06/04/2024 12:37

Instrument ID: 19506-B
Calib Start Date: 04/29/2024 15:57

GC Column: 19809 ID: 1.00(mm)
Calib End Date: 04/29/2024 16:37

Lab File ID: 312024_6_4BB.0019.d
Heated Purge: (Y/N) N

Analyte	RT	RT WINDOW	
		FROM	TO
Carbon dioxide	2.04	2.01	2.07

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-512911/1-A

Matrix: Water Lab File ID: 312024_6_3BB.0005.d

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 5(mL) Date Analyzed: 06/03/2024 10:18

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH:

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 512895 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	5600	U	12000	11000	5600

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 410-513397/1-A

Matrix: Water Lab File ID: 312024_6_4BB.0005.d

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 5(mL) Date Analyzed: 06/04/2024 10:27

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: 19809 ID: 1(mm)

Purge Volume: Heated Purge: (Y/N) N pH:

% Moisture: % Solids: Level: (low/med) Low

Analysis Batch No.: 513353 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	5600	U	12000	11000	5600

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Client Sample ID:
Lab Sample ID: LCS 410-512911/2-A

Matrix: Water
Lab File ID: 312024_6_3BB.0006.d

Analysis Method: RSK-175
Date Collected:

Sample wt/vol: 5(mL)
Date Analyzed: 06/03/2024 10:26

Soil Aliquot Vol:
Dilution Factor: 1

Soil Extract Vol.:
GC Column: 19809 ID: 1(mm)

Purge Volume:
Heated Purge: (Y/N) N pH:

% Moisture: % Solids:
Level: (low/med) Low

Analysis Batch No.: 512895
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	38800		12000	11000	5600

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Client Sample ID:
Lab Sample ID: LCS 410-513397/2-A

Matrix: Water
Lab File ID: 312024_6_4BB.0006.d

Analysis Method: RSK-175
Date Collected:

Sample wt/vol: 5(mL)
Date Analyzed: 06/04/2024 10:34

Soil Aliquot Vol:
Dilution Factor: 1

Soil Extract Vol.:
GC Column: 19809 ID: 1(mm)

Purge Volume:
Heated Purge: (Y/N) N pH:

% Moisture: % Solids:
Level: (low/med) Low

Analysis Batch No.: 513353
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	39600		12000	11000	5600

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC
Job No.: 410-174036-1

SDG No.:

Client Sample ID:
Lab Sample ID: LCSD 410-513397/3-A

Matrix: Water
Lab File ID: 312024_6_4BB.0007.d

Analysis Method: RSK-175
Date Collected:

Sample wt/vol: 5(mL)
Date Analyzed: 06/04/2024 10:42

Soil Aliquot Vol:
Dilution Factor: 1

Soil Extract Vol.:
GC Column: 19809 ID: 1(mm)

Purge Volume:
Heated Purge: (Y/N) N pH:

% Moisture: % Solids:
Level: (low/med) Low

Analysis Batch No.: 513353
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
124-38-9	Carbon dioxide	40200		12000	11000	5600

GC VOA ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Instrument ID: 19506-B Start Date: 04/29/2024 15:50

Analysis Batch Number: 499750 End Date: 04/29/2024 18:35

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
PIBLK 410-499750/7		04/29/2024 15:50	1		19809 1(mm)
IC 410-499750/8		04/29/2024 15:57	1	312024_4_29BB.0008.d	19809 1(mm)
IC 410-499750/9		04/29/2024 16:06	1	312024_4_29BB.0009.d	19809 1(mm)
ICRT 410-499750/10		04/29/2024 16:13	1	312024_4_29BB.0010.d	19809 1(mm)
IC 410-499750/11		04/29/2024 16:21	1	312024_4_29BB.0011.d	19809 1(mm)
IC 410-499750/12		04/29/2024 16:29	1	312024_4_29BB.0012.d	19809 1(mm)
IC 410-499750/13		04/29/2024 16:37	1	312024_4_29BB.0013.d	19809 1(mm)
PIBLK 410-499750/14		04/29/2024 16:45	1		19809 1(mm)
ICVL 410-499750/15		04/29/2024 16:53	1		19809 1(mm)
ICV 410-499750/16		04/29/2024 17:01	1	312024_4_29BB.0016.d	19809 1(mm)
CCV 410-499750/17		04/29/2024 17:09	1		19809 1(mm)
ZZZZZ		04/29/2024 17:17	1		19809 1(mm)
ZZZZZ		04/29/2024 17:24	1		19809 1(mm)
ZZZZZ		04/29/2024 17:32	1		19809 1(mm)
CCV 410-499750/28		04/29/2024 18:35	1		19809 1(mm)

GC VOA ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Instrument ID: 19506-B Start Date: 06/03/2024 09:57

Analysis Batch Number: 512895 End Date: 06/03/2024 16:03

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVRT 410-512895/4		06/03/2024 09:57	1	312024_6_3BB.0004.d	19809 1(mm)
MB 410-512911/1-A		06/03/2024 10:18	1	312024_6_3BB.0005.d	19809 1(mm)
LCS 410-512911/2-A		06/03/2024 10:26	1	312024_6_3BB.0006.d	19809 1(mm)
410-174036-1	35AWW19_052324	06/03/2024 11:00	1	312024_6_3BB.0007.d	19809 1(mm)
410-174036-2	LHSMW07_052324	06/03/2024 11:07	1	312024_6_3BB.0008.d	19809 1(mm)
ZZZZZ		06/03/2024 11:16	1		19809 1(mm)
ZZZZZ		06/03/2024 11:23	1		19809 1(mm)
410-174036-5	35AWW23_052324	06/03/2024 11:31	1	312024_6_3BB.0011.d	19809 1(mm)
410-174036-6	35AWW06_052324	06/03/2024 11:39	1	312024_6_3BB.0012.d	19809 1(mm)
ZZZZZ		06/03/2024 11:47	1		19809 1(mm)
ZZZZZ		06/03/2024 11:55	1		19809 1(mm)
CCV 410-512895/15		06/03/2024 12:02	1	312024_6_3BB.0015.d	19809 1(mm)
ZZZZZ		06/03/2024 12:23	1		19809 1(mm)
ZZZZZ		06/03/2024 12:30	1		19809 1(mm)
ZZZZZ		06/03/2024 12:39	1		19809 1(mm)
ZZZZZ		06/03/2024 12:46	1		19809 1(mm)
ZZZZZ		06/03/2024 12:54	1		19809 1(mm)
ZZZZZ		06/03/2024 13:02	1		19809 1(mm)
ZZZZZ		06/03/2024 13:10	1		19809 1(mm)
CCV 410-512895/23		06/03/2024 13:17	1		19809 1(mm)
ZZZZZ		06/03/2024 13:25	1		19809 1(mm)
ZZZZZ		06/03/2024 13:33	1		19809 1(mm)
ZZZZZ		06/03/2024 13:41	1		19809 1(mm)
ZZZZZ		06/03/2024 13:49	1		19809 1(mm)
ZZZZZ		06/03/2024 13:57	1		19809 1(mm)
ZZZZZ		06/03/2024 14:05	1		19809 1(mm)
ZZZZZ		06/03/2024 14:12	1		19809 1(mm)
ZZZZZ		06/03/2024 14:20	1		19809 1(mm)
ZZZZZ		06/03/2024 14:28	1		19809 1(mm)
ZZZZZ		06/03/2024 14:41	1		19809 1(mm)
CCV 410-512895/34		06/03/2024 14:49	1		19809 1(mm)
ZZZZZ		06/03/2024 14:57	1		19809 1(mm)
ZZZZZ		06/03/2024 15:05	1		19809 1(mm)
ZZZZZ		06/03/2024 15:13	1		19809 1(mm)
ZZZZZ		06/03/2024 15:22	1		19809 1(mm)
ZZZZZ		06/03/2024 15:30	1		19809 1(mm)
ZZZZZ		06/03/2024 15:38	1		19809 1(mm)
ZZZZZ		06/03/2024 15:46	1		19809 1(mm)
ZZZZZ		06/03/2024 15:54	1		19809 1(mm)
CCV 410-512895/43		06/03/2024 16:03	1		19809 1(mm)

GC VOA ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC Job No.: 410-174036-1

SDG No.:

Instrument ID: 19506-B Start Date: 06/04/2024 10:15

Analysis Batch Number: 513353 End Date: 06/04/2024 12:37

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVRT 410-513353/4		06/04/2024 10:15	1	312024_6_4BB.0004.d	19809 1(mm)
MB 410-513397/1-A		06/04/2024 10:27	1	312024_6_4BB.0005.d	19809 1(mm)
LCS 410-513397/2-A		06/04/2024 10:34	1	312024_6_4BB.0006.d	19809 1(mm)
LCSD 410-513397/3-A		06/04/2024 10:42	1	312024_6_4BB.0007.d	19809 1(mm)
ZZZZZ		06/04/2024 10:50	1		19809 1(mm)
ZZZZZ		06/04/2024 10:58	1		19809 1(mm)
ZZZZZ		06/04/2024 11:06	1		19809 1(mm)
ZZZZZ		06/04/2024 11:14	1		19809 1(mm)
ZZZZZ		06/04/2024 11:21	1		19809 1(mm)
ZZZZZ		06/04/2024 11:29	1		19809 1(mm)
ZZZZZ		06/04/2024 11:37	1		19809 1(mm)
CCV 410-513353/15		06/04/2024 11:45	1	312024_6_4BB.0015.d	19809 1(mm)
ZZZZZ		06/04/2024 12:13	1		19809 1(mm)
410-174036-3	35AWW20_052324	06/04/2024 12:21	10	312024_6_4BB.0017.d	19809 1(mm)
410-174036-4	35AWW11_052324	06/04/2024 12:29	10	312024_6_4BB.0018.d	19809 1(mm)
CCV 410-513353/19		06/04/2024 12:37	1	312024_6_4BB.0019.d	19809 1(mm)

GC VOA BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratorie Job No.: 410-174036-1

SDG No.:

Batch Number: 499750 Batch Start Date: 04/29/24 15:50 Batch Analyst: Kennedy, Johanna C

Batch Method: RSK-175 Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Matrix	Basis	InitialAmount	FinalAmount	EPH_CO2ICV 00003	EPH_CO2MS 00006		
IC 410-499750/8		RSK-175			5 mL	5 mL		30 uL		
IC 410-499750/9		RSK-175			5 mL	5 mL		60 uL		
ICRT 410-499750/10		RSK-175			5 mL	5 mL		100 uL		
IC 410-499750/11		RSK-175			5 mL	5 mL		250 uL		
IC 410-499750/12		RSK-175			5 mL	5 mL		500 uL		
IC 410-499750/13		RSK-175			5 mL	5 mL		1000 uL		
ICV 410-499750/16		RSK-175			5 mL	5 mL	320 uL			

Batch Notes	
Henry Law Calculation Spreadsheet	yes

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC VOA BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratorie Job No.: 410-174036-1

SDG No.:

Batch Number: 512911 Batch Start Date: 06/03/24 09:53 Batch Analyst: Omorogbe, Malachi

Batch Method: RSK-175 Batch End Date: 06/03/24 10:50

Lab Sample ID	Client Sample ID	Method Chain	Matrix	Basis	Initial pH	InitialAmount	FinalAmount	Headspace	EPH_CO2MS 00006	AnalysisComment
MB 410-512911/1		RSK-175, RSK-175				5 mL	5 mL			
LCS 410-512911/2		RSK-175, RSK-175				5 mL	5 mL		0.1 mL	
410-174036-A-1	35AWW19_052324	RSK-175, RSK-175	Water	T	6 SU	5 mL	5 mL	No		ph 6
410-174036-A-2	LHSMW07_052324	RSK-175, RSK-175	Water	T	7 SU	5 mL	5 mL	No		
410-174036-A-5	35AWW23_052324	RSK-175, RSK-175	Water	T	7 SU	5 mL	5 mL	No		
410-174036-A-6	35AWW06_052324	RSK-175, RSK-175	Water	T	7 SU	5 mL	5 mL	No		

Batch Notes	
Pipette/Syringe/Dispenser ID	7105
pH Indicator ID	10BDH5131

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC VOA BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratorie Job No.: 410-174036-1

SDG No.:

Batch Number: 513397 Batch Start Date: 06/04/24 10:14 Batch Analyst: Omorogbe, Malachi

Batch Method: RSK-175 Batch End Date: 06/04/24 10:37

Lab Sample ID	Client Sample ID	Method Chain	Matrix	Basis	Initial pH	InitialAmount	FinalAmount	Headspace	EPH_CO2MS 00006	AnalysisComment
MB 410-513397/1		RSK-175, RSK-175				5 mL	5 mL			
LCS 410-513397/2		RSK-175, RSK-175				5 mL	5 mL		0.1 mL	
LCSD 410-513397/3		RSK-175, RSK-175				5 mL	5 mL		0.1 mL	
410-174036-B-3	35AWW20_052324	RSK-175, RSK-175	Water	T	6 SU	5 mL	5 mL	No		DF10. ph 6
410-174036-B-4	35AWW11_052324	RSK-175, RSK-175	Water	T	6 SU	5 mL	5 mL	No		DF10. ph 6

Batch Notes	
Pipette/Syringe/Dispenser ID	7105
pH Indicator ID	10BDH5131

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

410-174036 Chain of Custody

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:** **25841**

SUBCONTRACT TO:

Eurofins Lancaster Laboratories Envt Testing
2425 New Holland Pike
Lancaster, PA 17601

Phone: +1 717 656 2300

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Luis.Aguilar
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	luis.aguilar@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:	HS24051535
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS24051535-01**	**35AWW19_052324**	**Groundwater**	**23 May 2024 07:40**
	RSK-CO2; Level II & IV, DoD, Equ_APTIM_Longhorn			10 Jun 2024
2.	**HS24051535-02**	**LHSMW07_052324**	**Groundwater**	**23 May 2024 08:30**
	RSK-CO2; Level II & IV, DoD, Equ_APTIM_Longhorn			10 Jun 2024
3.	**HS24051535-03**	**35AWW20_052324**	**Groundwater**	**23 May 2024 09:20**
	RSK-CO2; Level II & IV, DoD, Equ_APTIM_Longhorn			10 Jun 2024
4.	**HS24051535-04**	**35AWW11_052324**	**Groundwater**	**23 May 2024 10:10**
	RSK-CO2; Level II & IV, DoD, Equ_APTIM_Longhorn			10 Jun 2024
5.	**HS24051535-05**	**35AWW23_052324**	**Groundwater**	**23 May 2024 11:00**
	RSK-CO2; Level II & IV, DoD, Equ_APTIM_Longhorn			10 Jun 2024
6.	**HS24051535-06**	**35AWW06_052324**	**Groundwater**	**23 May 2024 11:50**
	RSK-CO2; Level II & IV, DoD, Equ_APTIM_Longhorn			10 Jun 2024

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

NJ

Subcontract Chain of Custody

SAMPLING STATE: ~~Texas~~ **COC ID: 25841**

Relinquished By: _____ Date/Time: 5/30/24 1900

Received By: _____ Date/Time: 5/31/24 1015

Cooler ID(s): _____ Temperature(s): R: 4.0 C: 3.7

NJ

Login Sample Receipt Checklist

Client: ALS Group USA, Corp

Job Number: 410-174036-1

Login Number: 174036
List Number: 1
Creator: Santiago, Nathaniel

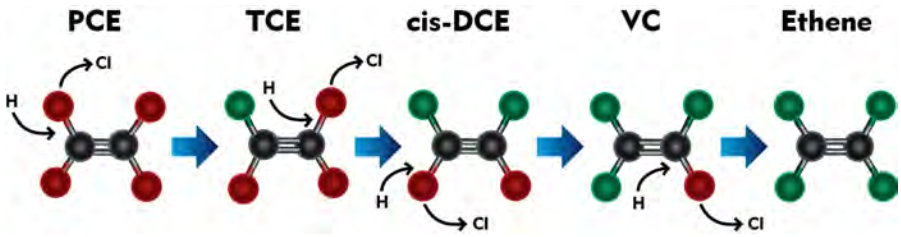
List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	True	
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	True	

DHC Interpretation

Dehalococcoides 16S rRNA gene (qDHC)

Under anaerobic conditions, tetrachloroethene (PCE) and trichloroethene (TCE) can undergo sequential reductive dechlorination through the daughter products *cis*-dichloroethene (*cis*-DCE) and vinyl chloride to nontoxic ethene (1,2).



While a number of bacterial cultures capable of utilizing PCE and TCE as growth supporting electron acceptors have been isolated (3-7), *Dehalococcoides* spp. may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene (8). In fact, the presence of *Dehalococcoides* spp. has been associated with complete dechlorination to ethene at sites across North America and Europe (9).

Status	*Dehalococcoides spp.*	Observation
	**≥ 10^4** (cells/mL)	Lu et al. proposed that a concentration of 1 x 10^4 DHC cells/mL could be used as a screening criterion to identify sites where reductive dechlorination will yield a generally useful biodegradation rate (10). Similarly, in an internal study conducted with nearly 1000 groundwater samples obtained from sites across the US, ethene production was observed in approximately 80% of samples in which CENSUS® qDHC results were greater than or equal to 10^4 DHC cells/mL.
	**10^1 to < 10^4** (cells/mL)	When vinyl chloride reductase genes (See DHC functional genes discussion below) are also detected, complete reductive dechlorination of PCE and TCE to ethene may still occur even with moderate DHC concentrations. When the DHC population is below the 10^4 cells/mL criterion proposed by Lu et al. (10), project managers should carefully consider other site-specific data to determine whether subsurface conditions may be limiting reductive dechlorination. For example, the addition of an electron donor may be able to stimulate DHC growth and enhance anaerobic bioremediation.
	**< 10^1** (cells/mL)	DHC concentrations are low suggesting that complete reductive dechlorination of PCE and TCE to ethene is unlikely to occur under existing conditions. Enhanced anaerobic bioremediation options (biostimulation or bioaugmentation) may need to be considered.

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

microbialinsights

DHC Interpretation

DHC Functional Genes (*tce*A, *bvc*A, *vcr*A)

A "stall" where daughter products *cis*-DCE and vinyl chloride accumulate can occur at PCE- and TCE-impacted sites especially under MNA conditions. The accumulation of vinyl chloride, generally considered more carcinogenic than the parent compounds, is particularly problematic. Although elevated *Dehalococcoides* concentrations correspond to ethene production in numerous studies, the range of chlorinated ethenes metabolized and cometabolized varies among species and strains within the *Dehalococcoides* genus. For example, *Dehalococcoides ethenogenes* str. 195 metabolizes PCE, TCE, and *cis*-DCE and cometabolizes vinyl chloride (8) to produce ethene. Conversely, *Dehalococcoides* sp. CBDB1 utilizes PCE and TCE but does not cometabolize additional chloroethenes (11). Other *Dehalococcoides* strains, such as BAV1, GT and VS, are known to fully dechlorinate cis-DCE and VC to ethene (14,16,19). Quantification of reductive dehalogenase genes is used to more definitively confirm the potential for reductive dechlorination of TCE, cis-DCE, and vinyl chloride (12-15).

Functional Gene	Observation
TCE Reductase	
***tce*A gene**	The *tce*A gene encodes the enzyme responsible for reductive dechlorination of TCE to *cis*-DCE in some strains of *Dehalococcoides*. Absence of *tce*A does not preclude the potential for reductive dechlorination of TCE in the field since the *tce*A gene is not universally distributed among all DHC and is not present in other microorganisms capable of reductive dechlorination of TCE (e.g. *Dehalobacter*). Detection of the *tce*A gene provides an additional line of evidence indicating the potential for dechlorination of TCE.
Vinyl Chloride Reductase	
***bvc*A gene**	The *bvc*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of vinyl chloride to ethene by *Dehalococcoides* sp. str. BAV1 (16). Presence of *bvc*A gene indicates the potential for reductive dechlorination of VC to ethene. Absence of both *bvc*A and *vcr*A genes suggests VC may accumulate. An internal study with ~1,000 samples showed ethene production was observed in 80% of the samples that the DHC population was greater than or equal to 10^4 cells/mL. The *bvc*A gene was detected in over 50% of these samples. Van Der Zaan et al (17) noted that the bvcA gene was the only VC reductase gene detected at three of their sites. Alfred Spormann's laboratory at Stanford University (18) reported that the *bvc*A gene was the most abundant and active at the outflow of a PCE fed column study. This section of the column was in the DCE to VC stages of reductive dechlorination thus confirming the importance of the *bvc*A gene for complete reductive dechlorination.
***vcr*A gene**	The *vcr*A gene encodes the vinyl chloride reductase enzyme responsible for reductive dechlorination of *cis*-DCE and vinyl chloride by *Dehalococcoides* sp. strain VS (14). Presence of *vcr*A gene indicates the potential for reductive dechlorination of DCE and/or VC to ethene. Absence of both *bvc*A and *vcr*A genes suggest VC may accumulate. As with the *bvc*A gene, detection of the *vcr*A gene is associated with ethene production in internal studies (67%) and vinyl chloride reduction in independent studies (14, 17).

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

DHC Interpretation

Reporting

Microbial Insights can provide a variety of data packages and reporting levels to suit the needs of any project. Data packages range from simple analytical reports with results only to more complex data packages that include a report narrative, analytical results, QC data, and supporting materials including all raw data and chain-of-custody documentation. The figure below shows our standard report and explains the way values are reported.

Microbial Insights, Inc.

2340 Stock Creek Blvd. Rockford, TN 37853-3044
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: Company Name
Project: Your Project Name

MI Project Number: Unique Laboratory Identifier
Date Received: Date Samples Arrived

Sample Information

Client Sample ID:		Sample A	Sample B	Sample C
Sample Date:		00/00/0000	00/00/0000	00/00/0000
Units:		cells/mL	cells/mL	cells/mL
Analyst:		Intials	Intials	Intials
Dechlorinating Bacteria				
Dehalococcoides spp.	DHC	**1.84E+05**	**2.76E+02**	**2.28E+01 (J)**
Functional Genes				
tceA Reductase	TCE	**6.00E+01**	**3.23E+01**	<4.00E-01
bvcA Reductase	BVC	**1.17E+04**	**1.81E+01**	<4.00E-01
vcrA Reducatase	VCR	**8.42E+04**	**1.74E+02**	<4.00E-01

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

"J" value
Result is an estimated value. This data qualifier (flag) is used when the target gene is detected but at a concentration or abundance below the practical quantification limit (PQL).

< value
The target gene was not detected at the limit of quantitation (LOQ) reported for that sample.

"I" value
QA Procedure indicated that the sample may have exhibited PCR inhibition. Although relatively rare, PCR inhibition can occur due to the presence of metals or humic acids at high concentrations in the sample.

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

Quality Assurance

Microbial Insights' comprehensive Quality Assurance (QA) Program is the foundation of all laboratory analyses, ensuring that our clients receive high-quality analytical services that are timely, reliable, and meet their intended purpose in a cost effective manner. MI is committed to providing quality data that surpasses regulatory and industry standards, thus enabling the client to make well-informed decisions. MI maintains strict standard operating procedures and QA/QC measures throughout all of the analyses offered. The following Table details specific QA/QC procedures that are used for CENSUS.

QA/QC	Description
Date of Extraction	DNA and RNA extractions are performed the day the samples are received by MI to minimize the possibility of any changes to the microbial community prior to analysis.
Laboratory Method Blanks	An extraction blank (no sample added) is processed alongside each set of field samples from DNA extraction through CENSUS® analysis to ensure that cross contamination has not occurred. Although MI has never experienced this issue, the detection of the CENSUS® target (e.g. *Dehalococcoides*) in an extraction blank is direct evidence of cross contamination with a sample or contamination of a reagent and would invalidate the results. If this were to occur, MI would re-extract the sample. If not possible to re-extract, MI would contact the client immediately and notate it on the laboratory report.
Laboratory Control Samples (LCS)	A laboratory control sample (LCS) or positive control (target DNA) is included with each CENSUS® plate to confirm amplification and as a continuing calibration check.
Negative Controls	A negative control (no DNA) is included with each CENSUS plate to ensure that cross contamination has not occurred during amplification. As with the extraction blank, detection of CENSUS target (e.g. DHC) in a negative control is direct evidence of contamination and would invalidate the results. If this were to occur, MI would rerun the analysis.

References

1. Freedman, D. L. and J. M. Gossett. 1989. Biological reductive dechlorination of tetrachloroethylene and trichloroethylene to ethylene under methanogenic conditions. Applied and Environmental Microbiology 55(9): 2144-2151.

2. DiStefano, T. D., J.M. Gossett, and S.H. Zinder. 1991. Reductive dechlorination of high concentrations of tetrachlorethene to ethene by an anaerobic enrichment culture in the absence of methanogenesis. Applied and Environmental Microbiology 57(8): 2287-2292.

3. Gerritse, J., V. Renard, T. M. Pedro Gomes, P. A. Lawson, M. D. Collins, and J. C. Gottschal. 1996. *Desulfitobacterium* sp. Strain PCE1, an anaerobic bacterium that can grow by reductive dechlorination of tetrachloroethene or ortho-chlorinated phenols. Archives of Microbiology 165(2): 132-140.

4. Gerritse, J., O. Drzyzga, G. Kloetstra, M. Keijmel, L. P. Wiersum, R. Hutson, M. D. Collins, and J. C. Gottschal. 1999. Influence of different electron donors and acceptors on dehalorespiration of tetrachloroethene by *Desulfitobacterium frappieri* TCE1. Applied and Environmental Microbiology 65(12): 5212-5221.

5. Holliger, C., G. Schraa, A.J.M. Stams, and A.J.B. Zehnder. 1993. A highly purified enrichment culture couples the reductive dechlorination of tetrachloroethene to growth. Applied and Environmental Microbiology 59 (9): 2991-2997.

6. Krumholz, L. R., R. Sharp, and S. S. Fishbain. 1996. A freshwater anaerobe coupling acetate oxidation to tetrachloroethylene dehalogenation. Applied and Environmental Microbiology 62(11): 4108-4113.

7. Löffler, F.E., R.A. Sanford, and J.M. Tiedje. 1996. Initial characterization of a reductive dehalogenase from *Desulfitobacterium chlororespirans* Co23. Applied and Environmental Microbiology 62(10): 3809–3813.

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

8. Maymó-Gatell, X., T. Anguish, and S.H. Zinder. 1999. Reductive dechlorination of chlorinated ethenes and 1,2-dichloroethane by *Dehalococcoides ethenogenes* 195. Applied and Environmental Microbiology 65(7): 3108–3113.

9. Hendrickson, E.R., J. Payne, R.M. Young, M.G. Starr, M.P. Perry, S. Fahnestock, D.E. Ellis, and R.C. Eversole. 2002. Molecular analysis of *Dehalococcoides* 16S ribosomal DNA from chloroethene-contaminated sites throughout North America and Europe. Applied and Environmental Microbiology 68(2): 485-495.

10. Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. Water Research 40:3131-3140.

11. Adrian, L, U. Szewzyk, J. Wecke, and H. Görisch. 2000. Bacterial dehalorespiration with chlorinated benzenes. Nature 408(6812): 580-583.

12. Holmes, V.F., J. He, P.K.H. Lee, and L. Alvarez-Cohen. 2006. Discrimination of multiple *Dehalococcoides* strains in a trichlorethene enrichment by quantification of their reductive dehalogenase genes. Applied and Environmental Microbiology 72(9): 5877-5883.

13. Lee, P.K.H., D.R. Johnson, V.F. Holmes, J. He, and L. Alvarez-Cohen. 2006. Reductive dehalogenase gene expression as a biomarker for physiological activity of *Dehalococcoides* spp. Applied and Environmental Microbiology 72(9): 6161-6168.

14. Müller, J.A., B.M. Rosner, G. von Avendroth, G. Meshulam-Simon, P.L. McCarty, and A.M. Spormann. 2004. Molecular identification of the catabolic vinyl chloride reductase from *Dehalococcoides* sp. strain VS and its environmental distribution. Applied and Environmental Microbiology 70(8): 4880-4888.

15. Ritalahti, K.M., B.K. Amos, Y. Sung, Q. Wu, S.S. Koenigsberg, and F.E. Löffler. 2006. Quantitative PCR targeting 16S rRNA and reductive dehalogenase genes simultaneously monitors multiple *Dehalococcoides* strains. Applied and Environmental Microbiology 72(4): 2765-2774.

16. Krajmalnik-Brown, R., T. Hölscher, I. N. Thomson, F. M. Saunders, K. M. Ritalahti, and F. E. Löffler. 2004. Genetic identification of a putative vinyl chloride reductase in *Dehalococcoides* sp. strain BAV1. Applied and Environmental Microbiology 70:6347–6351.

17. van der Zaan, B., F. Hannes, N. Hoekstra, H. Rijnaarts, W.M. de Vos, H. Smidt, and J. Gerritse. 2010. Correlation of *Dehalococcoides* 16S rRNA and chlorethene-reductive dehalogenase genes with geochemical conditions in chloroethene-contaminated groundwater. Applied and Environmental Microbiology 76(3):843-850.

18. Behrens, S., M.F., Azizian, P.J. McMurdie, A. Sabalowsky, M.E. Dolan, L. Semprini, and A.M. Spormann. 2008. Monitoring abundance and expression of *Dehalococcoides* species chloroethene-reductive dehalogenases in a tetrachloroethene-dechlorinating flow column. Applied and Environmental Microbiology 74(18):5695-5703.

19. Sung, Y., K. M. Ritalahti, R. P. Apkarian, and F. E. Löffler. 2006. Quantitative PCR confirms purity of strain GT, a novel trichloroethene (TCE)-to-ethene respiring Dehalococcoides isolate. Appl. Environ. Microbiol. 72:1980-1987

10515 Research Drive
Knoxville, TN 37932
Phone: 865.573.8188
Fax: 865.573.8133
www.microbe.com

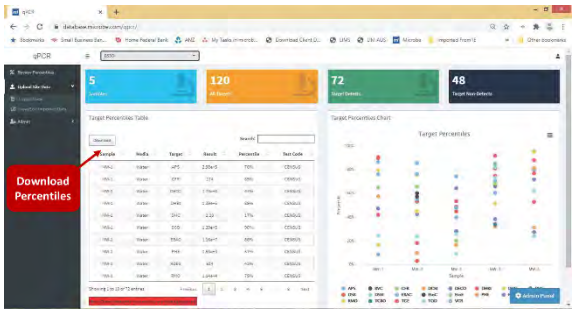
How to Retrieve and Use Percentile Ranks from the Microbial Insights Database

The MI Database

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 100,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide.

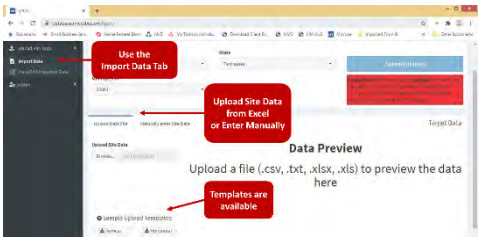
Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. The percentile ranks retrieved from the MI Database answer the question "Is that low, medium or high?" by comparing your results to those of the literally thousands of other environmental samples submitted to MI for analysis.



Retrieving Estimated Percentile Ranks

When you receive your report, you will be emailed a link enabling you to login to the Microbial Insights Database. Click the link and use the Upload Site Data Tab to enter basic information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. Once the site data is entered, you will be able to retrieve the percentile ranks of your results based on those compiled in the MI database at no additional charge.



All site specific data is treated as confidential and uploading is easy.

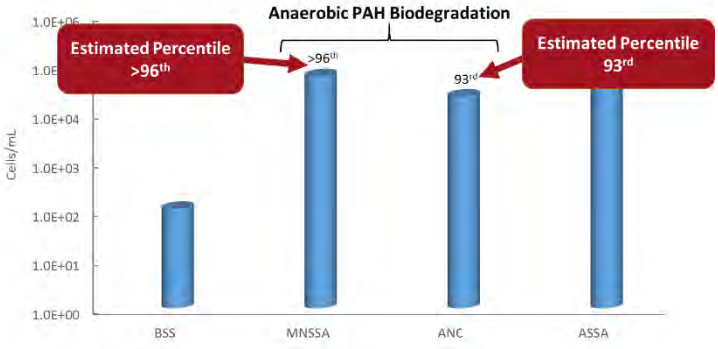
You can even upload chemical and geochemical data from EDDs. Just save as a Tab Delimited text file.

Example - Using Estimated Percentile for MNA Assessment at an MGP Site

CENSUS® qPCR was performed to quantify anaerobic naphthalene carboxylase (ANC) and naphthyl-2-methylsuccinate synthase (MNSSA) to assess anaerobic biodegradation of naphthalene and methyl-naphthalene under existing site conditions.

- Not only were ANC and MNSSA genes detected, but these functional genes responsible for anaerobic biodegradation of PAHs were present at high concentrations based on the percentile ranks.

- Demonstrating high concentrations of ANC and MNSSA gave an additional line of evidence indicating growth substantial populations of anaerobic PAH degraders and suggested a greater probability that monitored natural attenuation (MNA) will be successful.



How to Use Estimated Percentile Ranks from the Microbial Insights Database

The MI Database and Client Portal

The Microbial Insights Database is the largest collection of field concentrations of key microorganisms and functional genes currently containing qPCR and QuantArray results for more than 100,000 unique groundwater, soil, and sediment samples from all 50 states and 33 countries worldwide. Driven by field samples, the database reflects the impacts of common contaminants, geochemical conditions, and site management practices on critical microbial populations.

With your report, you received a passcode enabling you to retrieve estimates of the percentile ranks of your results based on those compiled in the MI database at no additional charge. When accessing the database, you will be asked to provide background information about the sample (e.g. contaminant concentrations) to aid in understanding the links between environmental conditions and microbial populations. As with all client information provided to MI, site specific data will be treated as confidential.

Is that low, medium or high?

In practice, biodegradation depends not just on the presence but the actual concentrations of the contaminant degrading microorganisms. Simply put, qPCR and QuantArray results demonstrating high concentrations of target microorganisms or functional genes suggest in situ selection, enrichment and growth of those specific contaminant degraders and therefore a greater probability that monitored natural attenuation (MNA) or bioremediation will be successful.

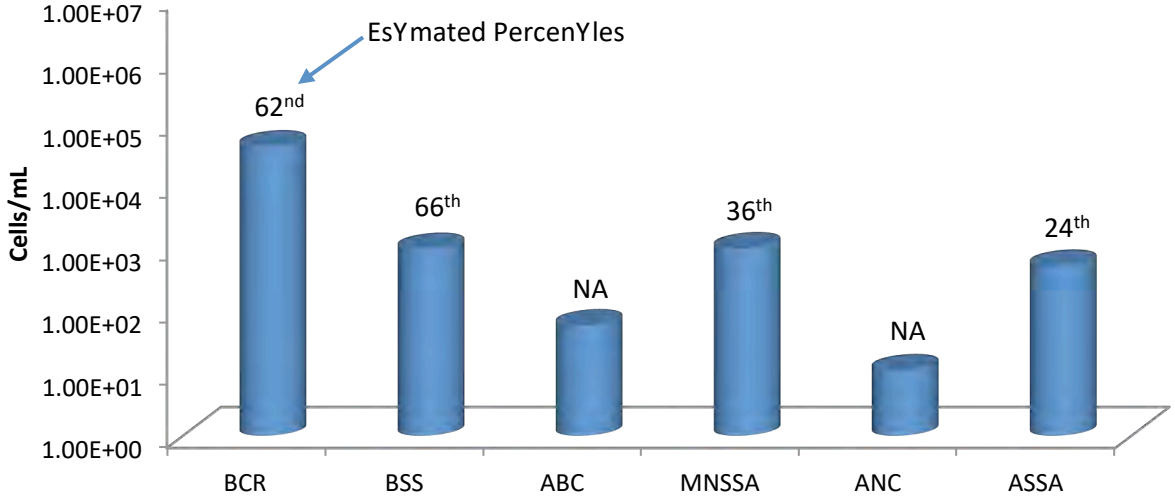
Is that a low, medium, or high concentration? The estimated percentile ranks retrieved from the MI Database answer that question by comparing your qPCR and QuantArray results to those of the literally thousands of other environmental samples submitted to MI for analysis over the last 20+ years.

Using the Estimated Percentile - Interpretation Examples

MNA Assessment – Petroleum Hydrocarbon Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between samples obtained from background and impacted wells. The estimated percentile ranks however provide an additional avenue for comparison and evaluation of treatment options as shown below.

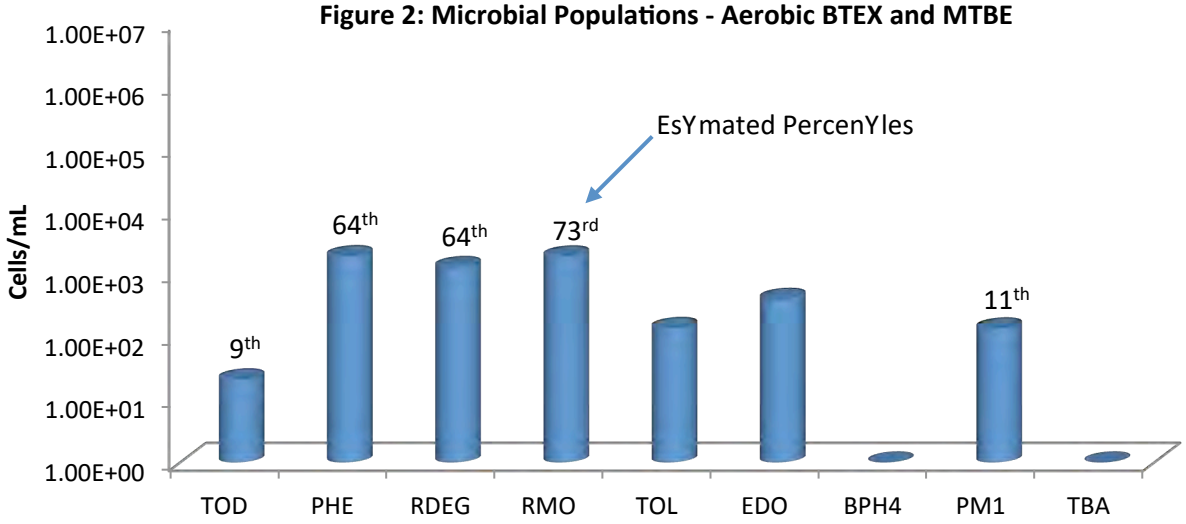
Figure 1: Microbial Populations - Anaerobic BTEX and PAHs



Anaerobic BTEX and PAH Biodegradation (Figure 1):

- With moderate concentrations of functional genes involved in anaerobic BTEX metabolism detected, the QuantArray-Petro® results were encouraging in terms of evaluating biodegradation potential under existing site conditions.
- More specifically, benzylsuccinate synthase (BSS) was detected on the order of nearly 10^3 cells/mL indicating the presence of a substantial population (66th percentile) capable of anaerobic biodegradation of toluene and other alkyl substituted benzenes.
- Naphthyl-2-methylsuccinate synthase (MNSSA) and alkylsuccinate synthase (ASSA) genes were also detected indicating the potential for anaerobic biodegradation of 2-methylnaphthalene and normal alkanes.
- The concentration of MNSSA genes would be considered modest with an estimated percentile of 36th.
- While the percentile rank for MNSSA would be "below average", a number of additional factors should be considered.
    - First, anaerobic hydrocarbon degraders are less prevalent than aerobic BTEX degraders and overall detection frequencies for many genes involved in anaerobic hydrocarbon biodegradation are less than 50%.
    - Therefore, the detection of genes like BSS, MNSSA, ASSA, anaerobic benzene carboxylase (ABC), and anaerobic naphthalene carboxylase (ANC) even at low concentrations is certainly noteworthy and inherently "better than average".
    - The estimated percentiles for all assays are based only on samples where the concentration of the target gene was greater than the practical quantitation limit (PQL).
    - For less commonly detected targets like many of the genes involved in anaerobic hydrocarbon biodegradation this is an especially important consideration.
    - Excluding samples where a gene target is below the PQL ensured that the median concentrations of less commonly detected targets would not be unduly biased low by the fact that the gene is not detected in most samples.
- Anaerobic benzene carboxylase (ABC) and naphthalene carboxylase (ANC) genes were also detected indicating the presence of bacterial populations capable of anaerobic biodegradation of benzene and naphthalene.
- For newly identified genes like ABC and ANC, estimated percentile ranks are not yet available due to the limited number of field samples that have been analyzed to date.
- However, like MNSSA and other genes involved in anaerobic hydrocarbon biodegradation, ABC and ANC detection frequencies are relatively low so the detection of these genes even at low concentrations should be considered when evaluating biodegradation potential under existing site conditions.

Figure 2: Microbial Populations - Aerobic BTEX and MTBE



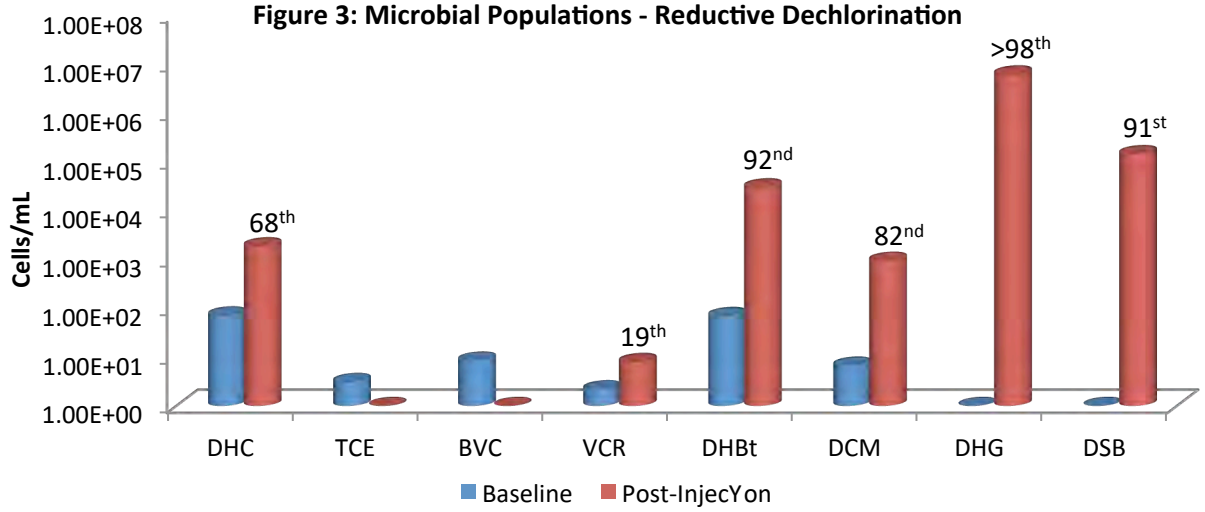
Aerobic BTEX and MTBE Biodegradation (Figure 2):

- With growing evidence that aromatic oxygenases function at low dissolved oxygen concentrations, aerobic BTEX biodegradation pathways should also be evaluated when considering MNA.
- Again, the QuantArray-Petro results were encouraging – genes encoding the first step in multiple pathways for aerobic BTEX biodegradation were detected indicating the presence of a diverse population of aerobic BTEX degraders.
- However, aerobic BTEX degraders are often considered ubiquitous. Therefore answering the question "Is that low, medium or high?" becomes especially important when evaluating aerobic BTEX biodegradation at petroleum hydrocarbon sites.
- In this case, the estimated percentile ranks of the concentrations of toluene/benzene monooxygenase (RMO and RDEG) and phenol hydroxylase (PHE) genes ranged from the 64th to 73rd percentile.
- In other words, the concentrations of RMO, RDEG, and PHE detected in this groundwater sample were greater than the concentrations detected in 64% to 73% of all other groundwater samples where these genes were analyzed and detected above the PQL.
- Aerobic BTEX degraders are common in the environment, but in this sample concentrations of toluene/benzene monooxygenase genes could be viewed as "better than average" when compared to the MI Database.

Biostimulation – Chlorinated Solvent Site:

Whenever possible, interpretation of qPCR and QuantArray results should include comparisons between baseline and post-injection monitoring events as shown below (Figure 3). The estimated percentile ranks however provide an additional avenue for comparison and evaluation of remedy performance.

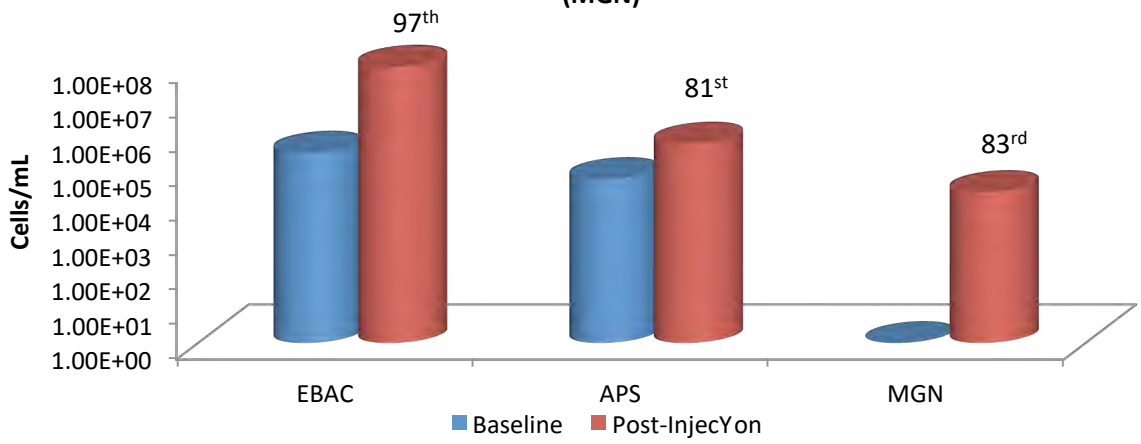
Figure 3: Microbial Populations - Reductive Dechlorination



- During the baseline groundwater sampling event, *Dehalococcoides* and vinyl chloride reductase genes were detected indicating the potential for complete reductive dechlorination of PCE and TCE to ethene.
- However, the *Dehalococcoides* concentration was well below the 10^4 cells/mL recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.
- Based on qPCR results as well as traditional groundwater monitoring, biostimulation with electron donor addition was selected as the site management plan.
- By the first monitoring event after injection, populations of halorespiring bacteria had increased substantially in response to electron donor addition.
    - *Dehalobacter* populations increased by more than two orders of magnitude to post-injection concentrations greater than 10^4 cells/mL (92nd percentile).
    - *Dehalogenimonas* (10^6 cells/mL) and *Desulfitobacterium* (10^5 cells/mL) which had not been detected prior electron donor addition were present at concentrations greater than observed in over 90% of other groundwater samples where these halorespiring bacteria were detected.
- After injection, *Dehalococcoides* populations increased by more than an order of magnitude to a concentration of over 10^3 cells/mL (68th percentile) demonstrating growth of this key group of halorespiring bacteria.
- Despite a substantial increase and a "better than average" concentration, the *Dehalococcoides* population was still below the 10^4 cells/mL threshold and vinyl chloride reductase gene copies were low (19th percentile).
    - In terms of electron donors and acceptors, the metabolic capabilities of *Dehalococcoides* are rather specialized (hydrogen utilizing obligate halorespiring bacteria) so the median concentration is low. With a low median concentration across the database, a "better than average" *Dehalococcoides* concentration in a given sample may not exceed the 10^4 cells/mL threshold established for effective reductive dechlorination (Lu et al. 2006) and ethene production (Microbial Insights, unpublished data).

- In this case, the initial growth of *Dehalococcoides* was substantial but may have been somewhat hindered by competition with sulfate reducing bacteria (Figure 4 below).
    - The baseline population of sulfate reducing bacteria was moderate (10^4 cells/mL; 63rd percentile). Consistent with an observed decreased in dissolved sulfate concentrations, populations of sulfate reducing bacteria increased and were detected at a relatively high concentration (81st percentile) after electron donor addition.
    - After injection, methanogen populations also increased to a relatively high concentration (83rd percentile) suggesting generation of methanogenic conditions.
- With sulfate depletion and generation of highly anaerobic conditions more conducive to reductive dechlorination, *Dehalococcoides* populations may continue to increase and exceed the 10^4 *Dehalococcoides* cells/mL threshold in subsequent monitoring events.
- Overall, QuantArray analysis conclusively demonstrated that electron donor addition stimulated growth of halorespiring bacteria with the estimated percentiles retrieved from the MI Database providing the "low, medium or high" perspective to the observed changes in microbial populations.

Figure 4: Total Bacteria (EBAC), Sulfate Reducering Bacteria (APS) and Methanogens (MGN)



References

Lu, X., J.T. Wilson, and D.H. Kampbell. 2006. Relationship between *Dehalococcoides* DNA in ground water and rates of reductive dechlorination at field scale. *Water Research* 40 no. 16: 3131-3140.

microbialinsights
10515 Research Dr.
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

ACCREDITED
CERTIFICATE #7157.01

Client: James Guin
ALS Laboratory Group
10450 Stancliff Rd
Suite 210
Houston, TX 77099

Phone:

Fax:

Identifier: 094VE **Date Rec:** 05/24/2024 **Report Date:** 05/31/2024

Client Project #: JVPCIBH.0001 **Client Project Name:** LHAAP / Site 58

Purchase Order #:

Test Results Provided For: CENSUS

Reviewed By: Adam Partin

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

Results relate only to the items tested and the sample(s) as received by the laboratory.

10515 Research Dr., Knoxville TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **ALS Laboratory Group** **MI Project Number:** **094VE**

Project: LHAAP / Site 58 Date Received: 05/24/2024

Sample Information

Client Sample ID:	**35AWW19_052324**	**35AWW20_052324**	**35AWW23_052324**
Sample Date:	05/23/2024	05/23/2024	05/23/2024
Units:	cells/mL	cells/mL	cells/mL
Analyst/Reviewer:	AR/AP	AR/AP	AR/AP

Dechlorinating Bacteria

Dehalococcoides	*DHC*	**4.00E+00**	**3.60E+03**	**6.10E+01**
tceA Reductase	TCE	<2.30E-01	<2.30E-01	**2.60E+00**
BAV1 Vinyl Chloride Reductase	BVC	<2.30E-01	**6.60E+02**	**1.20E+00**
Vinyl Chloride Reductase	VCR	<2.30E-01	**2.10E+00**	**4.80E+01**
Dehalobacter spp.	*DHBt*	**5.50E+03**	**9.00E+02**	**1.20E+03**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

01335971

Samples Received: **05/24/2024**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
BVC	05/24/2024	05/31/2024	0°C	104%	non-detect	non-detect
DHBt	05/24/2024	05/31/2024	0°C	110%	non-detect	non-detect
DHC	05/24/2024	05/31/2024	0°C	109%	non-detect	non-detect
TCE	05/24/2024	05/31/2024	0°C	106%	non-detect	non-detect
VCR	05/24/2024	05/31/2024	0°C	108%	non-detect	non-detect

bhate

Page: ____ of 01335072

Project/Phase No: JVPCIBH.0001

COC Number(1): ____

LIMS Number: ____

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	DHC / DHB	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AMW9_052324	23 MAY 2024	0740	-	N		WG	1	X				094VF1
LHSMW07_052324	23 MAY 2024	0830	-	N		WG	1	X				2
35AMW20_052324	23 MAY 2024	0920	-	N		WG	1	X				3
35AMW11_052324	23 MAY 2024	1010		N		WG	1	X				4
35AMW23_052324	23 MAY 2024	1107		N		WG	1	X				5
35AMW06_052324	23 MAY 2024	1150	-	N		WG	1	X				6
			-									
			-									
			-									
			-									
			-									

Sample Analysis Requested (5) | Quality Assurance Samples (6)

COMMENTS: STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	5/23/24	1430	1.	5/24/24	0950
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill Number:

Analytical Lab: ALS 10450 Stancliff Rd Suite 210 Houston TX 77099 (281) 530-5656

ATTN: ____ Lab Recipient: ____ Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 03, 2024

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS24051959**

Laboratory Results for: **LHAAP-58**

Dear Marcia Olive,

ALS Environmental received 18 sample(s) on May 30, 2024 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
Luis.Aguilar

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Work Order: HS24051959

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS24051959-01	35AWW15_052924	Water		29-May-2024 06:50	30-May-2024 09:35	☐
HS24051959-02	35AWW26_052924	Water		29-May-2024 07:30	30-May-2024 09:35	☐
HS24051959-03	35AWW05_052924	Water		29-May-2024 08:15	30-May-2024 09:35	☐
HS24051959-04	35AWW24_052924	Water		29-May-2024 08:55	30-May-2024 09:35	☐
HS24051959-05	35AWW09_052924	Water		29-May-2024 09:40	30-May-2024 09:35	☐
HS24051959-06	35AWW09_052924_a	Water		29-May-2024 09:40	30-May-2024 09:35	☐
HS24051959-07	35AWW21_052924	Water		29-May-2024 10:25	30-May-2024 09:35	☐
HS24051959-08	35AWW22_052924	Water		29-May-2024 11:10	30-May-2024 09:35	☐
HS24051959-09	35AWW12_052924	Water		29-May-2024 11:20	30-May-2024 09:35	☐
HS24051959-10	03WW01_052824	Water		28-May-2024 07:30	30-May-2024 09:35	☐
HS24051959-11	35AWW08_052824	Water		28-May-2024 08:10	30-May-2024 09:35	☐
HS24051959-12	35AWW01_052824	Water		28-May-2024 08:50	30-May-2024 09:35	☐
HS24051959-13	35AWW13_052824	Water		28-May-2024 14:50	30-May-2024 09:35	☐
HS24051959-14	35AWW10_052824	Water		28-May-2024 14:50	30-May-2024 09:35	☐
HS24051959-15	LHSMW06_052824	Water		28-May-2024 16:10	30-May-2024 09:35	☐
HS24051959-16	LHSMW06_052824_a	Water		28-May-2024 16:10	30-May-2024 09:35	☐
HS24051959-17	35AWW16_052824	Water		28-May-2024 16:50	30-May-2024 09:35	☐
HS24051959-18	Trip Blank	Water	CG-040123-957	29-May-2024 00:00	30-May-2024 09:35	☐

Revision:1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP-58
Work Order: HS24051959

Work Order Comments

• This report was revised 07/03/24 to correct the field duplicate samples to match the chain of custody per client request.

Work Order Comments

• Login Comments: Sample : 35AWW13_052824A @14:50 listed on COC but not found in cooler

GCMS Volatiles by Method SW8260

Batch ID: R468948

Sample ID: HS24060349-12MS

• MS and MSD are for an unrelated sample

Batch ID: R469280

Sample ID: HS24060214-10MS

• MS and MSD are for an unrelated sample

Batch ID: R469054

Sample ID: 35AWW10_052824 (HS24051959-14MS)

• MS/MSD failed QC control limits due to matrix interference.

Surrogates failed outside control limits high. This was confirmed by MSD.

Sample ID: 35AWW10_052824 (HS24051959-14)

• Surrogate failed outside control limits high. There are no hits associated with this surrogate.

Batch ID: R468791

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R468713

Sample ID: 35AWW21_052924 (HS24051959-07MS)

• MS/MSD failed QC control limits due to matrix interference.

Metals by Method SW6020A

Batch ID: 213215

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW15_052924
Collection Date: 29-May-2024 06:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 15:11
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 15:11
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 15:11
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 15:11
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 15:11
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW15_052924
Collection Date: 29-May-2024 06:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 15:11
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 15:11
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:11
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:11
Surr: 1,2-Dichloroethane-d4	*111*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 15:11*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 15:11*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 15:11*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 15:11*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: 35AWW26_052924 Lab ID:HS24051959-02
Collection Date: 29-May-2024 07:30 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,1,2-Trichloroethane	**0.63**	J	**0.30**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 15:32
1,1-Dichloroethane	**84**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 15:32
1,1-Dichloroethene	**180**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 15:32
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 15:32
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 15:32
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 15:32
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 15:32
Benzene	**1.0**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 15:32
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 15:32
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: 35AWW26_052924 Lab ID:HS24051959-02
Collection Date: 29-May-2024 07:30 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
cis-1,2-Dichloroethene	**7.1**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 15:32
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 15:32
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 15:32
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:32
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:32
Vinyl chloride	**15**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 15:32
Surr: 1,2-Dichloroethane-d4	*111*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 15:32*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 15:32*
Surr: Dibromofluoromethane	*106*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 15:32*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 15:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW05_052924
Collection Date: 29-May-2024 08:15

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 15:54
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 15:54
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 15:54
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 15:54
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 15:54
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW05_052924
Collection Date: 29-May-2024 08:15

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 15:54
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 15:54
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 15:54
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 15:54
Surr: 1,2-Dichloroethane-d4	*111*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 15:54*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 15:54*
Surr: Dibromofluoromethane	*103*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 15:54*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 15:54*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_052924
Collection Date: 29-May-2024 08:55

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 16:15
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 16:15
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 16:15
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 16:15
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 16:15
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW24_052924
Collection Date: 29-May-2024 08:55

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 16:15
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 16:15
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 16:15
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 16:15
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 16:15*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 16:15*
Surr: Dibromofluoromethane	*106*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 16:15*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 16:15*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_052924
Collection Date: 29-May-2024 09:40

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-05
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
2,2-Dichloropropane	0	U	0.20	0	1.0	ug/L	1	12-Jun-2024 20:29
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	09-Jun-2024 15:28
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	09-Jun-2024 15:28
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	09-Jun-2024 15:28
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	09-Jun-2024 15:28
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	09-Jun-2024 15:28
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: 35AWW09_052924 Lab ID:HS24051959-05
Collection Date: 29-May-2024 09:40 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	09-Jun-2024 15:28
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	09-Jun-2024 15:28
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:28
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Tetrachloroethene	**380**		**1.5**	**5.0**	**5.0**	**ug/L**	5	06-Jun-2024 16:39
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Trichloroethene	**180**		**1.0**	**5.0**	**5.0**	**ug/L**	5	06-Jun-2024 16:39
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:28
Surr: 1,2-Dichloroethane-d4	*108*			**0**	*81-118*	*%REC*	*5*	*06-Jun-2024 16:39*
Surr: 1,2-Dichloroethane-d4	*114*			**0**	*81-118*	*%REC*	*1*	*09-Jun-2024 15:28*
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2024 20:29*
Surr: 4-Bromofluorobenzene	*98.0*			**0**	*85-114*	*%REC*	*5*	*06-Jun-2024 16:39*
Surr: 4-Bromofluorobenzene	*113*			**0**	*85-114*	*%REC*	*1*	*09-Jun-2024 15:28*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2024 20:29*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*5*	*06-Jun-2024 16:39*
Surr: Dibromofluoromethane	*108*			**0**	*80-119*	*%REC*	*1*	*09-Jun-2024 15:28*
Surr: Dibromofluoromethane	*117*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2024 20:29*
Surr: Toluene-d8	*103*			**0**	*89-112*	*%REC*	*5*	*06-Jun-2024 16:39*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*09-Jun-2024 15:28*
Surr: Toluene-d8	*110*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2024 20:29*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 08-Jun-2024		Analyst: JC
Arsenic	**0.000521**	J	**0.000400**	**0.00125**	**0.00500**	**mg/L**	1	12-Jun-2024 11:30

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW09_052924_a
Collection Date: 29-May-2024 09:40

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
2,2-Dichloropropane	0	U	0.20	0	1.0	ug/L	1	12-Jun-2024 20:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	09-Jun-2024 15:49
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	09-Jun-2024 15:49
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	09-Jun-2024 15:49
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	09-Jun-2024 15:49
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	09-Jun-2024 15:49
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: 35AWW09_052924_a Lab ID:HS24051959-06
Collection Date: 29-May-2024 09:40 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
cis-1,2-Dichloroethene	**1.5**		**0.20**	**1.0**	**1.0**	**ug/L**	1	09-Jun-2024 15:49
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	09-Jun-2024 15:49
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	09-Jun-2024 15:49
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	09-Jun-2024 15:49
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Tetrachloroethene	**430**		**1.5**	**5.0**	**5.0**	**ug/L**	5	06-Jun-2024 17:03
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Trichloroethene	**190**		**1.0**	**5.0**	**5.0**	**ug/L**	5	06-Jun-2024 17:03
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	09-Jun-2024 15:49
Surr: 1,2-Dichloroethane-d4	*107*			**0**	*81-118*	*%REC*	*5*	*06-Jun-2024 17:03*
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*09-Jun-2024 15:49*
Surr: 1,2-Dichloroethane-d4	*114*			**0**	*81-118*	*%REC*	*1*	*12-Jun-2024 20:52*
Surr: 4-Bromofluorobenzene	*97.2*			**0**	*85-114*	*%REC*	*5*	*06-Jun-2024 17:03*
Surr: 4-Bromofluorobenzene	*110*			**0**	*85-114*	*%REC*	*1*	*09-Jun-2024 15:49*
Surr: 4-Bromofluorobenzene	*109*			**0**	*85-114*	*%REC*	*1*	*12-Jun-2024 20:52*
Surr: Dibromofluoromethane	*100*			**0**	*80-119*	*%REC*	*5*	*06-Jun-2024 17:03*
Surr: Dibromofluoromethane	*110*			**0**	*80-119*	*%REC*	*1*	*09-Jun-2024 15:49*
Surr: Dibromofluoromethane	*116*			**0**	*80-119*	*%REC*	*1*	*12-Jun-2024 20:52*
Surr: Toluene-d8	*104*			**0**	*89-112*	*%REC*	*5*	*06-Jun-2024 17:03*
Surr: Toluene-d8	*111*			**0**	*89-112*	*%REC*	*1*	*09-Jun-2024 15:49*
Surr: Toluene-d8	*110*			**0**	*89-112*	*%REC*	*1*	*12-Jun-2024 20:52*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 08-Jun-2024		Analyst: JC
Arsenic	**0.000535**	J	**0.000400**	**0.00125**	**0.00500**	**mg/L**	1	12-Jun-2024 11:41

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_052924
Collection Date: 29-May-2024 10:25

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,1-Dichloroethane	**4.0**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 12:37
1,1-Dichloroethene	**3.6**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 12:37
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 12:37
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 12:37
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 12:37
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 12:37
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 12:37
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW21_052924
Collection Date: 29-May-2024 10:25

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-07
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
cis-1,2-Dichloroethene	**1.1**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 12:37
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 12:37
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 12:37
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 12:37
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Trichloroethene	**0.77**	J	**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 12:37
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 12:37
Surr: 1,2-Dichloroethane-d4	*111*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 12:37*
Surr: 4-Bromofluorobenzene	*105*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 12:37*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 12:37*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 12:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW22_052924
Collection Date: 29-May-2024 11:10

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 17:24
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 17:24
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 17:24
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 17:24
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 17:24
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW22_052924
Collection Date: 29-May-2024 11:10

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 17:24
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 17:24
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:24
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:24
Surr: 1,2-Dichloroethane-d4	*112*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 17:24*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 17:24*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 17:24*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 17:24*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_052924
Collection Date: 29-May-2024 11:20

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 17:46
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 17:46
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 17:46
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 17:46
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 17:46
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW12_052924
Collection Date: 29-May-2024 11:20

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-09
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 17:46
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 17:46
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 17:46
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 17:46
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 17:46*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 17:46*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 17:46*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 17:46*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_052824
Collection Date: 28-May-2024 07:30

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 18:07
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 18:07
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 18:07
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 18:07
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 18:07
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 03WW01_052824
Collection Date: 28-May-2024 07:30

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-10
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
cis-1,2-Dichloroethene	**9.8**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:07
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 18:07
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 18:07
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:07
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Tetrachloroethene	**4.8**		**0.30**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:07
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
trans-1,2-Dichloroethene	**1.2**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:07
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Trichloroethene	**7.8**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:07
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:07
Vinyl chloride	**7.6**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:07
Surr: 1,2-Dichloroethane-d4	*114*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 18:07*
Surr: 4-Bromofluorobenzene	*106*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 18:07*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 18:07*
Surr: Toluene-d8	*110*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 18:07*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 08-Jun-2024		Analyst: JC
Arsenic	**0.00894**		**0.000400**	**0.00125**	**0.00500**	**mg/L**	1	12-Jun-2024 11:43

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW08_052824
Collection Date: 28-May-2024 08:10

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-11
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 18:29
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 18:29
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 18:29
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 18:29
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 18:29
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: 35AWW08_052824 Lab ID:HS24051959-11
Collection Date: 28-May-2024 08:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
cis-1,2-Dichloroethene	**4.3**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:29
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 18:29
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 18:29
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:29
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Tetrachloroethene	**2.3**		**0.30**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:29
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
trans-1,2-Dichloroethene	**2.1**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:29
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Trichloroethene	**2.8**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 18:29
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:29
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 18:29*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 18:29*
Surr: Dibromofluoromethane	*106*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 18:29*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 18:29*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 08-Jun-2024		Analyst: JC
Arsenic	**0.0266**		**0.000400**	**0.00125**	**0.00500**	**mg/L**	1	12-Jun-2024 11:51

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW01_052824
Collection Date: 28-May-2024 08:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-12
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 18:50
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 18:50
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 18:50
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 18:50
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 18:50
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: 35AWW01_052824 Lab ID:HS24051959-12
Collection Date: 28-May-2024 08:50 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 18:50
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 18:50
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 18:50
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 18:50
Surr: 1,2-Dichloroethane-d4	*112*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 18:50*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 18:50*
Surr: Dibromofluoromethane	*106*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 18:50*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 18:50*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 08-Jun-2024		Analyst: JC
Arsenic	**0.000709**	J	**0.000400**	**0.00125**	**0.00500**	**mg/L**	1	12-Jun-2024 11:53

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW13_052824
Collection Date: 28-May-2024 14:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-13
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 19:12
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 19:12
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 19:12
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 19:12
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 19:12
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW13_052824
Collection Date: 28-May-2024 14:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-13
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 19:12
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 19:12
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:12
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:12
Surr: 1,2-Dichloroethane-d4	*112*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 19:12*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 19:12*
Surr: Dibromofluoromethane	*105*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 19:12*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 19:12*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**

Project: LHAAP-58 WorkOrder:HS24051959

Sample ID: 35AWW10_052824 Lab ID:HS24051959-14

Collection Date: 28-May-2024 14:50 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 13:02
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	10-Jun-2024 13:02
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	10-Jun-2024 13:02
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 13:02
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	10-Jun-2024 13:02
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW10_052824
Collection Date: 28-May-2024 14:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-14
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 13:02
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 13:02
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 13:02
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	07-Jun-2024 07:55
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 13:02
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*07-Jun-2024 07:55*
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*10-Jun-2024 13:02*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*07-Jun-2024 07:55*
Surr: 4-Bromofluorobenzene	*112*			**0**	*85-114*	*%REC*	*1*	*10-Jun-2024 13:02*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*07-Jun-2024 07:55*
Surr: Dibromofluoromethane	*107*			**0**	*80-119*	*%REC*	*1*	*10-Jun-2024 13:02*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*07-Jun-2024 07:55*
Surr: Toluene-d8	*114*	*S*		**0**	*89-112*	*%REC*	*1*	*10-Jun-2024 13:02*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: LHSMW06_052824
Collection Date: 28-May-2024 16:10

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-15
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,1-Dichloroethane	**8.8**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:33
1,1-Dichloroethene	**12**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:33
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 19:33
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 19:33
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 19:33
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 19:33
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 19:33
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: LHSMW06_052824 Lab ID:HS24051959-15
Collection Date: 28-May-2024 16:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
cis-1,2-Dichloroethene	**160**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:33
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 19:33
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 19:33
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:33
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Tetrachloroethene	**2.6**		**0.30**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:33
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
trans-1,2-Dichloroethene	**2.2**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:33
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Trichloroethene	**19**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:33
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:33
Surr: 1,2-Dichloroethane-d4	*112*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 19:33*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 19:33*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 19:33*
Surr: Toluene-d8	*109*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 19:33*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 08-Jun-2024		Analyst: JC
Arsenic	0.00125	U	0.000400	0.00125	0.00500	mg/L	1	12-Jun-2024 11:55

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: LHSMW06_052824_a Lab ID:HS24051959-16
Collection Date: 28-May-2024 16:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,1-Dichloroethane	**8.7**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:54
1,1-Dichloroethene	**12**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:54
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 19:54
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 19:54
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 19:54
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 19:54
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 19:54
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP-58 WorkOrder:HS24051959
Sample ID: LHSMW06_052824_a Lab ID:HS24051959-16
Collection Date: 28-May-2024 16:10 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
cis-1,2-Dichloroethene	**160**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:54
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 19:54
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 19:54
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 19:54
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Tetrachloroethene	**2.6**		**0.30**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:54
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
trans-1,2-Dichloroethene	**2.3**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:54
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Trichloroethene	**19**		**0.20**	**1.0**	**1.0**	**ug/L**	1	06-Jun-2024 19:54
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 19:54
Surr: 1,2-Dichloroethane-d4	*110*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 19:54*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 19:54*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 19:54*
Surr: Toluene-d8	*106*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 19:54*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 08-Jun-2024		Analyst: JC
Arsenic	0.00125	U	0.000400	0.00125	0.00500	mg/L	1	12-Jun-2024 11:57

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16_052824
Collection Date: 28-May-2024 16:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-17
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 20:16
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 20:16
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 20:16
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 20:16
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 20:16
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: 35AWW16_052824
Collection Date: 28-May-2024 16:50

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-17
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 20:16
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 20:16
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 20:16
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 20:16
Surr: 1,2-Dichloroethane-d4	*113*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 20:16*
Surr: 4-Bromofluorobenzene	*104*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 20:16*
Surr: Dibromofluoromethane	*106*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 20:16*
Surr: Toluene-d8	*110*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 20:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 29-May-2024 00:00

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-18
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 14:49
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 14:49
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 14:49
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 14:49
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 14:49
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
Sample ID: Trip Blank
Collection Date: 29-May-2024 00:00

ANALYTICAL REPORT
WorkOrder:HS24051959
Lab ID:HS24051959-18
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 14:49
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 14:49
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:49
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:49
Surr: 1,2-Dichloroethane-d4	*108*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 14:49*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 14:49*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 14:49*
Surr: Toluene-d8	*108*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 14:49*

Note: See Qualifiers Page for a list of qualifiers and their explanation. **Revision:** 1

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

Batch ID: 213215 **Start Date:** 08 Jun 2024 11:00 **End Date:** 08 Jun 2024 11:00
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS24051959-05		10 (mL)	10 (mL)	1	120 plastic HNO3
HS24051959-06		10 (mL)	10 (mL)	1	120 plastic HNO3
HS24051959-10		10 (mL)	10 (mL)	1	120 plastic HNO3
HS24051959-11		10 (mL)	10 (mL)	1	120 plastic HNO3
HS24051959-12		10 (mL)	10 (mL)	1	120 plastic HNO3
HS24051959-15		10 (mL)	10 (mL)	1	120 plastic HNO3
HS24051959-16		10 (mL)	10 (mL)	1	120 plastic HNO3

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 213215 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Water	
HS24051959-05	35AWW09_052924	29 May 2024 09:40		08 Jun 2024 11:00	12 Jun 2024 11:30	1
HS24051959-06	35AWW09_052924_a	29 May 2024 09:40		08 Jun 2024 11:00	12 Jun 2024 11:41	1
HS24051959-10	03WW01_052824	28 May 2024 07:30		08 Jun 2024 11:00	12 Jun 2024 11:43	1
HS24051959-11	35AWW08_052824	28 May 2024 08:10		08 Jun 2024 11:00	12 Jun 2024 11:51	1
HS24051959-12	35AWW01_052824	28 May 2024 08:50		08 Jun 2024 11:00	12 Jun 2024 11:53	1
HS24051959-15	LHSMW06_052824	28 May 2024 16:10		08 Jun 2024 11:00	12 Jun 2024 11:55	1
HS24051959-16	LHSMW06_052824_a	28 May 2024 16:10		08 Jun 2024 11:00	12 Jun 2024 11:57	1
Batch ID: R468713 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS24051959-01	35AWW15_052924	29 May 2024 06:50			06 Jun 2024 15:11	1
HS24051959-02	35AWW26_052924	29 May 2024 07:30			06 Jun 2024 15:32	1
HS24051959-03	35AWW05_052924	29 May 2024 08:15			06 Jun 2024 15:54	1
HS24051959-04	35AWW24_052924	29 May 2024 08:55			06 Jun 2024 16:15	1
HS24051959-05	35AWW09_052924	29 May 2024 09:40			06 Jun 2024 16:39	5
HS24051959-06	35AWW09_052924_a	29 May 2024 09:40			06 Jun 2024 17:03	5
HS24051959-07	35AWW21_052924	29 May 2024 10:25			06 Jun 2024 12:37	1
HS24051959-08	35AWW22_052924	29 May 2024 11:10			06 Jun 2024 17:24	1
HS24051959-09	35AWW12_052924	29 May 2024 11:20			06 Jun 2024 17:46	1
HS24051959-10	03WW01_052824	28 May 2024 07:30			06 Jun 2024 18:07	1
HS24051959-11	35AWW08_052824	28 May 2024 08:10			06 Jun 2024 18:29	1
HS24051959-12	35AWW01_052824	28 May 2024 08:50			06 Jun 2024 18:50	1
HS24051959-13	35AWW13_052824	28 May 2024 14:50			06 Jun 2024 19:12	1
HS24051959-15	LHSMW06_052824	28 May 2024 16:10			06 Jun 2024 19:33	1
HS24051959-16	LHSMW06_052824_a	28 May 2024 16:10			06 Jun 2024 19:54	1
HS24051959-17	35AWW16_052824	28 May 2024 16:50			06 Jun 2024 20:16	1
HS24051959-18	Trip Blank	29 May 2024 00:00			06 Jun 2024 14:49	1
Batch ID: R468791 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS24051959-14	35AWW10_052824	28 May 2024 14:50			07 Jun 2024 07:55	1
Batch ID: R468948 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS24051959-05	35AWW09_052924	29 May 2024 09:40			09 Jun 2024 15:28	1
HS24051959-06	35AWW09_052924_a	29 May 2024 09:40			09 Jun 2024 15:49	1
Batch ID: R469054 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS24051959-14	35AWW10_052824	28 May 2024 14:50			10 Jun 2024 13:02	1
Batch ID: R469280 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS24051959-05	35AWW09_052924	29 May 2024 09:40			12 Jun 2024 20:29	1
HS24051959-06	35AWW09_052924_a	29 May 2024 09:40			12 Jun 2024 20:52	1

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: 213215 (0) **Instrument: ICPMS06** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-213215** Units: **mg/L** Analysis Date: **12-Jun-2024 11:26**
Client ID: Run ID: **ICPMS06_469167** SeqNo: **8065559** PrepDate: **08-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.00125	0.00500								U

LCS Sample ID: **LCS-213215** Units: **mg/L** Analysis Date: **12-Jun-2024 11:28**
Client ID: Run ID: **ICPMS06_469167** SeqNo: **8065560** PrepDate: **08-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04681	0.00500	0.05	0	93.6	84 - 116				

MS Sample ID: **HS24051959-05MS** Units: **mg/L** Analysis Date: **12-Jun-2024 11:34**
Client ID: **35AWW09_052924** Run ID: **ICPMS06_469167** SeqNo: **8065563** PrepDate: **08-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04685	0.00500	0.05	0.000521	92.7	84 - 116				

MSD Sample ID: **HS24051959-05MSD** Units: **mg/L** Analysis Date: **12-Jun-2024 11:37**
Client ID: **35AWW09_052924** Run ID: **ICPMS06_469167** SeqNo: **8065564** PrepDate: **08-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04641	0.00500	0.05	0.000521	91.8	84 - 116	0.04685	0.946	20	

PDS Sample ID: **HS24051959-05PDS** Units: **mg/L** Analysis Date: **12-Jun-2024 11:39**
Client ID: **35AWW09_052924** Run ID: **ICPMS06_469167** SeqNo: **8065565** PrepDate: **08-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.1063	0.00500	0.1	0.000521	106	80 - 120				

SD Sample ID: **HS24051959-05SD** Units: **mg/L** Analysis Date: **12-Jun-2024 11:33**
Client ID: **35AWW09_052924** Run ID: **ICPMS06_469167** SeqNo: **8065562** PrepDate: **08-Jun-2024** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.00625	0.0250					0.000521	0	10	U

The following samples were analyzed in this batch: HS24051959-05 HS24051959-06 HS24051959-10 HS24051959-11 HS24051959-12 HS24051959-15 HS24051959-16

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 12:16**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051733** 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	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	1.0	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 12:16**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051733** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*53.89*	*35*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.12*	*35*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*50.98*	*35*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*54.25*	*35*	*50*	*0*	*108*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:12**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051731** 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	17.83	1.0	20	0	89.2	78 - 124				
1,1,1-Trichloroethane	18.79	1.0	20	0	93.9	74 - 131				
1,1,2,2-Tetrachloroethane	18.7	1.0	20	0	93.5	71 - 121				
1,1,2-Trichloroethane	19.26	1.0	20	0	96.3	80 - 119				
1,1-Dichloroethane	19.38	1.0	20	0	96.9	77 - 125				
1,1-Dichloroethene	19.5	1.0	20	0	97.5	71 - 131				
1,1-Dichloropropene	18.88	1.0	20	0	94.4	78 - 125				
1,2,3-Trichlorobenzene	19.33	1.0	20	0	96.7	69 - 129				
1,2,3-Trichloropropane	18.11	1.0	20	0	90.6	73 - 122				
1,2,4-Trichlorobenzene	19.15	1.0	20	0	95.8	69 - 130				
1,2,4-Trimethylbenzene	20.56	1.0	20	0	103	76 - 124				
1,2-Dibromo-3-chloropropane	16.66	1.0	20	0	83.3	62 - 128				
1,2-Dibromoethane	18.15	1.0	20	0	90.8	77 - 121				
1,2-Dichlorobenzene	19.56	1.0	20	0	97.8	80 - 119				
1,2-Dichloroethane	18.95	1.0	20	0	94.7	73 - 128				
1,2-Dichloropropane	18.58	1.0	20	0	92.9	78 - 122				
1,3,5-Trimethylbenzene	21.04	1.0	20	0	105	75 - 124				
1,3-Dichlorobenzene	18.73	1.0	20	0	93.7	80 - 119				
1,3-Dichloropropane	18.25	1.0	20	0	91.3	80 - 119				
1,4-Dichlorobenzene	19.84	1.0	20	0	99.2	79 - 118				
2,2-Dichloropropane	18.94	1.0	20	0	94.7	60 - 139				
2-Butanone	38.35	2.0	40	0	95.9	56 - 143				
2-Chlorotoluene	19.28	1.0	20	0	96.4	79 - 122				
2-Hexanone	37.64	2.0	40	0	94.1	57 - 139				
4-Chlorotoluene	19.38	1.0	20	0	96.9	78 - 122				
4-Isopropyltoluene	21.07	1.0	20	0	105	77 - 127				
4-Methyl-2-pentanone	33.7	2.0	40	0	84.3	67 - 130				
Acetone	37.74	2.0	40	0	94.4	39 - 160				
Benzene	19.32	1.0	20	0	96.6	79 - 120				
Bromobenzene	19.64	1.0	20	0	98.2	80 - 120				
Bromochloromethane	19.46	1.0	20	0	97.3	78 - 123				
Bromodichloromethane	16.6	1.0	20	0	83.0	79 - 125				
Bromoform	15.87	1.0	20	0	79.4	66 - 130				
Bromomethane	21.49	1.0	20	0	107	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:12**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051731** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.28	2.0	40	0	93.2	64 - 133				
Carbon tetrachloride	17.97	1.0	20	0	89.9	72 - 136				
Chlorobenzene	19.44	1.0	20	0	97.2	82 - 118				
Chloroethane	20.21	1.0	20	0	101	60 - 138				
Chloroform	18.05	1.0	20	0	90.2	79 - 124				
Chloromethane	20.08	1.0	20	0	100	50 - 139				
cis-1,2-Dichloroethene	19.11	1.0	20	0	95.5	78 - 123				
cis-1,3-Dichloropropene	17.03	1.0	20	0	85.1	75 - 124				
Dibromochloromethane	16.85	1.0	20	0	84.3	74 - 126				
Dibromomethane	18.81	1.0	20	0	94.0	79 - 123				
Dichlorodifluoromethane	21.56	1.0	20	0	108	32 - 152				
Ethylbenzene	18.74	1.0	20	0	93.7	79 - 121				
Hexachlorobutadiene	20.47	1.0	20	0	102	66 - 134				
Isopropylbenzene	20.35	1.0	20	0	102	72 - 131				
m,p-Xylene	38.75	2.0	40	0	96.9	80 - 121				
Methylene chloride	19.32	2.0	20	0	96.6	74 - 124				
Naphthalene	17.62	1.0	20	0	88.1	61 - 128				
n-Butylbenzene	20.03	1.0	20	0	100	75 - 128				
n-Propylbenzene	20.04	1.0	20	0	100	76 - 126				
o-Xylene	19.12	1.0	20	0	95.6	78 - 122				
sec-Butylbenzene	21.13	1.0	20	0	106	77 - 126				
Styrene	19.42	1.0	20	0	97.1	78 - 123				
tert-Butylbenzene	20.65	1.0	20	0	103	78 - 124				
Tetrachloroethene	19.31	1.0	20	0	96.5	74 - 129				
Toluene	18.75	1.0	20	0	93.8	80 - 121				
trans-1,2-Dichloroethene	19.65	1.0	20	0	98.2	75 - 124				
trans-1,3-Dichloropropene	16.34	1.0	20	0	81.7	73 - 127				
Trichloroethene	18.39	1.0	20	0	91.9	79 - 123				
Trichlorofluoromethane	20.19	1.0	20	0	101	65 - 141				
Vinyl chloride	19.96	1.0	20	0	99.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.45*	*35*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.8*	*35*	*50*	*0*	*112*	*85 - 114*				
Surr: Dibromofluoromethane	*52.92*	*35*	*50*	*0*	*106*	*80 - 119*				
Surr: Toluene-d8	*54.56*	*35*	*50*	*0*	*109*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCSD Sample ID: **VLCSDW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:33**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051732** 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	16.64	1.0	20	0	83.2	78 - 124	17.83	6.92	20	
1,1,1-Trichloroethane	17.43	1.0	20	0	87.1	74 - 131	18.79	7.49	20	
1,1,2,2-Tetrachloroethane	17.82	1.0	20	0	89.1	71 - 121	18.7	4.83	20	
1,1,2-Trichloroethane	18.14	1.0	20	0	90.7	80 - 119	19.26	6.03	20	
1,1-Dichloroethane	17.59	1.0	20	0	88.0	77 - 125	19.38	9.69	20	
1,1-Dichloroethene	17.45	1.0	20	0	87.2	71 - 131	19.5	11.1	20	
1,1-Dichloropropene	16.83	1.0	20	0	84.1	78 - 125	18.88	11.5	20	
1,2,3-Trichlorobenzene	17.41	1.0	20	0	87.1	69 - 129	19.33	10.4	20	
1,2,3-Trichloropropane	17.27	1.0	20	0	86.3	73 - 122	18.11	4.79	20	
1,2,4-Trichlorobenzene	17.36	1.0	20	0	86.8	69 - 130	19.15	9.8	20	
1,2,4-Trimethylbenzene	18.48	1.0	20	0	92.4	76 - 124	20.56	10.7	20	
1,2-Dibromo-3-chloropropane	15.58	1.0	20	0	77.9	62 - 128	16.66	6.67	20	
1,2-Dibromoethane	17.47	1.0	20	0	87.3	77 - 121	18.15	3.85	20	
1,2-Dichlorobenzene	18.4	1.0	20	0	92.0	80 - 119	19.56	6.1	20	
1,2-Dichloroethane	17.88	1.0	20	0	89.4	73 - 128	18.95	5.77	20	
1,2-Dichloropropane	17.08	1.0	20	0	85.4	78 - 122	18.58	8.45	20	
1,3,5-Trimethylbenzene	19.24	1.0	20	0	96.2	75 - 124	21.04	8.96	20	
1,3-Dichlorobenzene	17.49	1.0	20	0	87.4	80 - 119	18.73	6.88	20	
1,3-Dichloropropane	17.85	1.0	20	0	89.3	80 - 119	18.25	2.21	20	
1,4-Dichlorobenzene	18.51	1.0	20	0	92.5	79 - 118	19.84	6.93	20	
2,2-Dichloropropane	16.7	1.0	20	0	83.5	60 - 139	18.94	12.6	20	
2-Butanone	35.86	2.0	40	0	89.7	56 - 143	38.35	6.71	20	
2-Chlorotoluene	18.02	1.0	20	0	90.1	79 - 122	19.28	6.77	20	
2-Hexanone	36.25	2.0	40	0	90.6	57 - 139	37.64	3.77	20	
4-Chlorotoluene	18.06	1.0	20	0	90.3	78 - 122	19.38	7.05	20	
4-Isopropyltoluene	19.21	1.0	20	0	96.1	77 - 127	21.07	9.22	20	
4-Methyl-2-pentanone	33.2	2.0	40	0	83.0	67 - 130	33.7	1.49	20	
Acetone	38.98	2.0	40	0	97.4	39 - 160	37.74	3.21	20	
Benzene	17.78	1.0	20	0	88.9	79 - 120	19.32	8.32	20	
Bromobenzene	18.27	1.0	20	0	91.3	80 - 120	19.64	7.25	20	
Bromochloromethane	17.93	1.0	20	0	89.6	78 - 123	19.46	8.19	20	
Bromodichloromethane	16.17	1.0	20	0	80.9	79 - 125	16.6	2.6	20	
Bromoform	15.12	1.0	20	0	75.6	66 - 130	15.87	4.85	20	
Bromomethane	19.64	1.0	20	0	98.2	53 - 141	21.49	9.02	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCSD Sample ID: **VLCSDW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:33**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051732** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	33.72	2.0	40	0	84.3	64 - 133	37.28	10	20	
Carbon tetrachloride	16.63	1.0	20	0	83.2	72 - 136	17.97	7.75	20	
Chlorobenzene	18.43	1.0	20	0	92.1	82 - 118	19.44	5.34	20	
Chloroethane	17.67	1.0	20	0	88.4	60 - 138	20.21	13.4	20	
Chloroform	16.55	1.0	20	0	82.7	79 - 124	18.05	8.67	20	
Chloromethane	18.06	1.0	20	0	90.3	50 - 139	20.08	10.6	20	
cis-1,2-Dichloroethene	18.14	1.0	20	0	90.7	78 - 123	19.11	5.18	20	
cis-1,3-Dichloropropene	16.3	1.0	20	0	81.5	75 - 124	17.03	4.39	20	
Dibromochloromethane	16.31	1.0	20	0	81.6	74 - 126	16.85	3.27	20	
Dibromomethane	17.69	1.0	20	0	88.4	79 - 123	18.81	6.13	20	
Dichlorodifluoromethane	19.63	1.0	20	0	98.1	32 - 152	21.56	9.37	20	
Ethylbenzene	17.82	1.0	20	0	89.1	79 - 121	18.74	5	20	
Hexachlorobutadiene	18.23	1.0	20	0	91.2	66 - 134	20.47	11.6	20	
Isopropylbenzene	19.31	1.0	20	0	96.6	72 - 131	20.35	5.24	20	
m,p-Xylene	36.71	2.0	40	0	91.8	80 - 121	38.75	5.4	20	
Methylene chloride	18.04	2.0	20	0	90.2	74 - 124	19.32	6.89	20	
Naphthalene	16.46	1.0	20	0	82.3	61 - 128	17.62	6.84	20	
n-Butylbenzene	18.54	1.0	20	0	92.7	75 - 128	20.03	7.74	20	
n-Propylbenzene	18.42	1.0	20	0	92.1	76 - 126	20.04	8.44	20	
o-Xylene	18.16	1.0	20	0	90.8	78 - 122	19.12	5.11	20	
sec-Butylbenzene	19.49	1.0	20	0	97.4	77 - 126	21.13	8.1	20	
Styrene	18.58	1.0	20	0	92.9	78 - 123	19.42	4.47	20	
tert-Butylbenzene	18.64	1.0	20	0	93.2	78 - 124	20.65	10.2	20	
Tetrachloroethene	17.81	1.0	20	0	89.0	74 - 129	19.31	8.06	20	
Toluene	17.42	1.0	20	0	87.1	80 - 121	18.75	7.36	20	
trans-1,2-Dichloroethene	18.04	1.0	20	0	90.2	75 - 124	19.65	8.55	20	
trans-1,3-Dichloropropene	15.53	1.0	20	0	77.6	73 - 127	16.34	5.07	20	
Trichloroethene	17.12	1.0	20	0	85.6	79 - 123	18.39	7.11	20	
Trichlorofluoromethane	18.1	1.0	20	0	90.5	65 - 141	20.19	10.9	20	
Vinyl chloride	17.36	1.0	20	0	86.8	58 - 137	19.96	13.9	20	
Surr: 1,2-Dichloroethane-d4	*51.3*	*35*	*50*	*0*	*103*	*81 - 118*	*52.45*	*2.21*	*20*	
Surr: 4-Bromofluorobenzene	*55.46*	*35*	*50*	*0*	*111*	*85 - 114*	*55.8*	*0.622*	*20*	
Surr: Dibromofluoromethane	*50.86*	*35*	*50*	*0*	*102*	*80 - 119*	*52.92*	*3.97*	*20*	
Surr: Toluene-d8	*54.49*	*35*	*50*	*0*	*109*	*89 - 112*	*54.56*	*0.125*	*20*	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS24051959-07MS** Units: **ug/L** Analysis Date: **06-Jun-2024 12:59**
Client ID: **35AWW21_052924** Run ID: **VOA9_468713** SeqNo: **8051735** 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	15.26	1.0	20	0	76.3	78 - 124				S
1,1,1-Trichloroethane	16.47	1.0	20	0	82.3	74 - 131				
1,1,2,2-Tetrachloroethane	15.72	1.0	20	0	78.6	71 - 121				
1,1,2-Trichloroethane	15.91	1.0	20	0	79.6	80 - 119				S
1,1-Dichloroethane	20.68	1.0	20	4.004	83.4	77 - 125				
1,1-Dichloroethene	21.23	1.0	20	3.558	88.4	71 - 131				
1,1-Dichloropropene	15.96	1.0	20	0	79.8	78 - 125				
1,2,3-Trichlorobenzene	16.23	1.0	20	0	81.1	69 - 129				
1,2,3-Trichloropropane	15.74	1.0	20	0	78.7	73 - 122				
1,2,4-Trichlorobenzene	16.64	1.0	20	0	83.2	69 - 130				
1,2,4-Trimethylbenzene	17.79	1.0	20	0	89.0	76 - 124				
1,2-Dibromo-3-chloropropane	15.48	1.0	20	0	77.4	62 - 128				
1,2-Dibromoethane	14.92	1.0	20	0	74.6	77 - 121				S
1,2-Dichlorobenzene	17.39	1.0	20	0	87.0	80 - 119				
1,2-Dichloroethane	15.72	1.0	20	0	78.6	73 - 128				
1,2-Dichloropropane	15.41	1.0	20	0	77.0	78 - 122				S
1,3,5-Trimethylbenzene	18.69	1.0	20	0	93.5	75 - 124				
1,3-Dichlorobenzene	16.3	1.0	20	0	81.5	80 - 119				
1,3-Dichloropropane	15.48	1.0	20	0	77.4	80 - 119				S
1,4-Dichlorobenzene	17.69	1.0	20	0	88.4	79 - 118				
2,2-Dichloropropane	15.7	1.0	20	0	78.5	60 - 139				
2-Butanone	31.88	2.0	40	0	79.7	56 - 143				
2-Chlorotoluene	17.28	1.0	20	0	86.4	79 - 122				
2-Hexanone	35.7	2.0	40	0	89.3	57 - 139				
4-Chlorotoluene	17.5	1.0	20	0	87.5	78 - 122				
4-Isopropyltoluene	19.48	1.0	20	0	97.4	77 - 127				
4-Methyl-2-pentanone	31.09	2.0	40	0	77.7	67 - 130				
Acetone	30.52	2.0	40	0	76.3	39 - 160				
Benzene	16.11	1.0	20	0	80.5	79 - 120				
Bromobenzene	16.85	1.0	20	0	84.2	80 - 120				
Bromochloromethane	15.82	1.0	20	0	79.1	78 - 123				
Bromodichloromethane	13.83	1.0	20	0	69.2	79 - 125				S
Bromoform	13.67	1.0	20	0	68.4	66 - 130				
Bromomethane	16.83	1.0	20	0	84.2	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS24051959-07MS** Units: **ug/L** Analysis Date: **06-Jun-2024 12:59**
Client ID: **35AWW21_052924** Run ID: **VOA9_468713** SeqNo: **8051735** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	30.47	2.0	40	0	76.2	64 - 133				
Carbon tetrachloride	15.84	1.0	20	0	79.2	72 - 136				
Chlorobenzene	16.39	1.0	20	0	82.0	82 - 118				S
Chloroethane	16.45	1.0	20	0	82.2	60 - 138				
Chloroform	15.13	1.0	20	0	75.7	79 - 124				S
Chloromethane	17.14	1.0	20	0	85.7	50 - 139				
cis-1,2-Dichloroethene	16.75	1.0	20	1.081	78.4	78 - 123				
cis-1,3-Dichloropropene	13.78	1.0	20	0	68.9	75 - 124				S
Dibromochloromethane	14.07	1.0	20	0	70.4	74 - 126				S
Dibromomethane	15.26	1.0	20	0	76.3	79 - 123				S
Dichlorodifluoromethane	19.59	1.0	20	0	98.0	32 - 152				
Ethylbenzene	16.79	1.0	20	0	83.9	79 - 121				
Hexachlorobutadiene	17.62	1.0	20	0	88.1	66 - 134				
Isopropylbenzene	18.8	1.0	20	0	94.0	72 - 131				
m,p-Xylene	34.58	2.0	40	0	86.5	80 - 121				
Methylene chloride	15.72	2.0	20	0	78.6	74 - 124				
Naphthalene	14.66	1.0	20	0	73.3	61 - 128				
n-Butylbenzene	18.28	1.0	20	0	91.4	75 - 128				
n-Propylbenzene	18.96	1.0	20	0	94.8	76 - 126				
o-Xylene	17.34	1.0	20	0	86.7	78 - 122				
sec-Butylbenzene	20.03	1.0	20	0	100	77 - 126				
Styrene	16.59	1.0	20	0	82.9	78 - 123				
tert-Butylbenzene	19.27	1.0	20	0	96.4	78 - 124				
Tetrachloroethene	18.22	1.0	20	0	91.1	74 - 129				
Toluene	16.07	1.0	20	0	80.3	80 - 121				
trans-1,2-Dichloroethene	16.3	1.0	20	0	81.5	75 - 124				
trans-1,3-Dichloropropene	13.46	1.0	20	0	67.3	73 - 127				S
Trichloroethene	16.48	1.0	20	0.7715	78.5	79 - 123				S
Trichlorofluoromethane	17.67	1.0	20	0	88.3	65 - 141				
Vinyl chloride	17.74	1.0	20	0	88.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*53.03*	*35*	*50*	*0*	*106*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.38*	*35*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*51.79*	*35*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*54.39*	*35*	*50*	*0*	*109*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS24051959-07MSD** Units: **ug/L** Analysis Date: **06-Jun-2024 13:20**
Client ID: **35AWW21_052924** Run ID: **VOA9_468713** SeqNo: **8051736** 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	14.62	1.0	20	0	73.1	78 - 124	15.26	4.26	20	S
1,1,1-Trichloroethane	15.77	1.0	20	0	78.8	74 - 131	16.47	4.35	20	
1,1,2,2-Tetrachloroethane	16.07	1.0	20	0	80.3	71 - 121	15.72	2.18	20	
1,1,2-Trichloroethane	15.98	1.0	20	0	79.9	80 - 119	15.91	0.415	20	S
1,1-Dichloroethane	20.27	1.0	20	4.004	81.3	77 - 125	20.68	2.02	20	
1,1-Dichloroethene	20.22	1.0	20	3.558	83.3	71 - 131	21.23	4.87	20	
1,1-Dichloropropene	15.63	1.0	20	0	78.2	78 - 125	15.96	2.04	20	
1,2,3-Trichlorobenzene	16.51	1.0	20	0	82.6	69 - 129	16.23	1.75	20	
1,2,3-Trichloropropane	15.87	1.0	20	0	79.4	73 - 122	15.74	0.849	20	
1,2,4-Trichlorobenzene	16.74	1.0	20	0	83.7	69 - 130	16.64	0.609	20	
1,2,4-Trimethylbenzene	17.84	1.0	20	0	89.2	76 - 124	17.79	0.288	20	
1,2-Dibromo-3-chloropropane	15.36	1.0	20	0	76.8	62 - 128	15.48	0.801	20	
1,2-Dibromoethane	14.98	1.0	20	0	74.9	77 - 121	14.92	0.421	20	S
1,2-Dichlorobenzene	17.54	1.0	20	0	87.7	80 - 119	17.39	0.869	20	
1,2-Dichloroethane	15.94	1.0	20	0	79.7	73 - 128	15.72	1.43	20	
1,2-Dichloropropane	15.04	1.0	20	0	75.2	78 - 122	15.41	2.41	20	S
1,3,5-Trimethylbenzene	18.77	1.0	20	0	93.8	75 - 124	18.69	0.394	20	
1,3-Dichlorobenzene	16.45	1.0	20	0	82.3	80 - 119	16.3	0.901	20	
1,3-Dichloropropane	15.67	1.0	20	0	78.4	80 - 119	15.48	1.19	20	S
1,4-Dichlorobenzene	17.31	1.0	20	0	86.6	79 - 118	17.69	2.13	20	
2,2-Dichloropropane	15.15	1.0	20	0	75.8	60 - 139	15.7	3.53	20	
2-Butanone	31.86	2.0	40	0	79.6	56 - 143	31.88	0.0583	20	
2-Chlorotoluene	17.11	1.0	20	0	85.6	79 - 122	17.28	0.98	20	
2-Hexanone	35.76	2.0	40	0	89.4	57 - 139	35.7	0.172	20	
4-Chlorotoluene	17.07	1.0	20	0	85.3	78 - 122	17.5	2.48	20	
4-Isopropyltoluene	19.2	1.0	20	0	96.0	77 - 127	19.48	1.44	20	
4-Methyl-2-pentanone	31.27	2.0	40	0	78.2	67 - 130	31.09	0.577	20	
Acetone	28.78	2.0	40	0	71.9	39 - 160	30.52	5.88	20	
Benzene	15.82	1.0	20	0	79.1	79 - 120	16.11	1.81	20	
Bromobenzene	16.46	1.0	20	0	82.3	80 - 120	16.85	2.36	20	
Bromochloromethane	15.26	1.0	20	0	76.3	78 - 123	15.82	3.65	20	S
Bromodichloromethane	13.55	1.0	20	0	67.8	79 - 125	13.83	2.06	20	S
Bromoform	13.83	1.0	20	0	69.2	66 - 130	13.67	1.15	20	
Bromomethane	16.39	1.0	20	0	82.0	53 - 141	16.83	2.63	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS24051959-07MSD** Units: **ug/L** Analysis Date: **06-Jun-2024 13:20**
Client ID: **35AWW21_052924** Run ID: **VOA9_468713** SeqNo: **8051736** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	29.45	2.0	40	0	73.6	64 - 133	30.47	3.4	20	
Carbon tetrachloride	15.61	1.0	20	0	78.0	72 - 136	15.84	1.51	20	
Chlorobenzene	16.06	1.0	20	0	80.3	82 - 118	16.39	2.02	20	S
Chloroethane	16.35	1.0	20	0	81.7	60 - 138	16.45	0.59	20	
Chloroform	14.62	1.0	20	0	73.1	79 - 124	15.13	3.48	20	S
Chloromethane	16.74	1.0	20	0	83.7	50 - 139	17.14	2.36	20	
cis-1,2-Dichloroethene	16.51	1.0	20	1.081	77.2	78 - 123	16.75	1.44	20	S
cis-1,3-Dichloropropene	13.6	1.0	20	0	68.0	75 - 124	13.78	1.25	20	S
Dibromochloromethane	14.02	1.0	20	0	70.1	74 - 126	14.07	0.354	20	S
Dibromomethane	15.07	1.0	20	0	75.4	79 - 123	15.26	1.24	20	S
Dichlorodifluoromethane	18.59	1.0	20	0	92.9	32 - 152	19.59	5.25	20	
Ethylbenzene	16.73	1.0	20	0	83.6	79 - 121	16.79	0.359	20	
Hexachlorobutadiene	17.19	1.0	20	0	86.0	66 - 134	17.62	2.47	20	
Isopropylbenzene	18.86	1.0	20	0	94.3	72 - 131	18.8	0.328	20	
m,p-Xylene	34.5	2.0	40	0	86.3	80 - 121	34.58	0.223	20	
Methylene chloride	15	2.0	20	0	75.0	74 - 124	15.72	4.72	20	
Naphthalene	15.33	1.0	20	0	76.6	61 - 128	14.66	4.49	20	
n-Butylbenzene	18.18	1.0	20	0	90.9	75 - 128	18.28	0.536	20	
n-Propylbenzene	18.25	1.0	20	0	91.2	76 - 126	18.96	3.82	20	
o-Xylene	17.04	1.0	20	0	85.2	78 - 122	17.34	1.75	20	
sec-Butylbenzene	19.61	1.0	20	0	98.1	77 - 126	20.03	2.09	20	
Styrene	16.66	1.0	20	0	83.3	78 - 123	16.59	0.438	20	
tert-Butylbenzene	18.88	1.0	20	0	94.4	78 - 124	19.27	2.06	20	
Tetrachloroethene	17.85	1.0	20	0	89.3	74 - 129	18.22	2.03	20	
Toluene	15.91	1.0	20	0	79.6	80 - 121	16.07	0.986	20	S
trans-1,2-Dichloroethene	16.08	1.0	20	0	80.4	75 - 124	16.3	1.37	20	
trans-1,3-Dichloropropene	13.6	1.0	20	0	68.0	73 - 127	13.46	1.06	20	S
Trichloroethene	16.29	1.0	20	0.7715	77.6	79 - 123	16.48	1.18	20	S
Trichlorofluoromethane	17.07	1.0	20	0	85.4	65 - 141	17.67	3.44	20	
Vinyl chloride	16.91	1.0	20	0	84.5	58 - 137	17.74	4.79	20	
Surr: 1,2-Dichloroethane-d4	*52.56*	*35*	*50*	*0*	*105*	*81 - 118*	*53.03*	*0.88*	*20*	
Surr: 4-Bromofluorobenzene	*56.46*	*35*	*50*	*0*	*113*	*85 - 114*	*55.38*	*1.93*	*20*	
Surr: Dibromofluoromethane	*51.79*	*35*	*50*	*0*	*104*	*80 - 119*	*51.79*	*0*	*20*	
Surr: Toluene-d8	*54.73*	*35*	*50*	*0*	*109*	*89 - 112*	*54.39*	*0.621*	*20*	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468713 (0)	Instrument: VOA9	Method: VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:

HS24051959-01	HS24051959-02	HS24051959-03	HS24051959-04
HS24051959-05	HS24051959-06	HS24051959-07	HS24051959-08
HS24051959-09	HS24051959-10	HS24051959-11	HS24051959-12
HS24051959-13	HS24051959-15	HS24051959-16	HS24051959-17
HS24051959-18			

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468791 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 23:29**
Client ID: Run ID: **VOA9_468791** SeqNo: **8053498** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*54.21*	*35*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.95*	*35*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*51.03*	*35*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*54.48*	*35*	*50*	*0*	*109*	*89 - 112*				

LCS Sample ID: **VLCSW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 22:25**
Client ID: Run ID: **VOA9_468791** SeqNo: **8053496** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	16	1.0	20	0	80.0	61 - 128				
Surr: 1,2-Dichloroethane-d4	*53.04*	*35*	*50*	*0*	*106*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.1*	*35*	*50*	*0*	*112*	*85 - 114*				
Surr: Dibromofluoromethane	*52.79*	*35*	*50*	*0*	*106*	*80 - 119*				
Surr: Toluene-d8	*55.35*	*35*	*50*	*0*	*111*	*89 - 112*				

MS Sample ID: **HS24051959-14MS** Units: **ug/L** Analysis Date: **07-Jun-2024 08:38**
Client ID: **35AWW10_052824** Run ID: **VOA9_468791** SeqNo: **8053500** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Naphthalene	13.49	1.0	20	0	67.4	61 - 128				
Surr: 1,2-Dichloroethane-d4	*54.16*	*35*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.43*	*35*	*50*	*0*	*113*	*85 - 114*				
Surr: Dibromofluoromethane	*53.55*	*35*	*50*	*0*	*107*	*80 - 119*				
Surr: Toluene-d8	*55.83*	*35*	*50*	*0*	*112*	*89 - 112*				

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468791 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS24051959-14MSD** Units: **ug/L** Analysis Date: **07-Jun-2024 09:00**
Client ID: **35AWW10_052824** Run ID: **VOA9_468791** SeqNo: **8053501** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Naphthalene	14.08	1.0	20	0	70.4	61 - 128	13.49	4.25	20	
Surr: 1,2-Dichloroethane-d4	*52.96*	*35*	*50*	*0*	*106*	*81 - 118*	*54.16*	*2.25*	*20*	
Surr: 4-Bromofluorobenzene	*56.29*	*35*	*50*	*0*	*113*	*85 - 114*	*56.43*	*0.245*	*20*	
Surr: Dibromofluoromethane	*51.85*	*35*	*50*	*0*	*104*	*80 - 119*	*53.55*	*3.23*	*20*	
Surr: Toluene-d8	*55.63*	*35*	*50*	*0*	*111*	*89 - 112*	*55.83*	*0.368*	*20*	

The following samples were analyzed in this batch: HS24051959-14

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240608** Units: **ug/L** Analysis Date: **09-Jun-2024 09:16**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056885** 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	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U
Carbon disulfide	1.0	2.0								U

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-240608** Units: **ug/L** Analysis Date: **09-Jun-2024 09:16**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056885** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*55.55*	*35*	*50*	*0*	*111*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.66*	*35*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*53.73*	*35*	*50*	*0*	*107*	*80 - 119*				
Surr: Toluene-d8	*55.58*	*35*	*50*	*0*	*111*	*89 - 112*				

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-240608** Units: **ug/L** Analysis Date: **09-Jun-2024 08:11**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056883** 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	18.88	1.0	20	0	94.4	78 - 124				
1,1,1-Trichloroethane	18.07	1.0	20	0	90.4	74 - 131				
1,1,2,2-Tetrachloroethane	19.9	1.0	20	0	99.5	71 - 121				
1,1,2-Trichloroethane	19.77	1.0	20	0	98.9	80 - 119				
1,1-Dichloroethane	18.96	1.0	20	0	94.8	77 - 125				
1,1-Dichloroethene	18.95	1.0	20	0	94.8	71 - 131				
1,1-Dichloropropene	18.72	1.0	20	0	93.6	78 - 125				
1,2,3-Trichlorobenzene	21.99	1.0	20	0	110	69 - 129				
1,2,3-Trichloropropane	17.48	1.0	20	0	87.4	73 - 122				
1,2,4-Trichlorobenzene	21.22	1.0	20	0	106	69 - 130				
1,2,4-Trimethylbenzene	19.45	1.0	20	0	97.2	76 - 124				
1,2-Dibromo-3-chloropropane	21.23	1.0	20	0	106	62 - 128				
1,2-Dibromoethane	19.61	1.0	20	0	98.1	77 - 121				
1,2-Dichlorobenzene	20.02	1.0	20	0	100	80 - 119				
1,2-Dichloroethane	19.21	1.0	20	0	96.0	73 - 128				
1,2-Dichloropropane	19	1.0	20	0	95.0	78 - 122				
1,3,5-Trimethylbenzene	20.37	1.0	20	0	102	75 - 124				
1,3-Dichlorobenzene	19.79	1.0	20	0	99.0	80 - 119				
1,3-Dichloropropane	19.67	1.0	20	0	98.3	80 - 119				
1,4-Dichlorobenzene	19.43	1.0	20	0	97.2	79 - 118				
2-Butanone	42.97	2.0	40	0	107	56 - 143				
2-Chlorotoluene	19.5	1.0	20	0	97.5	79 - 122				
2-Hexanone	40.17	2.0	40	0	100	57 - 139				
4-Chlorotoluene	19.24	1.0	20	0	96.2	78 - 122				
4-Isopropyltoluene	20.11	1.0	20	0	101	77 - 127				
4-Methyl-2-pentanone	39.66	2.0	40	0	99.2	67 - 130				
Acetone	41.71	2.0	40	0	104	39 - 160				
Benzene	19.17	1.0	20	0	95.8	79 - 120				
Bromobenzene	19.74	1.0	20	0	98.7	80 - 120				
Bromochloromethane	19.36	1.0	20	0	96.8	78 - 123				
Bromodichloromethane	17.13	1.0	20	0	85.6	79 - 125				
Bromoform	17.76	1.0	20	0	88.8	66 - 130				
Bromomethane	19.47	1.0	20	0	97.4	53 - 141				
Carbon disulfide	36.22	2.0	40	0	90.5	64 - 133				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-240608** Units: **ug/L** Analysis Date: **09-Jun-2024 08:11**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056883** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon tetrachloride	17.56	1.0	20	0	87.8	72 - 136				
Chlorobenzene	19.65	1.0	20	0	98.3	82 - 118				
Chloroethane	18.91	1.0	20	0	94.5	60 - 138				
Chloroform	19.01	1.0	20	0	95.0	79 - 124				
Chloromethane	18.47	1.0	20	0	92.4	50 - 139				
cis-1,2-Dichloroethene	18.87	1.0	20	0	94.4	78 - 123				
cis-1,3-Dichloropropene	17.23	1.0	20	0	86.1	75 - 124				
Dibromochloromethane	17.97	1.0	20	0	89.9	74 - 126				
Dibromomethane	18.9	1.0	20	0	94.5	79 - 123				
Dichlorodifluoromethane	18.21	1.0	20	0	91.1	32 - 152				
Ethylbenzene	18.4	1.0	20	0	92.0	79 - 121				
Hexachlorobutadiene	20.73	1.0	20	0	104	66 - 134				
Isopropylbenzene	19.43	1.0	20	0	97.2	72 - 131				
m,p-Xylene	37.68	2.0	40	0	94.2	80 - 121				
Methylene chloride	19.41	2.0	20	0	97.1	74 - 124				
Naphthalene	21.72	1.0	20	0	109	61 - 128				
n-Butylbenzene	19.65	1.0	20	0	98.3	75 - 128				
n-Propylbenzene	19.46	1.0	20	0	97.3	76 - 126				
o-Xylene	18.88	1.0	20	0	94.4	78 - 122				
sec-Butylbenzene	20.27	1.0	20	0	101	77 - 126				
Styrene	19.14	1.0	20	0	95.7	78 - 123				
tert-Butylbenzene	20.62	1.0	20	0	103	78 - 124				
Toluene	19.58	1.0	20	0	97.9	80 - 121				
trans-1,2-Dichloroethene	18.83	1.0	20	0	94.1	75 - 124				
trans-1,3-Dichloropropene	17.2	1.0	20	0	86.0	73 - 127				
Trichlorofluoromethane	18.4	1.0	20	0	92.0	65 - 141				
Vinyl chloride	18.27	1.0	20	0	91.4	58 - 137				
Surr: 1,2-Dichloroethane-d4	*54.97*	*35*	*50*	*0*	*110*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.12*	*35*	*50*	*0*	*110*	*85 - 114*				
Surr: Dibromofluoromethane	*55.72*	*35*	*50*	*0*	*111*	*80 - 119*				
Surr: Toluene-d8	*55.94*	*35*	*50*	*0*	*112*	*89 - 112*				

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCSD Sample ID: **VLCSDW-240608** Units: **ug/L** Analysis Date: **09-Jun-2024 08:33**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056884** 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	18.21	1.0	20	0	91.0	78 - 124	18.88	3.6	20	
1,1,1-Trichloroethane	17.47	1.0	20	0	87.4	74 - 131	18.07	3.36	20	
1,1,2,2-Tetrachloroethane	18.63	1.0	20	0	93.1	71 - 121	19.9	6.61	20	
1,1,2-Trichloroethane	18.94	1.0	20	0	94.7	80 - 119	19.77	4.32	20	
1,1-Dichloroethane	18.2	1.0	20	0	91.0	77 - 125	18.96	4.12	20	
1,1-Dichloroethene	18.26	1.0	20	0	91.3	71 - 131	18.95	3.72	20	
1,1-Dichloropropene	17.74	1.0	20	0	88.7	78 - 125	18.72	5.39	20	
1,2,3-Trichlorobenzene	20.59	1.0	20	0	103	69 - 129	21.99	6.55	20	
1,2,3-Trichloropropane	18.45	1.0	20	0	92.2	73 - 122	17.48	5.4	20	
1,2,4-Trichlorobenzene	19.5	1.0	20	0	97.5	69 - 130	21.22	8.43	20	
1,2,4-Trimethylbenzene	18.09	1.0	20	0	90.5	76 - 124	19.45	7.22	20	
1,2-Dibromo-3-chloropropane	20.21	1.0	20	0	101	62 - 128	21.23	4.93	20	
1,2-Dibromoethane	18.73	1.0	20	0	93.7	77 - 121	19.61	4.6	20	
1,2-Dichlorobenzene	18.78	1.0	20	0	93.9	80 - 119	20.02	6.41	20	
1,2-Dichloroethane	18.69	1.0	20	0	93.5	73 - 128	19.21	2.71	20	
1,2-Dichloropropane	18.46	1.0	20	0	92.3	78 - 122	19	2.91	20	
1,3,5-Trimethylbenzene	18.94	1.0	20	0	94.7	75 - 124	20.37	7.25	20	
1,3-Dichlorobenzene	18.37	1.0	20	0	91.8	80 - 119	19.79	7.46	20	
1,3-Dichloropropane	18.8	1.0	20	0	94.0	80 - 119	19.67	4.5	20	
1,4-Dichlorobenzene	18.5	1.0	20	0	92.5	79 - 118	19.43	4.92	20	
2-Butanone	41.54	2.0	40	0	104	56 - 143	42.97	3.38	20	
2-Chlorotoluene	18.53	1.0	20	0	92.7	79 - 122	19.5	5.08	20	
2-Hexanone	38.53	2.0	40	0	96.3	57 - 139	40.17	4.16	20	
4-Chlorotoluene	18.2	1.0	20	0	91.0	78 - 122	19.24	5.52	20	
4-Isopropyltoluene	18.67	1.0	20	0	93.4	77 - 127	20.11	7.4	20	
4-Methyl-2-pentanone	37.99	2.0	40	0	95.0	67 - 130	39.66	4.31	20	
Acetone	40.61	2.0	40	0	102	39 - 160	41.71	2.69	20	
Benzene	18.44	1.0	20	0	92.2	79 - 120	19.17	3.88	20	
Bromobenzene	18.6	1.0	20	0	93.0	80 - 120	19.74	5.94	20	
Bromochloromethane	19.42	1.0	20	0	97.1	78 - 123	19.36	0.326	20	
Bromodichloromethane	16.55	1.0	20	0	82.7	79 - 125	17.13	3.46	20	
Bromoform	16.87	1.0	20	0	84.3	66 - 130	17.76	5.14	20	
Bromomethane	19.69	1.0	20	0	98.5	53 - 141	19.47	1.13	20	
Carbon disulfide	34.26	2.0	40	0	85.7	64 - 133	36.22	5.54	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCSD Sample ID: **VLCSDW-240608** Units: **ug/L** Analysis Date: **09-Jun-2024 08:33**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056884** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon tetrachloride	16.73	1.0	20	0	83.6	72 - 136	17.56	4.89	20	
Chlorobenzene	18.39	1.0	20	0	91.9	82 - 118	19.65	6.65	20	
Chloroethane	17.88	1.0	20	0	89.4	60 - 138	18.91	5.57	20	
Chloroform	18.29	1.0	20	0	91.5	79 - 124	19.01	3.82	20	
Chloromethane	17.89	1.0	20	0	89.5	50 - 139	18.47	3.2	20	
cis-1,2-Dichloroethene	18.67	1.0	20	0	93.4	78 - 123	18.87	1.06	20	
cis-1,3-Dichloropropene	16.92	1.0	20	0	84.6	75 - 124	17.23	1.8	20	
Dibromochloromethane	17.37	1.0	20	0	86.9	74 - 126	17.97	3.39	20	
Dibromomethane	18.68	1.0	20	0	93.4	79 - 123	18.9	1.13	20	
Dichlorodifluoromethane	17.35	1.0	20	0	86.8	32 - 152	18.21	4.85	20	
Ethylbenzene	17.29	1.0	20	0	86.4	79 - 121	18.4	6.23	20	
Hexachlorobutadiene	19.25	1.0	20	0	96.3	66 - 134	20.73	7.36	20	
Isopropylbenzene	18.36	1.0	20	0	91.8	72 - 131	19.43	5.67	20	
m,p-Xylene	35.61	2.0	40	0	89.0	80 - 121	37.68	5.65	20	
Methylene chloride	18.87	2.0	20	0	94.3	74 - 124	19.41	2.84	20	
Naphthalene	19.84	1.0	20	0	99.2	61 - 128	21.72	9.08	20	
n-Butylbenzene	18	1.0	20	0	90.0	75 - 128	19.65	8.8	20	
n-Propylbenzene	18.15	1.0	20	0	90.8	76 - 126	19.46	6.94	20	
o-Xylene	17.85	1.0	20	0	89.3	78 - 122	18.88	5.57	20	
sec-Butylbenzene	18.97	1.0	20	0	94.9	77 - 126	20.27	6.59	20	
Styrene	17.95	1.0	20	0	89.8	78 - 123	19.14	6.38	20	
tert-Butylbenzene	19.07	1.0	20	0	95.4	78 - 124	20.62	7.78	20	
Toluene	18.59	1.0	20	0	92.9	80 - 121	19.58	5.18	20	
trans-1,2-Dichloroethene	18.05	1.0	20	0	90.3	75 - 124	18.83	4.2	20	
trans-1,3-Dichloropropene	16.76	1.0	20	0	83.8	73 - 127	17.2	2.57	20	
Trichlorofluoromethane	17.63	1.0	20	0	88.1	65 - 141	18.4	4.3	20	
Vinyl chloride	17.49	1.0	20	0	87.5	58 - 137	18.27	4.38	20	
Surr: 1,2-Dichloroethane-d4	*54.31*	*35*	*50*	*0*	*109*	*81 - 118*	*54.97*	*1.21*	*20*	
Surr: 4-Bromofluorobenzene	*55.21*	*35*	*50*	*0*	*110*	*85 - 114*	*55.12*	*0.163*	*20*	
Surr: Dibromofluoromethane	*54.83*	*35*	*50*	*0*	*110*	*80 - 119*	*55.72*	*1.6*	*20*	
Surr: Toluene-d8	*55.52*	*35*	*50*	*0*	*111*	*89 - 112*	*55.94*	*0.751*	*20*	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS24060349-12MS** Units: **ug/L** Analysis Date: **09-Jun-2024 09:59**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056887** 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	17.84	1.0	20	0	89.2	78 - 124				
1,1,1-Trichloroethane	18.53	1.0	20	0	92.7	74 - 131				
1,1,2,2-Tetrachloroethane	19.12	1.0	20	0	95.6	71 - 121				
1,1,2-Trichloroethane	18.65	1.0	20	0	93.2	80 - 119				
1,1-Dichloroethane	18.77	1.0	20	0	93.9	77 - 125				
1,1-Dichloroethene	19.46	1.0	20	0	97.3	71 - 131				
1,1-Dichloropropene	19.11	1.0	20	0	95.5	78 - 125				
1,2,3-Trichlorobenzene	17.1	1.0	20	0	85.5	69 - 129				
1,2,3-Trichloropropane	17.47	1.0	20	0	87.3	73 - 122				
1,2,4-Trichlorobenzene	16.69	1.0	20	0	83.4	69 - 130				
1,2,4-Trimethylbenzene	17.63	1.0	20	0	88.1	76 - 124				
1,2-Dibromo-3-chloropropane	18.54	1.0	20	0	92.7	62 - 128				
1,2-Dibromoethane	17.82	1.0	20	0	89.1	77 - 121				
1,2-Dichlorobenzene	18.5	1.0	20	0	92.5	80 - 119				
1,2-Dichloroethane	18.35	1.0	20	0	91.8	73 - 128				
1,2-Dichloropropane	17.87	1.0	20	0	89.3	78 - 122				
1,3,5-Trimethylbenzene	19.39	1.0	20	0	97.0	75 - 124				
1,3-Dichlorobenzene	18.4	1.0	20	0	92.0	80 - 119				
1,3-Dichloropropane	18.4	1.0	20	0	92.0	80 - 119				
1,4-Dichlorobenzene	17.96	1.0	20	0	89.8	79 - 118				
2-Butanone	36.16	2.0	40	0	90.4	56 - 143				
2-Chlorotoluene	19.42	1.0	20	0	97.1	79 - 122				
2-Hexanone	40.98	2.0	40	0	102	57 - 139				
4-Chlorotoluene	18.39	1.0	20	0	91.9	78 - 122				
4-Isopropyltoluene	18.32	1.0	20	0	91.6	77 - 127				
4-Methyl-2-pentanone	36.52	2.0	40	0	91.3	67 - 130				
Acetone	30.51	2.0	40	0	76.3	39 - 160				
Benzene	19.09	1.0	20	0	95.5	79 - 120				
Bromobenzene	18.85	1.0	20	0	94.3	80 - 120				
Bromochloromethane	18.64	1.0	20	0	93.2	78 - 123				
Bromodichloromethane	16.41	1.0	20	0	82.1	79 - 125				
Bromoform	16.25	1.0	20	0	81.3	66 - 130				
Bromomethane	19.96	1.0	20	0	99.8	53 - 141				
Carbon disulfide	36.12	2.0	40	0	90.3	64 - 133				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS24060349-12MS** Units: **ug/L** Analysis Date: **09-Jun-2024 09:59**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056887** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon tetrachloride	18.08	1.0	20	0	90.4	72 - 136				
Chlorobenzene	18.74	1.0	20	0	93.7	82 - 118				
Chloroethane	18.95	1.0	20	0	94.7	60 - 138				
Chloroform	18.62	1.0	20	0	93.1	79 - 124				
Chloromethane	18.67	1.0	20	0	93.3	50 - 139				
cis-1,2-Dichloroethene	18.88	1.0	20	0	94.4	78 - 123				
cis-1,3-Dichloropropene	16.14	1.0	20	0	80.7	75 - 124				
Dibromochloromethane	16.76	1.0	20	0	83.8	74 - 126				
Dibromomethane	18.24	1.0	20	0	91.2	79 - 123				
Dichlorodifluoromethane	18.25	1.0	20	0	91.2	32 - 152				
Ethylbenzene	18.06	1.0	20	0	90.3	79 - 121				
Hexachlorobutadiene	15.82	1.0	20	0	79.1	66 - 134				
Isopropylbenzene	18.85	1.0	20	0	94.2	72 - 131				
m,p-Xylene	36.69	2.0	40	0	91.7	80 - 121				
Methylene chloride	18.49	2.0	20	0	92.4	74 - 124				
Naphthalene	17.75	1.0	20	0	88.8	61 - 128				
n-Butylbenzene	17.11	1.0	20	0	85.6	75 - 128				
n-Propylbenzene	19.06	1.0	20	0	95.3	76 - 126				
o-Xylene	18.13	1.0	20	0	90.7	78 - 122				
sec-Butylbenzene	19.06	1.0	20	0	95.3	77 - 126				
Styrene	17.72	1.0	20	0	88.6	78 - 123				
tert-Butylbenzene	19.63	1.0	20	0	98.1	78 - 124				
Toluene	19.21	1.0	20	0	96.0	80 - 121				
trans-1,2-Dichloroethene	19	1.0	20	0	95.0	75 - 124				
trans-1,3-Dichloropropene	15.96	1.0	20	0	79.8	73 - 127				
Trichlorofluoromethane	19.34	1.0	20	0	96.7	65 - 141				
Vinyl chloride	18.73	1.0	20	0	93.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*54.35*	*35*	*50*	*0*	*109*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*58.39*	*35*	*50*	*0*	*117*	*85 - 114*				S
Surr: Dibromofluoromethane	*54.1*	*35*	*50*	*0*	*108*	*80 - 119*				
Surr: Toluene-d8	*59*	*35*	*50*	*0*	*118*	*89 - 112*				S

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24060349-12MSD** Units: **ug/L** Analysis Date: **09-Jun-2024 10:21**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056888** 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	17.25	1.0	20	0	86.2	78 - 124	17.84	3.37	20	
1,1,1-Trichloroethane	17.57	1.0	20	0	87.9	74 - 131	18.53	5.3	20	
1,1,2,2-Tetrachloroethane	18.14	1.0	20	0	90.7	71 - 121	19.12	5.26	20	
1,1,2-Trichloroethane	18.27	1.0	20	0	91.4	80 - 119	18.65	2.01	20	
1,1-Dichloroethane	17.86	1.0	20	0	89.3	77 - 125	18.77	4.99	20	
1,1-Dichloroethene	18.65	1.0	20	0	93.3	71 - 131	19.46	4.24	20	
1,1-Dichloropropene	18.24	1.0	20	0	91.2	78 - 125	19.11	4.65	20	
1,2,3-Trichlorobenzene	16.59	1.0	20	0	82.9	69 - 129	17.1	3.08	20	
1,2,3-Trichloropropane	16.8	1.0	20	0	84.0	73 - 122	17.47	3.93	20	
1,2,4-Trichlorobenzene	16.14	1.0	20	0	80.7	69 - 130	16.69	3.32	20	
1,2,4-Trimethylbenzene	17.07	1.0	20	0	85.3	76 - 124	17.63	3.23	20	
1,2-Dibromo-3-chloropropane	17.78	1.0	20	0	88.9	62 - 128	18.54	4.21	20	
1,2-Dibromoethane	17.8	1.0	20	0	89.0	77 - 121	17.82	0.107	20	
1,2-Dichlorobenzene	18.04	1.0	20	0	90.2	80 - 119	18.5	2.57	20	
1,2-Dichloroethane	17.49	1.0	20	0	87.5	73 - 128	18.35	4.78	20	
1,2-Dichloropropane	17.4	1.0	20	0	87.0	78 - 122	17.87	2.66	20	
1,3,5-Trimethylbenzene	18.71	1.0	20	0	93.5	75 - 124	19.39	3.61	20	
1,3-Dichlorobenzene	17.54	1.0	20	0	87.7	80 - 119	18.4	4.77	20	
1,3-Dichloropropane	18.13	1.0	20	0	90.7	80 - 119	18.4	1.45	20	
1,4-Dichlorobenzene	17.68	1.0	20	0	88.4	79 - 118	17.96	1.56	20	
2-Butanone	34.57	2.0	40	0	86.4	56 - 143	36.16	4.49	20	
2-Chlorotoluene	18.63	1.0	20	0	93.1	79 - 122	19.42	4.2	20	
2-Hexanone	38.7	2.0	40	0	96.7	57 - 139	40.98	5.72	20	
4-Chlorotoluene	17.83	1.0	20	0	89.1	78 - 122	18.39	3.09	20	
4-Isopropyltoluene	17.66	1.0	20	0	88.3	77 - 127	18.32	3.71	20	
4-Methyl-2-pentanone	36.06	2.0	40	0	90.2	67 - 130	36.52	1.27	20	
Acetone	28.86	2.0	40	0	72.1	39 - 160	30.51	5.58	20	
Benzene	18.26	1.0	20	0	91.3	79 - 120	19.09	4.46	20	
Bromobenzene	18.12	1.0	20	0	90.6	80 - 120	18.85	3.96	20	
Bromochloromethane	17.72	1.0	20	0	88.6	78 - 123	18.64	5.1	20	
Bromodichloromethane	15.78	1.0	20	0	78.9	79 - 125	16.41	3.89	20	S
Bromoform	15.88	1.0	20	0	79.4	66 - 130	16.25	2.33	20	
Bromomethane	18.8	1.0	20	0	94.0	53 - 141	19.96	5.99	20	
Carbon disulfide	34.85	2.0	40	0	87.1	64 - 133	36.12	3.58	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R468948 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24060349-12MSD** Units: **ug/L** Analysis Date: **09-Jun-2024 10:21**
Client ID: Run ID: **VOA9_468948** SeqNo: **8056888** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon tetrachloride	17.49	1.0	20	0	87.5	72 - 136	18.08	3.29	20	
Chlorobenzene	18.3	1.0	20	0	91.5	82 - 118	18.74	2.34	20	
Chloroethane	17.91	1.0	20	0	89.6	60 - 138	18.95	5.62	20	
Chloroform	17.91	1.0	20	0	89.5	79 - 124	18.62	3.91	20	
Chloromethane	17.72	1.0	20	0	88.6	50 - 139	18.67	5.17	20	
cis-1,2-Dichloroethene	17.92	1.0	20	0	89.6	78 - 123	18.88	5.19	20	
cis-1,3-Dichloropropene	15.15	1.0	20	0	75.7	75 - 124	16.14	6.36	20	
Dibromochloromethane	16.55	1.0	20	0	82.8	74 - 126	16.76	1.26	20	
Dibromomethane	17.44	1.0	20	0	87.2	79 - 123	18.24	4.47	20	
Dichlorodifluoromethane	17.81	1.0	20	0	89.0	32 - 152	18.25	2.44	20	
Ethylbenzene	17.77	1.0	20	0	88.8	79 - 121	18.06	1.62	20	
Hexachlorobutadiene	15.56	1.0	20	0	77.8	66 - 134	15.82	1.71	20	
Isopropylbenzene	18.6	1.0	20	0	93.0	72 - 131	18.85	1.32	20	
m,p-Xylene	35.96	2.0	40	0	89.9	80 - 121	36.69	2.01	20	
Methylene chloride	17.56	2.0	20	0	87.8	74 - 124	18.49	5.17	20	
Naphthalene	17.73	1.0	20	0	88.7	61 - 128	17.75	0.101	20	
n-Butylbenzene	16.56	1.0	20	0	82.8	75 - 128	17.11	3.24	20	
n-Propylbenzene	18.09	1.0	20	0	90.4	76 - 126	19.06	5.25	20	
o-Xylene	17.8	1.0	20	0	89.0	78 - 122	18.13	1.88	20	
sec-Butylbenzene	18.08	1.0	20	0	90.4	77 - 126	19.06	5.26	20	
Styrene	17.3	1.0	20	0	86.5	78 - 123	17.72	2.39	20	
tert-Butylbenzene	18.86	1.0	20	0	94.3	78 - 124	19.63	4	20	
Toluene	18.72	1.0	20	0	93.6	80 - 121	19.21	2.57	20	
trans-1,2-Dichloroethene	18	1.0	20	0	90.0	75 - 124	19	5.4	20	
trans-1,3-Dichloropropene	15.33	1.0	20	0	76.6	73 - 127	15.96	4.04	20	
Trichlorofluoromethane	18.31	1.0	20	0	91.5	65 - 141	19.34	5.5	20	
Vinyl chloride	17.85	1.0	20	0	89.3	58 - 137	18.73	4.78	20	
Surr: 1,2-Dichloroethane-d4	*53.76*	*35*	*50*	*0*	*108*	*81 - 118*	*54.35*	*1.09*	*20*	
Surr: 4-Bromofluorobenzene	*59.72*	*35*	*50*	*0*	*119*	*85 - 114*	*58.39*	*2.25*	*20*	S
Surr: Dibromofluoromethane	*54.29*	*35*	*50*	*0*	*109*	*80 - 119*	*54.1*	*0.354*	*20*	
Surr: Toluene-d8	*58.81*	*35*	*50*	*0*	*118*	*89 - 112*	*59*	*0.328*	*20*	S

The following samples were analyzed in this batch: HS24051959-05 HS24051959-06

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 11:13**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062360** 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	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	1.0	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MBLK Sample ID: **VBLKW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 11:13**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062360** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*58.25*	*35*	*50*	*0*	*117*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.67*	*35*	*50*	*0*	*113*	*85 - 114*				
Surr: Dibromofluoromethane	*55.34*	*35*	*50*	*0*	*111*	*80 - 119*				
Surr: Toluene-d8	*55.94*	*35*	*50*	*0*	*112*	*89 - 112*				

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:09**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062358** 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	19.55	1.0	20	0	97.7	78 - 124				
1,1,1-Trichloroethane	19.63	1.0	20	0	98.1	74 - 131				
1,1,2,2-Tetrachloroethane	20.24	1.0	20	0	101	71 - 121				
1,1,2-Trichloroethane	20.3	1.0	20	0	101	80 - 119				
1,1-Dichloroethane	20.56	1.0	20	0	103	77 - 125				
1,1-Dichloroethene	20.49	1.0	20	0	102	71 - 131				
1,1-Dichloropropene	20.52	1.0	20	0	103	78 - 125				
1,2,3-Trichlorobenzene	20.23	1.0	20	0	101	69 - 129				
1,2,3-Trichloropropane	19.19	1.0	20	0	96.0	73 - 122				
1,2,4-Trichlorobenzene	19.66	1.0	20	0	98.3	69 - 130				
1,2,4-Trimethylbenzene	19.27	1.0	20	0	96.4	76 - 124				
1,2-Dibromo-3-chloropropane	20.08	1.0	20	0	100	62 - 128				
1,2-Dibromoethane	19.51	1.0	20	0	97.6	77 - 121				
1,2-Dichlorobenzene	20.56	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	20.45	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	19.62	1.0	20	0	98.1	78 - 122				
1,3,5-Trimethylbenzene	20.21	1.0	20	0	101	75 - 124				
1,3-Dichlorobenzene	20.28	1.0	20	0	101	80 - 119				
1,3-Dichloropropane	19.69	1.0	20	0	98.4	80 - 119				
1,4-Dichlorobenzene	20.55	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	20.34	1.0	20	0	102	60 - 139				
2-Butanone	41.36	2.0	40	0	103	56 - 143				
2-Chlorotoluene	20.72	1.0	20	0	104	79 - 122				
2-Hexanone	41.26	2.0	40	0	103	57 - 139				
4-Chlorotoluene	20.26	1.0	20	0	101	78 - 122				
4-Isopropyltoluene	20.08	1.0	20	0	100	77 - 127				
4-Methyl-2-pentanone	38.85	2.0	40	0	97.1	67 - 130				
Acetone	40.4	2.0	40	0	101	39 - 160				
Benzene	19.94	1.0	20	0	99.7	79 - 120				
Bromobenzene	20.21	1.0	20	0	101	80 - 120				
Bromochloromethane	20.45	1.0	20	0	102	78 - 123				
Bromodichloromethane	18.2	1.0	20	0	91.0	79 - 125				
Bromoform	17.42	1.0	20	0	87.1	66 - 130				
Bromomethane	21.23	1.0	20	0	106	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:09**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062358** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	40.8	2.0	40	0	102	64 - 133				
Carbon tetrachloride	19.49	1.0	20	0	97.4	72 - 136				
Chlorobenzene	20.16	1.0	20	0	101	82 - 118				
Chloroethane	20.5	1.0	20	0	102	60 - 138				
Chloroform	20.67	1.0	20	0	103	79 - 124				
Chloromethane	20.33	1.0	20	0	102	50 - 139				
cis-1,2-Dichloroethene	19.97	1.0	20	0	99.8	78 - 123				
cis-1,3-Dichloropropene	18.8	1.0	20	0	94.0	75 - 124				
Dibromochloromethane	18.67	1.0	20	0	93.3	74 - 126				
Dibromomethane	19.85	1.0	20	0	99.3	79 - 123				
Dichlorodifluoromethane	20.46	1.0	20	0	102	32 - 152				
Ethylbenzene	18.91	1.0	20	0	94.6	79 - 121				
Hexachlorobutadiene	20.7	1.0	20	0	103	66 - 134				
Isopropylbenzene	19.94	1.0	20	0	99.7	72 - 131				
m,p-Xylene	38.9	2.0	40	0	97.2	80 - 121				
Methylene chloride	20.74	2.0	20	0	104	74 - 124				
n-Butylbenzene	20.07	1.0	20	0	100	75 - 128				
n-Propylbenzene	20.32	1.0	20	0	102	76 - 126				
o-Xylene	19.43	1.0	20	0	97.1	78 - 122				
sec-Butylbenzene	20.59	1.0	20	0	103	77 - 126				
Styrene	19.63	1.0	20	0	98.2	78 - 123				
tert-Butylbenzene	20.57	1.0	20	0	103	78 - 124				
Tetrachloroethene	20.48	1.0	20	0	102	74 - 129				
Toluene	20.32	1.0	20	0	102	80 - 121				
trans-1,2-Dichloroethene	20.5	1.0	20	0	103	75 - 124				
trans-1,3-Dichloropropene	18.22	1.0	20	0	91.1	73 - 127				
Trichloroethene	20.01	1.0	20	0	100	79 - 123				
Trichlorofluoromethane	20.76	1.0	20	0	104	65 - 141				
Vinyl chloride	20.53	1.0	20	0	103	58 - 137				
Surr: 1,2-Dichloroethane-d4	*56.15*	*35*	*50*	*0*	*112*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.67*	*35*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*56.68*	*35*	*50*	*0*	*113*	*80 - 119*				
Surr: Toluene-d8	*55.13*	*35*	*50*	*0*	*110*	*89 - 112*				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCSD Sample ID: **VLCSDW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:30**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062359** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.13	1.0	20	0	95.7	78 - 124	19.55	2.14	20	
1,1,1-Trichloroethane	19.4	1.0	20	0	97.0	74 - 131	19.63	1.17	20	
1,1,2,2-Tetrachloroethane	19.99	1.0	20	0	100.0	71 - 121	20.24	1.24	20	
1,1,2-Trichloroethane	20.32	1.0	20	0	102	80 - 119	20.3	0.113	20	
1,1-Dichloroethane	19.79	1.0	20	0	98.9	77 - 125	20.56	3.8	20	
1,1-Dichloroethene	20.09	1.0	20	0	100	71 - 131	20.49	1.96	20	
1,1-Dichloropropene	19.47	1.0	20	0	97.4	78 - 125	20.52	5.23	20	
1,2,3-Trichlorobenzene	19.49	1.0	20	0	97.4	69 - 129	20.23	3.75	20	
1,2,3-Trichloropropane	18.96	1.0	20	0	94.8	73 - 122	19.19	1.25	20	
1,2,4-Trichlorobenzene	18.97	1.0	20	0	94.9	69 - 130	19.66	3.59	20	
1,2,4-Trimethylbenzene	18.41	1.0	20	0	92.1	76 - 124	19.27	4.57	20	
1,2-Dibromo-3-chloropropane	19.54	1.0	20	0	97.7	62 - 128	20.08	2.71	20	
1,2-Dibromoethane	19.5	1.0	20	0	97.5	77 - 121	19.51	0.0652	20	
1,2-Dichlorobenzene	20	1.0	20	0	100	80 - 119	20.56	2.73	20	
1,2-Dichloroethane	19.79	1.0	20	0	98.9	73 - 128	20.45	3.29	20	
1,2-Dichloropropane	19.54	1.0	20	0	97.7	78 - 122	19.62	0.408	20	
1,3,5-Trimethylbenzene	19.81	1.0	20	0	99.1	75 - 124	20.21	2	20	
1,3-Dichlorobenzene	20.06	1.0	20	0	100	80 - 119	20.28	1.1	20	
1,3-Dichloropropane	19.85	1.0	20	0	99.3	80 - 119	19.69	0.833	20	
1,4-Dichlorobenzene	19.58	1.0	20	0	97.9	79 - 118	20.55	4.88	20	
2,2-Dichloropropane	19.28	1.0	20	0	96.4	60 - 139	20.34	5.36	20	
2-Butanone	42.28	2.0	40	0	106	56 - 143	41.36	2.19	20	
2-Chlorotoluene	19.77	1.0	20	0	98.8	79 - 122	20.72	4.7	20	
2-Hexanone	42.42	2.0	40	0	106	57 - 139	41.26	2.77	20	
4-Chlorotoluene	19.51	1.0	20	0	97.6	78 - 122	20.26	3.77	20	
4-Isopropyltoluene	19.36	1.0	20	0	96.8	77 - 127	20.08	3.64	20	
4-Methyl-2-pentanone	39.16	2.0	40	0	97.9	67 - 130	38.85	0.806	20	
Acetone	37.98	2.0	40	0	94.9	39 - 160	40.4	6.17	20	
Benzene	19.71	1.0	20	0	98.6	79 - 120	19.94	1.16	20	
Bromobenzene	19.69	1.0	20	0	98.5	80 - 120	20.21	2.61	20	
Bromochloromethane	19.69	1.0	20	0	98.5	78 - 123	20.45	3.75	20	
Bromodichloromethane	17.89	1.0	20	0	89.5	79 - 125	18.2	1.7	20	
Bromoform	17.63	1.0	20	0	88.1	66 - 130	17.42	1.19	20	
Bromomethane	20.25	1.0	20	0	101	53 - 141	21.23	4.73	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCSD Sample ID: **VLCSDW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:30**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062359** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	38.91	2.0	40	0	97.3	64 - 133	40.8	4.75	20	
Carbon tetrachloride	19	1.0	20	0	95.0	72 - 136	19.49	2.51	20	
Chlorobenzene	20.29	1.0	20	0	101	82 - 118	20.16	0.628	20	
Chloroethane	19.24	1.0	20	0	96.2	60 - 138	20.5	6.32	20	
Chloroform	19.86	1.0	20	0	99.3	79 - 124	20.67	4.01	20	
Chloromethane	19.18	1.0	20	0	95.9	50 - 139	20.33	5.81	20	
cis-1,2-Dichloroethene	19.24	1.0	20	0	96.2	78 - 123	19.97	3.71	20	
cis-1,3-Dichloropropene	18.29	1.0	20	0	91.4	75 - 124	18.8	2.74	20	
Dibromochloromethane	18.54	1.0	20	0	92.7	74 - 126	18.67	0.666	20	
Dibromomethane	19.65	1.0	20	0	98.3	79 - 123	19.85	1.02	20	
Dichlorodifluoromethane	19.6	1.0	20	0	98.0	32 - 152	20.46	4.29	20	
Ethylbenzene	18.65	1.0	20	0	93.3	79 - 121	18.91	1.38	20	
Hexachlorobutadiene	19.31	1.0	20	0	96.6	66 - 134	20.7	6.93	20	
Isopropylbenzene	19.6	1.0	20	0	98.0	72 - 131	19.94	1.68	20	
m,p-Xylene	38.15	2.0	40	0	95.4	80 - 121	38.9	1.93	20	
Methylene chloride	20.23	2.0	20	0	101	74 - 124	20.74	2.48	20	
n-Butylbenzene	19.29	1.0	20	0	96.4	75 - 128	20.07	3.96	20	
n-Propylbenzene	19.4	1.0	20	0	97.0	76 - 126	20.32	4.65	20	
o-Xylene	19.04	1.0	20	0	95.2	78 - 122	19.43	2	20	
sec-Butylbenzene	19.33	1.0	20	0	96.6	77 - 126	20.59	6.33	20	
Styrene	19.39	1.0	20	0	96.9	78 - 123	19.63	1.27	20	
tert-Butylbenzene	19.5	1.0	20	0	97.5	78 - 124	20.57	5.36	20	
Tetrachloroethene	20.16	1.0	20	0	101	74 - 129	20.48	1.54	20	
Toluene	19.75	1.0	20	0	98.7	80 - 121	20.32	2.86	20	
trans-1,2-Dichloroethene	20.2	1.0	20	0	101	75 - 124	20.5	1.49	20	
trans-1,3-Dichloropropene	18.4	1.0	20	0	92.0	73 - 127	18.22	0.97	20	
Trichloroethene	19.73	1.0	20	0	98.7	79 - 123	20.01	1.4	20	
Trichlorofluoromethane	20.3	1.0	20	0	102	65 - 141	20.76	2.23	20	
Vinyl chloride	19.74	1.0	20	0	98.7	58 - 137	20.53	3.93	20	
Surr: 1,2-Dichloroethane-d4	*55.32*	*35*	*50*	*0*	*111*	*81 - 118*	*56.15*	*1.48*	*20*	
Surr: 4-Bromofluorobenzene	*55.86*	*35*	*50*	*0*	*112*	*85 - 114*	*55.67*	*0.34*	*20*	
Surr: Dibromofluoromethane	*54.96*	*35*	*50*	*0*	*110*	*80 - 119*	*56.68*	*3.08*	*20*	
Surr: Toluene-d8	*55.96*	*35*	*50*	*0*	*112*	*89 - 112*	*55.13*	*1.48*	*20*	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS24051959-14MS** Units: **ug/L** Analysis Date: **10-Jun-2024 13:48**
Client ID: **35AWW10_052824** Run ID: **VOA9_469054** SeqNo: **8062362** 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	15.68	1.0	20	0	78.4	78 - 124				
1,1,1-Trichloroethane	16.09	1.0	20	0	80.4	74 - 131				
1,1,2,2-Tetrachloroethane	15.76	1.0	20	0	78.8	71 - 121				
1,1,2-Trichloroethane	16.4	1.0	20	0	82.0	80 - 119				
1,1-Dichloroethane	16.6	1.0	20	0	83.0	77 - 125				
1,1-Dichloroethene	17.35	1.0	20	0	86.8	71 - 131				
1,1-Dichloropropene	16.46	1.0	20	0	82.3	78 - 125				
1,2,3-Trichlorobenzene	14.27	1.0	20	0	71.4	69 - 129				
1,2,3-Trichloropropane	14.66	1.0	20	0	73.3	73 - 122				
1,2,4-Trichlorobenzene	14.32	1.0	20	0	71.6	69 - 130				
1,2,4-Trimethylbenzene	14.09	1.0	20	0	70.5	76 - 124				S
1,2-Dibromo-3-chloropropane	14.39	1.0	20	0	71.9	62 - 128				
1,2-Dibromoethane	15.58	1.0	20	0	77.9	77 - 121				
1,2-Dichlorobenzene	15.83	1.0	20	0	79.1	80 - 119				S
1,2-Dichloroethane	15.87	1.0	20	0	79.4	73 - 128				
1,2-Dichloropropane	15.77	1.0	20	0	78.9	78 - 122				
1,3,5-Trimethylbenzene	15.78	1.0	20	0	78.9	75 - 124				
1,3-Dichlorobenzene	16.04	1.0	20	0	80.2	80 - 119				
1,3-Dichloropropane	15.81	1.0	20	0	79.1	80 - 119				S
1,4-Dichlorobenzene	16.2	1.0	20	0	81.0	79 - 118				
2,2-Dichloropropane	15.77	1.0	20	0	78.9	60 - 139				
2-Butanone	30.02	2.0	40	0	75.0	56 - 143				
2-Chlorotoluene	16.39	1.0	20	0	82.0	79 - 122				
2-Hexanone	33.41	2.0	40	0	83.5	57 - 139				
4-Chlorotoluene	16.08	1.0	20	0	80.4	78 - 122				
4-Isopropyltoluene	15.78	1.0	20	0	78.9	77 - 127				
4-Methyl-2-pentanone	31.62	2.0	40	0	79.1	67 - 130				
Acetone	25.36	2.0	40	0	63.4	39 - 160				
Benzene	16.17	1.0	20	0	80.9	79 - 120				
Bromobenzene	16.17	1.0	20	0	80.8	80 - 120				
Bromochloromethane	15.73	1.0	20	0	78.7	78 - 123				
Bromodichloromethane	14.31	1.0	20	0	71.6	79 - 125				S
Bromoform	13.82	1.0	20	0	69.1	66 - 130				
Bromomethane	16.87	1.0	20	0	84.3	53 - 141				

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS24051959-14MS** Units: **ug/L** Analysis Date: **10-Jun-2024 13:48**
Client ID: **35AWW10_052824** Run ID: **VOA9_469054** SeqNo: **8062362** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	33.11	2.0	40	0	82.8	64 - 133				
Carbon tetrachloride	15.7	1.0	20	0	78.5	72 - 136				
Chlorobenzene	16.46	1.0	20	0	82.3	82 - 118				
Chloroethane	16.96	1.0	20	0	84.8	60 - 138				
Chloroform	16.51	1.0	20	0	82.6	79 - 124				
Chloromethane	17.51	1.0	20	0	87.5	50 - 139				
cis-1,2-Dichloroethene	16.04	1.0	20	0	80.2	78 - 123				
cis-1,3-Dichloropropene	14.38	1.0	20	0	71.9	75 - 124				S
Dibromochloromethane	14.79	1.0	20	0	74.0	74 - 126				S
Dibromomethane	15.86	1.0	20	0	79.3	79 - 123				
Dichlorodifluoromethane	17.8	1.0	20	0	89.0	32 - 152				
Ethylbenzene	15.73	1.0	20	0	78.7	79 - 121				S
Hexachlorobutadiene	15.18	1.0	20	0	75.9	66 - 134				
Isopropylbenzene	16.37	1.0	20	0	81.8	72 - 131				
m,p-Xylene	31.82	2.0	40	0	79.5	80 - 121				S
Methylene chloride	15.98	2.0	20	0	79.9	74 - 124				
n-Butylbenzene	15.66	1.0	20	0	78.3	75 - 128				
n-Propylbenzene	16.31	1.0	20	0	81.6	76 - 126				
o-Xylene	15.55	1.0	20	0	77.8	78 - 122				S
sec-Butylbenzene	16.32	1.0	20	0	81.6	77 - 126				
Styrene	18.84	1.0	20	0	94.2	78 - 123				
tert-Butylbenzene	16.28	1.0	20	0	81.4	78 - 124				
Tetrachloroethene	16.93	1.0	20	0	84.7	74 - 129				
Toluene	16.55	1.0	20	0	82.8	80 - 121				
trans-1,2-Dichloroethene	17.01	1.0	20	0	85.1	75 - 124				
trans-1,3-Dichloropropene	13.93	1.0	20	0	69.7	73 - 127				S
Trichloroethene	16.63	1.0	20	0	83.2	79 - 123				
Trichlorofluoromethane	17.87	1.0	20	0	89.4	65 - 141				
Vinyl chloride	16.92	1.0	20	0	84.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*56.74*	*35*	*50*	*0*	*113*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*59.32*	*35*	*50*	*0*	*119*	*85 - 114*				S
Surr: Dibromofluoromethane	*56.51*	*35*	*50*	*0*	*113*	*80 - 119*				
Surr: Toluene-d8	*58.75*	*35*	*50*	*0*	*117*	*89 - 112*				S

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS24051959-14MSD** Units: **ug/L** Analysis Date: **10-Jun-2024 14:09**
Client ID: **35AWW10_052824** Run ID: **VOA9_469054** SeqNo: **8062363** 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	15.21	1.0	20	0	76.1	78 - 124	15.68	3.03	20	S
1,1,1-Trichloroethane	15.32	1.0	20	0	76.6	74 - 131	16.09	4.86	20	
1,1,2,2-Tetrachloroethane	15.71	1.0	20	0	78.6	71 - 121	15.76	0.294	20	
1,1,2-Trichloroethane	15.95	1.0	20	0	79.7	80 - 119	16.4	2.79	20	S
1,1-Dichloroethane	15.98	1.0	20	0	79.9	77 - 125	16.6	3.8	20	
1,1-Dichloroethene	16.96	1.0	20	0	84.8	71 - 131	17.35	2.26	20	
1,1-Dichloropropene	16.02	1.0	20	0	80.1	78 - 125	16.46	2.7	20	
1,2,3-Trichlorobenzene	14.82	1.0	20	0	74.1	69 - 129	14.27	3.77	20	
1,2,3-Trichloropropane	14.24	1.0	20	0	71.2	73 - 122	14.66	2.87	20	S
1,2,4-Trichlorobenzene	14.31	1.0	20	0	71.6	69 - 130	14.32	0.0412	20	
1,2,4-Trimethylbenzene	14.07	1.0	20	0	70.4	76 - 124	14.09	0.17	20	S
1,2-Dibromo-3-chloropropane	14.4	1.0	20	0	72.0	62 - 128	14.39	0.0855	20	
1,2-Dibromoethane	15.39	1.0	20	0	77.0	77 - 121	15.58	1.19	20	S
1,2-Dichlorobenzene	15.87	1.0	20	0	79.4	80 - 119	15.83	0.299	20	S
1,2-Dichloroethane	16.19	1.0	20	0	80.9	73 - 128	15.87	1.94	20	
1,2-Dichloropropane	15.69	1.0	20	0	78.4	78 - 122	15.77	0.514	20	
1,3,5-Trimethylbenzene	15.6	1.0	20	0	78.0	75 - 124	15.78	1.17	20	
1,3-Dichlorobenzene	15.69	1.0	20	0	78.5	80 - 119	16.04	2.22	20	S
1,3-Dichloropropane	15.39	1.0	20	0	76.9	80 - 119	15.81	2.74	20	S
1,4-Dichlorobenzene	15.91	1.0	20	0	79.5	79 - 118	16.2	1.84	20	
2,2-Dichloropropane	15.21	1.0	20	0	76.1	60 - 139	15.77	3.61	20	
2-Butanone	29.82	2.0	40	0	74.5	56 - 143	30.02	0.667	20	
2-Chlorotoluene	16.2	1.0	20	0	81.0	79 - 122	16.39	1.18	20	
2-Hexanone	33	2.0	40	0	82.5	57 - 139	33.41	1.21	20	
4-Chlorotoluene	15.62	1.0	20	0	78.1	78 - 122	16.08	2.94	20	
4-Isopropyltoluene	15.66	1.0	20	0	78.3	77 - 127	15.78	0.76	20	
4-Methyl-2-pentanone	30.59	2.0	40	0	76.5	67 - 130	31.62	3.31	20	
Acetone	22.71	2.0	40	0	56.8	39 - 160	25.36	11	20	
Benzene	16.04	1.0	20	0	80.2	79 - 120	16.17	0.796	20	
Bromobenzene	15.84	1.0	20	0	79.2	80 - 120	16.17	2.04	20	S
Bromochloromethane	16.26	1.0	20	0	81.3	78 - 123	15.73	3.33	20	
Bromodichloromethane	14.15	1.0	20	0	70.7	79 - 125	14.31	1.15	20	S
Bromoform	13.85	1.0	20	0	69.3	66 - 130	13.82	0.231	20	
Bromomethane	16.8	1.0	20	0	84.0	53 - 141	16.87	0.425	20	

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MSD Sample ID: **HS24051959-14MSD** Units: **ug/L** Analysis Date: **10-Jun-2024 14:09**
Client ID: **35AWW10_052824** Run ID: **VOA9_469054** SeqNo: **8062363** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	31.82	2.0	40	0	79.5	64 - 133	33.11	3.97	20	
Carbon tetrachloride	15.71	1.0	20	0	78.6	72 - 136	15.7	0.116	20	
Chlorobenzene	16.15	1.0	20	0	80.8	82 - 118	16.46	1.9	20	S
Chloroethane	16.31	1.0	20	0	81.5	60 - 138	16.96	3.92	20	
Chloroform	16.23	1.0	20	0	81.1	79 - 124	16.51	1.73	20	
Chloromethane	16.19	1.0	20	0	80.9	50 - 139	17.51	7.83	20	
cis-1,2-Dichloroethene	15.88	1.0	20	0	79.4	78 - 123	16.04	1.03	20	
cis-1,3-Dichloropropene	14.43	1.0	20	0	72.2	75 - 124	14.38	0.402	20	S
Dibromochloromethane	14.4	1.0	20	0	72.0	74 - 126	14.79	2.69	20	S
Dibromomethane	15.64	1.0	20	0	78.2	79 - 123	15.86	1.38	20	S
Dichlorodifluoromethane	17.2	1.0	20	0	86.0	32 - 152	17.8	3.44	20	
Ethylbenzene	14.95	1.0	20	0	74.7	79 - 121	15.73	5.1	20	S
Hexachlorobutadiene	14.45	1.0	20	0	72.2	66 - 134	15.18	4.97	20	
Isopropylbenzene	15.89	1.0	20	0	79.5	72 - 131	16.37	2.95	20	
m,p-Xylene	31.33	2.0	40	0	78.3	80 - 121	31.82	1.56	20	S
Methylene chloride	15.78	2.0	20	0	78.9	74 - 124	15.98	1.2	20	
n-Butylbenzene	15.36	1.0	20	0	76.8	75 - 128	15.66	1.96	20	
n-Propylbenzene	15.99	1.0	20	0	80.0	76 - 126	16.31	1.99	20	
o-Xylene	15.25	1.0	20	0	76.3	78 - 122	15.55	1.95	20	S
sec-Butylbenzene	15.92	1.0	20	0	79.6	77 - 126	16.32	2.43	20	
Styrene	16.49	1.0	20	0	82.4	78 - 123	18.84	13.3	20	
tert-Butylbenzene	16.07	1.0	20	0	80.3	78 - 124	16.28	1.34	20	
Tetrachloroethene	16.59	1.0	20	0	82.9	74 - 129	16.93	2.07	20	
Toluene	16.03	1.0	20	0	80.1	80 - 121	16.55	3.21	20	
trans-1,2-Dichloroethene	16.55	1.0	20	0	82.7	75 - 124	17.01	2.76	20	
trans-1,3-Dichloropropene	14.22	1.0	20	0	71.1	73 - 127	13.93	2.03	20	S
Trichloroethene	16.15	1.0	20	0	80.7	79 - 123	16.63	2.98	20	
Trichlorofluoromethane	17.37	1.0	20	0	86.9	65 - 141	17.87	2.83	20	
Vinyl chloride	16.59	1.0	20	0	83.0	58 - 137	16.92	1.96	20	
Surr: 1,2-Dichloroethane-d4	*56.09*	*35*	*50*	*0*	*112*	*81 - 118*	*56.74*	*1.15*	*20*	
Surr: 4-Bromofluorobenzene	*58.4*	*35*	*50*	*0*	*117*	*85 - 114*	*59.32*	*1.58*	*20*	S
Surr: Dibromofluoromethane	*55.52*	*35*	*50*	*0*	*111*	*80 - 119*	*56.51*	*1.76*	*20*	
Surr: Toluene-d8	*57.83*	*35*	*50*	*0*	*116*	*89 - 112*	*58.75*	*1.58*	*20*	S

The following samples were analyzed in this batch: HS24051959-14

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469280 (0) **Instrument: VOA7** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240612** Units: **ug/L** Analysis Date: **12-Jun-2024 17:26**
Client ID: Run ID: **VOA7_469280** SeqNo: **8067977** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,2-Dichloropropane	0	1.0								U
Surr: 1,2-Dichloroethane-d4	*55.8*	*35*	*50*	*0*	*112*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*48.58*	*35*	*50*	*0*	*97.2*	*85 - 114*				
Surr: Dibromofluoromethane	*56.06*	*35*	*50*	*0*	*112*	*80 - 119*				
Surr: Toluene-d8	*53.79*	*35*	*50*	*0*	*108*	*89 - 112*				

LCS Sample ID: **VLCSW-240612** Units: **ug/L** Analysis Date: **12-Jun-2024 16:40**
Client ID: Run ID: **VOA7_469280** SeqNo: **8067975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,2-Dichloropropane	18.8	1.0	20	0	94.0	60 - 139				
Surr: 1,2-Dichloroethane-d4	*51.13*	*35*	*50*	*0*	*102*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*50.7*	*35*	*50*	*0*	*101*	*85 - 114*				
Surr: Dibromofluoromethane	*49.54*	*35*	*50*	*0*	*99.1*	*80 - 119*				
Surr: Toluene-d8	*52.27*	*35*	*50*	*0*	*105*	*89 - 112*				

LCSD Sample ID: **VLSDW-240612** Units: **ug/L** Analysis Date: **12-Jun-2024 17:03**
Client ID: Run ID: **VOA7_469280** SeqNo: **8067976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,2-Dichloropropane	18.29	1.0	20	0	91.4	60 - 139	18.8	2.79	20	
Surr: 1,2-Dichloroethane-d4	*51.22*	*35*	*50*	*0*	*102*	*81 - 118*	*51.13*	*0.171*	*20*	
Surr: 4-Bromofluorobenzene	*51.55*	*35*	*50*	*0*	*103*	*85 - 114*	*50.7*	*1.66*	*20*	
Surr: Dibromofluoromethane	*49.24*	*35*	*50*	*0*	*98.5*	*80 - 119*	*49.54*	*0.621*	*20*	
Surr: Toluene-d8	*52.57*	*35*	*50*	*0*	*105*	*89 - 112*	*52.27*	*0.571*	*20*	

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: HS24051959

QC BATCH REPORT

Batch ID: R469280 (0) **Instrument: VOA7** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS24060214-10MS** Units: **ug/L** Analysis Date: **12-Jun-2024 19:20**
Client ID: Run ID: **VOA7_469280** SeqNo: **8067979** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,2-Dichloropropane	1653	100	2000	0	82.7	60 - 139				
Surr: 1,2-Dichloroethane-d4	*5847*	*3500*	*5000*	*0*	*117*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*5687*	*3500*	*5000*	*0*	*114*	*85 - 114*				
Surr: Dibromofluoromethane	*5798*	*3500*	*5000*	*0*	*116*	*80 - 119*				
Surr: Toluene-d8	*5825*	*3500*	*5000*	*0*	*116*	*89 - 112*				S

MSD Sample ID: **HS24060214-10MSD** Units: **ug/L** Analysis Date: **12-Jun-2024 19:43**
Client ID: Run ID: **VOA7_469280** SeqNo: **8067980** PrepDate: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2,2-Dichloropropane	2196	100	2000	0	110	60 - 139	1653	28.2	20	R
Surr: 1,2-Dichloroethane-d4	*5995*	*3500*	*5000*	*0*	*120*	*81 - 118*	*5847*	*2.5*	*20*	S
Surr: 4-Bromofluorobenzene	*5797*	*3500*	*5000*	*0*	*116*	*85 - 114*	*5687*	*1.92*	*20*	S
Surr: Dibromofluoromethane	*6077*	*3500*	*5000*	*0*	*122*	*80 - 119*	*5798*	*4.71*	*20*	S
Surr: Toluene-d8	*5995*	*3500*	*5000*	*0*	*120*	*89 - 112*	*5825*	*2.89*	*20*	S

The following samples were analyzed in this batch: HS24051959-05 HS24051959-06

Revision: 1

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP-58
WorkOrder: **HS24051959**

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

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arizona	AZ0793	27-May-2025
Arkansas	88-00356_2024	27-Mar-2025
California	2919; 2025	30-Apr-2025
Illinois	2000322023-11	31-Jul-2025
Kansas	E-10352 2023-2024	31-Jul-2024
Kentucky	123043	30-Apr-2025
Louisiana	03087 2023-2024	30-Jun-2025
Maine	2024017	23-Jun-2026
Michigan	9971	30-Apr-2025
North Carolina	624 - 2024	31-Dec-2024
Oklahoma	2023-140	31-Aug-2024
Pennsylvania	018	30-Jun-2025
Tennessee	04016	30-Apr-2025
Texas	T104704231 TX-C24-00130	30-Apr-2025
Utah	TX026932023-14	31-Jul-2024

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 03-Jul-24

Sample Receipt Checklist

Work Order ID: HS24051959 **Date/Time Received:** 30-May-2024 09:35

Client Name: Bhate Environmental **Received by:** Si Ma

Completed By: /S/ Armand Morgan (eSignature) 30-May-2024 20:59 (Date/Time) **Reviewed by:** /S/ Luis.Aguilar (eSignature) 31-May-2024 14:53 (Date/Time)

Matrices: W Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
VOA/TX1005/TX1006 Solids in hermetically sealed vials?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	3 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):	1.6UC/1.7C	IR 31
Cooler(s)/Kit(s):	BLUE	
Date/Time sample(s) sent to storage:	05/30/24 21:00	

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: Login Comments: Sample : 35AWW13_052824A @14:50 listed on COC but not found in cooler

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

RIGHT SOLUTIONS | RIGHT PARTNER

bhate

HS24051959

Bhate Environmental Associates, Inc.
LHAAP-58

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requ

Field Sample ID (20 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hh:mm)	Sample Depth (beginning - ending)	SA Code (1)	Sample Number (2)	Sample Matrix (4)	Number of containers	VOC	Dissolved Gases	TOC	Carbon Dioxide	Anions	Arsenic					Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35ATww15_052924	29 may 2024	0650	-	N		wb	3	X													
35ATww26_052924	29 may 2024	0730	-	N		wb	3	X													
35ATww05_052924	29 may 2024	0815	-	N		wb	3	X													
35ATww24_052924	29 may 2024	0855	-	N		wb	3	X													
35ATww09_052924	29 may 2024	0940	-	N		wb	4	X					X								
35ATww09_052924_fd	29 may 2024	0940	-	FD		wb	4	X					X								
35ATww21_052924	29 may 2024	1025	-	N		wb	3	X													
35ATww21_052924_ms	29 may 2024	1025	-	MS		wb	3	X													
35ATww21_052924_msd	29 may 2024	1025	-	SD		wb	3	X													
35ATww22_052924	29 may 2024	1110	-	N		wb	3														
35ATww12_052924	29 may 2024	1120	-	N		wb	3	X													

COMMENTS: STANDARD TAT Cooler # ww Temp ww 2nd 3.1 1.6 corr to 1

Custody Transfers Prior to Receipt by Laboratory

Relinquished by (Signed)	Date	Time	Received by (Signed)	Date	Time
1. Scott Beesinger	5/30/24	1430	1.		
2.			2.		
3.			3. SM	05/30/24	09:35

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No.:

_____ Method of Shipment: _____

_____ Fed _____ Ex _____ Airbill _____ Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston TX 77099 (281) 530-5656

ATTN: Dana Wagasey Lab Recipient: _____ Delivery Date/Time: _____

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-t) Samples, FD = Field Duplicate (-d) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-e) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-a)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 101099E1 in the Equipment Blank Lot Control

RIGHT SOLUTIONS | RIGHT PARTNER

bhate

Page: 01336054 of

HS24051959

Bhate Environmental Associates, Inc.
LHAAP-58

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requ

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Dissolved Gases	TOC	Carbon Dioxide	Anions	Arsenic					Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
03mw01_052824	28-may-2024	0730	-		N	wb	4	X					X								
35Amw08_052824	28-may-2024	0810	-		N	wb	4	X					X								
35Amw01_052824	28-may-2024	0850	-		N	wb	4	X					X								
35Amw13_052824	28-may-2024	1457			N	wb	3	X													
35Amw13_052824_c	28-may-2024	1450			FB	wb	3	X													
35Amw10_052824	28-may-2024	1530	-		N	wb	3	X													
35Amw10_052824_MS	28-may-2024	1530	-		MS	wb	3	X													
35Amw10_052824_MSD	28-may-2024	1530	-		SD	wb	3	X													
LHSmw06_052824	28-may-2024	1610	-		N	wb	4	X					X								
LHSmw06_052824_c	28-may-2024	1610	-		FD	wb	4	X					X								
35Amw16_052824	28-may-2024	1650	-		N	wb	3	X													

COMMENTS: STANDARD TAT Coolers Rec'd Temp 1.6 Date 3/ cf +0.1

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	5/24/24	1430	1.		
2.			2.		
3.			3. Sam Cox	5/24/24	09:35

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped _____ No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wagasey Lab Recipient: Delivery Date / Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

RIGHT SOLUTIONS | RIGHT PARTNER

bhate

01336055

HS24051959

Bhate Environmental Associates, Inc.

LHAAP-58

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205

Chain of Custody and Analytical Request

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code [2]	Sample Number [3]	Sample Matrix [4]	Number of containers	VOC	Dissolved Gases	TOC	Carbon Dioxide	Anions	Arsenic					Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
Trip Blank	24-May-2024		-	TB		W	2	X													
			-																		
			-																		
			-																		
			-																		
			-																		
			-																		
			-																		
			-																		

COMMENTS: STANDARD TAT Cooler # Blue Temp 4.6 BRN 5! CIP-10.1

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	5/24/24	1430	1.		
2.			2.		
3.			3. GM	05/30/24	09:35

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

_____ Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stanchiff Rd, Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dana Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

RIGHT SOLUTIONS | RIGHT PARTNER

ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 5/29/24 Time: 1430
Name: Scott Beesinger
Company: BHATE

Must Deliver Next Business Day
Time and Tempature Sensitive!

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PM8202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 14MAY24
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3755
DIMS: 26x14x14 IN

TO SAMPLE RECEIVING
ALS GROUP USA,CORP
10450 STANCLIFF RD.
SUITE 210
HOUSTON TX 77099
(281) 530-5868
REF: LHAAP-58=BO 100845-LA

RMA:

FedEx Express

FedEx
TRK# 6862 6805 6371

THU - 30 MAY AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX-US
IAH

RIGHT SOLUTIONS | RIGHT PARTNER

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 12, 2024

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS24052045**

Laboratory Results for: **LHAAP/ Site 58**

Dear Marcia Olive,

ALS Environmental received 6 sample(s) on May 31, 2024 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
Luis.Aguilar

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Work Order: HS24052045

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS24052045-01	35AWW17_053024	Groundwater		30-May-2024 07:55	31-May-2024 09:50	☐
HS24052045-02	35AWW25_053024	Groundwater		30-May-2024 10:10	31-May-2024 09:50	☐
HS24052045-03	35AWW04_053024	Groundwater		30-May-2024 10:20	31-May-2024 09:50	☐
HS24052045-04	35AWW14_053024	Groundwater		30-May-2024 10:30	31-May-2024 09:50	☐
HS24052045-05	35ASW03_053024	Groundwater		30-May-2024 10:40	31-May-2024 09:50	☐
HS24052045-06	Trip Blank	Water		30-May-2024 00:00	31-May-2024 09:50	☐

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: LHAAP/ Site 58
Work Order: HS24052045

GCMS Volatiles by Method SW8260

Batch ID: R468713

Sample ID: HS24051959-07MS

- MS and MSD are for an unrelated sample

Batch ID: R469054

Sample ID: HS24051959-14MS

- MS and MSD are for an unrelated sample

Sample ID: 35AWW17_053024 (HS24052045-01)

- One or more surrogate recoveries were above the upper control limits. No target analytes were detected in the sample. The high surrogate recoveries did not impact the non-detect results for target analytes. 1,2-Dichloroethane-d4 and Toluene-d8

Sample ID: 35AWW25_053024 (HS24052045-02)

- One or more surrogate recoveries were above the upper control limits. No target analytes were detected in the sample. The high surrogate recoveries did not impact the non-detect results for target analytes. 4-BFB and Toluene-d8

Sample ID: 35AWW04_053024 (HS24052045-03)

- One or more surrogate recoveries were above the upper control limits. No target analytes were detected in the sample. The high surrogate recoveries did not impact the non-detect results for target analytes. Toluene-d8

Sample ID: 35AWW14_053024 (HS24052045-04)

- One or more surrogate recoveries were above the upper control limits. No target analytes were detected in the sample. The high surrogate recoveries did not impact the non-detect results for target analytes. 1,2-Dichloroethane-d4 and Toluene-d8

Sample ID: 35ASW03_053024 (HS24052045-05)

- One or more surrogate recoveries were above the upper control limits. No target analytes were detected in the sample. The high surrogate recoveries did not impact the non-detect results for target analytes. Toluene-d8

Metals by Method SW6020A

Batch ID: 213120

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35AWW17_053024
Collection Date: 30-May-2024 07:55

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 14:52
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	10-Jun-2024 14:52
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	10-Jun-2024 14:52
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 14:52
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	10-Jun-2024 14:52
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35AWW17_053024
Collection Date: 30-May-2024 07:55

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 14:52
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 14:52
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 14:52
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 14:52
Surr: 1,2-Dichloroethane-d4	*119*	*S*		**0**	*81-118*	*%REC*	*1*	*10-Jun-2024 14:52*
Surr: 4-Bromofluorobenzene	*112*			**0**	*85-114*	*%REC*	*1*	*10-Jun-2024 14:52*
Surr: Dibromofluoromethane	*113*			**0**	*80-119*	*%REC*	*1*	*10-Jun-2024 14:52*
Surr: Toluene-d8	*116*	*S*		**0**	*89-112*	*%REC*	*1*	*10-Jun-2024 14:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35AWW25_053024
Collection Date: 30-May-2024 10:10

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 15:13
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	10-Jun-2024 15:13
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	10-Jun-2024 15:13
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 15:13
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	10-Jun-2024 15:13
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35AWW25_053024
Collection Date: 30-May-2024 10:10

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 15:13
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 15:13
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:13
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:13
Surr: 1,2-Dichloroethane-d4	*117*			**0**	*81-118*	*%REC*	*1*	*10-Jun-2024 15:13*
Surr: 4-Bromofluorobenzene	*115*	*S*		**0**	*85-114*	*%REC*	*1*	*10-Jun-2024 15:13*
Surr: Dibromofluoromethane	*112*			**0**	*80-119*	*%REC*	*1*	*10-Jun-2024 15:13*
Surr: Toluene-d8	*115*	*S*		**0**	*89-112*	*%REC*	*1*	*10-Jun-2024 15:13*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc. **ANALYTICAL REPORT**
Project: LHAAP/ Site 58 WorkOrder:HS24052045
Sample ID: 35AWW04_053024 Lab ID:HS24052045-03
Collection Date: 30-May-2024 10:20 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 15:35
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	10-Jun-2024 15:35
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	10-Jun-2024 15:35
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 15:35
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	10-Jun-2024 15:35
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35AWW04_053024
Collection Date: 30-May-2024 10:20

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C		**Method:SW8260**						Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 15:35
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 15:35
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:35
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:35
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*1*	*10-Jun-2024 15:35*
Surr: 4-Bromofluorobenzene	*114*			**0**	*85-114*	*%REC*	*1*	*10-Jun-2024 15:35*
Surr: Dibromofluoromethane	*111*			**0**	*80-119*	*%REC*	*1*	*10-Jun-2024 15:35*
Surr: Toluene-d8	*115*	*S*		**0**	*89-112*	*%REC*	*1*	*10-Jun-2024 15:35*
METALS BY ICPMS BY SW6020A		**Method:SW6020A**				Prep:SW3010A / 06-Jun-2024		Analyst: JC
Arsenic	**0.000778**	J	**0.000400**	**0.0100**	**0.00500**	**mg/L**	1	07-Jun-2024 11:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35AWW14_053024
Collection Date: 30-May-2024 10:30

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,1-Dichloroethane	**31**		**0.20**	**1.0**	**1.0**	**ug/L**	1	10-Jun-2024 15:56
1,1-Dichloroethene	**34**		**0.20**	**1.0**	**1.0**	**ug/L**	1	10-Jun-2024 15:56
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 15:56
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	10-Jun-2024 15:56
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	10-Jun-2024 15:56
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 15:56
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	10-Jun-2024 15:56
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35AWW14_053024
Collection Date: 30-May-2024 10:30

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
cis-1,2-Dichloroethene	**14**		**0.20**	**1.0**	**1.0**	**ug/L**	1	10-Jun-2024 15:56
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 15:56
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 15:56
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 15:56
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Trichloroethene	**28**		**0.20**	**1.0**	**1.0**	**ug/L**	1	10-Jun-2024 15:56
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 15:56
Surr: 1,2-Dichloroethane-d4	*119*	*S*		**0**	*81-118*	*%REC*	*1*	*10-Jun-2024 15:56*
Surr: 4-Bromofluorobenzene	*112*			**0**	*85-114*	*%REC*	*1*	*10-Jun-2024 15:56*
Surr: Dibromofluoromethane	*112*			**0**	*80-119*	*%REC*	*1*	*10-Jun-2024 15:56*
Surr: Toluene-d8	*115*	*S*		**0**	*89-112*	*%REC*	*1*	*10-Jun-2024 15:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35ASW03_053024
Collection Date: 30-May-2024 10:40

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 16:18
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	10-Jun-2024 16:18
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	10-Jun-2024 16:18
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 16:18
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	10-Jun-2024 16:18
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: 35ASW03_053024
Collection Date: 30-May-2024 10:40

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	10-Jun-2024 16:18
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	10-Jun-2024 16:18
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	10-Jun-2024 16:18
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	10-Jun-2024 16:18
Surr: 1,2-Dichloroethane-d4	*118*			**0**	*81-118*	*%REC*	*1*	*10-Jun-2024 16:18*
Surr: 4-Bromofluorobenzene	*110*			**0**	*85-114*	*%REC*	*1*	*10-Jun-2024 16:18*
Surr: Dibromofluoromethane	*111*			**0**	*80-119*	*%REC*	*1*	*10-Jun-2024 16:18*
Surr: Toluene-d8	*114*	*S*		**0**	*89-112*	*%REC*	*1*	*10-Jun-2024 16:18*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: Trip Blank
Collection Date: 30-May-2024 00:00

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
1,1,1,2-Tetrachloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,1,1-Trichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,1,2,2-Tetrachloroethane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,1,2-Trichloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,1-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,1-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,1-Dichloropropene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2,3-Trichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2,3-Trichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2,4-Trichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2,4-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2-Dibromo-3-chloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2-Dibromoethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2-Dichlorobenzene	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2-Dichloroethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,2-Dichloropropane	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,3,5-Trimethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,3-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,3-Dichloropropane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
1,4-Dichlorobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
2,2-Dichloropropane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 14:27
2-Chlorotoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	06-Jun-2024 14:27
4-Chlorotoluene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
4-Isopropyltoluene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	06-Jun-2024 14:27
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 14:27
Benzene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Bromobenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Bromochloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Bromodichloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Bromoform	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Bromomethane	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	06-Jun-2024 14:27
Carbon tetrachloride	1.0	U	0.50	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Chlorobenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Chloroethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Chloroform	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
Sample ID: Trip Blank
Collection Date: 30-May-2024 00:00

ANALYTICAL REPORT
WorkOrder:HS24052045
Lab ID:HS24052045-06
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: TS
Chloromethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
cis-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
cis-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Dibromochloromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Dibromomethane	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Dichlorodifluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Ethylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Hexachlorobutadiene	1.0	U	1.0	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Isopropylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	06-Jun-2024 14:27
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	06-Jun-2024 14:27
n-Butylbenzene	1.0	U	0.40	1.0	1.0	ug/L	1	06-Jun-2024 14:27
n-Propylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Naphthalene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
o-Xylene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
sec-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Styrene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
tert-Butylbenzene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Tetrachloroethene	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Toluene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
trans-1,2-Dichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
trans-1,3-Dichloropropene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Trichloroethene	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Trichlorofluoromethane	1.0	U	0.30	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Vinyl chloride	1.0	U	0.20	1.0	1.0	ug/L	1	06-Jun-2024 14:27
Surr: 1,2-Dichloroethane-d4	*107*			**0**	*81-118*	*%REC*	*1*	*06-Jun-2024 14:27*
Surr: 4-Bromofluorobenzene	*103*			**0**	*85-114*	*%REC*	*1*	*06-Jun-2024 14:27*
Surr: Dibromofluoromethane	*101*			**0**	*80-119*	*%REC*	*1*	*06-Jun-2024 14:27*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*06-Jun-2024 14:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

Weight / Prep Log

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

Batch ID: 213120 **Start Date:** 06 Jun 2024 12:30 **End Date:** 06 Jun 2024 12:30
Method: WATER - SW3010A **Prep Code:** 3010A

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS24052045-03		10 (mL)	10 (mL)	1	120 plastic HNO3

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 213120 (0)	**Test Name :** METALS BY ICPMS BY SW6020A				**Matrix:** Groundwater	
HS24052045-03	35AWW04_053024	30 May 2024 10:20		06 Jun 2024 12:30	07 Jun 2024 11:48	1
Batch ID: R468713 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Water	
HS24052045-06	Trip Blank	30 May 2024 00:00			06 Jun 2024 14:27	1
Batch ID: R469054 (0)	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C				**Matrix:** Groundwater	
HS24052045-01	35AWW17_053024	30 May 2024 07:55			10 Jun 2024 14:52	1
HS24052045-02	35AWW25_053024	30 May 2024 10:10			10 Jun 2024 15:13	1
HS24052045-03	35AWW04_053024	30 May 2024 10:20			10 Jun 2024 15:35	1
HS24052045-04	35AWW14_053024	30 May 2024 10:30			10 Jun 2024 15:56	1
HS24052045-05	35ASW03_053024	30 May 2024 10:40			10 Jun 2024 16:18	1

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: 213120 (0) **Instrument: ICPMS07** **Method: METALS BY ICPMS BY SW6020A**

MBLK Sample ID: **MBLK-213120** Units: **mg/L** Analysis Date: **07-Jun-2024 11:41**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053605** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0100	0.00500								U

LCS Sample ID: **LCS-213120** Units: **mg/L** Analysis Date: **07-Jun-2024 11:43**
Client ID: Run ID: **ICPMS07_468784** SeqNo: **8053606** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04841	0.00500	0.05	0	96.8	84 - 116				

MS Sample ID: **HS24052045-03MS** Units: **mg/L** Analysis Date: **07-Jun-2024 11:51**
Client ID: **35AWW04_053024** Run ID: **ICPMS07_468784** SeqNo: **8053609** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04828	0.00500	0.05	0.000778	95.0	84 - 116				

MSD Sample ID: **HS24052045-03MSD** Units: **mg/L** Analysis Date: **07-Jun-2024 11:53**
Client ID: **35AWW04_053024** Run ID: **ICPMS07_468784** SeqNo: **8053610** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04861	0.00500	0.05	0.000778	95.7	84 - 116	0.04828	0.683	20	

PDS Sample ID: **HS24052045-03PDS** Units: **mg/L** Analysis Date: **07-Jun-2024 11:56**
Client ID: **35AWW04_053024** Run ID: **ICPMS07_468784** SeqNo: **8053611** PrepDate: **06-Jun-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09788	0.00500	0.1	0.000778	97.1	80 - 120				

SD Sample ID: **HS24052045-03SD** Units: **mg/L** Analysis Date: **07-Jun-2024 11:46**
Client ID: **35AWW04_053024** Run ID: **ICPMS07_468784** SeqNo: **8053607** PrepDate: **06-Jun-2024** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	0.0500	0.0250					0.000778	0	10	U

The following samples were analyzed in this batch: HS24052045-03

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 12:16**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051733** 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	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	1.0	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 12:16**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051733** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*53.89*	*35*	*50*	*0*	*108*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*52.12*	*35*	*50*	*0*	*104*	*85 - 114*				
Surr: Dibromofluoromethane	*50.98*	*35*	*50*	*0*	*102*	*80 - 119*				
Surr: Toluene-d8	*54.25*	*35*	*50*	*0*	*108*	*89 - 112*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCS Sample ID: **VLCSW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:12**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051731** 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	17.83	1.0	20	0	89.2	78 - 124				
1,1,1-Trichloroethane	18.79	1.0	20	0	93.9	74 - 131				
1,1,2,2-Tetrachloroethane	18.7	1.0	20	0	93.5	71 - 121				
1,1,2-Trichloroethane	19.26	1.0	20	0	96.3	80 - 119				
1,1-Dichloroethane	19.38	1.0	20	0	96.9	77 - 125				
1,1-Dichloroethene	19.5	1.0	20	0	97.5	71 - 131				
1,1-Dichloropropene	18.88	1.0	20	0	94.4	78 - 125				
1,2,3-Trichlorobenzene	19.33	1.0	20	0	96.7	69 - 129				
1,2,3-Trichloropropane	18.11	1.0	20	0	90.6	73 - 122				
1,2,4-Trichlorobenzene	19.15	1.0	20	0	95.8	69 - 130				
1,2,4-Trimethylbenzene	20.56	1.0	20	0	103	76 - 124				
1,2-Dibromo-3-chloropropane	16.66	1.0	20	0	83.3	62 - 128				
1,2-Dibromoethane	18.15	1.0	20	0	90.8	77 - 121				
1,2-Dichlorobenzene	19.56	1.0	20	0	97.8	80 - 119				
1,2-Dichloroethane	18.95	1.0	20	0	94.7	73 - 128				
1,2-Dichloropropane	18.58	1.0	20	0	92.9	78 - 122				
1,3,5-Trimethylbenzene	21.04	1.0	20	0	105	75 - 124				
1,3-Dichlorobenzene	18.73	1.0	20	0	93.7	80 - 119				
1,3-Dichloropropane	18.25	1.0	20	0	91.3	80 - 119				
1,4-Dichlorobenzene	19.84	1.0	20	0	99.2	79 - 118				
2,2-Dichloropropane	18.94	1.0	20	0	94.7	60 - 139				
2-Butanone	38.35	2.0	40	0	95.9	56 - 143				
2-Chlorotoluene	19.28	1.0	20	0	96.4	79 - 122				
2-Hexanone	37.64	2.0	40	0	94.1	57 - 139				
4-Chlorotoluene	19.38	1.0	20	0	96.9	78 - 122				
4-Isopropyltoluene	21.07	1.0	20	0	105	77 - 127				
4-Methyl-2-pentanone	33.7	2.0	40	0	84.3	67 - 130				
Acetone	37.74	2.0	40	0	94.4	39 - 160				
Benzene	19.32	1.0	20	0	96.6	79 - 120				
Bromobenzene	19.64	1.0	20	0	98.2	80 - 120				
Bromochloromethane	19.46	1.0	20	0	97.3	78 - 123				
Bromodichloromethane	16.6	1.0	20	0	83.0	79 - 125				
Bromoform	15.87	1.0	20	0	79.4	66 - 130				
Bromomethane	21.49	1.0	20	0	107	53 - 141				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:12**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051731** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	37.28	2.0	40	0	93.2	64 - 133				
Carbon tetrachloride	17.97	1.0	20	0	89.9	72 - 136				
Chlorobenzene	19.44	1.0	20	0	97.2	82 - 118				
Chloroethane	20.21	1.0	20	0	101	60 - 138				
Chloroform	18.05	1.0	20	0	90.2	79 - 124				
Chloromethane	20.08	1.0	20	0	100	50 - 139				
cis-1,2-Dichloroethene	19.11	1.0	20	0	95.5	78 - 123				
cis-1,3-Dichloropropene	17.03	1.0	20	0	85.1	75 - 124				
Dibromochloromethane	16.85	1.0	20	0	84.3	74 - 126				
Dibromomethane	18.81	1.0	20	0	94.0	79 - 123				
Dichlorodifluoromethane	21.56	1.0	20	0	108	32 - 152				
Ethylbenzene	18.74	1.0	20	0	93.7	79 - 121				
Hexachlorobutadiene	20.47	1.0	20	0	102	66 - 134				
Isopropylbenzene	20.35	1.0	20	0	102	72 - 131				
m,p-Xylene	38.75	2.0	40	0	96.9	80 - 121				
Methylene chloride	19.32	2.0	20	0	96.6	74 - 124				
Naphthalene	17.62	1.0	20	0	88.1	61 - 128				
n-Butylbenzene	20.03	1.0	20	0	100	75 - 128				
n-Propylbenzene	20.04	1.0	20	0	100	76 - 126				
o-Xylene	19.12	1.0	20	0	95.6	78 - 122				
sec-Butylbenzene	21.13	1.0	20	0	106	77 - 126				
Styrene	19.42	1.0	20	0	97.1	78 - 123				
tert-Butylbenzene	20.65	1.0	20	0	103	78 - 124				
Tetrachloroethene	19.31	1.0	20	0	96.5	74 - 129				
Toluene	18.75	1.0	20	0	93.8	80 - 121				
trans-1,2-Dichloroethene	19.65	1.0	20	0	98.2	75 - 124				
trans-1,3-Dichloropropene	16.34	1.0	20	0	81.7	73 - 127				
Trichloroethene	18.39	1.0	20	0	91.9	79 - 123				
Trichlorofluoromethane	20.19	1.0	20	0	101	65 - 141				
Vinyl chloride	19.96	1.0	20	0	99.8	58 - 137				
Surr: 1,2-Dichloroethane-d4	*52.45*	*35*	*50*	*0*	*105*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.8*	*35*	*50*	*0*	*112*	*85 - 114*				
Surr: Dibromofluoromethane	*52.92*	*35*	*50*	*0*	*106*	*80 - 119*				
Surr: Toluene-d8	*54.56*	*35*	*50*	*0*	*109*	*89 - 112*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCSD Sample ID: **VLCSDW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:33**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051732** 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	16.64	1.0	20	0	83.2	78 - 124	17.83	6.92	20	
1,1,1-Trichloroethane	17.43	1.0	20	0	87.1	74 - 131	18.79	7.49	20	
1,1,2,2-Tetrachloroethane	17.82	1.0	20	0	89.1	71 - 121	18.7	4.83	20	
1,1,2-Trichloroethane	18.14	1.0	20	0	90.7	80 - 119	19.26	6.03	20	
1,1-Dichloroethane	17.59	1.0	20	0	88.0	77 - 125	19.38	9.69	20	
1,1-Dichloroethene	17.45	1.0	20	0	87.2	71 - 131	19.5	11.1	20	
1,1-Dichloropropene	16.83	1.0	20	0	84.1	78 - 125	18.88	11.5	20	
1,2,3-Trichlorobenzene	17.41	1.0	20	0	87.1	69 - 129	19.33	10.4	20	
1,2,3-Trichloropropane	17.27	1.0	20	0	86.3	73 - 122	18.11	4.79	20	
1,2,4-Trichlorobenzene	17.36	1.0	20	0	86.8	69 - 130	19.15	9.8	20	
1,2,4-Trimethylbenzene	18.48	1.0	20	0	92.4	76 - 124	20.56	10.7	20	
1,2-Dibromo-3-chloropropane	15.58	1.0	20	0	77.9	62 - 128	16.66	6.67	20	
1,2-Dibromoethane	17.47	1.0	20	0	87.3	77 - 121	18.15	3.85	20	
1,2-Dichlorobenzene	18.4	1.0	20	0	92.0	80 - 119	19.56	6.1	20	
1,2-Dichloroethane	17.88	1.0	20	0	89.4	73 - 128	18.95	5.77	20	
1,2-Dichloropropane	17.08	1.0	20	0	85.4	78 - 122	18.58	8.45	20	
1,3,5-Trimethylbenzene	19.24	1.0	20	0	96.2	75 - 124	21.04	8.96	20	
1,3-Dichlorobenzene	17.49	1.0	20	0	87.4	80 - 119	18.73	6.88	20	
1,3-Dichloropropane	17.85	1.0	20	0	89.3	80 - 119	18.25	2.21	20	
1,4-Dichlorobenzene	18.51	1.0	20	0	92.5	79 - 118	19.84	6.93	20	
2,2-Dichloropropane	16.7	1.0	20	0	83.5	60 - 139	18.94	12.6	20	
2-Butanone	35.86	2.0	40	0	89.7	56 - 143	38.35	6.71	20	
2-Chlorotoluene	18.02	1.0	20	0	90.1	79 - 122	19.28	6.77	20	
2-Hexanone	36.25	2.0	40	0	90.6	57 - 139	37.64	3.77	20	
4-Chlorotoluene	18.06	1.0	20	0	90.3	78 - 122	19.38	7.05	20	
4-Isopropyltoluene	19.21	1.0	20	0	96.1	77 - 127	21.07	9.22	20	
4-Methyl-2-pentanone	33.2	2.0	40	0	83.0	67 - 130	33.7	1.49	20	
Acetone	38.98	2.0	40	0	97.4	39 - 160	37.74	3.21	20	
Benzene	17.78	1.0	20	0	88.9	79 - 120	19.32	8.32	20	
Bromobenzene	18.27	1.0	20	0	91.3	80 - 120	19.64	7.25	20	
Bromochloromethane	17.93	1.0	20	0	89.6	78 - 123	19.46	8.19	20	
Bromodichloromethane	16.17	1.0	20	0	80.9	79 - 125	16.6	2.6	20	
Bromoform	15.12	1.0	20	0	75.6	66 - 130	15.87	4.85	20	
Bromomethane	19.64	1.0	20	0	98.2	53 - 141	21.49	9.02	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCSD Sample ID: **VLCSDW-240606** Units: **ug/L** Analysis Date: **06-Jun-2024 11:33**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051732** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	33.72	2.0	40	0	84.3	64 - 133	37.28	10	20	
Carbon tetrachloride	16.63	1.0	20	0	83.2	72 - 136	17.97	7.75	20	
Chlorobenzene	18.43	1.0	20	0	92.1	82 - 118	19.44	5.34	20	
Chloroethane	17.67	1.0	20	0	88.4	60 - 138	20.21	13.4	20	
Chloroform	16.55	1.0	20	0	82.7	79 - 124	18.05	8.67	20	
Chloromethane	18.06	1.0	20	0	90.3	50 - 139	20.08	10.6	20	
cis-1,2-Dichloroethene	18.14	1.0	20	0	90.7	78 - 123	19.11	5.18	20	
cis-1,3-Dichloropropene	16.3	1.0	20	0	81.5	75 - 124	17.03	4.39	20	
Dibromochloromethane	16.31	1.0	20	0	81.6	74 - 126	16.85	3.27	20	
Dibromomethane	17.69	1.0	20	0	88.4	79 - 123	18.81	6.13	20	
Dichlorodifluoromethane	19.63	1.0	20	0	98.1	32 - 152	21.56	9.37	20	
Ethylbenzene	17.82	1.0	20	0	89.1	79 - 121	18.74	5	20	
Hexachlorobutadiene	18.23	1.0	20	0	91.2	66 - 134	20.47	11.6	20	
Isopropylbenzene	19.31	1.0	20	0	96.6	72 - 131	20.35	5.24	20	
m,p-Xylene	36.71	2.0	40	0	91.8	80 - 121	38.75	5.4	20	
Methylene chloride	18.04	2.0	20	0	90.2	74 - 124	19.32	6.89	20	
Naphthalene	16.46	1.0	20	0	82.3	61 - 128	17.62	6.84	20	
n-Butylbenzene	18.54	1.0	20	0	92.7	75 - 128	20.03	7.74	20	
n-Propylbenzene	18.42	1.0	20	0	92.1	76 - 126	20.04	8.44	20	
o-Xylene	18.16	1.0	20	0	90.8	78 - 122	19.12	5.11	20	
sec-Butylbenzene	19.49	1.0	20	0	97.4	77 - 126	21.13	8.1	20	
Styrene	18.58	1.0	20	0	92.9	78 - 123	19.42	4.47	20	
tert-Butylbenzene	18.64	1.0	20	0	93.2	78 - 124	20.65	10.2	20	
Tetrachloroethene	17.81	1.0	20	0	89.0	74 - 129	19.31	8.06	20	
Toluene	17.42	1.0	20	0	87.1	80 - 121	18.75	7.36	20	
trans-1,2-Dichloroethene	18.04	1.0	20	0	90.2	75 - 124	19.65	8.55	20	
trans-1,3-Dichloropropene	15.53	1.0	20	0	77.6	73 - 127	16.34	5.07	20	
Trichloroethene	17.12	1.0	20	0	85.6	79 - 123	18.39	7.11	20	
Trichlorofluoromethane	18.1	1.0	20	0	90.5	65 - 141	20.19	10.9	20	
Vinyl chloride	17.36	1.0	20	0	86.8	58 - 137	19.96	13.9	20	
Surr: 1,2-Dichloroethane-d4	*51.3*	*35*	*50*	*0*	*103*	*81 - 118*	*52.45*	*2.21*	*20*	
Surr: 4-Bromofluorobenzene	*55.46*	*35*	*50*	*0*	*111*	*85 - 114*	*55.8*	*0.622*	*20*	
Surr: Dibromofluoromethane	*50.86*	*35*	*50*	*0*	*102*	*80 - 119*	*52.92*	*3.97*	*20*	
Surr: Toluene-d8	*54.49*	*35*	*50*	*0*	*109*	*89 - 112*	*54.56*	*0.125*	*20*	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS24051959-07MS** Units: **ug/L** Analysis Date: **06-Jun-2024 12:59**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051735** 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	15.26	1.0	20	0	76.3	78 - 124				S
1,1,1-Trichloroethane	16.47	1.0	20	0	82.3	74 - 131				
1,1,2,2-Tetrachloroethane	15.72	1.0	20	0	78.6	71 - 121				
1,1,2-Trichloroethane	15.91	1.0	20	0	79.6	80 - 119				S
1,1-Dichloroethane	20.68	1.0	20	4.004	83.4	77 - 125				
1,1-Dichloroethene	21.23	1.0	20	3.558	88.4	71 - 131				
1,1-Dichloropropene	15.96	1.0	20	0	79.8	78 - 125				
1,2,3-Trichlorobenzene	16.23	1.0	20	0	81.1	69 - 129				
1,2,3-Trichloropropane	15.74	1.0	20	0	78.7	73 - 122				
1,2,4-Trichlorobenzene	16.64	1.0	20	0	83.2	69 - 130				
1,2,4-Trimethylbenzene	17.79	1.0	20	0	89.0	76 - 124				
1,2-Dibromo-3-chloropropane	15.48	1.0	20	0	77.4	62 - 128				
1,2-Dibromoethane	14.92	1.0	20	0	74.6	77 - 121				S
1,2-Dichlorobenzene	17.39	1.0	20	0	87.0	80 - 119				
1,2-Dichloroethane	15.72	1.0	20	0	78.6	73 - 128				
1,2-Dichloropropane	15.41	1.0	20	0	77.0	78 - 122				S
1,3,5-Trimethylbenzene	18.69	1.0	20	0	93.5	75 - 124				
1,3-Dichlorobenzene	16.3	1.0	20	0	81.5	80 - 119				
1,3-Dichloropropane	15.48	1.0	20	0	77.4	80 - 119				S
1,4-Dichlorobenzene	17.69	1.0	20	0	88.4	79 - 118				
2,2-Dichloropropane	15.7	1.0	20	0	78.5	60 - 139				
2-Butanone	31.88	2.0	40	0	79.7	56 - 143				
2-Chlorotoluene	17.28	1.0	20	0	86.4	79 - 122				
2-Hexanone	35.7	2.0	40	0	89.3	57 - 139				
4-Chlorotoluene	17.5	1.0	20	0	87.5	78 - 122				
4-Isopropyltoluene	19.48	1.0	20	0	97.4	77 - 127				
4-Methyl-2-pentanone	31.09	2.0	40	0	77.7	67 - 130				
Acetone	30.52	2.0	40	0	76.3	39 - 160				
Benzene	16.11	1.0	20	0	80.5	79 - 120				
Bromobenzene	16.85	1.0	20	0	84.2	80 - 120				
Bromochloromethane	15.82	1.0	20	0	79.1	78 - 123				
Bromodichloromethane	13.83	1.0	20	0	69.2	79 - 125				S
Bromoform	13.67	1.0	20	0	68.4	66 - 130				
Bromomethane	16.83	1.0	20	0	84.2	53 - 141				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

MS Sample ID: **HS24051959-07MS** Units: **ug/L** Analysis Date: **06-Jun-2024 12:59**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051735** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	30.47	2.0	40	0	76.2	64 - 133				
Carbon tetrachloride	15.84	1.0	20	0	79.2	72 - 136				
Chlorobenzene	16.39	1.0	20	0	82.0	82 - 118				S
Chloroethane	16.45	1.0	20	0	82.2	60 - 138				
Chloroform	15.13	1.0	20	0	75.7	79 - 124				S
Chloromethane	17.14	1.0	20	0	85.7	50 - 139				
cis-1,2-Dichloroethene	16.75	1.0	20	1.081	78.4	78 - 123				
cis-1,3-Dichloropropene	13.78	1.0	20	0	68.9	75 - 124				S
Dibromochloromethane	14.07	1.0	20	0	70.4	74 - 126				S
Dibromomethane	15.26	1.0	20	0	76.3	79 - 123				S
Dichlorodifluoromethane	19.59	1.0	20	0	98.0	32 - 152				
Ethylbenzene	16.79	1.0	20	0	83.9	79 - 121				
Hexachlorobutadiene	17.62	1.0	20	0	88.1	66 - 134				
Isopropylbenzene	18.8	1.0	20	0	94.0	72 - 131				
m,p-Xylene	34.58	2.0	40	0	86.5	80 - 121				
Methylene chloride	15.72	2.0	20	0	78.6	74 - 124				
Naphthalene	14.66	1.0	20	0	73.3	61 - 128				
n-Butylbenzene	18.28	1.0	20	0	91.4	75 - 128				
n-Propylbenzene	18.96	1.0	20	0	94.8	76 - 126				
o-Xylene	17.34	1.0	20	0	86.7	78 - 122				
sec-Butylbenzene	20.03	1.0	20	0	100	77 - 126				
Styrene	16.59	1.0	20	0	82.9	78 - 123				
tert-Butylbenzene	19.27	1.0	20	0	96.4	78 - 124				
Tetrachloroethene	18.22	1.0	20	0	91.1	74 - 129				
Toluene	16.07	1.0	20	0	80.3	80 - 121				
trans-1,2-Dichloroethene	16.3	1.0	20	0	81.5	75 - 124				
trans-1,3-Dichloropropene	13.46	1.0	20	0	67.3	73 - 127				S
Trichloroethene	16.48	1.0	20	0.7715	78.5	79 - 123				S
Trichlorofluoromethane	17.67	1.0	20	0	88.3	65 - 141				
Vinyl chloride	17.74	1.0	20	0	88.7	58 - 137				
Surr: 1,2-Dichloroethane-d4	*53.03*	*35*	*50*	*0*	*106*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.38*	*35*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*51.79*	*35*	*50*	*0*	*104*	*80 - 119*				
Surr: Toluene-d8	*54.39*	*35*	*50*	*0*	*109*	*89 - 112*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24051959-07MSD** Units: **ug/L** Analysis Date: **06-Jun-2024 13:20**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051736** 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	14.62	1.0	20	0	73.1	78 - 124	15.26	4.26	20	S
1,1,1-Trichloroethane	15.77	1.0	20	0	78.8	74 - 131	16.47	4.35	20	
1,1,2,2-Tetrachloroethane	16.07	1.0	20	0	80.3	71 - 121	15.72	2.18	20	
1,1,2-Trichloroethane	15.98	1.0	20	0	79.9	80 - 119	15.91	0.415	20	S
1,1-Dichloroethane	20.27	1.0	20	4.004	81.3	77 - 125	20.68	2.02	20	
1,1-Dichloroethene	20.22	1.0	20	3.558	83.3	71 - 131	21.23	4.87	20	
1,1-Dichloropropene	15.63	1.0	20	0	78.2	78 - 125	15.96	2.04	20	
1,2,3-Trichlorobenzene	16.51	1.0	20	0	82.6	69 - 129	16.23	1.75	20	
1,2,3-Trichloropropane	15.87	1.0	20	0	79.4	73 - 122	15.74	0.849	20	
1,2,4-Trichlorobenzene	16.74	1.0	20	0	83.7	69 - 130	16.64	0.609	20	
1,2,4-Trimethylbenzene	17.84	1.0	20	0	89.2	76 - 124	17.79	0.288	20	
1,2-Dibromo-3-chloropropane	15.36	1.0	20	0	76.8	62 - 128	15.48	0.801	20	
1,2-Dibromoethane	14.98	1.0	20	0	74.9	77 - 121	14.92	0.421	20	S
1,2-Dichlorobenzene	17.54	1.0	20	0	87.7	80 - 119	17.39	0.869	20	
1,2-Dichloroethane	15.94	1.0	20	0	79.7	73 - 128	15.72	1.43	20	
1,2-Dichloropropane	15.04	1.0	20	0	75.2	78 - 122	15.41	2.41	20	S
1,3,5-Trimethylbenzene	18.77	1.0	20	0	93.8	75 - 124	18.69	0.394	20	
1,3-Dichlorobenzene	16.45	1.0	20	0	82.3	80 - 119	16.3	0.901	20	
1,3-Dichloropropane	15.67	1.0	20	0	78.4	80 - 119	15.48	1.19	20	S
1,4-Dichlorobenzene	17.31	1.0	20	0	86.6	79 - 118	17.69	2.13	20	
2,2-Dichloropropane	15.15	1.0	20	0	75.8	60 - 139	15.7	3.53	20	
2-Butanone	31.86	2.0	40	0	79.6	56 - 143	31.88	0.0583	20	
2-Chlorotoluene	17.11	1.0	20	0	85.6	79 - 122	17.28	0.98	20	
2-Hexanone	35.76	2.0	40	0	89.4	57 - 139	35.7	0.172	20	
4-Chlorotoluene	17.07	1.0	20	0	85.3	78 - 122	17.5	2.48	20	
4-Isopropyltoluene	19.2	1.0	20	0	96.0	77 - 127	19.48	1.44	20	
4-Methyl-2-pentanone	31.27	2.0	40	0	78.2	67 - 130	31.09	0.577	20	
Acetone	28.78	2.0	40	0	71.9	39 - 160	30.52	5.88	20	
Benzene	15.82	1.0	20	0	79.1	79 - 120	16.11	1.81	20	
Bromobenzene	16.46	1.0	20	0	82.3	80 - 120	16.85	2.36	20	
Bromochloromethane	15.26	1.0	20	0	76.3	78 - 123	15.82	3.65	20	S
Bromodichloromethane	13.55	1.0	20	0	67.8	79 - 125	13.83	2.06	20	S
Bromoform	13.83	1.0	20	0	69.2	66 - 130	13.67	1.15	20	
Bromomethane	16.39	1.0	20	0	82.0	53 - 141	16.83	2.63	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R468713 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24051959-07MSD** Units: **ug/L** Analysis Date: **06-Jun-2024 13:20**
Client ID: Run ID: **VOA9_468713** SeqNo: **8051736** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	29.45	2.0	40	0	73.6	64 - 133	30.47	3.4	20	
Carbon tetrachloride	15.61	1.0	20	0	78.0	72 - 136	15.84	1.51	20	
Chlorobenzene	16.06	1.0	20	0	80.3	82 - 118	16.39	2.02	20	S
Chloroethane	16.35	1.0	20	0	81.7	60 - 138	16.45	0.59	20	
Chloroform	14.62	1.0	20	0	73.1	79 - 124	15.13	3.48	20	S
Chloromethane	16.74	1.0	20	0	83.7	50 - 139	17.14	2.36	20	
cis-1,2-Dichloroethene	16.51	1.0	20	1.081	77.2	78 - 123	16.75	1.44	20	S
cis-1,3-Dichloropropene	13.6	1.0	20	0	68.0	75 - 124	13.78	1.25	20	S
Dibromochloromethane	14.02	1.0	20	0	70.1	74 - 126	14.07	0.354	20	S
Dibromomethane	15.07	1.0	20	0	75.4	79 - 123	15.26	1.24	20	S
Dichlorodifluoromethane	18.59	1.0	20	0	92.9	32 - 152	19.59	5.25	20	
Ethylbenzene	16.73	1.0	20	0	83.6	79 - 121	16.79	0.359	20	
Hexachlorobutadiene	17.19	1.0	20	0	86.0	66 - 134	17.62	2.47	20	
Isopropylbenzene	18.86	1.0	20	0	94.3	72 - 131	18.8	0.328	20	
m,p-Xylene	34.5	2.0	40	0	86.3	80 - 121	34.58	0.223	20	
Methylene chloride	15	2.0	20	0	75.0	74 - 124	15.72	4.72	20	
Naphthalene	15.33	1.0	20	0	76.6	61 - 128	14.66	4.49	20	
n-Butylbenzene	18.18	1.0	20	0	90.9	75 - 128	18.28	0.536	20	
n-Propylbenzene	18.25	1.0	20	0	91.2	76 - 126	18.96	3.82	20	
o-Xylene	17.04	1.0	20	0	85.2	78 - 122	17.34	1.75	20	
sec-Butylbenzene	19.61	1.0	20	0	98.1	77 - 126	20.03	2.09	20	
Styrene	16.66	1.0	20	0	83.3	78 - 123	16.59	0.438	20	
tert-Butylbenzene	18.88	1.0	20	0	94.4	78 - 124	19.27	2.06	20	
Tetrachloroethene	17.85	1.0	20	0	89.3	74 - 129	18.22	2.03	20	
Toluene	15.91	1.0	20	0	79.6	80 - 121	16.07	0.986	20	S
trans-1,2-Dichloroethene	16.08	1.0	20	0	80.4	75 - 124	16.3	1.37	20	
trans-1,3-Dichloropropene	13.6	1.0	20	0	68.0	73 - 127	13.46	1.06	20	S
Trichloroethene	16.29	1.0	20	0.7715	77.6	79 - 123	16.48	1.18	20	S
Trichlorofluoromethane	17.07	1.0	20	0	85.4	65 - 141	17.67	3.44	20	
Vinyl chloride	16.91	1.0	20	0	84.5	58 - 137	17.74	4.79	20	
Surr: 1,2-Dichloroethane-d4	*52.56*	*35*	*50*	*0*	*105*	*81 - 118*	*53.03*	*0.88*	*20*	
Surr: 4-Bromofluorobenzene	*56.46*	*35*	*50*	*0*	*113*	*85 - 114*	*55.38*	*1.93*	*20*	
Surr: Dibromofluoromethane	*51.79*	*35*	*50*	*0*	*104*	*80 - 119*	*51.79*	*0*	*20*	
Surr: Toluene-d8	*54.73*	*35*	*50*	*0*	*109*	*89 - 112*	*54.39*	*0.621*	*20*	

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP/ Site 58
WorkOrder:	HS24052045

QC BATCH REPORT

Batch ID:	**R468713 (0)**	**Instrument:**	**VOA9**	**Method:**	**VOLATILES ORGANICS BY METHOD 8260C**

The following samples were analyzed in this batch: HS24052045-06

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 11:13**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062360** 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	1.0	1.0								U
1,1,1-Trichloroethane	1.0	1.0								U
1,1,2,2-Tetrachloroethane	1.0	1.0								U
1,1,2-Trichloroethane	1.0	1.0								U
1,1-Dichloroethane	1.0	1.0								U
1,1-Dichloroethene	1.0	1.0								U
1,1-Dichloropropene	1.0	1.0								U
1,2,3-Trichlorobenzene	1.0	1.0								U
1,2,3-Trichloropropane	1.0	1.0								U
1,2,4-Trichlorobenzene	1.0	1.0								U
1,2,4-Trimethylbenzene	1.0	1.0								U
1,2-Dibromo-3-chloropropane	1.0	1.0								U
1,2-Dibromoethane	1.0	1.0								U
1,2-Dichlorobenzene	1.0	1.0								U
1,2-Dichloroethane	1.0	1.0								U
1,2-Dichloropropane	1.0	1.0								U
1,3,5-Trimethylbenzene	1.0	1.0								U
1,3-Dichlorobenzene	1.0	1.0								U
1,3-Dichloropropane	1.0	1.0								U
1,4-Dichlorobenzene	1.0	1.0								U
2,2-Dichloropropane	1.0	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	1.0	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	1.0	1.0								U
4-Isopropyltoluene	1.0	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	1.0	1.0								U
Bromobenzene	1.0	1.0								U
Bromochloromethane	1.0	1.0								U
Bromodichloromethane	1.0	1.0								U
Bromoform	1.0	1.0								U
Bromomethane	1.0	1.0								U

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MBLK Sample ID: **VBLKW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 11:13**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062360** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	1.0	1.0								U
Chlorobenzene	1.0	1.0								U
Chloroethane	1.0	1.0								U
Chloroform	1.0	1.0								U
Chloromethane	1.0	1.0								U
cis-1,2-Dichloroethene	1.0	1.0								U
cis-1,3-Dichloropropene	1.0	1.0								U
Dibromochloromethane	1.0	1.0								U
Dibromomethane	1.0	1.0								U
Dichlorodifluoromethane	1.0	1.0								U
Ethylbenzene	1.0	1.0								U
Hexachlorobutadiene	1.0	1.0								U
Isopropylbenzene	1.0	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	1.0	1.0								U
n-Butylbenzene	1.0	1.0								U
n-Propylbenzene	1.0	1.0								U
o-Xylene	1.0	1.0								U
sec-Butylbenzene	1.0	1.0								U
Styrene	1.0	1.0								U
tert-Butylbenzene	1.0	1.0								U
Tetrachloroethene	1.0	1.0								U
Toluene	1.0	1.0								U
trans-1,2-Dichloroethene	1.0	1.0								U
trans-1,3-Dichloropropene	1.0	1.0								U
Trichloroethene	1.0	1.0								U
Trichlorofluoromethane	1.0	1.0								U
Vinyl chloride	1.0	1.0								U
Surr: 1,2-Dichloroethane-d4	*58.25*	*35*	*50*	*0*	*117*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*56.67*	*35*	*50*	*0*	*113*	*85 - 114*				
Surr: Dibromofluoromethane	*55.34*	*35*	*50*	*0*	*111*	*80 - 119*				
Surr: Toluene-d8	*55.94*	*35*	*50*	*0*	*112*	*89 - 112*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:09**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062358** 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	19.55	1.0	20	0	97.7	78 - 124				
1,1,1-Trichloroethane	19.63	1.0	20	0	98.1	74 - 131				
1,1,2,2-Tetrachloroethane	20.24	1.0	20	0	101	71 - 121				
1,1,2-Trichloroethane	20.3	1.0	20	0	101	80 - 119				
1,1-Dichloroethane	20.56	1.0	20	0	103	77 - 125				
1,1-Dichloroethene	20.49	1.0	20	0	102	71 - 131				
1,1-Dichloropropene	20.52	1.0	20	0	103	78 - 125				
1,2,3-Trichlorobenzene	20.23	1.0	20	0	101	69 - 129				
1,2,3-Trichloropropane	19.19	1.0	20	0	96.0	73 - 122				
1,2,4-Trichlorobenzene	19.66	1.0	20	0	98.3	69 - 130				
1,2,4-Trimethylbenzene	19.27	1.0	20	0	96.4	76 - 124				
1,2-Dibromo-3-chloropropane	20.08	1.0	20	0	100	62 - 128				
1,2-Dibromoethane	19.51	1.0	20	0	97.6	77 - 121				
1,2-Dichlorobenzene	20.56	1.0	20	0	103	80 - 119				
1,2-Dichloroethane	20.45	1.0	20	0	102	73 - 128				
1,2-Dichloropropane	19.62	1.0	20	0	98.1	78 - 122				
1,3,5-Trimethylbenzene	20.21	1.0	20	0	101	75 - 124				
1,3-Dichlorobenzene	20.28	1.0	20	0	101	80 - 119				
1,3-Dichloropropane	19.69	1.0	20	0	98.4	80 - 119				
1,4-Dichlorobenzene	20.55	1.0	20	0	103	79 - 118				
2,2-Dichloropropane	20.34	1.0	20	0	102	60 - 139				
2-Butanone	41.36	2.0	40	0	103	56 - 143				
2-Chlorotoluene	20.72	1.0	20	0	104	79 - 122				
2-Hexanone	41.26	2.0	40	0	103	57 - 139				
4-Chlorotoluene	20.26	1.0	20	0	101	78 - 122				
4-Isopropyltoluene	20.08	1.0	20	0	100	77 - 127				
4-Methyl-2-pentanone	38.85	2.0	40	0	97.1	67 - 130				
Acetone	40.4	2.0	40	0	101	39 - 160				
Benzene	19.94	1.0	20	0	99.7	79 - 120				
Bromobenzene	20.21	1.0	20	0	101	80 - 120				
Bromochloromethane	20.45	1.0	20	0	102	78 - 123				
Bromodichloromethane	18.2	1.0	20	0	91.0	79 - 125				
Bromoform	17.42	1.0	20	0	87.1	66 - 130				
Bromomethane	21.23	1.0	20	0	106	53 - 141				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCS Sample ID: **VLCSW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:09**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062358** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	40.8	2.0	40	0	102	64 - 133				
Carbon tetrachloride	19.49	1.0	20	0	97.4	72 - 136				
Chlorobenzene	20.16	1.0	20	0	101	82 - 118				
Chloroethane	20.5	1.0	20	0	102	60 - 138				
Chloroform	20.67	1.0	20	0	103	79 - 124				
Chloromethane	20.33	1.0	20	0	102	50 - 139				
cis-1,2-Dichloroethene	19.97	1.0	20	0	99.8	78 - 123				
cis-1,3-Dichloropropene	18.8	1.0	20	0	94.0	75 - 124				
Dibromochloromethane	18.67	1.0	20	0	93.3	74 - 126				
Dibromomethane	19.85	1.0	20	0	99.3	79 - 123				
Dichlorodifluoromethane	20.46	1.0	20	0	102	32 - 152				
Ethylbenzene	18.91	1.0	20	0	94.6	79 - 121				
Hexachlorobutadiene	20.7	1.0	20	0	103	66 - 134				
Isopropylbenzene	19.94	1.0	20	0	99.7	72 - 131				
m,p-Xylene	38.9	2.0	40	0	97.2	80 - 121				
Methylene chloride	20.74	2.0	20	0	104	74 - 124				
Naphthalene	20.02	1.0	20	0	100	61 - 128				
n-Butylbenzene	20.07	1.0	20	0	100	75 - 128				
n-Propylbenzene	20.32	1.0	20	0	102	76 - 126				
o-Xylene	19.43	1.0	20	0	97.1	78 - 122				
sec-Butylbenzene	20.59	1.0	20	0	103	77 - 126				
Styrene	19.63	1.0	20	0	98.2	78 - 123				
tert-Butylbenzene	20.57	1.0	20	0	103	78 - 124				
Tetrachloroethene	20.48	1.0	20	0	102	74 - 129				
Toluene	20.32	1.0	20	0	102	80 - 121				
trans-1,2-Dichloroethene	20.5	1.0	20	0	103	75 - 124				
trans-1,3-Dichloropropene	18.22	1.0	20	0	91.1	73 - 127				
Trichloroethene	20.01	1.0	20	0	100	79 - 123				
Trichlorofluoromethane	20.76	1.0	20	0	104	65 - 141				
Vinyl chloride	20.53	1.0	20	0	103	58 - 137				
Surr: 1,2-Dichloroethane-d4	*56.15*	*35*	*50*	*0*	*112*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*55.67*	*35*	*50*	*0*	*111*	*85 - 114*				
Surr: Dibromofluoromethane	*56.68*	*35*	*50*	*0*	*113*	*80 - 119*				
Surr: Toluene-d8	*55.13*	*35*	*50*	*0*	*110*	*89 - 112*				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

LCSD Sample ID: **VLCSDW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:30**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062359** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	19.13	1.0	20	0	95.7	78 - 124	19.55	2.14	20	
1,1,1-Trichloroethane	19.4	1.0	20	0	97.0	74 - 131	19.63	1.17	20	
1,1,2,2-Tetrachloroethane	19.99	1.0	20	0	100.0	71 - 121	20.24	1.24	20	
1,1,2-Trichloroethane	20.32	1.0	20	0	102	80 - 119	20.3	0.113	20	
1,1-Dichloroethane	19.79	1.0	20	0	98.9	77 - 125	20.56	3.8	20	
1,1-Dichloroethene	20.09	1.0	20	0	100	71 - 131	20.49	1.96	20	
1,1-Dichloropropene	19.47	1.0	20	0	97.4	78 - 125	20.52	5.23	20	
1,2,3-Trichlorobenzene	19.49	1.0	20	0	97.4	69 - 129	20.23	3.75	20	
1,2,3-Trichloropropane	18.96	1.0	20	0	94.8	73 - 122	19.19	1.25	20	
1,2,4-Trichlorobenzene	18.97	1.0	20	0	94.9	69 - 130	19.66	3.59	20	
1,2,4-Trimethylbenzene	18.41	1.0	20	0	92.1	76 - 124	19.27	4.57	20	
1,2-Dibromo-3-chloropropane	19.54	1.0	20	0	97.7	62 - 128	20.08	2.71	20	
1,2-Dibromoethane	19.5	1.0	20	0	97.5	77 - 121	19.51	0.0652	20	
1,2-Dichlorobenzene	20	1.0	20	0	100	80 - 119	20.56	2.73	20	
1,2-Dichloroethane	19.79	1.0	20	0	98.9	73 - 128	20.45	3.29	20	
1,2-Dichloropropane	19.54	1.0	20	0	97.7	78 - 122	19.62	0.408	20	
1,3,5-Trimethylbenzene	19.81	1.0	20	0	99.1	75 - 124	20.21	2	20	
1,3-Dichlorobenzene	20.06	1.0	20	0	100	80 - 119	20.28	1.1	20	
1,3-Dichloropropane	19.85	1.0	20	0	99.3	80 - 119	19.69	0.833	20	
1,4-Dichlorobenzene	19.58	1.0	20	0	97.9	79 - 118	20.55	4.88	20	
2,2-Dichloropropane	19.28	1.0	20	0	96.4	60 - 139	20.34	5.36	20	
2-Butanone	42.28	2.0	40	0	106	56 - 143	41.36	2.19	20	
2-Chlorotoluene	19.77	1.0	20	0	98.8	79 - 122	20.72	4.7	20	
2-Hexanone	42.42	2.0	40	0	106	57 - 139	41.26	2.77	20	
4-Chlorotoluene	19.51	1.0	20	0	97.6	78 - 122	20.26	3.77	20	
4-Isopropyltoluene	19.36	1.0	20	0	96.8	77 - 127	20.08	3.64	20	
4-Methyl-2-pentanone	39.16	2.0	40	0	97.9	67 - 130	38.85	0.806	20	
Acetone	37.98	2.0	40	0	94.9	39 - 160	40.4	6.17	20	
Benzene	19.71	1.0	20	0	98.6	79 - 120	19.94	1.16	20	
Bromobenzene	19.69	1.0	20	0	98.5	80 - 120	20.21	2.61	20	
Bromochloromethane	19.69	1.0	20	0	98.5	78 - 123	20.45	3.75	20	
Bromodichloromethane	17.89	1.0	20	0	89.5	79 - 125	18.2	1.7	20	
Bromoform	17.63	1.0	20	0	88.1	66 - 130	17.42	1.19	20	
Bromomethane	20.25	1.0	20	0	101	53 - 141	21.23	4.73	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument:** VOA9 **Method:** VOLATILES ORGANICS BY METHOD 8260C

LCSD Sample ID: **VLCSDW-240610** Units: **ug/L** Analysis Date: **10-Jun-2024 10:30**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062359** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	38.91	2.0	40	0	97.3	64 - 133	40.8	4.75	20	
Carbon tetrachloride	19	1.0	20	0	95.0	72 - 136	19.49	2.51	20	
Chlorobenzene	20.29	1.0	20	0	101	82 - 118	20.16	0.628	20	
Chloroethane	19.24	1.0	20	0	96.2	60 - 138	20.5	6.32	20	
Chloroform	19.86	1.0	20	0	99.3	79 - 124	20.67	4.01	20	
Chloromethane	19.18	1.0	20	0	95.9	50 - 139	20.33	5.81	20	
cis-1,2-Dichloroethene	19.24	1.0	20	0	96.2	78 - 123	19.97	3.71	20	
cis-1,3-Dichloropropene	18.29	1.0	20	0	91.4	75 - 124	18.8	2.74	20	
Dibromochloromethane	18.54	1.0	20	0	92.7	74 - 126	18.67	0.666	20	
Dibromomethane	19.65	1.0	20	0	98.3	79 - 123	19.85	1.02	20	
Dichlorodifluoromethane	19.6	1.0	20	0	98.0	32 - 152	20.46	4.29	20	
Ethylbenzene	18.65	1.0	20	0	93.3	79 - 121	18.91	1.38	20	
Hexachlorobutadiene	19.31	1.0	20	0	96.6	66 - 134	20.7	6.93	20	
Isopropylbenzene	19.6	1.0	20	0	98.0	72 - 131	19.94	1.68	20	
m,p-Xylene	38.15	2.0	40	0	95.4	80 - 121	38.9	1.93	20	
Methylene chloride	20.23	2.0	20	0	101	74 - 124	20.74	2.48	20	
Naphthalene	19.74	1.0	20	0	98.7	61 - 128	20.02	1.43	20	
n-Butylbenzene	19.29	1.0	20	0	96.4	75 - 128	20.07	3.96	20	
n-Propylbenzene	19.4	1.0	20	0	97.0	76 - 126	20.32	4.65	20	
o-Xylene	19.04	1.0	20	0	95.2	78 - 122	19.43	2	20	
sec-Butylbenzene	19.33	1.0	20	0	96.6	77 - 126	20.59	6.33	20	
Styrene	19.39	1.0	20	0	96.9	78 - 123	19.63	1.27	20	
tert-Butylbenzene	19.5	1.0	20	0	97.5	78 - 124	20.57	5.36	20	
Tetrachloroethene	20.16	1.0	20	0	101	74 - 129	20.48	1.54	20	
Toluene	19.75	1.0	20	0	98.7	80 - 121	20.32	2.86	20	
trans-1,2-Dichloroethene	20.2	1.0	20	0	101	75 - 124	20.5	1.49	20	
trans-1,3-Dichloropropene	18.4	1.0	20	0	92.0	73 - 127	18.22	0.97	20	
Trichloroethene	19.73	1.0	20	0	98.7	79 - 123	20.01	1.4	20	
Trichlorofluoromethane	20.3	1.0	20	0	102	65 - 141	20.76	2.23	20	
Vinyl chloride	19.74	1.0	20	0	98.7	58 - 137	20.53	3.93	20	
Surr: 1,2-Dichloroethane-d4	*55.32*	*35*	*50*	*0*	*111*	*81 - 118*	*56.15*	*1.48*	*20*	
Surr: 4-Bromofluorobenzene	*55.86*	*35*	*50*	*0*	*112*	*85 - 114*	*55.67*	*0.34*	*20*	
Surr: Dibromofluoromethane	*54.96*	*35*	*50*	*0*	*110*	*80 - 119*	*56.68*	*3.08*	*20*	
Surr: Toluene-d8	*55.96*	*35*	*50*	*0*	*112*	*89 - 112*	*55.13*	*1.48*	*20*	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS24051959-14MS** Units: **ug/L** Analysis Date: **10-Jun-2024 13:48**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062362** 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	15.68	1.0	20	0	78.4	78 - 124				
1,1,1-Trichloroethane	16.09	1.0	20	0	80.4	74 - 131				
1,1,2,2-Tetrachloroethane	15.76	1.0	20	0	78.8	71 - 121				
1,1,2-Trichloroethane	16.4	1.0	20	0	82.0	80 - 119				
1,1-Dichloroethane	16.6	1.0	20	0	83.0	77 - 125				
1,1-Dichloroethene	17.35	1.0	20	0	86.8	71 - 131				
1,1-Dichloropropene	16.46	1.0	20	0	82.3	78 - 125				
1,2,3-Trichlorobenzene	14.27	1.0	20	0	71.4	69 - 129				
1,2,3-Trichloropropane	14.66	1.0	20	0	73.3	73 - 122				
1,2,4-Trichlorobenzene	14.32	1.0	20	0	71.6	69 - 130				
1,2,4-Trimethylbenzene	14.09	1.0	20	0	70.5	76 - 124				S
1,2-Dibromo-3-chloropropane	14.39	1.0	20	0	71.9	62 - 128				
1,2-Dibromoethane	15.58	1.0	20	0	77.9	77 - 121				
1,2-Dichlorobenzene	15.83	1.0	20	0	79.1	80 - 119				S
1,2-Dichloroethane	15.87	1.0	20	0	79.4	73 - 128				
1,2-Dichloropropane	15.77	1.0	20	0	78.9	78 - 122				
1,3,5-Trimethylbenzene	15.78	1.0	20	0	78.9	75 - 124				
1,3-Dichlorobenzene	16.04	1.0	20	0	80.2	80 - 119				
1,3-Dichloropropane	15.81	1.0	20	0	79.1	80 - 119				S
1,4-Dichlorobenzene	16.2	1.0	20	0	81.0	79 - 118				
2,2-Dichloropropane	15.77	1.0	20	0	78.9	60 - 139				
2-Butanone	30.02	2.0	40	0	75.0	56 - 143				
2-Chlorotoluene	16.39	1.0	20	0	82.0	79 - 122				
2-Hexanone	33.41	2.0	40	0	83.5	57 - 139				
4-Chlorotoluene	16.08	1.0	20	0	80.4	78 - 122				
4-Isopropyltoluene	15.78	1.0	20	0	78.9	77 - 127				
4-Methyl-2-pentanone	31.62	2.0	40	0	79.1	67 - 130				
Acetone	25.36	2.0	40	0	63.4	39 - 160				
Benzene	16.17	1.0	20	0	80.9	79 - 120				
Bromobenzene	16.17	1.0	20	0	80.8	80 - 120				
Bromochloromethane	15.73	1.0	20	0	78.7	78 - 123				
Bromodichloromethane	14.31	1.0	20	0	71.6	79 - 125				S
Bromoform	13.82	1.0	20	0	69.1	66 - 130				
Bromomethane	16.87	1.0	20	0	84.3	53 - 141				

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MS Sample ID: **HS24051959-14MS** Units: **ug/L** Analysis Date: **10-Jun-2024 13:48**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062362** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	33.11	2.0	40	0	82.8	64 - 133				
Carbon tetrachloride	15.7	1.0	20	0	78.5	72 - 136				
Chlorobenzene	16.46	1.0	20	0	82.3	82 - 118				
Chloroethane	16.96	1.0	20	0	84.8	60 - 138				
Chloroform	16.51	1.0	20	0	82.6	79 - 124				
Chloromethane	17.51	1.0	20	0	87.5	50 - 139				
cis-1,2-Dichloroethene	16.04	1.0	20	0	80.2	78 - 123				
cis-1,3-Dichloropropene	14.38	1.0	20	0	71.9	75 - 124				S
Dibromochloromethane	14.79	1.0	20	0	74.0	74 - 126				S
Dibromomethane	15.86	1.0	20	0	79.3	79 - 123				
Dichlorodifluoromethane	17.8	1.0	20	0	89.0	32 - 152				
Ethylbenzene	15.73	1.0	20	0	78.7	79 - 121				S
Hexachlorobutadiene	15.18	1.0	20	0	75.9	66 - 134				
Isopropylbenzene	16.37	1.0	20	0	81.8	72 - 131				
m,p-Xylene	31.82	2.0	40	0	79.5	80 - 121				S
Methylene chloride	15.98	2.0	20	0	79.9	74 - 124				
Naphthalene	14.02	1.0	20	1.326	63.5	61 - 128				
n-Butylbenzene	15.66	1.0	20	0	78.3	75 - 128				
n-Propylbenzene	16.31	1.0	20	0	81.6	76 - 126				
o-Xylene	15.55	1.0	20	0	77.8	78 - 122				S
sec-Butylbenzene	16.32	1.0	20	0	81.6	77 - 126				
Styrene	18.84	1.0	20	0	94.2	78 - 123				
tert-Butylbenzene	16.28	1.0	20	0	81.4	78 - 124				
Tetrachloroethene	16.93	1.0	20	0	84.7	74 - 129				
Toluene	16.55	1.0	20	0	82.8	80 - 121				
trans-1,2-Dichloroethene	17.01	1.0	20	0	85.1	75 - 124				
trans-1,3-Dichloropropene	13.93	1.0	20	0	69.7	73 - 127				S
Trichloroethene	16.63	1.0	20	0	83.2	79 - 123				
Trichlorofluoromethane	17.87	1.0	20	0	89.4	65 - 141				
Vinyl chloride	16.92	1.0	20	0	84.6	58 - 137				
Surr: 1,2-Dichloroethane-d4	*56.74*	*35*	*50*	*0*	*113*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*59.32*	*35*	*50*	*0*	*119*	*85 - 114*				S
Surr: Dibromofluoromethane	*56.51*	*35*	*50*	*0*	*113*	*80 - 119*				
Surr: Toluene-d8	*58.75*	*35*	*50*	*0*	*117*	*89 - 112*				S

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24051959-14MSD** Units: **ug/L** Analysis Date: **10-Jun-2024 14:09**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062363** 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	15.21	1.0	20	0	76.1	78 - 124	15.68	3.03	20	S
1,1,1-Trichloroethane	15.32	1.0	20	0	76.6	74 - 131	16.09	4.86	20	
1,1,2,2-Tetrachloroethane	15.71	1.0	20	0	78.6	71 - 121	15.76	0.294	20	
1,1,2-Trichloroethane	15.95	1.0	20	0	79.7	80 - 119	16.4	2.79	20	S
1,1-Dichloroethane	15.98	1.0	20	0	79.9	77 - 125	16.6	3.8	20	
1,1-Dichloroethene	16.96	1.0	20	0	84.8	71 - 131	17.35	2.26	20	
1,1-Dichloropropene	16.02	1.0	20	0	80.1	78 - 125	16.46	2.7	20	
1,2,3-Trichlorobenzene	14.82	1.0	20	0	74.1	69 - 129	14.27	3.77	20	
1,2,3-Trichloropropane	14.24	1.0	20	0	71.2	73 - 122	14.66	2.87	20	S
1,2,4-Trichlorobenzene	14.31	1.0	20	0	71.6	69 - 130	14.32	0.0412	20	
1,2,4-Trimethylbenzene	14.07	1.0	20	0	70.4	76 - 124	14.09	0.17	20	S
1,2-Dibromo-3-chloropropane	14.4	1.0	20	0	72.0	62 - 128	14.39	0.0855	20	
1,2-Dibromoethane	15.39	1.0	20	0	77.0	77 - 121	15.58	1.19	20	S
1,2-Dichlorobenzene	15.87	1.0	20	0	79.4	80 - 119	15.83	0.299	20	S
1,2-Dichloroethane	16.19	1.0	20	0	80.9	73 - 128	15.87	1.94	20	
1,2-Dichloropropane	15.69	1.0	20	0	78.4	78 - 122	15.77	0.514	20	
1,3,5-Trimethylbenzene	15.6	1.0	20	0	78.0	75 - 124	15.78	1.17	20	
1,3-Dichlorobenzene	15.69	1.0	20	0	78.5	80 - 119	16.04	2.22	20	S
1,3-Dichloropropane	15.39	1.0	20	0	76.9	80 - 119	15.81	2.74	20	S
1,4-Dichlorobenzene	15.91	1.0	20	0	79.5	79 - 118	16.2	1.84	20	
2,2-Dichloropropane	15.21	1.0	20	0	76.1	60 - 139	15.77	3.61	20	
2-Butanone	29.82	2.0	40	0	74.5	56 - 143	30.02	0.667	20	
2-Chlorotoluene	16.2	1.0	20	0	81.0	79 - 122	16.39	1.18	20	
2-Hexanone	33	2.0	40	0	82.5	57 - 139	33.41	1.21	20	
4-Chlorotoluene	15.62	1.0	20	0	78.1	78 - 122	16.08	2.94	20	
4-Isopropyltoluene	15.66	1.0	20	0	78.3	77 - 127	15.78	0.76	20	
4-Methyl-2-pentanone	30.59	2.0	40	0	76.5	67 - 130	31.62	3.31	20	
Acetone	22.71	2.0	40	0	56.8	39 - 160	25.36	11	20	
Benzene	16.04	1.0	20	0	80.2	79 - 120	16.17	0.796	20	
Bromobenzene	15.84	1.0	20	0	79.2	80 - 120	16.17	2.04	20	S
Bromochloromethane	16.26	1.0	20	0	81.3	78 - 123	15.73	3.33	20	
Bromodichloromethane	14.15	1.0	20	0	70.7	79 - 125	14.31	1.15	20	S
Bromoform	13.85	1.0	20	0	69.3	66 - 130	13.82	0.231	20	
Bromomethane	16.8	1.0	20	0	84.0	53 - 141	16.87	0.425	20	

RIGHT SOLUTIONS | RIGHT PARTNER

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: HS24052045

QC BATCH REPORT

Batch ID: R469054 (0) **Instrument: VOA9** **Method: VOLATILES ORGANICS BY METHOD 8260C**

MSD Sample ID: **HS24051959-14MSD** Units: **ug/L** Analysis Date: **10-Jun-2024 14:09**
Client ID: Run ID: **VOA9_469054** SeqNo: **8062363** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	31.82	2.0	40	0	79.5	64 - 133	33.11	3.97	20	
Carbon tetrachloride	15.71	1.0	20	0	78.6	72 - 136	15.7	0.116	20	
Chlorobenzene	16.15	1.0	20	0	80.8	82 - 118	16.46	1.9	20	S
Chloroethane	16.31	1.0	20	0	81.5	60 - 138	16.96	3.92	20	
Chloroform	16.23	1.0	20	0	81.1	79 - 124	16.51	1.73	20	
Chloromethane	16.19	1.0	20	0	80.9	50 - 139	17.51	7.83	20	
cis-1,2-Dichloroethene	15.88	1.0	20	0	79.4	78 - 123	16.04	1.03	20	
cis-1,3-Dichloropropene	14.43	1.0	20	0	72.2	75 - 124	14.38	0.402	20	S
Dibromochloromethane	14.4	1.0	20	0	72.0	74 - 126	14.79	2.69	20	S
Dibromomethane	15.64	1.0	20	0	78.2	79 - 123	15.86	1.38	20	S
Dichlorodifluoromethane	17.2	1.0	20	0	86.0	32 - 152	17.8	3.44	20	
Ethylbenzene	14.95	1.0	20	0	74.7	79 - 121	15.73	5.1	20	S
Hexachlorobutadiene	14.45	1.0	20	0	72.2	66 - 134	15.18	4.97	20	
Isopropylbenzene	15.89	1.0	20	0	79.5	72 - 131	16.37	2.95	20	
m,p-Xylene	31.33	2.0	40	0	78.3	80 - 121	31.82	1.56	20	S
Methylene chloride	15.78	2.0	20	0	78.9	74 - 124	15.98	1.2	20	
Naphthalene	14.6	1.0	20	1.326	66.4	61 - 128	14.02	4.03	20	
n-Butylbenzene	15.36	1.0	20	0	76.8	75 - 128	15.66	1.96	20	
n-Propylbenzene	15.99	1.0	20	0	80.0	76 - 126	16.31	1.99	20	
o-Xylene	15.25	1.0	20	0	76.3	78 - 122	15.55	1.95	20	S
sec-Butylbenzene	15.92	1.0	20	0	79.6	77 - 126	16.32	2.43	20	
Styrene	16.49	1.0	20	0	82.4	78 - 123	18.84	13.3	20	
tert-Butylbenzene	16.07	1.0	20	0	80.3	78 - 124	16.28	1.34	20	
Tetrachloroethene	16.59	1.0	20	0	82.9	74 - 129	16.93	2.07	20	
Toluene	16.03	1.0	20	0	80.1	80 - 121	16.55	3.21	20	
trans-1,2-Dichloroethene	16.55	1.0	20	0	82.7	75 - 124	17.01	2.76	20	
trans-1,3-Dichloropropene	14.22	1.0	20	0	71.1	73 - 127	13.93	2.03	20	S
Trichloroethene	16.15	1.0	20	0	80.7	79 - 123	16.63	2.98	20	
Trichlorofluoromethane	17.37	1.0	20	0	86.9	65 - 141	17.87	2.83	20	
Vinyl chloride	16.59	1.0	20	0	83.0	58 - 137	16.92	1.96	20	
Surr: 1,2-Dichloroethane-d4	*56.09*	*35*	*50*	*0*	*112*	*81 - 118*	*56.74*	*1.15*	*20*	
Surr: 4-Bromofluorobenzene	*58.4*	*35*	*50*	*0*	*117*	*85 - 114*	*59.32*	*1.58*	*20*	S
Surr: Dibromofluoromethane	*55.52*	*35*	*50*	*0*	*111*	*80 - 119*	*56.51*	*1.76*	*20*	
Surr: Toluene-d8	*57.83*	*35*	*50*	*0*	*116*	*89 - 112*	*58.75*	*1.58*	*20*	S

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client:	Bhate Environmental Associates, Inc.
Project:	LHAAP/ Site 58
WorkOrder:	HS24052045

QC BATCH REPORT

Batch ID: R469054 (0)	**Instrument:** VOA9	**Method:** VOLATILES ORGANICS BY METHOD 8260C

The following samples were analyzed in this batch:	HS24052045-01	HS24052045-02	HS24052045-03	HS24052045-04
	HS24052045-05			

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Client: Bhate Environmental Associates, Inc.
Project: LHAAP/ Site 58
WorkOrder: **HS24052045**

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

RIGHT SOLUTIONS | RIGHT PARTNER

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	88-00356_2024	27-Mar-2025
California	2919; 2025	30-Apr-2025
Florida	E87611-38	30-Jun-2024
Illinois	2000322023-11	30-Jun-2024
Kansas	E-10352 2023-2024	31-Jul-2024
Kentucky	123043	30-Apr-2025
Louisiana	03087 2023-2024	30-Jun-2024
Maryland	343; 2023-2024	30-Jun-2024
North Carolina	624 - 2024	31-Dec-2024
Oklahoma	2023-140	31-Aug-2024
Tennessee	04016	30-Apr-2025
Texas	T104704231 TX-C24-00130	30-Apr-2025
Utah	TX026932023-14	31-Jul-2024

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Houston, US Date: 12-Jun-24

Sample Receipt Checklist

Work Order ID: HS24052045 **Date/Time Received:** 31-May-2024 09:50

Client Name: Bhate Environmental **Received by:** Jacob Coronado

Completed By: /S/ Kaycee Rogers (eSignature) 31-May-2024 19:27 (Date/Time) **Reviewed by:** /S/ Alexis Dorenbosch (eSignature) 03-Jun-2024 12:09 (Date/Time)

Matrices: w Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
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 ☐	
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):	2.2uc/2.3c	ir 31
Cooler(s)/Kit(s):	red	
Date/Time sample(s) sent to storage:	05/31/2024 1927	

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:

RIGHT SOLUTIONS | RIGHT PARTNER

bhate

Page: 01336100 (6)

Project/Phase

No: JVPCIBH.0001

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205

Chain of Custody and Analytical Request

COC Number(1):

LIMS Number:

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested (5) | Quality Assurance Samples (6)

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	VOC	Dissolved Gases	TOC	Carbon Dioxide	Anions	Arsenic	Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35ATww17_053024	30 may 2024	0955	-	N		WG	3	X									
35ATww25_053024	30 may 2024	1010	-	N		WG	3	X									
35ATww04_053024	30 may 2024	1020	-	N		WG	4	X					X				
35ATww14_053024	30 may 2024	1030		N		WG	3	X									
~~35ATDup~~ 35ATSW03_053024	30 may 2024	1040		N		WG	3	X									
Trip Blank	30 may 2024		-	~~TB~~ TB		W	2	X									
			-														
			-														
			-														
			-														
			-														

HS24052045

Bhate Environmental Associates, Inc.
LHAAP/ Site 58

COMMENTS: STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	5/30/24	1400	1.	5/31/24	0950
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: _____ Shipped No.:

Method of Shipment: _____

_____ Fed Ex _____ Airbill Number:

_____ Analytical Lab: ALS 10450 Stanchiff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wagasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/20/99 = 02, etc.)

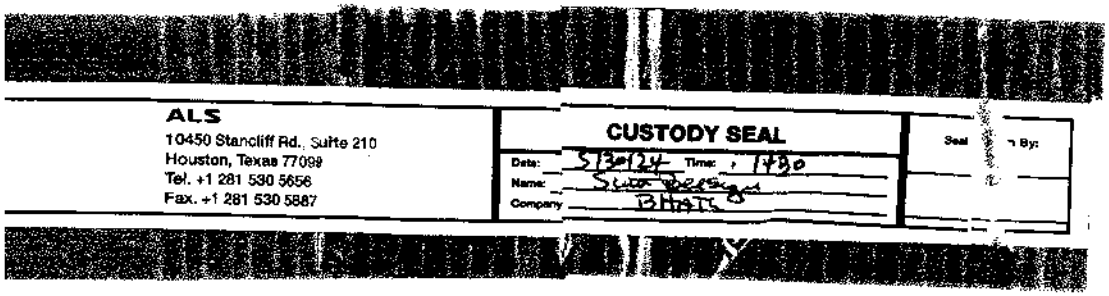
4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blank Lot Control

Rel 22 1231

RIGHT SOLUTIONS | RIGHT PARTNER



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL
Date: 5/30/24 Time: 1430
Name: Suite Beers
Company: BHATS

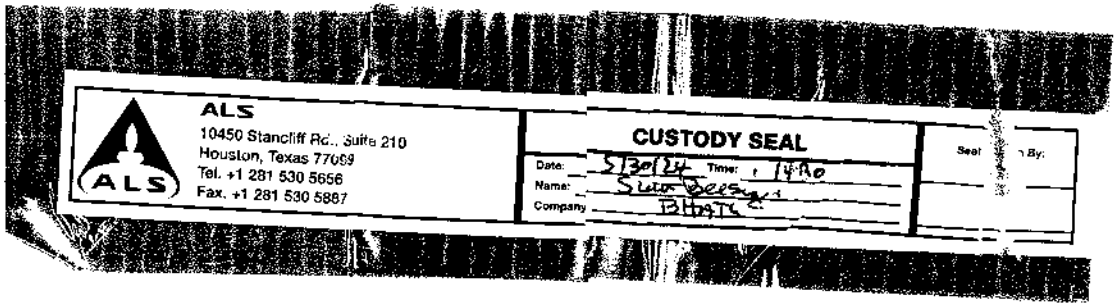
Seal By:

5-31-24



9D3) 930-6193
SHIP DATE: 14MAY24
ACTWGT: 1.00 LB MAN
CAD: 0221247/CAFE3755
DIMS: 26x14x14 IN
TAL ASSOCIATES
AVE. PMB202
TO
ECEIVING
P USA,CORP
NCLIFF ROAD
TX 77099
=BD 100945-LA
FedEx
Express
FRI - 31 MAY AA
PRIORITY OVERNIGHT
05 6382
77099
TX-US
GRA
IAH

RIGHT SOLUTIONS | RIGHT PARTNER



5-31-24

ORIGIN ID:SGRA (903) 930-6193
SCOTT BEESINER
BHATE ENVIRONMENTAL ASSOCIATES
1203-B EAST GRAND AVE. PMB202

MARSHALL, TX 75670
UNITED STATES US

SHIP DATE: 14MAY24
ACTWGT: 1.60 LB MAN
CAD: 6221247/CAFE3755
DIMS: 26x14x4 IN

TO SAMPLE RECEIVING
ALS GROUP USA,CORP
10450 STANCLIFF ROAD
SUITE 210
HOUSTON TX 77099
(281) 530-5656
REF: LHAAP-58-BO 100945-LA

RMA:

FedEx Express

FedEx
TRK# 6862 6805 6382

FRI - 31 MAY AA
PRIORITY OVERNIGHT

AB SGRA

77099
TX US
IAH

RIGHT SOLUTIONS | RIGHT PARTNER

June 20, 2024 Service Request No:R2404477

Corey Grandits
ALS Group USA, Corp.
10450 Stancliff Road
Suite 210
Houston, TX 77099-4338

Laboratory Results for: BHATE LHAAP / Site 58

Dear Corey,

Enclosed are the results of the sample(s) submitted to our laboratory May 24, 2024
For your reference, these analyses have been assigned our service request number **R2404477.**

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7476. You may also contact me via email at Chris.Leavy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Christopher Leavy
Project Manager

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623
PHONE +1 585 288 5380 | FAX +1 585 288 8475
ALS Group USA, Corp.
dba ALS Environmental

Narrative Documents

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

Client: ALS Environmental - US
Project: BHATE LHAAP / Site 58
Sample Matrix: Water

Service Request: R2404477
Date Received: 05/24/2024

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.
Manual Integrations may have been used in the quantitation of the results in this report. Manual Integrations are readily identified in the raw data on the Quantitation Reports (Organics) by the automatic placement of an “m” next to the sample result. For Ion Chromatography, the manual integrations are identified by the automatic placement of “manipulated” or "manually integrated" in the upper left corner of the chromatogram (Hexavalent Chromium) or “M” by the result in the “Type” column (anions). The reason for the manual integration is noted on the “after” chromatogram, which is found with the original chromatogram and quantitation report. All integrations follow the lab SOP ADM-INT “Manual Integration.”

Sample Receipt:

Six water samples were received for analysis at ALS Environmental on 05/24/2024. 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.

Semivoa GC:

Method Organic Acids, 06/19/2024: The upper control criterion was exceeded for one or more analytes in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) above the MRL in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Approved by _____ Date 06/20/2024

Sample Receipt Information

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

Client: ALS Environmental - US **Service Request:**R2404477

Project: BHATE LHAAP / Site 58/JVPCIBH.0001

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
R2404477-001	35AWW19_052324	5/23/2024	0740
R2404477-002	LHSMW07_052324	5/23/2024	0830
R2404477-003	35AWW20_052324	5/23/2024	0920
R2404477-004	35AWW11_052324	5/23/2024	1010
R2404477-005	35AWW23_052324	5/23/2024	1100
R2404477-006	35AWW06_052324	5/23/2024	1150

bhate ENVIRONMENTAL CONSTRUCTION LIMITED

1608 13th Avenue South, Suite 300
Birmingham Alabama 35205
Tel: 205-918-4000
Fax: 205-918-4050

Chain of Custody and Analytical Request

Page: ____ of 01336108

Project/Phase No: JVPCIBH.0001

COC Number(1): ____

LIMS Number: ____

Facility/Base I.D.: LHAAP

Project/Site Name: LHAAP / Site 58

Client Name:

Collected by: Scott Beesinger

Sample Analysis Requested [5] | Quality Assurance Samples [6]

Field Sample ID (30 Characters Max)	Date Collected (dd-mmm-yyyy)	Time Collected (Military) (hhmm)	Sample Depth (beginning - ending)	SA Code (2)	Sample Number (3)	Sample Matrix (4)	Number of containers	Volatile Fatty Acids										Ambient Blank Lot Control Number	Equipment Blank Lot Control Number	Trip Blank Lot Control Number	Cooler ID
35AWW19_052324	23 MAY 2024	0740	-	N		WG	3	X													
LHSMW07_052324	23 MAY 2024	0830	-	N		WG	3	X													
35AWW20_052324	23 MAY 2024	0920	-	N		WG	3	X													
35AWW11_052324	23 MAY 2024	1010		N		WG	3	X													
35AWW23_052324	23 MAY 2024	1100		N		WG	3	X													
35AWW06_052324	23 MAY 2024	1150	-	N		WG	3	X													
			-																		
			-																		
			-																		
			-																		
			-																		

COMMENTS: STANDARD TAT

Custody Transfers Prior to Receipt by Laboratory

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1. Scott Beesinger	5/23/24	1430	1. [illegible]	5/24/24	915
2.			2.		
3.			3.		

Sample Delivery Details / Laboratory Receipt

Delivered Directly to Lab: ____ Shipped ____ No.:

Method of Shipment: ____

Fed Ex ____ Airbill ____ Number:

Analytical Lab: ALS 10450 Stancliff Rd. Suite 210 Houston, TX 77099 (281) 530-5656

ATTN: Dane Wacasey Lab Recipient: Delivery Date/Time:

1.) Chain of Custody Number = date collected + custody number (e.g. 09-02-1999-01)

2.) Sample Type (SA) Codes: N = Normal Sample, TB = Trip Blank (-c) Sample, FD = Field Duplicate (-a) Samples, FR = Field Replicate (-b) Samples, EB = Equipment Blank (-d) Samples, MS = Matrix Spike, SD = Matrix Spike Duplicate, AB = Ambient Blank (-e)

3.) Sample Number: Unique sample number collected from a particular location per day. (e.g. Groundwater sample collected from MW-1 on 10/10/99 = 01, if sampled again on 10/10/99 = 02, etc.)

4.) Matrix Codes: GS = Soil Gas, WG = Groundwater, WS = Surface Water, SO = Soil, SE = Sediment, SL = Sludge, SS = Surface Soil Samples, WQ = Aqueous Blank Samples (trip, equipment, ambient, etc), SQ = Soil Blanks

5.) Sample Analysis Requested: Analytical method requested and number of containers provided for each.

6.) Quality assurance samples are assigned by date (ddmmyy) and the sample number associated with the sample (01, 02, etc) (e.g. Equipment blank collected in association with MW-1 on 10/10/99 will be designated 10109901 in the Equipment Blan

R2404477 5

ALS Group USA, Corp.
BHATE LHAAP / Site 58

R2404477 07336109 5
ALS Group USA, Corp.
BHATE LHAAP / Site 68

Cooler Receipt and Preservation Check Form

Project/Client _____ Folder Number _____

Cooler received on 5/24/24 by: SES **COURIER:** ALS UPS (FEDEX) VELOCITY CLIENT

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

8. Temperature Readings Date: 5/24/24 Time: 918 ID: IR#12 (IR#11) From: Temp Blank (Sample Bottle)

Temp (°C)	8.0						
Within 0-6°C?	Y (N)	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

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

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

All samples held in storage location: SMO by SES on 5/24/24 at 919
5035 samples placed in storage location: _____ by _____ on _____ at _____ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 5/24/24 Time: 1035 by: SES

9. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
10. Did all bottle labels and tags agree with custody papers? (YES) NO
11. Were correct containers used for the tests indicated? (YES) NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO (N/A)
13. Were dissolved metals filtered in the field? YES NO (N/A)
14. Air Samples: Cassettes / Tubes Intact Y / N with MS Y / N Canisters Pressurized Tedlar® Bags Inflated (N/A)

pH	Lot of test paper	Reagent	Preserved? Yes	Preserved? No	Lot Received	Exp	Sample-ID Adjusted	Vol. Added	Lot Added	Final pH
≥12		NaOH								
≤2		HNO_3								
≤2		H_2SO_4								
<4		$NaHSO_4$								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add $Na_2S_2O_3$ (625, 608, CN), ascorbic (phenol).					
		$Na_2S_2O_3$								
		ZnAcetate	-	-			**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).			
		HCl	**	**						

Bottle lot numbers: 042224-3EGR
Explain all Discrepancies/ Other Comments:

H_3PO_4: A0447807 exp. 11/27

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: SES *significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

Miscellaneous Forms

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

REPORT QUALIFIERS AND DEFINITIONS

U	Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.
J	Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).
B	Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.
E	Inorganics- Concentration is estimated due to the serial dilution was outside control limits.
E	Organics- Concentration has exceeded the calibration range for that specific analysis.
D	Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.
*	Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.
H	Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.
#	Spike was diluted out.
+	Correlation coefficient for MSA is <0.995.
N	Inorganics- Matrix spike recovery was outside laboratory limits.
N	Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.
S	Concentration has been determined using Method of Standard Additions (MSA).
W	Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.
P	Concentration >40% difference between the two GC columns.
C	Confirmed by GC/MS
Q	DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).
X	See Case Narrative for discussion.
MRL LOQ	Method Reporting Limit. Also known as: Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.
MDL	Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).
LOD	Limit of Detection. A value at or above the MDL which has been verified to be detectable.
ND	Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

Rochester Lab ID # for State Accreditations[1]

NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory. To verify NH accredited analytes, go to https://www4.des.state.nh.us/CertifiedLabs/Certified-Method.aspx.

ALS Laboratory Group

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
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.

Client: ALS Environmental - US **Service Request:** R2404477
Project: BHATE LHAAP / Site 58/JVPCIBH.0001

Non-Certified Analytes

Certifying Agency: New York Department of Health

Method	Matrix	Analyte
Organic Acids	Water	Acetic Acid
Organic Acids	Water	Butanoic Acid (Butyric Acid)
Organic Acids	Water	Lactic Acid
Organic Acids	Water	Propionic Acid
Organic Acids	Water	Pyruvic Acid

Client: ALS Environmental - US **Service Request:** R2404477
Project: BHATE LHAAP / Site 58/JVPCIBH.0001

Sample Name: 35AWW19_052324 **Date Collected:** 05/23/24
Lab Code: R2404477-001 **Date Received:** 05/24/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: LHSMW07_052324 **Date Collected:** 05/23/24
Lab Code: R2404477-002 **Date Received:** 05/24/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW20_052324 **Date Collected:** 05/23/24
Lab Code: R2404477-003 **Date Received:** 05/24/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW11_052324 **Date Collected:** 05/23/24
Lab Code: R2404477-004 **Date Received:** 05/24/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Sample Name: 35AWW23_052324 **Date Collected:** 05/23/24
Lab Code: R2404477-005 **Date Received:** 05/24/24
Sample Matrix: Water

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

Analyst Summary report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001		

Sample Name:	35AWW06_052324	**Date Collected:**	05/23/24
Lab Code:	R2404477-006	**Date Received:**	05/24/24
Sample Matrix:	Water		

Analysis Method	Extracted/Digested By	Analyzed By
Organic Acids		AFELSER

PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

INORGANIC

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C or 6010D	3005A/3010A
6020A or 6020B	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-N-2016 Amenable and Residual Cyanide	SM 4500-CN-G and SM 4500-CN-B,C-2016
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C or 6010D	3050B
6020A or 6020B	3050B
6010C or 6010D TCLP (1311) extract	3005A/3010A
6010C or 6010D SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	

ORGANIC

Preparation Methods for Organic methods are listed in the header of the Results pages.

Regarding "Bulk/5035A":
For soil/solid samples submitted in soil jars for Volatiles analysis, the prep method is listed as "Bulk/5035A". The lab follows the closed-system EPA 5035A protocols once the sample is transferred to a sealed vial, but collection in bulk in soil jars does not follow the collection protocols listed in EPA 5035A. In accordance with the NYSDOH technical notice of October 2012, all results or reporting limits <200 ug/kg are to be considered estimated due to potential low bias.

Sample Results

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

Semivolatile Organic Compounds by GC

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

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	05/23/24 07:40
Sample Matrix:	Water	**Date Received:**	05/24/24 09:15
Sample Name:	35AWW19_052324	**Units:**	mg/L
Lab Code:	R2404477-001	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Acetic Acid	0.56 U	4.0	0.56	1	06/19/24 04:48	
Butanoic Acid (Butyric Acid)	5.0 U	10	5.0	1	06/19/24 04:48	
Lactic Acid	0.41 U	2.0	0.41	1	06/19/24 04:48	
Propionic Acid	1.1 U	4.0	1.1	1	06/19/24 04:48	
Pyruvic Acid	0.19 U	0.50	0.19	1	06/19/24 04:48	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	05/23/24 08:30
Sample Matrix:	Water	**Date Received:**	05/24/24 09:15
Sample Name:	LHSMW07_052324	**Units:**	mg/L
Lab Code:	R2404477-002	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Acetic Acid	**0.81 J**	4.0	0.56	1	06/19/24 05:20	
Butanoic Acid (Butyric Acid)	5.0 U	10	5.0	1	06/19/24 05:20	
Lactic Acid	0.41 U	2.0	0.41	1	06/19/24 05:20	
Propionic Acid	1.1 U	4.0	1.1	1	06/19/24 05:20	
Pyruvic Acid	0.19 U	0.50	0.19	1	06/19/24 05:20	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	05/23/24 09:20
Sample Matrix:	Water	**Date Received:**	05/24/24 09:15
Sample Name:	35AWW20_052324	**Units:**	mg/L
Lab Code:	R2404477-003	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Acetic Acid	0.56 U	4.0	0.56	1	06/19/24 05:52	
Butanoic Acid (Butyric Acid)	5.0 U	10	5.0	1	06/19/24 05:52	
Lactic Acid	0.41 U	2.0	0.41	1	06/19/24 05:52	
Propionic Acid	1.1 U	4.0	1.1	1	06/19/24 05:52	
Pyruvic Acid	0.19 U	0.50	0.19	1	06/19/24 05:52	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	05/23/24 10:10
Sample Matrix:	Water	**Date Received:**	05/24/24 09:15
Sample Name:	35AWW11_052324	**Units:**	mg/L
Lab Code:	R2404477-004	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Acetic Acid	0.56 U	4.0	0.56	1	06/19/24 06:57	
Butanoic Acid (Butyric Acid)	5.0 U	10	5.0	1	06/19/24 06:57	
Lactic Acid	0.41 U	2.0	0.41	1	06/19/24 06:57	
Propionic Acid	1.1 U	4.0	1.1	1	06/19/24 06:57	
Pyruvic Acid	0.19 U	0.50	0.19	1	06/19/24 06:57	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	05/23/24 11:00
Sample Matrix:	Water	**Date Received:**	05/24/24 09:15
Sample Name:	35AWW23_052324	**Units:**	mg/L
Lab Code:	R2404477-005	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Acetic Acid	0.56 U	4.0	0.56	1	06/19/24 07:30	
Butanoic Acid (Butyric Acid)	5.0 U	10	5.0	1	06/19/24 07:30	
Lactic Acid	0.41 U	2.0	0.41	1	06/19/24 07:30	
Propionic Acid	1.1 U	4.0	1.1	1	06/19/24 07:30	
Pyruvic Acid	0.19 U	0.50	0.19	1	06/19/24 07:30	

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	05/23/24 11:50
Sample Matrix:	Water	**Date Received:**	05/24/24 09:15
Sample Name:	35AWW06_052324	**Units:**	mg/L
Lab Code:	R2404477-006	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Acetic Acid	0.56 U	4.0	0.56	1	06/19/24 08:02	
Butanoic Acid (Butyric Acid)	5.0 U	10	5.0	1	06/19/24 08:02	
Lactic Acid	0.41 U	2.0	0.41	1	06/19/24 08:02	
Propionic Acid	1.1 U	4.0	1.1	1	06/19/24 08:02	
Pyruvic Acid	0.19 U	0.50	0.19	1	06/19/24 08:02	

QC Summary Forms

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

Semivolatile Organic Compounds by GC

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

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	05/23/24
Sample Matrix:	Water	**Date Received:**	05/24/24
		Date Analyzed:	06/19/24

Duplicate Matrix Spike Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Sample Name:	35AWW06_052324	**Units:**	mg/L
Lab Code:	R2404477-006	**Basis:**	NA
Analysis Method:	Organic Acids		

		Matrix Spike RQ2407088-07			Duplicate Matrix Spike RQ2407088-08					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Acetic Acid	0.56 U	19.9	20.0	100	19.9	20.0	99	80-130	<1	30
Butanoic Acid (Butyric Acid)	5.0 U	22.6	20.0	113	23.6	20.0	118	86-128	5	30
Lactic Acid	0.41 U	17.8	20.0	89	18.6	20.0	93	81-114	4	30
Propionic Acid	1.1 U	20.9	20.0	104	21.1	20.0	105	63-153	<1	30
Pyruvic Acid	0.19 U	1.59	2.00	79	1.61	2.00	80	73-122	1	30

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.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	R2404477
Project:	BHATE LHAAP / Site 58/JVPCIBH.0001	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	mg/L
Lab Code:	RQ2407088-02	**Basis:**	NA

Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Analysis Method: Organic Acids

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Acetic Acid	0.56 U	4.0	0.56	1	06/19/24 01:01	
Butanoic Acid (Butyric Acid)	5.0 U	10	5.0	1	06/19/24 01:01	
Lactic Acid	0.41 U	2.0	0.41	1	06/19/24 01:01	
Propionic Acid	1.1 U	4.0	1.1	1	06/19/24 01:01	
Pyruvic Acid	0.19 U	0.50	0.19	1	06/19/24 01:01	

Client: ALS Environmental - US
Project: BHATE LHAAP / Site 58/JVPCIBH.0001
Sample Matrix: Water

Service Request: R2404477
Date Analyzed: 06/19/24

Duplicate Lab Control Sample Summary
Organic Acids in Aqueous Matrices by High Performance Liquid Chromatography (HPLC) 28 Day Hold Time

Units:mg/L
Basis:NA

		Lab Control Sample			Duplicate Lab Control Sample					
		RQ2407088-03			RQ2407088-04					
Analyte Name	**Analytical Method**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Acetic Acid	Organic Acids	22.4	20.0	112	21.9	20.0	109	80-130	2	30
Butanoic Acid (Butyric Acid)	Organic Acids	21.4	20.0	107	21.2	20.0	106	86-128	<1	30
Lactic Acid	Organic Acids	23.0	20.0	115 *	22.8	20.0	114	81-114	<1	30
Propionic Acid	Organic Acids	21.9	20.0	110	19.4	20.0	97	63-153	12	30
Pyruvic Acid	Organic Acids	2.22	2.00	111	2.22	2.00	111	73-122	<1	30

This page intentionally left blank.

APPENDIX F
QUALITY CONTROL SUMMARY REPORT

This page intentionally left blank.

QUALITY CONTROL SUMMARY REPORT
LHAAP-SITE 58
SEMIANNUAL SAMPLING EVENT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

August 2024

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

U.S. Army Corps of Engineers
Tulsa District
Tulsa, Oklahoma

Prepared By:

1608 13th Avenue South, Suite 300
Birmingham, Alabama 35205
1-800-806-4001 • www.bhate.com

Table of Contents

1 INTRODUCTION 3
1.1 Intended Use of Data 3
1.2 Preservation and Holding Times 3
1.3 Calibrations 4
1.3.1 Continuing Calibration Verifications 4
1.4 Blanks 4
1.5 Surrogates 4
1.6 Laboratory Control Sample/Laboratory Control Sample Duplicate 4
1.7 Matrix Spike/Matrix Spike Duplicate Sample 4
1.8 Internal Standards 5
1.9 Field Precision 5
2.0 Lab Precision 5
2.1 DATA USABILITY SUMMARY 5

Tables

Table 1: Field Sample Identification and Laboratory Packages
Table 2: Qualified Analytical Data
Table 3: Completeness by Method

1 INTRODUCTION

Bhate reviewed three data packages from ALS Environmental, Houston, Texas. Groundwater samples were collected May 23-30th, 2024 from Site LHAAP-58 at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas in. Data was reviewed for conformance to the requirements of the following guidance documents: *USEPA Contract Laboratory Program* [CLP] *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, November 2020), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, November 2020) and the *Final Basewide Uniform Federal Policy* [UFP] – *Quality Assurance Project Plan* [QAPP] *Longhorn Army Ammunition Plant* which is in Appendix C of the *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas* (Bhate, May 2018).

1.1 Intended Use of Data

The objective of sampling at LHAAP-58 in 2024 was to monitor the performance of the injections conducted at the site.

Analyses performed include:

- SW8260C- Volatiles
- RSK175 – Methane, Ethane, Ethene (MEE) and Carbon Dioxide (CO2)
- SW9056A – Anions
- SM5310C – Total Organic Carbon (TOC)
- SW6020A – Arsenic
- HPLC-METACIDS – Volatile Fatty Acids (VFAs)
- CENSUS – Dechlorinating Bacteria

Table 1 lists the sample identification numbers (IDs) and their associated laboratory package.

Table 2 lists qualified results with the qualification flag and reason code.

The following narrative is a brief synopsis of data that required qualification due to quality control discrepancies.

1.2 Preservation and Holding Times

Sample identification data were evaluated for agreement with the chain-of-custody (COC). All samples were received in appropriate containers, within the proper temperature range, in good condition, and within the required hold time.

1.3 Calibrations

All analytes reported must be present in the initial and continuing calibration. The calibrations must meet the acceptance criteria specified in Worksheet 24 (Analytical Instrument Calibration) of the QAPP. All results reported must be within the calibration range. Samples were diluted, if necessary, to bring analyte responses within the calibration range

1.3.1 Continuing Calibration Verifications

The CCV recovery for all compounds was within control limits.

1.4 Blanks

If the analyte results for an associated sample met the criteria in the National Functional Guidelines for blank contamination, then the sample result was qualified based on those criteria.

No compounds warranted blank qualification.

1.5 Surrogates

Surrogates were evaluated using limits defined by each method in the project-specific QAPP Worksheet 28.

Several surrogates were outside of range high. Detected results were affected for sample 35AWW14_053024. Analytes 1,1- Dichloroethane (31 ug/L), 1,1-Dichloroethene (34 ug/L), cis-1,2-Dichloroethene (14 ug/L), and Trichloroethene (28 ug/L) were J-qualified.

1.6 Laboratory Control Sample/Laboratory Control Sample Duplicate

Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries were evaluated using limits defined in the project-specific QAPP Worksheet 15.

No LCS recoveries warranted qualification.

1.7 Matrix Spike/Matrix Spike Duplicate Sample

The MS/MSD recoveries were outside control limits on the lower end for VOCs for the following samples: 35AWW21_052924. The following VOCs were associated with this sample and out of range: 1,1,1,2-tetrachloroethane, 1,2-dibromoethane, 1,2-dichloropropane, 1,3-dichloropropane, dibromochloromethane, bromodichloromethane, chloroform, chlorobenzene, cis-1,2-dichloroethene, cis-1,3-Dichloropropene, dibromochloromethane, dibromomethane, trans-1,3-Dichloropropene, and trichloroethene. These were all non-detects and given UJ qualifiers

Sample 35AWW10_052824 also had MS/MSD that were outside of control on the low end. The analytes 1,2-Dichlorobenzene, 1,3-Dichloropropane, bromodichloromethane, cis-1,3-

Dichloropropene, trans-1,3-Dichloropropene, 1,2,4-trimethylbenzene, 1,1,1,2-tetrachloroethane, 1,2,3-trichloropropane, 1,3-dichlorobenzene, bromobenzene, chlorobenzene, dibromochloromethane, dibromomethane, ethylbenzene, m,p xylene and o-xylene were all given UJ qualifiers. The sample 35AWW19_052324 was outside of control for the MS/MSD on the low end for TOC. Sample 35AWW19_052324 is J qualified at 9.02 (mg/L). Please see table 2 for details on the specific values.

1.8 Internal Standards

If the %R for an internal standard in a sample is not within the limit, the associated sample is qualified for those analytes associated with the internal standard(s) outside of the limit.

Internal standards were within acceptance criteria for the associated compounds.

1.9 Field Precision

Precision is the measure of variability of individual sample measurements. Evaluation of field duplicates for precision was done using the relative percent difference (RPD). The RPD is defined as the difference between two duplicate samples divided by the mean and expressed as a percent. Field duplicate RPD limits were set at <30% for groundwater matrices.

No RPD exceedances were reported.

2.0 Lab Precision

The laboratory RPDs were within control limits.

2.1 DATA USABILITY SUMMARY

The data are usable for the intended purposes of the project (see Table 3). The data quality objectives have been met for the project.

Table 1: Field Sample Identification and Laboratory Packages

Client Sample ID	Lab Package/ID	SW8260C - VOCs	RSK 175 (MEE + CO2)	SW9056A ANIONS	TOC SM5310C	SW6020A - METALS	VFAs-HPLC	Microbial - CENSUS
35AWW19_052324	HS24051535-01	X	X	X	X		X	X
LHSMW07_052324	HS24051535-02	X	X	X	X		X	X
35AWW20_052324	HS24051535-03	X	X	X	X	X	X	X
35AWW11_052324	HS24051535-04	X	X	X	X		X	X
35AWW23_052324	HS24051535-05	X	X	X	X		X	X
35AWW06_052324	HS24051535-06	X	X	X	X		X	X
35AWW18_052324	HS24051535-07	X						
Trip Blank	HS24051535-08	X						
35AWW15_052924	HS24051959-01	X						
35AWW26_052924	HS24051959-02	X						
35AWW05_052924	HS24051959-03	X						
35AWW24_052924	HS24051959-04	X						
35AWW09_052924	HS24051959-05	X				X		
35AWW09_052924A	HS24051959-06	X				X		

35AWW21_052924	HS24051959-07	X						
35AWW22_052924	HS24051959-08	X						
35AWW12_052924	HS24051959-09	X						
03WW01_052824	HS24051959-10	X				X		
35AWW08_052824	HS24051959-11	X				X		
35AWW01_052824	HS24051959-12	X				X		
35AWW13_052824	HS24051959-13	X						
35AWW10_052824	HS24051959-14	X						
LHSMW06_052824	HS24051959-15	X				X		
LHSMW06_052824A	HS24051959-16	X				X		
35AWW16_052824	HS24051959-17	X						
Trip Blank	HS24051959-18	X						
35AWW17_053024	HS24052045-01	X						
35AWW25_053024	HS24052045-02	X						
35AWW04_053024	HS24052045-03	X						
35AWW14_053024	HS24052045-04	X						
35ASW03_053024	HS24052045-05	X						
Trip Blank	HS24052045-06	X						

Table 2: Qualified Analytical Data

Client Sample ID Laboratory	Laboratory Package	Analyte Name	Data Validation Qualifier and Value (ug/L)	Reason for Qualification
35AWW14_053024	HS24052045	1,1- Dichloroethane	**31 J**	Surrogate Recovery
35AWW14_053024	HS24052045	1,1-Dichloroethene	**34 J**	Surrogate Recovery
35AWW14_053024	HS24052045	cis-1,2-Dichloroethene	**14 J**	Surrogate Recovery
35AWW14_053024	HS24052045	Trichloroethene	**28 J**	Surrogate Recovery
35AWW21_052924	HS24051959	1,1,1,2-Tetrachloroethane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	1,2-Dibromoethane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	1,2-Dichloropropane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	1,3-Dichloropropane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Bromochloromethane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Bromodichloromethane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Chloroform	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Chlorobenzene	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Cis-1,2-dichloroethene	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	cis-1,3-Dichloropropene	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Dibromochloromethane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Dibromomethane	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	trans-1,3-Dichloropropene	<1.0 UJ	MS/MSD
35AWW21_052924	HS24051959	Trichloroethene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	1,2-Dichlorobenzene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	1,3-Dichloropropane	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	bromodichloromethane	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	cis-1,3-Dichloropropene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	trans-1,3-Dichloropropene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	1,2,4-trimethylbenzene	<1.0 UJ	MS/MSD

35AWW10_052824	HS24051959	1,1,1,2,-tetrachloroethane	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	1,2,3-trichloropropane	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	1,3-dichlorobenzene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	bromobenzene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	chlorobenzene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	dibromochloromethane	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	dibromomethane	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	ethylbenzene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	m,p xylene	<1.0 UJ	MS/MSD
35AWW10_052824	HS24051959	o-xylene	<1.0 UJ	MS/MSD
35AWW19_052324	HS24051535	TOC	**9.02 J**	MS/MSD
Notes:J – estimated; UJ – estimated non-detect				

Table 3: Completeness by Method

Method	No. of Rejected Results	% Completeness
SW8260C	0	100
RSK 175 (MEE+ CO2)	0	100
SW9056	0	100
SM5310C	0	100
SW6020A	0	100
HPLC-METACIDS	0	100
CENSUS	0	100
SW-846 - Test Methods for Evaluating Solid Waste, Physical/Chemical Methods		

This page intentionally left blank.

APPENDIX G
MANN-KENDALL TREND TEST RESULTS

This page intentionally left blank.

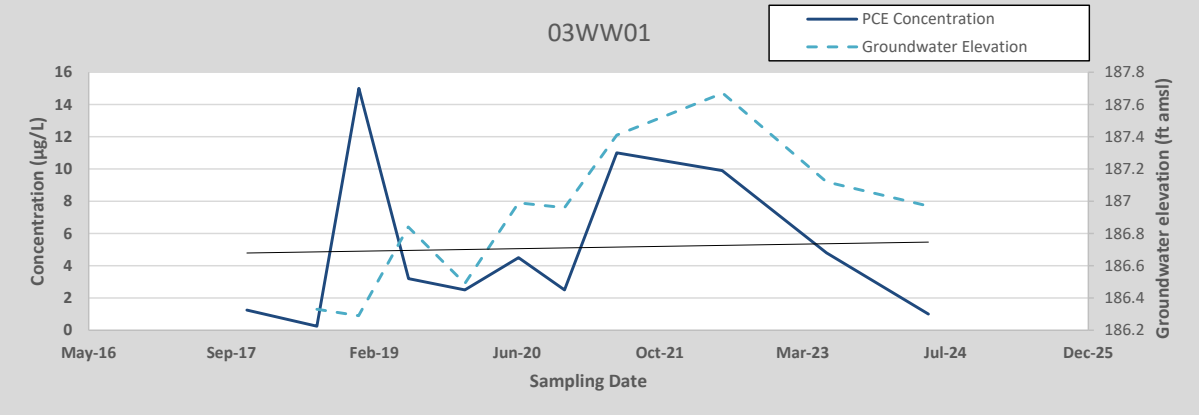
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**

Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Tetrachloroethene**
Concentration Units: **µg/L**

Sampling Point ID: **03WW01**

Sampling Event	Sampling Date	TETRACHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	*1.25*
2	18-Jul-18	*0.25*
3	12-Dec-18	15
4	4-Jun-19	3.2
5	18-Dec-19	*2.5*
6	23-Jun-20	4.5
7	1-Dec-20	*2.5*
8	2-Jun-21	11
9	6-Jun-22	9.9
10	6-Jun-23	4.8
11	28-May-24	*1*
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.94
Mann-Kendall Statistic (S):		8
Confidence Factor:		70.3%
Concentration Trend:		No Trend



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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

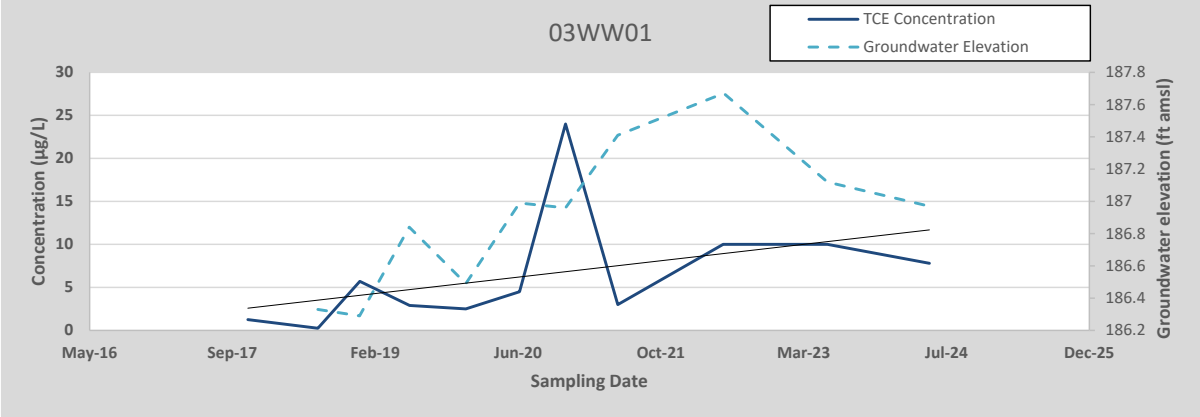
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwarz**

Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Trichloroethene**
Concentration Units: **µg/L**

Sampling Point ID: **03WW01**

Sampling Event	Sampling Date	TRICHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	*1.25*
2	18-Jul-18	*0.25*
3	12-Dec-18	5.7
4	4-Jun-19	2.9
5	18-Dec-19	*2.5*
6	23-Jun-20	4.5
7	1-Dec-20	24
8	2-Jun-21	3
9	6-Jun-22	10
10	6-Jun-23	10
11	28-May-24	7.8
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		**1.02**
Mann-Kendall Statistic (S):		**28**
Confidence Factor:		**98.4%**
Concentration Trend:		Increasing



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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

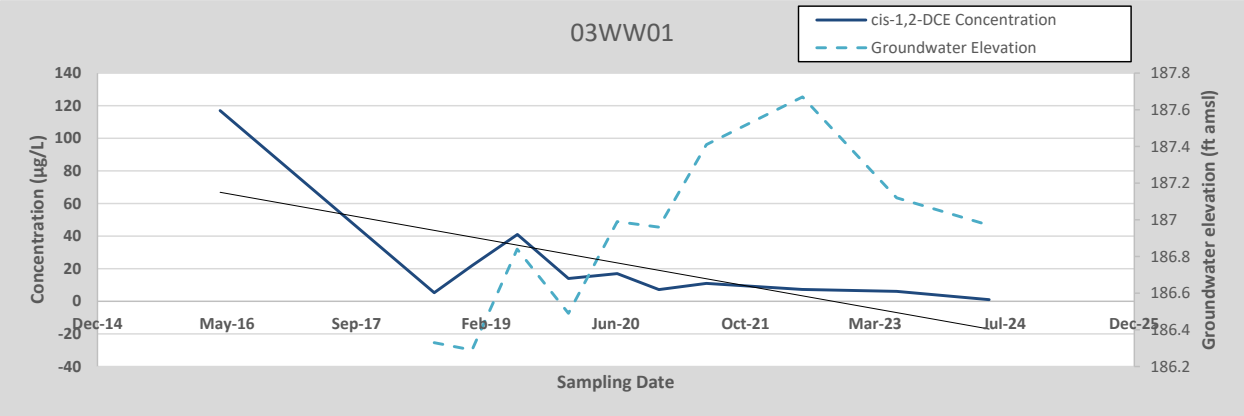
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	5-May-25	Job ID:	JVPCIBH.0001.0010.01
Facility Name:	LHAAP-58	Constituent:	CIS-1,2-DICHLOROETHENE
Conducted By:	Michelle Schwartz	Concentration Units:	µg/L

Sampling Point ID: **03WW01**

Sampling Event	Sampling Date	CIS-1,2-DICHLOROETHENE CONCENTRATION (µg/L)
1	13-Apr-16	117
2	18-Jul-18	5.3
3	12-Dec-18	22
4	4-Jun-19	41
5	18-Dec-19	14
6	23-Jun-20	17
7	1-Dec-20	7.2
8	2-Jun-21	11
9	6-Jun-22	7.3
10	6-Jun-23	6.1
11	28-May-24	*1*
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		1.47
Mann-Kendall Statistic (S):		-31
Confidence Factor:		99.2%
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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

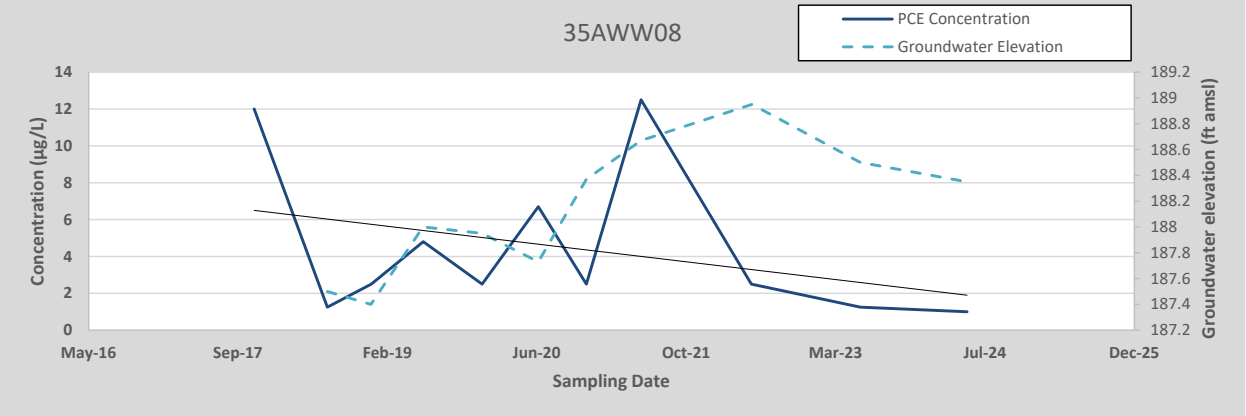
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 5-May-25
Facility Name: LHAAP-58
Conducted By: Michelle Schwartz

Job ID: JVPCIBH.0001.0010.01
Constituent: Tetrachloroethene
Concentration Units: µg/L

Sampling Point ID: 35AWW08

Sampling Event	Sampling Date	TETRACHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	12
2	18-Jul-18	*1.25*
3	12-Dec-18	*2.5*
4	4-Jun-19	4.8
5	18-Dec-19	*2.5*
6	23-Jun-20	6.7
7	1-Dec-20	*2.5*
8	2-Jun-21	*12.5*
9	6-Jun-22	*2.5*
10	6-Jun-23	*1.25*
11	28-May-24	*1*
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.94
Mann-Kendall Statistic (S):		-6
Confidence Factor:		66.8%
Concentration Trend:		Stable



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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

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.

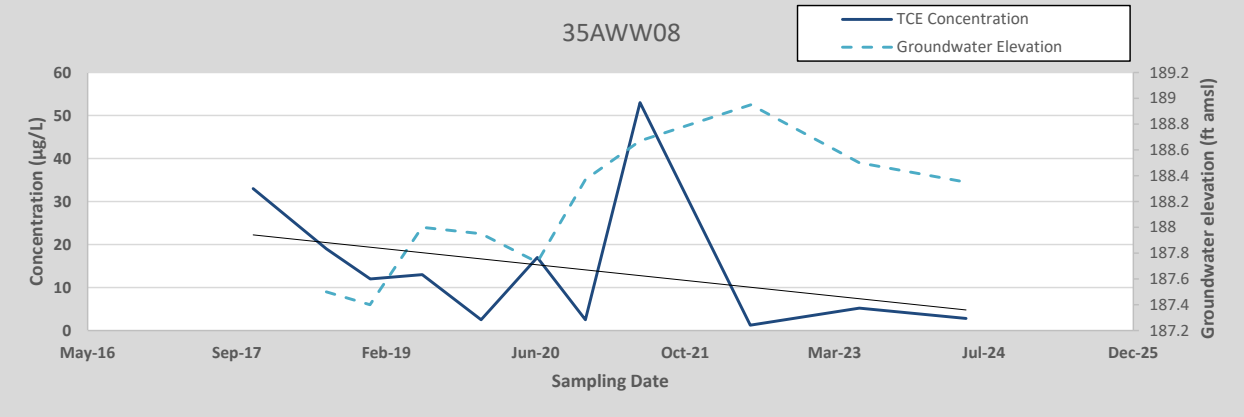
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**

Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Trichloroethene**
Concentration Units: **µg/L**

Sampling Point ID: **35AWW08**

Sampling Event	Sampling Date	TRICHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	33
2	18-Jul-18	19
3	12-Dec-18	12
4	4-Jun-19	13
5	18-Dec-19	*2.5*
6	23-Jun-20	17
7	1-Dec-20	*2.5*
8	2-Jun-21	53
9	6-Jun-22	*1.25*
10	6-Jun-23	5.2
11	28-May-24	2.8
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		1.09
Mann-Kendall Statistic (S):		-20
Confidence Factor:		92.9%
Concentration Trend:		Prob. 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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

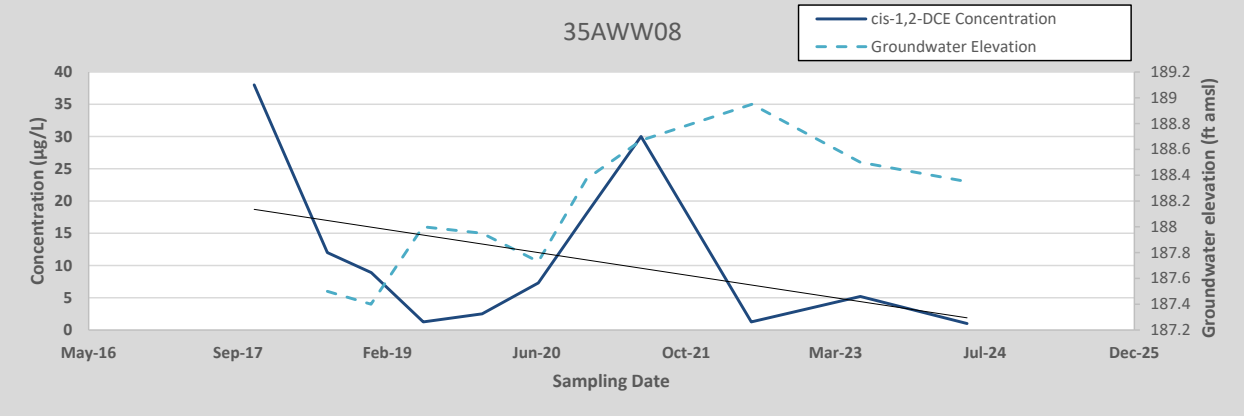
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	5-May-25	Job ID:	JVPCIBH.0001.0010.01
Facility Name:	LHAAP-58	Constituent:	CIS-1,2-DICHLOROETHENE
Conducted By:	Michelle Schwartz	Concentration Units:	µg/L

Sampling Point ID: **35AWW08**

Sampling Event	Sampling Date	CIS-1,2-DICHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	38
2	18-Jul-18	12
3	12-Dec-18	8.9
4	4-Jun-19	*1.25*
5	18-Dec-19	*2.5*
6	23-Jun-20	7.3
7	1-Dec-20	18
8	2-Jun-21	30
9	6-Jun-22	*1.25*
10	6-Jun-23	5.2
11	28-May-24	*1*
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		1.09
Mann-Kendall Statistic (S):		-20
Confidence Factor:		92.9%
Concentration Trend:		Prob. 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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

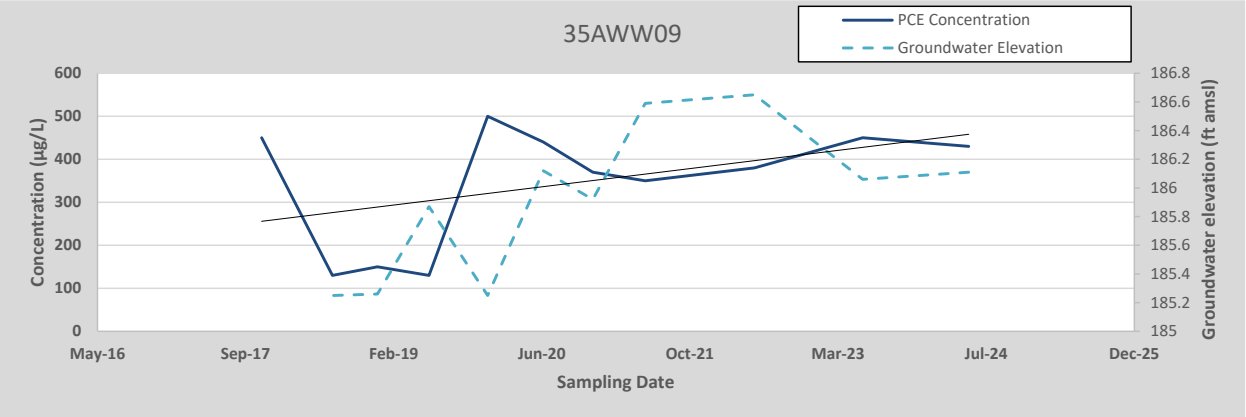
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 5-May-25
Facility Name: LHAAP-58
Conducted By: Michelle Schwartz
Job ID: JVPCIBH.0001.0010.01
Constituent: Tetrachloroethene
Concentration Units: µg/L

Sampling Point ID: 35AWW09

Sampling Event	Sampling Date	TETRACHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	450
2	12-Jul-18	130
3	11-Dec-18	150
4	3-Jun-19	130
5	18-Dec-19	500
6	23-Jun-20	440
7	7-Dec-20	370
8	2-Jun-21	350
9	6-Jun-22	380
10	6-Jun-23	450
11	29-May-24	430
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.41
Mann-Kendall Statistic (S):		11
Confidence Factor:		77.7%
Concentration Trend:		No Trend



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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

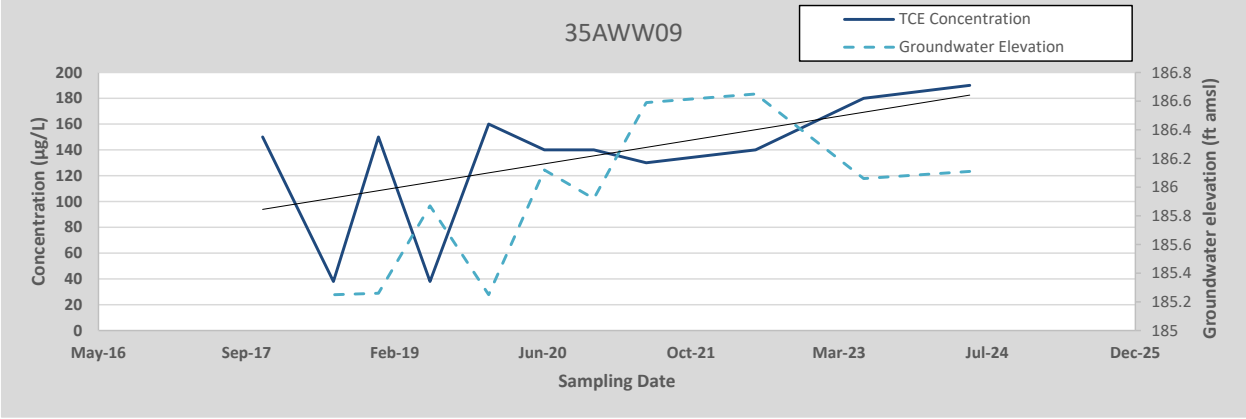
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 5-May-25
Facility Name: LHAAP-58
Conducted By: Michelle Schwartz

Job ID: JVPCIBH.0001.0010.01
Constituent: Trichloroethene
Concentration Units: µg/L

Sampling Point ID: 35AWW09

Sampling Event	Sampling Date	TRICHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	150
2	12-Jul-18	38
3	11-Dec-18	150
4	3-Jun-19	38
5	18-Dec-19	160
6	23-Jun-20	140
7	7-Dec-20	140
8	2-Jun-21	130
9	6-Jun-22	140
10	6-Jun-23	180
11	29-May-24	190
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.38
Mann-Kendall Statistic (S):		16
Confidence Factor:		87.5%
Concentration Trend:		No Trend



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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

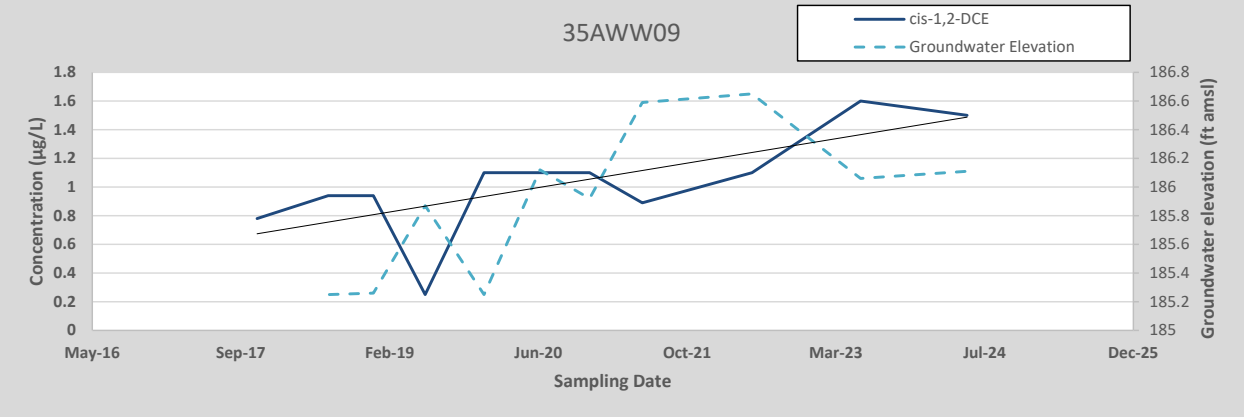
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**

Job ID: **JVPCIBH.0001.0010.01**
Constituent: **cis-1,2-Dichloroethene**
Concentration Units: **µg/L**

Sampling Point ID: **35AWW09**

Sampling Event	Sampling Date	CIS-1,2-DICHLOROETHENE CONCENTRATION (µg/L)
1	15-Nov-17	0.78
2	12-Jul-18	0.94
3	11-Dec-18	0.94
4	3-Jun-19	*0.25*
5	18-Dec-19	1.1
6	23-Jun-20	1.1
7	7-Dec-20	1.1
8	2-Jun-21	0.89
9	6-Jun-22	1.1
10	6-Jun-23	1.6
11	29-May-24	1.5
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.35
Mann-Kendall Statistic (S):		30
Confidence Factor:		99.0%
Concentration Trend:		Increasing



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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

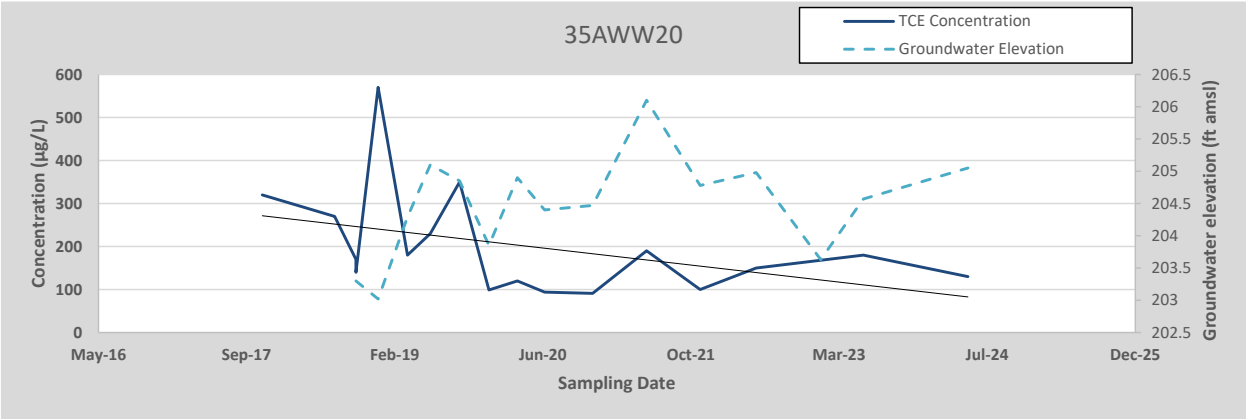
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 5-May-25
Facility Name: LHAAP-58
Conducted By: Michelle Schwartz

Job ID: JVPCIBH.0001.0010.01
Constituent: Trichloroethene
Concentration Units: µg/L

Sampling Point ID: 35AWW20

Sampling Event	Sampling Date	TRICHLOROETHENE CONCENTRATION (µg/L)
1	14-Nov-17	320
2	16-Jul-18	270
3	26-Sep-18	170
4	26-Sep-18	140
5	10-Dec-18	570
6	19-Mar-19	180
7	4-Jun-19	230
8	11-Sep-19	350
9	19-Dec-19	99
10	24-Mar-20	120
11	24-Jun-20	94
12	3-Dec-20	91
13	3-Jun-21	190
14	1-Dec-21	100
15	8-Jun-22	150
16	5-Jun-23	180
17	23-May-24	130
18		
19		
20		
Coefficient of Variation:		0.62
Mann-Kendall Statistic (S):		-45
Confidence Factor:		96.5%
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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

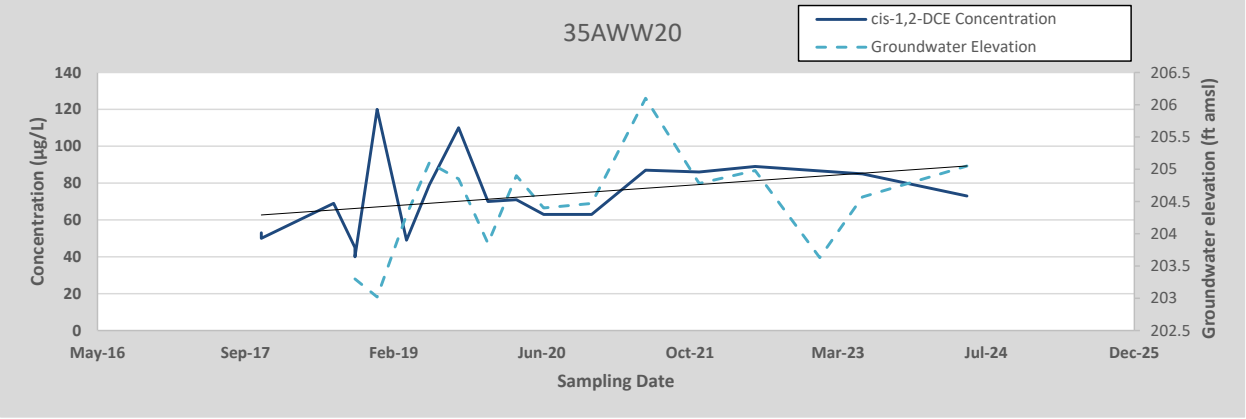
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 5-May-25
Facility Name: LHAAP-58
Conducted By: Michelle Schwartz

Job ID: JVPCIBH.0001.0010.01
Constituent: cis-1,2-Dichloroethene
Concentration Units: µg/L

Sampling Point ID: 35AWW20

Sampling Event	Sampling Date	CIS-1,2-DICHLOROETHENE CONCENTRATION (µg/L)
1	14-Nov-17	53
2	14-Nov-17	50
3	16-Jul-18	69
4	26-Sep-18	45
5	26-Sep-18	40
6	10-Dec-18	120
7	19-Mar-19	49
8	4-Jun-19	79
9	11-Sep-19	110
10	19-Dec-19	70
11	24-Mar-20	71
12	24-Jun-20	63
13	3-Dec-20	63
14	3-Jun-21	87
15	1-Dec-21	86
16	8-Jun-22	89
17	5-Jun-23	85
18	23-May-24	73
19		
20		
Coefficient of Variation:		0.30
Mann-Kendall Statistic (S):		50
Confidence Factor:		96.9%
Concentration Trend:		Increasing



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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

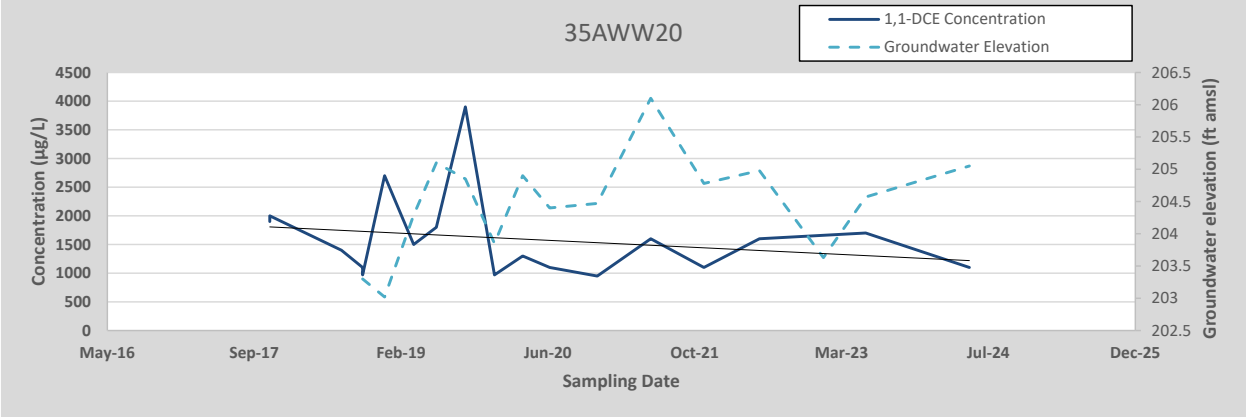
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 5-May-25
Facility Name: LHAAP-58
Conducted By: Michelle Schwartz

Job ID: JVPCIBH.0001.0010.01
Constituent: 1,1-Dichloroethene
Concentration Units: µg/L

Sampling Point ID: 35AWW20

Sampling Event	Sampling Date	1,1-DICHLOROETHENE CONCENTRATION (µg/L)
1	14-Nov-17	1900
2	14-Nov-17	2000
3	16-Jul-18	1400
4	26-Sep-18	1100
5	26-Sep-18	970
6	10-Dec-18	2700
7	19-Mar-19	1500
8	4-Jun-19	1800
9	11-Sep-19	3900
10	19-Dec-19	970
11	24-Mar-20	1300
12	24-Jun-20	1100
13	3-Dec-20	950
14	3-Jun-21	1600
15	1-Dec-21	1100
16	8-Jun-22	1600
17	5-Jun-23	1700
18	23-May-24	1100
19		
20		
Coefficient of Variation:		0.46
Mann-Kendall Statistic (S):		-25
Confidence Factor:		81.6%
Concentration Trend:		Stable



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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

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.

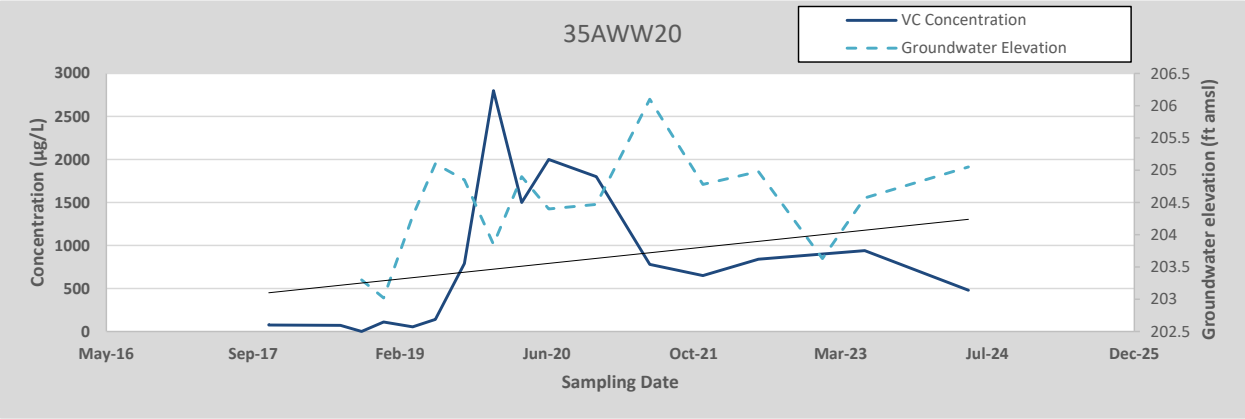
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**

Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Vinyl Chloride**
Concentration Units: **µg/L**

Sampling Point ID: **35AWW20**

Sampling Event	Sampling Date	VINYL CHLORIDE CONCENTRATION (µg/L)
1	14-Nov-17	78
2	14-Nov-17	75
3	16-Jul-18	71
4	26-Sep-18	*0.25*
5	10-Dec-18	110
6	19-Mar-19	54
7	4-Jun-19	140
8	11-Sep-19	790
9	19-Dec-19	2800
10	24-Mar-20	1500
11	24-Jun-20	2000
12	3-Dec-20	1800
13	3-Jun-21	780
14	1-Dec-21	650
15	8-Jun-22	840
16	5-Jun-23	940
17	23-May-24	480
18		
19		
20		
Coefficient of Variation:		**1.06**
Mann-Kendall Statistic (S):		**52**
Confidence Factor:		**98.3%**
Concentration Trend:		Increasing



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.
4. *ND values are shown in red italics as 1/2 the limit of detection.*

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.

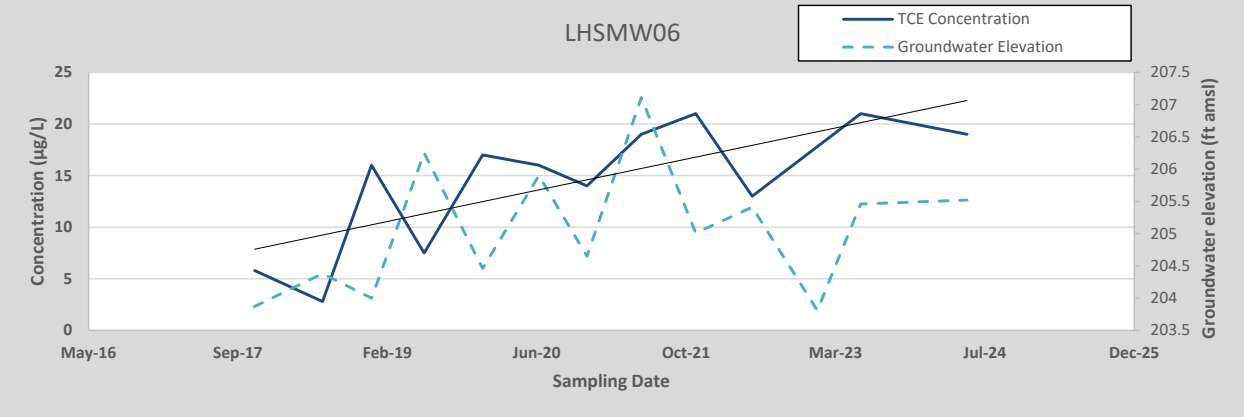
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**

Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Trichloroethene**
Concentration Units: **µg/L**

Sampling Point ID: **LHSMW06**

Sampling Event	Sampling Date	TRICHLOROETHENE CONCENTRATION (µg/L)
1	17-Nov-17	5.8
2	2-Jul-18	2.8
3	13-Dec-18	16
4	7-Jun-19	7.5
5	20-Dec-19	17
6	25-Jun-20	16
7	3-Dec-20	14
8	3-Jun-21	19
9	2-Dec-21	21
10	9-Jun-22	13
11	7-Jun-23	21
12	28-May-24	19
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.42
Mann-Kendall Statistic (S):		35
Confidence Factor:		99.2%
Concentration Trend:		Increasing



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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

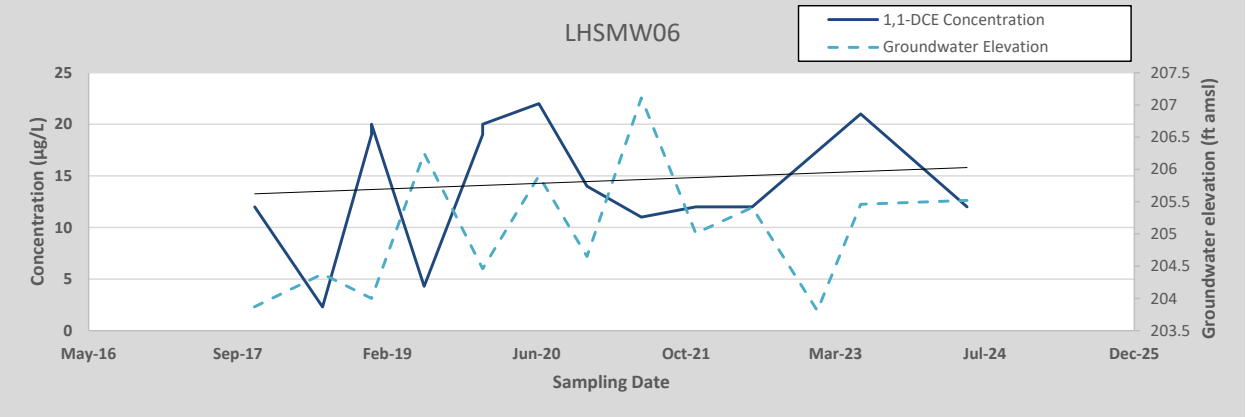
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 5-May-25
Facility Name: LHAAP-58
Conducted By: Michelle Schwartz
Job ID: JVPCIBH.0001.0010.01
Constituent: 1,1-Dichloroethene
Concentration Units: µg/L

Sampling Point ID: LHSMW06

Sampling Event	Sampling Date	1,1-DICHLOROETHENE CONCENTRATION (µg/L)
1	17-Nov-17	12
2	2-Jul-18	2.3
3	13-Dec-18	19
4	13-Dec-18	20
5	7-Jun-19	4.3
6	20-Dec-19	19
7	20-Dec-19	20
8	25-Jun-20	22
9	3-Dec-20	14
10	3-Jun-21	11
11	2-Dec-21	12
12	9-Jun-22	12
13	7-Jun-23	21
14	28-May-24	12
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.43
Mann-Kendall Statistic (S):		9
Confidence Factor:		66.6%
Concentration Trend:		No Trend



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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

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.

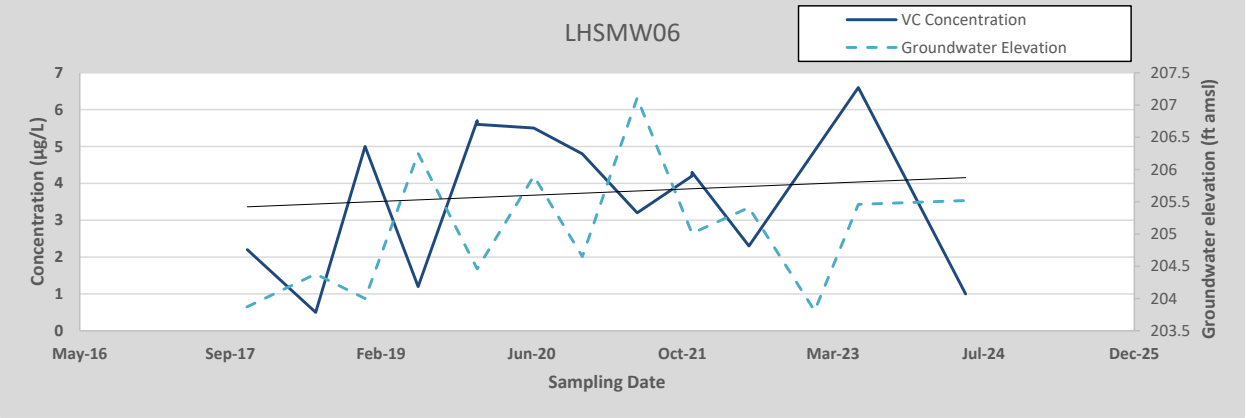
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**

Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Vinyl Chloride**
Concentration Units: **µg/L**

Sampling Point ID: **LHSMW06**

Sampling Event	Sampling Date	VINYL CHLORIDE CONCENTRATION (µg/L)
1	17-Nov-17	2.2
2	2-Jul-18	*0.5*
3	13-Dec-18	5
4	7-Jun-19	1.2
5	20-Dec-19	5.7
6	20-Dec-19	5.6
7	25-Jun-20	5.5
8	3-Dec-20	4.8
9	3-Jun-21	3.2
10	2-Dec-21	4.2
11	2-Dec-21	4.3
12	9-Jun-22	2.3
13	7-Jun-23	6.6
14	28-May-24	*1*
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		**0.53**
Mann-Kendall Statistic (S):		**1**
Confidence Factor:		**50.0%**
Concentration Trend:		No Trend



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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

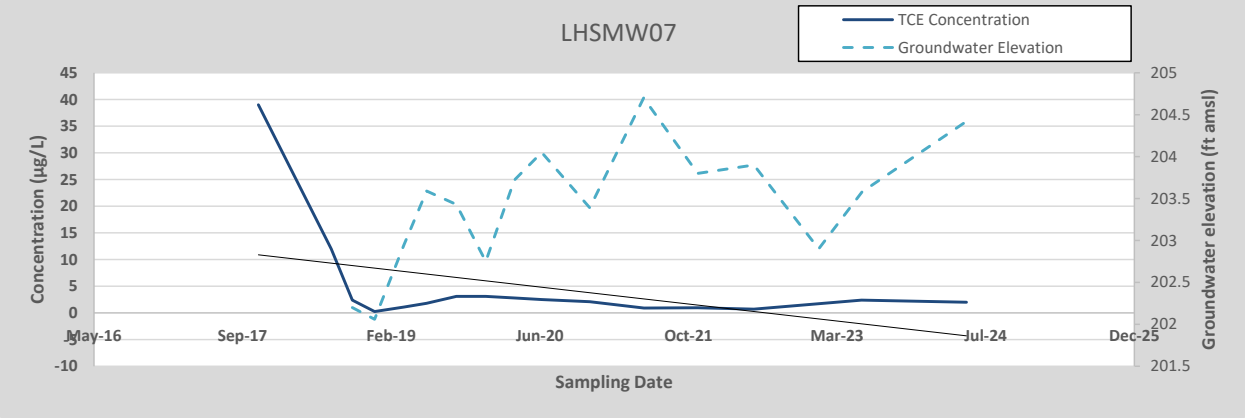
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**
Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Trichloroethene**
Concentration Units: **µg/L**

Sampling Point ID: **LHSMW07**

Sampling Event	Sampling Date	TRICHLOROETHENE CONCENTRATION (µg/L)
1	14-Nov-17	39
2	17-Jul-18	12
3	26-Sep-18	2.4
4	10-Dec-18	*0.25*
5	19-Mar-19	1.1
6	3-Jun-19	1.8
7	11-Sep-19	3.1
8	19-Dec-19	3.1
9	24-Mar-20	2.8
10	24-Jun-20	2.5
11	3-Dec-20	2.1
12	3-Jun-21	0.91
13	1-Dec-21	0.97
14	8-Jun-22	0.71
15	5-Jun-23	2.4
16	23-May-24	2
17		
18		
19		
20		
Coefficient of Variation:		1.97
Mann-Kendall Statistic (S):		-40
Confidence Factor:		96.1%
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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

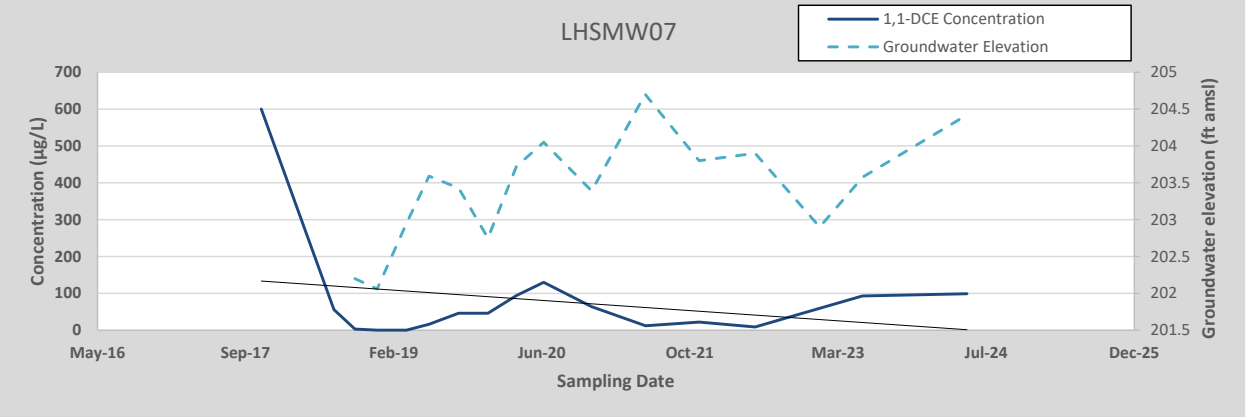
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**
Job ID: **JVPCIBH.0001.0010.01**
Constituent: **1,1-Dichloroethene**
Concentration Units: **µg/L**

Sampling Point ID: **LHSMW07**

Sampling Event	Sampling Date	1,1-DICHLOROETHENE CONCENTRATION (µg/L)
1	14-Nov-17	600
2	17-Jul-18	56
3	26-Sep-18	3.1
4	10-Dec-18	*0.25*
5	19-Mar-19	*0.25*
6	3-Jun-19	16
7	11-Sep-19	46
8	19-Dec-19	46
9	24-Mar-20	94
10	24-Jun-20	130
11	3-Dec-20	64
12	3-Jun-21	12
13	1-Dec-21	22
14	8-Jun-22	8.8
15	5-Jun-23	93
16	23-May-24	99
17		
18		
19		
20		
Coefficient of Variation:		1.79
Mann-Kendall Statistic (S):		18
Confidence Factor:		77.5%
Concentration Trend:		No Trend



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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

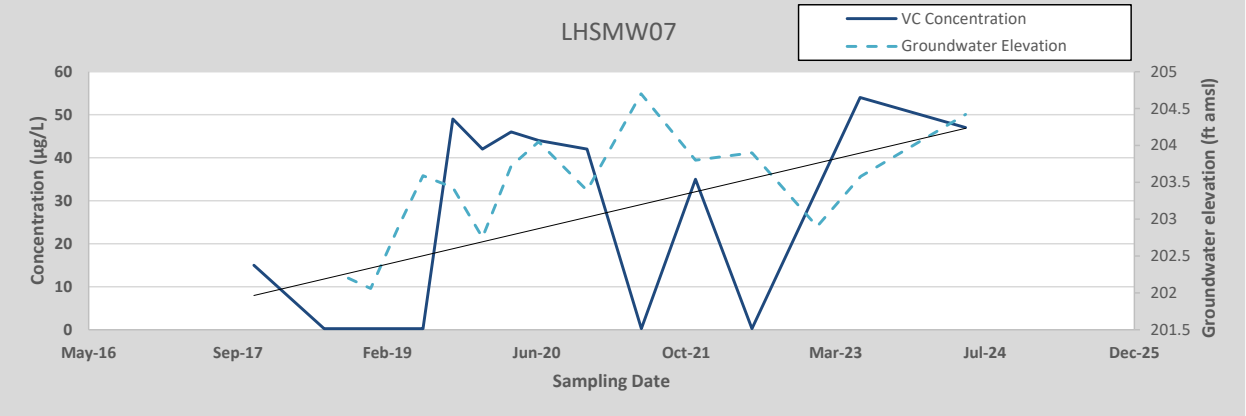
DISCLAIMER: The GSI Mann-Kendall Toolkit is available "as is". Considerable care has been exercised in preparing this software product; however, no party, including without limitation GSI Environmental Inc., makes any representation or warranty regarding the accuracy, correctness, or completeness of 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.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **5-May-25**
Facility Name: **LHAAP-58**
Conducted By: **Michelle Schwartz**
Job ID: **JVPCIBH.0001.0010.01**
Constituent: **Vinyl Chloride**
Concentration Units: **µg/L**

Sampling Point ID: **LHSMW07**

Sampling Event	Sampling Date	VINYL CHLORIDE CONCENTRATION (µg/L)
1	14-Nov-17	15
2	7-Jul-18	*0.25*
3	26-Sep-18	*0.25*
4	10-Dec-18	*0.25*
5	19-Mar-19	*0.25*
6	3-Jun-19	*0.25*
7	11-Sep-19	49
8	19-Dec-19	42
9	24-Mar-20	46
10	24-Jun-20	44
11	3-Dec-20	42
12	3-Jun-21	*0.25*
13	1-Dec-21	35
14	8-Jun-22	*0.25*
15	5-Jun-23	54
16	23-May-24	47
17		
18		
19		
20		
Coefficient of Variation:		0.97
Mann-Kendall Statistic (S):		34
Confidence Factor:		93.0%
Concentration Trend:		Prob. Increasing



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.
4 *ND values are shown in red italics as 1/2 the limit of detection.*

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.